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# Corruption and Bicameral Reforms \*

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## Abstract

During the last decade unicameral proposals have been put forward in fourteen US states. In this paper we analyze the effects of the proposed constitutional reforms, in a setting where decision making is subject to ‘hard time constraints’, and lawmakers face the opposing interests of a lobby and the electorate. We show that bicameralism might lead to a decline in the lawmakers’ bargaining power vis-a-vis the lobby, thus compromising their accountability to voters. Hence, bicameralism is not a panacea against the abuse of power by elected legislators and the proposed unicameral reforms could be effective in reducing corruption among elected representatives.

*JEL classification: D72, D73*

*Keywords: Bicameralism, corruption, lobbying*

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“A unicameral legislature will cut government expense, increase the legislators accountability to their constituents and improve efficiency.” Ventura (1998)

## 1 Introduction

During the last two decades, rampant corruption scandals and a generalized increase in the State debt have cast dark shadows on the accountability of state legislators across the United States.<sup>1</sup> This has fostered a widespread debate on the effectiveness of current bicameral arrangements, leading to the formulation of unicameral proposals in fourteen US states (Rogers 1999), the two most recent ones having been put forward in California and New York in 2006 and 2010 respectively.<sup>2</sup> Only the years of the great depression have witnessed a similar level of unicameral initiatives, which culminated in the decision of Nebraska, alone among all US states, to go unicameral in 1934. At that time, this decision was viewed with suspicion and the fear was that Nebraska would become a ‘lobbyist’s paradise’.<sup>3</sup> The historical evidence, however, shows that this fear was unfounded (Ewing 1937; Kolasa 1971; Shumate 1952), and in fact more recent data suggest that Nebraska ranks amongst the least corrupt US states (Glaeser and Saks 2006, Corporate Crime Reporter 2004).

The lack of conclusive evidence on the advantages of bicameralism raises the fundamental question of whether the second chamber is a useless duplication of the first, as most unicameral proposals suggest,<sup>4</sup> or whether it serves the important purpose of increasing the accountability of elected representatives.<sup>5</sup> This controversy is not unique to US state legislatures, as shown by the ongoing constitutional debate and reforms implemented in many national states.<sup>6</sup>

Do more complex legislative procedures really make lawmakers less vulnerable to lobby pressures? What are the potential costs of such lengthy procedures? The existing literature has identi-

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<sup>1</sup>As reported by the Center for Public Integrity, over one billion dollars was spent in 2005 to lobby state politicians. Moreover, of the 2000 investigations on public corruption undertaken by the F.B.I. in 2006, most involve states and local officials (source: The New York Times May 11, 2006, *F.B.I.’s Focus on Public Corruption Includes 2,000 Investigations*)

<sup>2</sup>California unicameral legislature, October 4 2006, Attorney General File number 2600–034; State of New York Bill 9875, February 5 2010.

<sup>3</sup>As Madison (1788) had pointed out “... a senate, as a second branch of the legislative assembly, distinct from, and dividing the power with, a first, *must be in all cases* a salutary check on the government. It doubles the security to the people, by requiring the concurrence of two distinct bodies in schemes of usurpation or perfidy, where the ambition or corruption of one would otherwise be sufficient”

<sup>4</sup>According to the New York unicameral bill proposal “A one house legislature will eliminate needless duplication and delay (...); it will speed up the budget process and facilitate the adoption of timely budgets” (source: State of New York, Bill Number A597, January 18 2005).

<sup>5</sup>Of course, bicameralism may also serve other purposes such as the representation of heterogenous interests that in modern democracies are associated with geographically distinct political jurisdictions such as for example, federal states. For a comprehensive view of bicameralism, see Tsebelis and Money (1997) and Voigt (2012). For an overview on the effects of federalism and bicameralism on corruption see instead Rose-Ackerman (2006).

<sup>6</sup>For an overview of bicameral arrangements in national states and a cross-country empirical analysis on bicameralism and corruption, see Testa (2010).

fied *legislative gridlock* and *status quo bias* as the two main drawbacks of bicameralism (Riker 1992, Levmore 1992, Muthoo and Shepsle 2008), and more generally of multiple veto players (Chang and Tsebelis 2002, Tsebelis 1995, Franzese 2007). An additional – and so far understudied – drawback of more complex procedures is that they typically require more *time* for legislation to be enacted, and time is the ultimate scarce resource for an elected politician. “Hard” time constraints on legislative decisions can typically arise because many bills compete for the attention of lawmakers, as it has been emphasized by Cox (2006), or because some important pieces of legislation, like the yearly budget, need to be approved within a specific time frame, under the threat of a complete government shutdown if the official deadline is not met. More generally, the presence of time constraints introduces an additional source of uncertainty on the fate of legislative proposals, which has important effects on the behavior of decision makers and, in particular, on their ability to resist lobby pressures. In fact, there is growing anecdotal evidence on the frequency of ‘Christmas Tree’ appropriations or ‘Walking Around Money’ (WAM), whereby earmarks are introduced into state budgets to support projects put forward by politically connected institutions and organizations, exploiting the threat of a government shutdown if the yearly budget is not approved by the official deadline.<sup>7</sup>

The purpose of this paper is to develop a theoretical framework that takes explicitly into account the role of *time* on legislative outcomes under alternative institutional arrangements to assess the effects of the proposed reforms of bicameral legislatures. Contrary to the received wisdom, we argue that long legislative procedures – like the ones brought about by a bicameral system – may shift the balance of power in *favor* of pressure groups, making lobby capture *easier* rather than more difficult.

In our analysis, private interests try to influence policy by bargaining with legislators, and the law making process is constrained by a finite number of legislative sessions. This allows us to explicitly consider the role played by the time necessary to pass legislation on the bargaining power of legislators and thus on accountability. To keep our framework tractable, we focus on a single powerful lobby bargaining with law makers during the legislative process, while citizens can only punish/reward legislators in an election called at the end of the mandate to hold them accountable. Thus, our model is particularly suited to describe those situations in which an organized industry lobbies legislators, whereas unorganized groups – such as consumers or taxpayers – can discipline politicians by means of elections. Comparing the effectiveness of unicameral and bicameral arrangements, we find that bicameralism does not necessarily improve electoral accountability.

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<sup>7</sup>For instance during the weeks preceding the approval of the 2005 New York state budget, it has been pointed out that “...winning on time passage from the legislature could be costly.... It might require Mr. Pataki to agree to hundreds of millions of dollars in extra spending” (*The Calendar vs. the Purse for Albany’s Big 3* The New York Times, March 16 2005). For more details on late budget procedures in US federal states see Eckl (1998).

This is because, in a bicameral set-up, the increased pressure to undertake timely decisions can have an adverse effect on the bargaining power of legislators. In particular, as the time necessary to complete the entire legislative process is limited, failure by one body to deliberate early in the process increases the risk that legislation will not gain passage. As a result, the legislator's outside option deteriorates, leading to a weakening of his bargaining power vis a vis the lobby. Hence, when legislators vote sequentially on a bill, an increase in the number of veto players does not necessarily make lobbying more expensive. In particular, and in contrast to Diermeier and Myerson (1999), we find that the cost of buying legislators (the so called *external hurdle factor*) does not increase monotonically with the number of legislative bodies. This result delivers an important warning on the optimal allocation of legislative power from the point of view of voters: when time constraints are binding, the fragmentation of decision making across multiple bodies may *weaken* legislators, rendering lobby capture easier rather than more difficult.

On the other hand, when time constraints are not binding, bicameralism can have a positive effect on accountability. Comparing different possible arrangements, we show that the best bicameral system is the one in which equal decision powers are given to the two chambers (*open rule* with restricted amendment rights). The system that attributes unrestricted amendment rights to the second chamber is bad for incentives, as it is likely to generate a status quo bias. The *closed rule* system – assigning proposal power to the first legislator and veto power to the second – can instead be ranked between the two previous alternatives.

Bicameralism is the subject of a recent, growing literature. Diermeier, Eraslan, and Merlo (2007) and Druckman and Thies (2002) have studied the impact of multiple chambers on the formation and stability of coalitional governments, whereas Hickey (2011) analyzes the effect of bicameralism on the formation of federations. Ansolabehere, Snyder, and Ting (2003b) and Knight (2008) analyze bargaining over the division of public expenditures in bicameral legislatures with unequal representation. Bradbury and Crain (2001) and Heller (2001) have considered instead the link between bicameralism and budget deficit. All these studies do not analyze the impact of legislative structures on electoral accountability, which is instead the focus of our paper. The accountability problem in our set-up with multiple legislators is similar to the corruption deterrence problem in agency models with multiple supervisors, who can collude with the agent they are supposed to monitor (Kofman and Lawarree 1993, Kofman and Lawarree 1996 and Mishra 2002). In particular, two chambers are akin to two supervisors in an horizontal structure. The main difference between supervisors and legislators is that the latter have substantive power, e.g. only policy passed by legislators can subsequently be executed and generate profits for the lobby. As a result, the effectiveness of different organizational structures on accountability hinges critically on their impact on the legislators' bargaining position. In particular, the introduction of an additional

chamber may make the collusion problem worse if the more complex organizational structure has a negative bearing on the bargaining power of legislative bodies.

In order to combine elections, lobbying and legislative procedures, we extend the bargaining literature<sup>8</sup> endogenizing the identity of one of the players (the legislator), through the introduction of an election stage.<sup>9</sup> The approach we follow is similar to Testa (2010), which uses Nash bargaining to model the interaction between elected legislators and organized interests. However, whereas Testa (2010), similarly to Diermeier and Myerson (1999), finds that the cost of buying legislators (the so called *external hurdle factor*) increases monotonically in the number of legislators with aligned electoral concerns, this is not the case in our set-up. Thus, the sequential bargaining with time constraints provides different important insights on the outcome of the legislative process. As in Bernheim et al. (2006), we assume that the number of bargaining rounds is finite, but differently from them we focus on the negotiations taking place between lobby and legislators, rather than on bargaining among law makers. In particular, similarly to Diermeier and Myerson (1999) and Groseclose and Snyder (1996), we assume that a lobbyist can buy the legislators' vote to obtain the implementation of a given policy, and we study how constitutional rules, affecting the bargaining process, have an impact on the cost of buying legislators (*external hurdle factor*). However, while Diermeier and Myerson (1999), taking the external hurdle factor as given, primarily focus on how legislators can manipulate the internal organization of chambers (i.e. *internal hurdle factor*) to extract higher payments from lobbyists, in our work we concentrate on constitutional rules themselves to ask which institutional arrangements can prevent lobbyists and legislators from finding agreements on policies that are detrimental to voters. Hence, in our model a powerful lobby competes with voters (rather than with other interest groups) to sway the policy choice in its favor.

By incorporating lobbying into our analysis, we also obtain predictions on the relevance of proposal power, which can bring larger rents to the legislators holding it. The importance of proposal power has been stressed by models of distributive politics showing that it provides an advantage in the so called "divide-the-dollar" bargaining (Baron and Ferejohn 1989, Cutrone and McCarty 2006 and Ansolabehere et al. 2003a). Empirically, proposal power has been found to secure legislators bigger shares of the budget (Knight 2005), more cabinets posts (Snyder et al. 2005) and larger campaign contributions (Grier and Munger 1993 and Romer and Snyder 1994).

Finally, since our theoretical framework shows how legislative rules and voting can be instrumental in disciplining legislators, our approach is also close to Persson, Roland, and Tabellini (1997).

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<sup>8</sup>See Osborne and Rubinstein (1990) for a comprehensive survey, and Baron and Ferejohn (1989) for a pioneering application of extensive form bargaining models to the legislative process.

<sup>9</sup>The literature on bicameral legislative bargaining typically does not incorporate elections. One exception is Muthoo and Shepsle (2008) which lay out a model of optimal constitutional choice introducing elections in a reduced form, i.e. without explicitly modeling the voting strategy.

However, we depart from their contribution in an important way because we introduce lobbying as the source of the agency problem, and explicitly analyze the bargaining between lobby and legislators to understand the role played by alternative legislative procedures.

The remainder of the paper is organized as follows. Section 2 outlines the model and discusses the main assumptions. In section 3 we characterize the equilibrium under unicameralism, while section 4 deals with bicameralism and accountability under both an *open rule* and a *closed rule* setting. Section 5 offers concluding remarks.

## 2 The model

### 2.1 Policies and Preferences

Consider an economy composed by citizens indexed by  $k$ , legislators denoted by  $g$  and a lobby group (private firm)  $l$ . The legislator  $g$  should be thought of as the ruling majority in a body that has the authority to decide on a public policy  $p$ . In a unicameral parliament there is a unique legislator  $g$ , whereas a bicameral legislature consists of two chambers requiring the agreement of two concurrent legislators denoted by  $g_1$  and  $g_2$ .

All agents in the economy derive a non-negative benefit  $B$  from the implementation of the public policy and share equally its cost, paying a per capita cost  $C \in \{C^L, C^H\}$  with  $C^H > C^L = 0$ . The policy maker has complete discretion on whether to choose a low cost policy ( $C^L$ ), a high cost one ( $C^H$ ) or no policy ( $\emptyset$ ), hence  $p \in \{C^L, C^H, \emptyset\}$ . He also enjoys delivering a policy, which can be thought of as representing his *legacy*, denoted by  $E$ . We assume that the overall benefit of the policy for the politician always outweighs its cost (e.g.  $E + B > C^H$ ).<sup>10</sup> At the same time, we assume that all other citizens  $k$  will only benefit from the policy as long as the low cost option is chosen, e.g.  $C^L < B < C^H$ . Furthermore, the execution of the policy results in a profit  $\Pi(C)$  for the lobby group  $l$ , which is increasing in  $C$  and generates a corresponding (net) rent  $\pi(C) = [\Pi(C) - C]$  for the group. For simplicity, we assume that  $\pi(C^H) = \pi > 0$  and  $\pi(C^L) = 0$ , which implies that citizens and the lobby have conflicting interests over the policy: citizens benefit only from the low cost option, whereas the lobby benefits more from the high cost one because, in this case, besides  $B$ , they also obtain the rent  $\pi > 0$ . Hence, denoting by  $v_j(p)$ , with  $j = k, g, l$  the utility each agent

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<sup>10</sup>The legacy motive represents a straightforward device to introduce non-pecuniary benefits enjoyed by politicians in power (Maskin and Tirole 2004). In a previous version of our paper (Facchini and Testa 2009), we had modeled the same idea by assuming that politicians derive instead a positive utility from implementing their own ideological agenda. While this allowed us to capture the role of political polarization, the main thrust of the analysis of bicameralism is not affected.

derives from a policy  $p$ , their preferences can be summarized follows:

$$v_k(C^H) < v_k(\emptyset) < v_k(C^L) \quad (1)$$

$$v_g(\emptyset) < v_g(C^H) < v_g(C^L) \quad (2)$$

$$v_l(\emptyset) < v_l(C^L) < v_l(C^H) \quad (3)$$

Besides conflicting interests over policies, lobby and citizens also differ because the former is an organized group that can directly influence the content of legislation by bargaining with the lawmakers, whereas the latter can only express their approval or disapproval by re-electing or not the incumbent legislator. In the next section we will formally lay out the decision making process by modeling the strategic interaction between the legislator, lobby and voters.

## 2.2 Lobbying and voting

The public policy is chosen in a game lasting for two periods  $t \in \{1, 2\}$ , with  $\delta$  being the inter-temporal discount rate.<sup>11</sup> For legislation to be passed, a motion must be put on the floor during a legislative session. In each period  $t$  lawmakers face time constraints in the form of a finite number of legislative sessions  $s > 1$ . The legislator, interacting with voters and the lobby, decides whether to implement a high cost policy ( $C^H$ ), a low cost policy ( $C^L$ ) or no policy ( $\emptyset$ ). We start by considering the case of a unicameral assembly. The timing of the game between legislator, lobby and voters is as follows. At the beginning of the first period, voters announce the voting strategy and an exogenously appointed legislator convenes the first legislative session. At the beginning of the session, before any motion is put to the floor, the lobby can “bribe” the lawmaker to affect his policy decision. The lobbying activity takes the form of a bargaining game where in  $t = 1$  the lobby is drawn to make the first proposal, whereas in  $t = 2$  the lobby and the legislator are randomly assigned the right to make offers, respectively with probability  $q$  and  $1 - q$ , which are common knowledge among the players. In this set-up, although the lobby enjoys a first mover advantage,<sup>12</sup> her ability to exploit it will crucially depend on how institutional rules shape the bargaining power of legislators in future negotiations. In particular, this bargaining framework will allow us to study

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<sup>11</sup>We focus on a finite horizon game because it represents the most difficult scenario for electoral accountability, since in the last mandate politicians do not face elections. As in any finite horizon set up, the last period policy choice is trivial, and the second period only serves the purpose of modeling in a simple way the future *electoral returns* from current policy choices.

<sup>12</sup>The recent corruption charges against Jack Abramoff, one of the most influential lobbyists in Washington, has sparked a wide debate on the large amounts of resources spent to gain influence on law making. As the Washington Post (June 22, 2005) points out “... companies are also hiring well-placed lobbyists to go on the offensive and find ways to profit from the many tax breaks, loosened regulations and other government goodies that increasingly are available.” In fact, professional lobbyists are usually hired for the exclusive purpose of constantly approaching legislators to promote the interests of their clients.



which decision making process is best suited to limit the influence of a powerful lobby on policy.

In the first legislative session, if the lobby and the lawmaker find an agreement to share the rent from the policy, a motion is put to the floor and the agreed policy is passed. In case of disagreement, the session adjourns with no policy approved, and the legislator can reconvene to unilaterally put a new motion to the floor, and pass it. At the end of the first period voters observe the implemented policy and cast their ballots. In the second period, the elected legislator chooses again a policy bargaining with the lobby as before and the game ends.

Denoting by  $\beta_g^t$  the share of rent paid by the lobby to the legislator in period  $t$ , the one period payoff of citizens  $k$ , legislator  $g$  and lobby  $l$  associated with the bargaining game can be written as follows:

$$v_k^t(\emptyset) \equiv v_g^t(\emptyset) \equiv v_l^t(\emptyset) = 0 \quad (4)$$

$$v_k^t(C) = B - C \quad (5)$$

$$v_l^t(C) = B + (1 - \beta_g^t)\pi \quad (6)$$

$$v_g^t(C) = B + E + \beta_g^t\pi - C \quad (7)$$

where  $C \in \{C^L, C^H\}$ . Having described the lobbying process, we are now ready to lay out the voting game. Each voter faces two candidates, the incumbent  $g$ , and an opponent  $g'$ . The two candidates are identical in all regards, except that the incumbent has been in office in the first term. Restricting our analysis to pure strategies, we define a voting strategy for the representative voter as a mapping from the first period policy choice  $p^1$  to a voting decision,  $\sigma : p^1 \rightarrow \{0, 1\}$ , where  $\sigma = 1$  means that he re-elects the incumbent  $g$ , whereas  $\sigma = 0$  indicates instead that he elects the opponent  $g'$ . We follow Ferejohn (1986) and assume that at the beginning of the first period the representative voter – given his expectations about the legislator's and lobby behavior – chooses a voting rule that maximizes his inter-temporal utility. Furthermore, the voting strategy must be sub-game perfect, i.e. we consider only rewards/punishments that can be credibly carried out once the first period policy has been chosen, so that the voting strategy is consistent with both retrospective and prospective voting. Hence, similarly to Persson, Roland, and Tabellini (1997), we focus on a simple voting strategy that has the property of selecting the best possible equilibrium from the point of view of the voters.<sup>13</sup> With the additional requirement that the strategies played by the legislator and lobby satisfy sub-game perfection, in the next sections we characterize the equilibrium of the game.

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<sup>13</sup>Simple retrospective voting strategies that are widely used in the political economy literature, also have the advantage of being plausible since they receive substantial empirical support (Fiorina 1981) and their adoption by the electorate can be thought of as the result of simple conventions due to social norms (Persson, Roland, and Tabellini 1997).

### 3 A unicameral system

The analysis of a unicameral system is a useful benchmark to evaluate how a legislator responds to monetary and electoral incentives. Using backward induction, we start by characterizing the share of rents that induces him to choose the high or the low cost policy in the second period. Remembering that in case of disagreement the chamber can re-convene at least for another session (e.g.  $s > 1$ ) and unilaterally choose the low cost policy ( $C^L$ ), the second period disagreement payoffs accruing to the legislator and lobby are:

$$v_g^2(C^L) = B + E \quad (8)$$

$$v_l^2(C^L) = B \quad (9)$$

whereas in case of agreement they are given by:

$$v_g^2(C^H) = B + E + \beta_g^2 \pi - C^H \quad (10)$$

$$v_l^2(C^H) = B + (1 - \beta_g^2) \pi \quad (11)$$

As we can immediately see, any share  $\beta_g^2 \geq \frac{C^H}{\pi}$  will induce  $g$  to choose the high cost policy, and the equilibrium shares depend on the bargaining power of the players, i.e. on their right to make offers. If the lobby moves first, then in equilibrium the share of rents paid to the legislator is  $\beta_g^2 = C^H/\pi$ , whereas if the legislator moves first  $\beta_g^2 = 1$ .

In the first period, the threat of losing elections makes the policy choice more interesting because, as we will formally show later, in equilibrium the legislator is re-elected only if he does not choose the high cost policy. More formally, consider the following conjectured voting strategy  $\sigma^* = [\sigma^*(C^H) = 0, \sigma^*(C^L) = 1, \sigma^*(\emptyset) = 1]$ . First, we characterize the optimal behaviour of a legislator in response to  $\sigma^*$  (Proposition 1); then we show that  $\sigma^*$  is an equilibrium voting strategy (Lemma 2). Given  $\sigma^*$ , the following holds

**Lemma 1** *In  $t = 1$ , any share  $\beta_g^1 < \bar{\beta}_g^1$  implements the low cost policy  $C^L$ , and any share  $\beta_g^1 \geq \bar{\beta}_g^1$  implements the high cost policy  $C^H$ , where  $\bar{\beta}_g^1 = \frac{C^H + \delta[E + q\pi + (1-q)C^H]}{\pi}$ .*

**Proof.** First note that in case of disagreement, the legislator can unilaterally choose his most preferred policy. Thus, if in  $t = 2$  the legislator is the proposer, he can extract the entire profit  $\pi$ . On the other hand, if the lobby is the proposer, she will have to offer the legislator a transfer  $C^H$ , which makes him indifferent between accepting the offer and rejecting it to get the outside option  $B + E$ . Thus, moving backward to the first period, the legislator knows that his expected second period payoff from re-election will be  $q(B + E + \pi - C^H) + (1 - q)(B + E)$ . Hence, the payoff

from rejecting the lobby offer and winning elections is  $B + E + \delta[q(\pi - C^H) + B + E]$ , whereas the payoff from accepting the lobby offer and losing elections is  $B + E + \beta_g^1 \pi - C^H + \delta(B - C^H)$ . Therefore, the minimum share inducing the legislator to accept the lobby offer in the first period is  $\bar{\beta}_g^1 = \frac{C^H + \delta[E + q\pi + (1-q)C^H]}{\pi}$ .  $\square$

The critical share  $\bar{\beta}_g^1$  depends on the per capita cost  $C^H$  the legislator pays in the first mandate, the second period legacy  $E$ , and the lobby transfer  $[q\pi + (1-q)C^H]$  he expects to receive in the second mandate if re-elected. In other words, the legislator is willing to choose the high cost policy and not be re-elected if the lobby transfer net of per capita costs in the first mandate compensates him for the electoral loss consisting of giving up future lobby transfers and the utility from leaving a legacy. Note that if  $\pi < C^H$  the legislator will never choose the high cost policy, because the minimum transfer  $C^H$  he is ready to accept is not affordable for the lobby. Hence, electoral accountability is at risk only when  $\pi \geq C^H$ . As this is the interesting case, in the rest of the paper we will assume this restriction to hold. We are now ready to characterize the policy choice in the first mandate in the following:

**Proposition 1** *During the first mandate if  $E \leq \frac{1-\delta q}{\delta} (\pi - C^H) - C^H$ , the high cost policy is chosen, while if  $E > \frac{1-\delta q}{\delta} (\pi - C^H) - C^H$ , the low cost policy is chosen.*

**Proof.** From lemma 1, we know that  $\beta_g^1 = \bar{\beta}_g^1$  is the minimum payment that makes the incumbent legislator (weakly) better off by agreeing to implement  $C^H$  in exchange for  $\bar{\beta}_g^1 \pi$  in the first mandate. As first mover, the lobby will offer the minimum payment the legislator will accept provided that it is feasible. This requires  $\bar{\beta}_g^1 \leq 1$ , which is true if and only if  $E \leq \frac{1-\delta q}{\delta} (\pi - C^H) - C^H$ .  $\square$

The condition  $E \leq \frac{1-\delta q}{\delta} (\pi - C^H) - C^H$  is a feasibility requirement on the minimum share inducing the legislator and the lobby to agree on the high cost policy, and it depends on the legislator non-monetary benefit from delivering a policy and on the bargaining power of the players. As  $\frac{1-\delta q}{\delta} (\pi - C^H)$  decreases with  $q$ , the legislator is more likely to be accountable to voters the larger is his bargaining power vis a vis the lobby. Interestingly, if  $q = 1$  and the future is not discounted ( $\delta = 1$ ), even a small legacy  $E$  will be sufficient to make the politician accountable.

Having characterized the equilibrium in the bargaining game, we can now show that:

**Lemma 2** *The voting strategy  $\sigma^* = [\sigma^*(C^H) = 0, \sigma^*(C^L) = 1, \sigma^*(\emptyset) = 1]$  is an equilibrium voting strategy.*

**Proof.** See appendix.  $\square$

To understand the intuition for this result, note that in the last period the incumbent's behavior does not depend on the voting strategy, because the game ends and he cannot be punished or rewarded by the voters. Hence, the rule that maximizes the voter's inter-temporal utility must

induce the legislator to choose a policy in the voter’s interest at least in the first period. A rule that punishes the incumbent if he chooses the worse policy for voters ( $C^H$ ) and rewards him if he does not, achieves this objective. Note that this strategy satisfies sub-game perfection since it makes the voter (weakly) better off at any time, i.e. before and after the first period policy has been chosen. Hence, although any other voting strategy would give the voter the same utility in the second period, there is no alternative voting strategy that would induce a better policy choice in the first period.<sup>14</sup> Therefore, similarly to Persson, Roland, and Tabellini (1997), we adopt the refinement proposed by Ferejohn (1986) that selects a voting strategy delivering the best possible equilibrium from the point of voters which in our case allows to achieve accountability at least in one period.

## 4 Bicameralism

In this section we analyze the impact of bicameralism on electoral accountability. In particular, we explore the effect of alternative institutional rules regulating the two legislative bodies. Intuitively, introducing multiple chambers makes lobbying more costly, since more decision makers need to be compensated for the implementation of an unpopular policy. At the same time, the creation of additional steps in the legislative process is likely to increase the time span needed for the policy to be adopted, thus putting at risk the passage of legislation when time is a scarce resource. As a result, a more subtle consequence of having multiple chambers is that the legislators’ outside options in the bargaining with the lobby may be worsened. Hence, a complex legislative procedure, besides wasting hours of legislators’ time in multiple deliberative sessions, can also *increase* the ability of the pressure group to influence the decision making process, and make the accountability problem more severe. In what follows we will show how these forces play out under two different institutional arrangements commonly adopted in democracies, i.e. the *closed rule* and the *open rule* system. In the former, after the first body has proposed a policy, the other chamber only enjoys veto power. In the latter, all chambers are symmetric in the sense of being able to introduce amendments to the original proposal. In this paper we focus on bicameralism, but our results easily extend to multiple veto players and can find a variety of alternative applications. For instance, they can be used to understand the role of presidential veto power or to evaluate provisions like the “emergency brake” rule which was proposed in the EU constitution draft.<sup>15</sup>

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<sup>14</sup>Note though that, as shown in the proof of Lemma 2, the alternative voting strategy [ $\sigma'''(C^H) = 0, \sigma'''(C^L) = 1, \sigma'''(\emptyset) = 0$ ] would deliver the same payoff for the voters.

<sup>15</sup>This rule would have allowed a member country, that had been outvoted on a proposal in Parliament, to ask for a new vote in the Council. This would have been equivalent to a system where the first body (Parliament) has proposal power and the second (Council) has final decision power.

Before proceeding we need to adapt our notation to accommodate the more complex structure of the game. To this end, assume that the legislative process requires the sequential approval of two chambers denoted by  $g_d$  with  $d = 1, 2$ . The lobby can influence legislation by bargaining with the body that is due to convene to approve the policy. As before, in  $t = 1$  the lobby moves first, whereas in  $t = 2$  she remains a proposer with probability  $q$ . In each mandate  $t$ , chamber  $g_1$  initiates the legislative process, and thus the lobby  $l$  starts the bargaining with  $g_1$  by making a first offer, which can be accepted or rejected. In the former case, the agreed legislation is put on the floor and passed in the first legislative session. In the latter, the disagreement payoffs are determined by the policy unilaterally chosen by the legislator. Once the bargaining between the lobby and the first lawmaker is over, the legislation passes to the next chamber  $g_2$ , with whom the lobby starts a new bargaining game, with the same structure. Importantly, the policy that each chamber can pass (and the agreement that the lobby can reach with each legislative body) crucially depends on the allocation of legislative powers. During each mandate  $t$ , the first chamber that has proposal power can choose any policy  $p^t \in \{C^L, C^H, \emptyset\}$ . As for chamber  $g_2$ , if it has only *veto power* (closed rule system) it can only ratify the policy chosen by the first chamber or veto it. If the second chamber enjoys instead *amendment rights* (open rule system), the set of feasible policies coincides with  $p^t \in \{C^L, C^H, \emptyset\}$ .

It is worth noting that, for a policy to be implemented in a bicameral setting, deliberation by each chamber is required, which implies that more time is necessary to pass a bill. This may have an important effect on the legislators' outside options. With a single legislative body, should the bargaining break down, the legislator can always implement his most preferred policy. This is no longer guaranteed in a bicameral set-up, because if the bargaining between a given chamber and the lobby breaks down, the policy unilaterally chosen by the first chamber must still be approved by the other legislative body. As a result, when the time necessary to complete the entire legislative process is limited, no legislation might end up being approved, and this will lead to a deterioration of the legislator's outside option. In our set-up, we say that the legislature operates under a *binding time constraint* when failure to pass a policy in the first session implies that no policy is implemented. Formally, let  $\gamma(D)$ , with  $0 \leq \gamma(D) \leq 1$ , denote the probability that, when deliberation is not achieved in the first legislative session, there will not be enough time for a bill to be approved by  $D$  legislators. With a single legislator the time constraint is not binding ( $\gamma(1) = 0$ ) since he can always obtain immediate passage of a bill. On the other hand, with multiple legislators the time constraint can become binding ( $\gamma(D) \geq 0$  for  $D > 1$ ) and, the larger is the number of bodies that needs to approve the bill, the higher is the probability that this will be the case, i.e.  $\frac{\partial \gamma(D)}{\partial D} > 0$ . For simplicity, since our analysis focuses on bicameralism, we assume that  $\gamma(2) = \gamma$  with  $0 \leq \gamma \leq 1$ , but the results easily extend to the more general set up with multiple legislators.

Denoting by  $\beta_{g_d}^t$  the share of profits received by each legislator bargaining with the lobby, the one period payoff to the various agents are given by:

$$v_k^t(\emptyset) \equiv v_{g_d}^t(\emptyset) \equiv v_l^t(\emptyset) = 0 \quad (12)$$

$$v_k^t(C) = B + E - C \quad (13)$$

$$v_l^t(C) = B + (1 - \sum_{d=1}^2 \beta_{g_d}^t) \pi \quad (14)$$

$$v_{g_d}^t(C) = B + E + \beta_{g_d}^t \pi - C \quad (15)$$

We focus again on a simple retrospective voting strategy where the voter decides to re-elect the two incumbent legislators based on the final policy outcome. Hence, the voting strategy is a mapping  $\sigma : p^1 \rightarrow \{0, 1\}$  where  $\sigma = 1$  indicates that the incumbents will be re-elected, whereas  $\sigma = 0$  means instead that they are replaced by the opponents.<sup>16</sup>

As in the unicameral case, we look for a sub-game perfect equilibrium. In the remainder of the paper we focus on the characterization of the equilibrium of the bargaining game, given the conjectured voting strategy  $\sigma^* = [\sigma^*(C^H) = 0, \sigma^*(C^L) = 1, \sigma^*(\emptyset) = 1]$ , which in turn can be shown to be an equilibrium voting strategy, following the same argument as in the unicameral case.<sup>17</sup>

## 4.1 *Closed rule*

We begin our analysis by considering the case where the first legislator has proposal power, and the second can only pass or veto previously approved proposals. The rent shares that legislators are able to extract bargaining with the lobby depend both on their outside options and on the institutional environment in which they operate. Outside options are affected by the time available to legislate, because when the latter is limited, the bargaining power of multiple legislators can be hindered. As for the legislators' institutional rights, under closed rule, the first legislator enjoys a substantial advantage that will be reflected in a rent share larger than that extracted by the second chamber. As before, the policy choice in the second period is trivial since the high cost policy is

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<sup>16</sup>As pointed out in the literature (Persson, Roland, and Tabellini 1997) the advantage of a retrospective voting strategy conditioning on the last policy outcome is its simplicity. Moreover, in the context of our complex decision making process, it has the additional benefit of allowing the voter to hold multiple legislators accountable even if he does not punish or reward them differently when they undertake different actions.

<sup>17</sup>See Lemma A1 and A3 in the appendix. Note that our simple voting strategy  $\sigma^*$  conditions on the final policy outcome, rather than on the behavior of each individual chamber. Alternatively, one could consider a more complex voting strategy, which would make the re-election of a given legislator dependent on the specific action he has undertaken, rather than only on the final policy outcome. Note that – as argued in Remark 1 in the Appendix – this more complex voting strategy does not allow the voter to obtain accountability if the latter cannot be already reached using our simple voting strategy. For this reason we focus the analysis on our simple voting strategy, which has the additional advantage of requiring less information on the entire policy formation process on the side of the voter.

always chosen.<sup>18</sup> Hence, focusing on the first period we can show that:

**Lemma 3** *In  $t = 1$  the minimum shares of rent required by each legislator  $g_d$  to choose the high cost policy are  $\bar{\beta}_{g_1}^1 = \bar{\beta}_g^1 - \gamma[1 + \delta(1 - q)]\frac{(B+E)}{\pi}$  and  $\bar{\beta}_{g_2}^1 = \frac{C^H + \delta E - (B+E)}{\pi}$ , with  $\bar{\beta}_g^1 = \frac{C^H + \delta[E + q\pi + (1-q)C^H]}{\pi}$ . Furthermore,  $\bar{\beta}_{g_1}^1 > \bar{\beta}_{g_2}^1$ .*

**Proof.** See Appendix. □

This result illustrates two important points. First, it shows how the distribution of proposal and veto powers has an impact on the cost of buying each chamber. Second, it establishes how the time constraints, by worsening the legislators' outside options, influence the cost of lobbying.

Proposal power matters. As in the unicameral case, legislators require a minimum transfer that should compensate them for both the “monetary” and “non-monetary” losses incurred in the second period by pleasing the lobby rather than the electorate. However, while both legislators suffer non-monetary losses if they are voted out of office, only the legislator with proposal power - who enjoys the possibility of extracting rents in the second period - suffers a monetary loss. As a result, the first chamber requires a larger transfer than the second, which only enjoys veto power.<sup>19</sup> Importantly, the compensation required by the chamber holding proposal power depends on the time constraints affecting its outside options. In particular, if time constraints are not binding ( $\gamma = 0$ ), the first chamber can credibly threaten to reject the lobby offer since it can unilaterally implement the low cost policy and thus extract the same rent share as in the unicameral case. On the other hand, if the time constraint is binding ( $\gamma > 0$ ), the first legislator's outside option is worsened, because a rejection of the lobby's proposal could result in a failure to approve any legislation by the end of the mandate. In particular, in the first period, if the first chamber rejects the lobby offer, with probability  $\gamma$  no legislation will be passed, thus implying an expected non-monetary (policy) loss  $\gamma(B + E)$ . In the second period, when the lobby will be a proposer with probability  $(1 - q)$ , a rejection of the lobby's offer implies again that with probability  $\gamma$  no policy will be implemented, and the expected loss from disagreement will be  $\delta(1 - q)(B + E)$ . As a result,

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<sup>18</sup>As for the equilibrium shares of profits, in the second period, if the legislator is the proposer, then  $\beta_{g_1}^2 = 1$ , if the lobby is the proposer then  $\beta_{g_1}^2 = \frac{C^H - \gamma(B+E)}{\pi}$ . On the other hand, the second legislator, who cannot credibly use his veto in the second period, always gets  $\beta_{g_2}^2 = 0$ . Note that although the lobby's outside option is worsened by the risk of binding time constraints, still the lobby always prefers agreement to disagreement. For this reason  $\gamma$  does not affect the share of profits paid to the lobby when  $g_1$  is the proposer. See also the proof of Lemma 3 in the appendix.

<sup>19</sup>The asymmetry between the two chambers depends on the allocation of proposal powers, which in our setup lies with the first legislator. In an alternative setting, in which in the second period  $g_1$  retains proposal power only with probability  $p$ , then the minimum shares of rent required by the two legislators to choose the high cost policy in  $t = 1$  are  $\hat{\beta}_{g_1}^1 = \bar{\beta}_{g_1}^1 - \delta(1 - p)\{q + (1 - q)\frac{C^H - \gamma(B+E)}{\pi}\}$  and  $\hat{\beta}_{g_2}^1 = \bar{\beta}_{g_2}^1 + \delta(1 - p)[q + (1 - q)\frac{C^H - \gamma(B+E)}{\pi}]$  (see Lemma A1 in the Appendix). As we can immediately see,  $\hat{\beta}_{g_1}^1 \leq \bar{\beta}_{g_1}^1$ , whereas  $\hat{\beta}_{g_2}^1 \geq \bar{\beta}_{g_2}^1$ , i.e. if both chambers retain some proposal power in the second period, the difference in the minimum profit share they require to pass the high cost policy declines. We would like to thank a referee for suggesting this extension.

the risk of binding time constraints reduces the transfer from the lobby to the legislator by the amount  $\gamma[1 + \delta(1 - q)](B + E)$ .

How does bicameralism affect accountability? If time constraints are non-binding (i.e.  $\gamma = 0$ ), the first legislator requires a minimum share of profits coinciding with that demanded in a unicameral system (i.e.  $\bar{\beta}_{g_1}^1 = \bar{\beta}_g^1$ ), and the second one requires a non-negative share. As a result, in the bicameral context policymakers will receive a share of profits which is at least as large as in the unicameral system i.e.  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 \geq \bar{\beta}_g^1$ , implying that the cost of lobbying increases monotonically with the number of legislators.<sup>20</sup> On the other hand, when time constraints bind with a positive probability ( $\gamma > 0$ ), the loss of bargaining power for the first legislator constitutes an important drawback of a multi-chamber system, which can work against the interest of the electorate. In this case, we can establish the following non monotonicity result:

**Lemma 4** *Let  $0 < \gamma \leq 1$ . If  $\bar{\beta}_{g_2}^1 \leq \gamma[1 + \delta(1 - q)]\frac{B+E}{\pi}$ , then two legislators do not require a larger share of rents than a single legislator, whereas the opposite holds if  $\bar{\beta}_{g_2}^1 > \gamma[1 + \delta(1 - q)]\frac{B+E}{\pi}$ .*

**Proof.** Remember that  $\bar{\beta}_{g_1}^1 = \bar{\beta}_g^1 - \gamma[1 + \delta(1 - q)]\frac{B+E}{\pi}$ . Therefore,  $\bar{\beta}_{g_1}^1 + \bar{\beta}_{g_2}^1 > \bar{\beta}_g^1 \Leftrightarrow \bar{\beta}_{g_2}^1 > \gamma[1 + \delta(1 - q)]\frac{B+E}{\pi}$ .  $\square$

Intuitively, in a bicameral system more legislators need to be bribed by the lobby than in a unicameral system. At the same time, the compensation required by the first legislator decreases, because of its inability to credibly reject a lobby proposal, given the presence of binding time constraints. Hence, only when the transfer paid to the second legislator more than compensates the decrease in bargaining power of the first, the cost of lobbying increases with the number of legislators, making multiple chambers potentially more accountable to voters. Thus, if the legislator without proposal power commands a zero minimum profit share in the bargaining with the lobby ( $\bar{\beta}_{g_2}^1 = 0$ ), then the only effect of the more complex decision making process is to reduce the bargaining power of the first legislator, thus making lobby capture easier.<sup>21</sup> This result contrasts with the findings of Diermeier and Myerson (1999), where the so called *external hurdle factor*<sup>22</sup> increases instead monotonically with the number of decision makers. Thus, our analysis highlights a potential drawback of increasing the number of legislative bodies and provides a potential rationale for current reform proposals aiming for shorter and simpler legislative procedures in US federal states.

<sup>20</sup>We focus on the cost of lobbying deriving from the electoral loss of multiple legislators because we are mainly interested in electoral incentives. However, it should be clear that having multiple chambers deciding sequentially rather than simultaneously can have a substantial impact on the lobby's ability to bribe the legislator whenever lobbying is a costly, time consuming activity or the rents associated to an agreement decrease over time. Hence, our results on the positive effect of bicameralism on accountability hold *a fortiori* if we introduce either a cost of lobbying or a profit that are time dependent.

<sup>21</sup>Note that if there is uncertainty in the allocation of proposal power in the second period – see footnote 19 – the second chamber can extract a larger rent, and thus the scenario in which bicameralism decreases accountability is less likely.

<sup>22</sup>Expressing the difficulty of buying legislators.



We are now ready to compare policy choices under a unicameral and a bicameral arrangement. Since if  $\bar{\beta}_{g_2}^1 = 0$  bicameralism is unambiguously worse than unicameralism, in the remainder of the analysis we focus on the alternative case (e.g.  $\bar{\beta}_{g_2}^1 > 0$ ). The next result fully characterizes the conditions under which legislators are *accountable* to voters:

**Proposition 2** *Comparing a unicameral and a bicameral system, the following holds:*

- i) Non-binding time constraint ( $\gamma = 0$ ). If  $\bar{\beta}_g^1 < \sum_{d=1}^2 \bar{\beta}_{g_d}^1 < 1$ , then legislators are never accountable, whereas if  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 > \bar{\beta}_g^1 > 1$  they are always accountable. If instead  $\bar{\beta}_g^1 < 1 < \sum_{d=1}^2 \bar{\beta}_{g_d}^1$  then legislators are accountable under bicameralism only.
- ii) Binding time constraint ( $0 < \gamma \leq 1$ ). If  $\bar{\beta}_g^1 < \sum_{d=1}^2 \bar{\beta}_{g_d}^1 < 1$  then legislators are never accountable, whereas for  $\bar{\beta}_g^1 > \sum_{d=1}^2 \bar{\beta}_{g_d}^1 > 1$  or  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 > \bar{\beta}_g^1 > 1$ , they are always accountable. Finally, if  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 < 1 < \bar{\beta}_g^1$  then legislators are accountable under a unicameral arrangement only, whereas if  $\bar{\beta}_g^1 < 1 < \sum_{d=1}^2 \bar{\beta}_{g_d}^1$  they are accountable only under bicameralism.

**Proof.** See Appendix. □

Proposition 2 points out that while under several configurations of the parameters unicameralism and bicameralism deliver the same policy outcomes, there are two cases where one type of legislative arrangement can be clearly ranked above the other in terms of electoral accountability. First, if the minimum rent share legislators are willing to accept under unicameralism is feasible and smaller than the non-feasible share under bicameralism ( $\bar{\beta}_g^1 < 1 < \sum_{d=1}^2 \bar{\beta}_{g_d}^1$ ), then we have the traditional Madisonian argument in favor of bicameralism, i.e. while one chamber can be easily corrupted, the cost of buying two chambers is so high that accountability can be achieved. However, this outcome is possible only insofar as multiple legislators retain bargaining power. Hence, when binding time constraints do not allow all chambers to extract rents, then bicameralism will in fact have an opposite effect on accountability. By increasing the time necessary to pass legislation, a bicameral system can decrease the minimum rent shares legislators are willing to accept up to the point where multiple chambers can be bought by the lobby, whereas a single one remains accountable to the electorate ( $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 < 1 < \bar{\beta}_g^1$ ). Hence, our model delivers an important caveat on adding multiple legislative steps in the law making process, since long and complex legislative procedures may ultimately weaken legislators and hurt voters. This result provides an important rationale for the unicameral proposals currently being discussed in several US states advocating the abolition of time consuming legislative procedures. While these proposals just point out that abolishing redundant

legislative sessions will save hours of wasted legislators' time, our analysis uncovers that there is a more profound meaning to the 'value of time' in a legislative process because, when law-makers are less pressured by time constraints, their bargaining power as well as their electoral accountability can be enhanced.

## 4.2 *Open rule*

In a closed rule setting, amendment rights are ruled out and the power to choose the content of the new legislation is given entirely to the chamber initiating the process, whereas the subsequent legislators can only decide whether to approve or not the initial proposal. Under an open rule all legislators can actually modify the original policy, i.e. they enjoy amendment rights. Since the first chamber will anticipate this possibility, the existence of amendment rights is likely to have an important effect. To isolate the role of alternative allocations of proposal power, in this section we concentrate for simplicity on the case where time constraints are non-binding (i.e.  $\gamma = 0$ ) and analyze different forms of open rule. We consider both the case of *unrestricted amendment rights*, i.e. the situation in which the policy passed by the previous chamber can unilaterally be modified by the subsequent legislators, and the situation in which the amendments introduced require the approval of all legislators (*restricted amendment rights*). In both cases, the second chamber can only amend a legislative proposal passed by the first; in other words, it does not have the power to initiate the legislative process.<sup>23</sup> If no legislation is passed in the first chamber, then the mandate ends with no policy implemented.

The following lemma characterizes the minimum profit shares  $\bar{\beta}_{g_d}^1$  required by each legislator  $g_d$  to implement the high cost policy in the first period under restricted and unrestricted amendment rights:<sup>24</sup>

**Lemma 5** *In period  $t = 1$ , if amendment rights are restricted, the minimum share required to choose the high cost policy are  $\bar{\beta}_{g_d}^1 = \frac{C^H + \delta E + \delta[q\pi + (1-q)C^H]}{\pi}$  for all  $g_d$ . If amendment rights are unrestricted, the minimum shares are instead given by  $\bar{\beta}_{g_1}^1 = \frac{C^H + \delta E - (B+E)}{\pi}$  and  $\bar{\beta}_{g_2}^1 = \frac{C^H + \delta E + \delta[q\pi + (1-q)C^H]}{\pi}$ .*

**Proof.** See Appendix. □

It is important to point out that under restricted amendment rights, since both chambers must agree on any amendment to the original proposal, the two bodies are able to extract the same

<sup>23</sup>This type of arrangement is very common. For instance, in the US only the House of Representatives can initiate budget legislation.

<sup>24</sup>Remember that in the second period the high cost policy will always be chosen. As for the profit shares, in  $t = 2$ , if amendment rights are restricted, the equilibrium profit shares are  $\beta_{g_d}^2 = q + (1 - q)\frac{C^H}{\pi}$  for all  $g_d$ , with  $\sum_{d=1}^2 \beta_{g_d}^2 \leq 1$ . If amendment rights are instead unrestricted,  $\beta_{g_1}^2 = 0$ , whereas  $\beta_{g_2}^2 = q + (1 - q)\frac{C^H}{\pi}$ . See proof in appendix.

profits shares from the lobby. This finding is very different from the result obtained in the closed rule system, where the first legislator, who enjoys proposal power, can extract a larger rent.

On the other hand, with unrestricted amendment rights, the second legislator, who is in a position to unilaterally change the policy passed by the first, can extract a larger share of rents. Hence, compared to the closed rule case, where the first legislator is advantaged, the power of legislators and their rent extraction are reversed. Moreover it is important to note that besides differences in the shares of rent extracted by legislators in the second period, the allocation of proposal power affects also the ‘non-profit’ component of the compensation that must be paid to every legislator in the first period in order to induce them to choose the high cost policy. Given these differences, we can compare the policy outcomes under *open* and *closed rules* systems. Our results are summarized in the next

**Proposition 3** *The following holds:*

- i) If the low cost policy is chosen under closed rule then the low cost policy is chosen also under open rule, while the reverse is not true.*
- ii) Assume that  $0 < \bar{\beta}_{ga}^1 < 1$  and  $\sum_{d=1}^2 \bar{\beta}_{ga}^1 > 1$ . Then, if amendment rights are unrestricted, the low cost policy is chosen under closed rule, whereas the status quo policy ( $\emptyset$ ) prevails under open rule. If amendment rights are restricted, the low cost policy is always chosen.*

**Proof.** See Appendix. □

The intuition for the first part of the proposition is quite straightforward. Under open rule (with both restricted and unrestricted amendment rights) the total share of profits the lobby needs to pay to legislators is at least as high as under closed rule. Hence, it might well be that under the open rule system legislators are accountable, whereas they are not under a closed rule. When amendment rights are *unrestricted*, there are also some additional policy implications, which arise if the lobby cannot afford paying all legislators. Interestingly, when the lobby can only pay one legislator, unrestricted amendment rights imply that the *status quo* ( $p = \emptyset$ ) is implemented, whereas under the closed rule or restricted amendment rights the low cost policy will be chosen. In other words, when the lobby cannot afford paying multiple legislators and the final legislator can unilaterally change a previously approved proposal, a status quo bias arises. The first legislator prefers not approving any proposal rather than passing a low cost policy that can be turned into a high cost one by the last decision maker, when he is bribed by the lobby. The problem of the potential *status quo* bias associated with multiple legislators has been stressed by other authors.<sup>25</sup> However, differently from the existing literature, our analysis emphasizes that this risk is real only when subsequent

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<sup>25</sup>See for instance Tsebelis and Money (1997).

legislators are given more power than the first one, as in the case of unrestricted amendment rights. On the other hand, if amendment rights are restricted, then situations of legislative *impasse* can be avoided. This factor seems to have been taken into account in the design of many legislative bodies around the world, in which amendments implemented by the second chamber need to be approved by the first chamber as well.<sup>26</sup>

To complete our discussion of bicameralism and accountability, we would like to briefly consider another example in which bicameralism turns out to be neutral. Suppose that for a given economic environment, the policy preferred by the lobby is the *status quo*, while the voters prefer instead a different policy. In this case, with a bicameral system, voters need the approval of two legislative bodies to see the implementation of their preferred policy, while the lobby will be satisfied by the negative decision of just one chamber. It is then clear that the existence of a second legislator does not have any effect since the cost of lobbying does not change compared to the one chamber case. In other words, policy choices implemented by *negative* decisions are “cheaper” to buy than policy choices requiring a *positive* decision. Therefore, if the lobby supports the status quo, increasing the number of legislators does not help solving the accountability problem.

## 5 Conclusions

In this paper we have developed a theoretical framework to analyze the effects of bicameralism on lawmakers’ accountability to the public. In particular, inspired by the current debate on constitutional reform in several US states, we have considered how the number of legislative chambers and the allocation of powers among them can discipline elected representatives and limit the ability of pressure groups to buy influence. To that end, we have built a model in which legislators interact with a lobby group through a bargaining process, and with voters by means of elections.

Our analysis delivers two important messages that should be taken into account in designing reforms of the legislative process. First, the greater complexity induced by an additional chamber may come with an undesirable effect, i.e. the loss of bargaining power for the elected body vis-à-vis the lobby. Additional steps increase the time necessary to pass legislation. Hence, when the chambers have limited time to deliberate, their ability to enact legislation may be put at risk. When this happens, the outside options of legislators become worse and bicameralism might well have a detrimental effect on accountability. On the other hand, if time constraints are not binding,

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<sup>26</sup>In most countries, this means that the text of a bill needs to be approved in the same form by both legislative bodies. Hence, in case of disagreement, the bill shuttles between the two chambers until an agreement is reached. However, in extreme cases of complete parliamentary deadlock, other mechanisms have been devised. For instance, in the US a conference committee can be called where delegates from each chamber meet to find a compromise. For more details see Tsebelis and Money (1997).

a larger number of legislative bodies may increase the cost of lobbying and, therefore, enhance electoral accountability. If this is the case, the second important message of our analysis is that the effectiveness of a bicameral system crucially depends on the rules governing the two elected bodies, and in particular the allocation of the decision power between the chambers. For accountability purposes, the best incentives are provided whenever two legislative bodies share equal decision powers (i.e. restricted amendment rights). Having instead unrestricted amendment rights can result in a status quo bias, whereby no new legislation is passed.

The debate on the effectiveness of bicameral as opposed to unicameral arrangements is not unique to US state legislatures. National states such as Germany and Italy have been considering reforms of their parliamentary bodies to reduce the power of the Senate, whereas the UK proposal to render the Lords an elected body with substantive legislative powers pushed in the opposite direction. The role of the Council of states in the European Union and its potential to act as a second chamber, in addition to the existing parliament, is also one of the many controversial issues surrounding the drafting of the EU constitution. How far can we go in applying our analysis of bicameralism to these alternative contexts? Differently from sub-national state legislatures, national and federal legislative bodies, besides the yearly budget approval, often deal with matters of constitutional relevance or important reforms of general interest, for which time constraints are typically not binding. In this case a more complex process does not translate in more lobby capture, while the scrutiny by two bodies might provide better expertise and more careful deliberation. Thus, if bicameralism is to be advantageous, its role could be confined to matters of general interest for which timely deliberations are not a priority. More research is necessary though to formally establish how different tasks should be allocated to decision-makers.

# Appendix

## A Proof of Lemma 2

Note that in the second period the high cost policy is always chosen. Hence, we conclude that to show whether the voter's expected payoff is maximized by  $\sigma^*$ , we only need to analyze the first period payoff for all  $\sigma$ . Let us start by considering the following alternative strategy

$$\sigma' = [\sigma'(C^H) = 1, \sigma'(C^L) = 1, \sigma'(\emptyset) = 1]$$

Under  $\sigma'$ , the high cost policy is preferred by any legislator receiving  $\beta_{ga} \geq 0$ , since he can receive lobby transfers and choose his most preferred policy in both periods. On the other hand, under the voting strategy  $\sigma^*$  depending on the parameters of the model, the legislator will choose either  $C^H$  or  $C^L$ . If  $C^H$  is chosen, then the expected payoff under the two alternative strategies is the same. On the other hand, if  $C^L$  is chosen then the voter prefers  $\sigma^*$  to  $\sigma'$ . Hence, we conclude that  $\sigma'$  is not an equilibrium strategy. Consider next the following alternative strategy

$$\sigma'' = [\sigma''(C^H) = 0, \sigma''(C^L) = 0, \sigma''(\emptyset) = 0]$$

Under this voting strategy the incumbent is never reappointed. Therefore, since  $C^H$  generates a higher net profit to be shared, the legislator will always choose  $C^H$ . Hence,  $\sigma''$  is not an equilibrium voting strategy and more generally, by the same arguments, any strategy such that either  $\sigma(C^H) = 1$  or  $\sigma(C^L) = 0$ , cannot be an equilibrium voting strategy. Finally, consider the strategy

$$\sigma''' = [\sigma'''(C^H) = 0, \sigma'''(C^L) = 1, \sigma'''(\emptyset) = 0]$$

Note that, as  $v_g^1(C^L) > v_g^1(\emptyset)$ , if the legislator does not receive transfers from the lobby, he always implements  $C^L$ , i.e.  $C^L$  is the outside option. Since in the bargaining game the legislator chooses between  $C^H$  and the outside option  $C^L$ , any voting strategy that punishes or rewards him for not choosing any policy does not affect his behavior and thus the policy outcome. As a result, the voter is indifferent between  $\sigma^*$  and  $\sigma'''$ .  $\square$

## B Proof of Lemma 3

In  $t = 2$  the following holds. Under a closed rule arrangement, the second legislator can only approve or veto the policy chosen by the first. Furthermore, since  $v_{g2}^2(C^H) > v_{g2}^2(\emptyset) \forall \beta_{g2}^2$ , vetoing is not

credible. As a consequence, if in  $t = 2$  the lobby can induce the first legislator to choose  $C^H$ , then she does not need to pay any positive transfer to convince the second to pass  $C^H$ . Hence,  $\beta_{g_2}^2 = 0$ . We can now determine the equilibrium transfers inducing the first legislator to choose  $C^H$ . Given that the time constraint is binding with probability  $\gamma$ , in case of disagreement,  $g_1$  outside option is  $\gamma v_{g_1}^2(\emptyset) + (1 - \gamma)(B + E)$ , and the lobby's outside option is  $\gamma v_l^2(\emptyset) + (1 - \gamma)B$ . Remembering that  $v_l^2(\emptyset) = v_{g_1}^2(\emptyset) = 0$ , then the first legislator prefers agreement to disagreement if and only if  $\beta_{g_1}^2 \geq \frac{C^H - \gamma(B + E)}{\pi}$ , whereas the lobby always prefers agreement. Hence, if the first legislator is the proposer then  $\beta_{g_1}^2 = 1$ , if the lobby is the proposer then  $\beta_{g_1}^2 = \frac{C^H - \gamma(B + E)}{\pi}$ , and  $C^H$  is always chosen. Moving to  $t = 1$ , and remembering that in  $t = 2$  the first legislator is the proposer with probability  $q$  and the lobby is the proposer with probability  $1 - q$ , the second period expected payoff for  $g_1$  is  $\{(B + E - C^H) + q\pi + (1 - q)[C^H - \gamma(B + E)]\}$ . Hence, if in the first period the first legislator rejects the first lobby offer, he obtains the disagreement payoff  $\gamma v_{g_1}^1(\emptyset) + (1 - \gamma)(B + E) + \delta \{(B + E - C^H) + q\pi + (1 - q)[C^H - \gamma(B + E)]\}$ , whereas the agreement payoff is given by  $B + E - C^H + \beta_{g_1}^1 \pi + \delta(B - C^H)$ . Hence, agreement is preferred to disagreement if and only if  $\beta_{g_1}^1 \geq \frac{C^H + \delta[E + q\pi + (1 - q)C^H]}{\pi} - \gamma[1 + \delta(1 - q)] \frac{B + E}{\pi}$ .

As for the second legislator, since  $\beta_{g_2}^2 = 0$ , his disagreement payoff is  $v_{g_2}^1(\emptyset) + \delta[(B + E - C^H)]$ , whereas his payoff from agreement is  $B + E - C^H + \beta_{g_2}^1 \pi + \delta(B - C^H)$ . Hence the second legislator can credibly threaten to veto the proposal passed by  $g_1$ , unless he receives  $\bar{\beta}_{g_2}^1 = \frac{C^H + \delta E - (B + E)}{\pi}$ . On the other hand, if  $\frac{\delta E}{\pi} + \frac{C^H - (B + E)}{\pi} < 0$ ,  $g_2$  cannot credibly veto any policy chosen by  $g_1$  and therefore  $\bar{\beta}_{g_2}^1 = 0$ .

Finally, note that  $\bar{\beta}_{g_1}^1 > \bar{\beta}_{g_2}^1$  if and only if  $(1 - \gamma)(B + E) + \delta\{q\pi + (1 - q)[C^H - \gamma(B + E)]\} \geq 0$ , which is always true because the second term is the expected lobby transfer, which is always weakly positive.  $\square$

## C Lemma A1

**Lemma A1** *Under closed rule, the voting strategy  $\sigma^* = [\sigma^*(C^H) = 0, \sigma^*(C^L) = 1, \sigma^*(\emptyset) = 1]$  is the unique equilibrium voting strategy.*

**Proof.** Since the voting strategy depends only on the policy outcome, the optimality of the voting strategy relies on the same arguments as in the unicameral case. In particular,  $\sigma^*$  is an equilibrium voting strategy since the voter is strictly better off by choosing  $\sigma^*$  than under any alternative strategy  $\sigma'$  such that either  $\sigma'(C^H) = 1$  or  $\sigma'(C^L) = 0$ . Moreover, under closed rule this is the unique equilibrium voting strategy because  $\sigma^* = [\sigma^*(C^H) = 0, \sigma^*(C^L) = 1, \sigma^*(\emptyset) = 1]$  is strictly preferred to  $\sigma' = [\sigma'(C^H) = 0, \sigma'(C^L) = 1, \sigma'(\emptyset) = 0]$ , since punishing or rewarding the legislators for not implementing any policy is not pay-off irrelevant. In fact, under  $\sigma'$ , the second legislator

cannot extract any rent since he cannot credibly veto any policy. This implies that  $C^H$  is more likely to be chosen because the feasibility constraint on lobby transfers is more easily satisfied when  $\beta_{g_2} = 0$ . Hence the voter strictly prefers  $\sigma^*$  to  $\sigma'$ .  $\square$

**Remark 1** Consider an alternative voting strategy  $\sigma'_{g_d}$  whereby each legislator  $g_d$  is re-elected based on the policy he has passed and  $\sigma'_{g_d} = [\sigma'_{g_d}(C^H) = 0, \sigma'_{g_d}(C^L) = 1, \sigma'_{g_d}(\emptyset) = 1]$ . Note that if each legislator passes the same policy,  $\sigma'_{g_d}$  delivers the same outcome as  $\sigma^*$ . Consider now the case where the two legislators pass different policies. Since the second legislator can only veto the policy passed by the first, the only relevant scenario is the one in which the first legislator chooses  $C \in \{C^L, C^H\}$  and the second vetoes it so that no policy is passed. Since if the first legislator chooses  $C^L$ , the second will always pass it, we only need to consider the case in which the first legislator chooses  $C^H$  and the second vetoes it. In this case under the voting strategy  $\sigma^*$  both legislators are re-elected, whereas under the voting strategy  $\sigma'_{g_d}$ , only the second legislator is re-elected. We can easily see that, given  $\sigma^*$ , if the first legislator chooses  $C^H$ , which is subsequently vetoed, then his expected payoff is  $v_{g_1}(\emptyset) + \delta(B - C^H + q\pi + (1 - q)C^H)$  which is strictly lower than the payoff from choosing  $C^L$ , that is  $B + E + \delta[B + E - C^H + q\pi + (1 - q)C^H]$ . In other words, the first legislator will never find it optimal to choose  $C^H$  when the second legislator will veto it. The same is true under the alternative voting strategy  $\sigma'_{g_d}$  because the payoff for  $g_1$  from choosing  $C^H$  that is subsequently vetoed is  $v_{g_1}(\emptyset) + \delta(B - C^H)$ , which is again strictly smaller than the payoff from choosing  $C^L$ . Hence, punishing only the first legislator for choosing  $C^H$  when this outcome is subsequently vetoed does not make him more or less likely to choose  $C^H$  over  $C^L$ .

## D Lemma A2

**Lemma A2** *Assume that the first chamber retains proposal power in the second period with probability  $p$ . Then in  $t = 1$  the minimum shares of rent required by the two legislators to choose the high cost policy are  $\hat{\beta}_{g_1}^1 = \bar{\beta}_{g_1}^1 - \delta(1 - p)[q + (1 - q)\frac{C^H - \gamma(B + E)}{\pi}]$  and  $\hat{\beta}_{g_2}^1 = \bar{\beta}_{g_2}^1 + \delta(1 - p)[q + (1 - q)\frac{C^H - \gamma(B + E)}{\pi}]$ .*

**Proof.** If the first chamber loses proposal power in the second period, the share of rents required to choose the high cost policy in the first period is  $\tilde{\beta}_{g_1} = \frac{C^H + \delta E - \gamma(B + E)}{\pi}$ , whereas if she retains proposal power the share required is  $\tilde{\beta}_{g_1} + \delta[q + (1 - q)\frac{C^H - \gamma(B + E)}{\pi}]$ . Hence, when  $g_1$  retains proposal power with probability  $p$ , the share of rents required to choose the high cost policy is  $\hat{\beta}_{g_1}^1 = \tilde{\beta}_{g_1} + \delta p[q + (1 - q)\frac{C^H - \gamma(B + E)}{\pi}]$  or equivalently  $\hat{\beta}_{g_1}^1 = \bar{\beta}_{g_1}^1 - \delta(1 - p)[q + (1 - q)\frac{C^H - \gamma(B + E)}{\pi}]$ . By the same argument, the second chamber requires  $\tilde{\beta}_{g_2} = \frac{C^H + \delta E - \gamma(B + E)}{\pi}$  when she does not gain proposal power and requires  $\tilde{\beta}_{g_2} + \delta[q + (1 - q)\frac{C^H - \gamma(B + E)}{\pi}]$  if she gains proposal power in the second period. Hence  $\hat{\beta}_{g_2}^1 =$



$\tilde{\beta}_{g_2} + \delta(1-p)[q+(1-q)\frac{C^H - \gamma(B+E)}{\pi}]$ , which can be rewritten as  $\hat{\beta}_{g_2}^1 = \bar{\beta}_{g_2}^1 + \delta(1-p)[q+(1-q)\frac{C^H - \gamma(B+E)}{\pi}]$ .  
 $\square$

## E Proof of Proposition 2

If the minimum shares required under unicameralism and bicameralism to choose  $C^H$  are feasible (i.e.  $\bar{\beta}_g^1 < 1$  and  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 < 1$ ), then  $C^H$  is chosen. On the other hand, when the minimum shares are not feasible (i.e.  $\bar{\beta}_g^1 > 1$  and  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 > 1$ ), then  $C^L$  is chosen. Note that, when  $\gamma = 0$ , then  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 \geq \bar{\beta}_g^1$ . Therefore, when  $\bar{\beta}_g^1 < \sum_{d=1}^2 \bar{\beta}_{g_d}^1 < 1$ , both shares are feasible and  $C^H$  is chosen under both legislative arrangements, whereas if  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 \geq \bar{\beta}_g^1 > 1$  none of the shares is feasible and  $C^L$  is chosen under both legislative arrangements. On the other hand, if  $\bar{\beta}_g^1 < 1 < \sum_{d=1}^2 \bar{\beta}_{g_d}^1$ , only the unicameral share is feasible implying that  $C^H$  is chosen under unicameralism and  $C^L$  under bicameralism. Consider now the scenario where the time constraint is binding with some probability ( $0 < \gamma \leq 1$ ). Then two cases arise. If  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 \geq \bar{\beta}_g^1$ , then we obtain the same policy choice characterized when  $\gamma = 0$ . On the other hand, when  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 < \bar{\beta}_g^1$  the following holds. If the minimum shares under the two legislative arrangements are feasible ( $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 < \bar{\beta}_g^1 < 1$ ) then  $C^H$  is chosen under both arrangements, if the same shares are not feasible ( $\bar{\beta}_g^1 > \sum_{d=1}^2 \bar{\beta}_{g_d}^1 > 1$ , then  $C^L$  is chosen under both arrangements. Finally, if  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 < 1 < \bar{\beta}_g^1$ , then  $C^H$  is chosen under bicameralism whereas  $C^L$  is chosen under a unicameralism.  $\square$

## F Proof of Lemma 5

In  $t = 2$ , since  $v_{g_d}^2(C^L) > v_{g_d}^2(\emptyset) \forall d$ , in the absence of lobby transfers the first legislator chooses  $C^L$  and the second legislator ratifies this choice. If amendment rights are restricted, once the policy  $C^L$  is chosen by the first legislator, it can be amended to  $C^H$  only if all legislators, including the first, approve the change. Remembering that in  $t = 2$  each legislator and the lobby  $l$  make take-it-or-leave-it offers with probability  $q$  and  $1 - q$ , then  $\beta_{g_d}^2 = q + (1 - q)\frac{C^H}{\pi}$ , with  $\sum_{d=1}^2 \beta_{g_d}^2 \leq 1$ . Moving backward to the first period, for each legislator  $g_d$ , the payoff from  $C^H$  is  $V_{g_d}(C^H) = B + E + \beta_{g_d}^1 \pi - C^H + \delta(B - C^H)$  and the payoff from  $C^L$  is  $V_{g_d}(C^L) = B + E + \delta(B + E + \beta_{g_d}^2 \pi - C^H)$ . Therefore, if amendment rights are restricted, we find that each legislators prefers  $C^H$  to  $C^L$  if and

only if  $\beta_{g_d}^1 \geq \frac{\delta E + C^H}{\pi} + \delta[q + (1 - q)\frac{C^H}{\pi}]$  with  $\sum_{d=1}^2 \beta_{g_d}^2 \leq 1$ .

On the other hand, in the case of unrestricted amendment rights, if in  $t = 2$  the policy  $C^L$  is chosen by the first legislator, the lobby can still obtain  $C^H$  by paying  $\beta_{g_2}^2 = q + (1 - q)\frac{C^H}{\pi}$  to the second legislator and  $\beta_{g_1}^2 = 0$  to the first because  $v_{g_1}^2(C^L) > v_{g_1}^2(\emptyset)$ . In the first period, the second legislator obtains the expected payoff  $V_{g_2}(C^H) = B + E + \beta_{g_d}^1 \pi - C^H + \delta(B - C^H)$  by choosing  $C^H$ , and the payoff  $V_{g_2}(C^L) = B + E + \delta(B + E + \beta_{g_2}^2 \pi - C^H)$  from choosing  $C^L$ . Hence, the second legislator prefers  $C^H$  to  $C^L$  if and only if  $\beta_{g_2}^1 \geq \frac{\delta E + C^H}{\pi} + \delta[q + (1 - q)\frac{C^H}{\pi}]$ . On the other hand, remembering that if  $C^L$  is passed by the first legislator, the lobby offers  $\beta_{g_2}^1 = \frac{\delta E + C^H}{\pi} + \delta[q + (1 - q)\frac{C^H}{\pi}]$  to the second legislator who amends  $C^L$  to  $C^H$ , then by choosing  $C^L$ , the first legislator obtains the expected payoff  $V_{g_1}(C^L) = B + E - C^H + \delta(B - C^H)$ , whereas, by not passing any policy his expected payoff is  $V_{g_1}(\emptyset) = \delta(B + E - C^H)$ . Hence, if  $\delta E + C^H - (B + E) > 0$  then  $V_{g_1}(\emptyset) > V_{g_1}(C^L)$ , which implies that the first legislator can credibly threaten not to pass any policy (i.e.  $V_{g_1}(\emptyset) > V_{g_1}(C^H)$ ) unless he receives  $\beta_{g_1}^1 \geq \frac{\delta E + C^H - (B + E)}{\pi} > 0$ . On the other hand, if  $\delta E + C^H - (B + E) \leq 0$ , the first legislator cannot credibly threaten not to choose any policy, and since  $V_{g_1}(C^H) \geq V_{g_1}(C^L) \forall \beta_{g_1}^1$ , the lobby offers  $\beta_{g_1}^1 = 0$  and  $C^H$  is passed.  $\square$

## G Proof of Proposition 3

Suppose that lemma 5 holds. If the sum of the minimum shares is feasible ( $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 \leq 1$ ) then  $C^H$  is chosen, whereas if  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 > 1$ ,  $C^L$  is chosen. Since the sum of the minimum shares under open rule is at least as high than under closed rule, then: (a) whenever the the sum of the minimum shares is not feasible under closed rule, it will also not be feasible under open rule; (b) When the sum of the minimum share is feasible under closed rule, it may not be feasible under open rule. From (a) and (b) we conclude that whenever the low cost policy is chosen under closed rule it will also be chosen under open rule, while the reverse is not true.

Consider now the case where amendment rights are unrestricted, with  $0 < \bar{\beta}_{g_d}^1 < 1$  for all  $g_d$  and  $\sum_{d=1}^2 \bar{\beta}_{g_d}^1 > 1$ . In this case, the first legislator could choose  $C^H$  if he is offered the appropriate transfer. However, given that both legislators cannot be offered the transfer necessary to pass  $C^H$ , the lobby will not find it optimal to carry out the transfer necessary to obtain  $C^H$  in the first legislative step, knowing that this proposal will be overridden by the subsequent legislator. As a consequence, the lobby offers  $\beta_{g_1}^1 = 0$  to the first legislator. Since  $g_1$  anticipates that  $C^L$  will be overridden by the last legislator who can receive the appropriate rent share for choosing  $C^H$ , then  $g_1$  rejects the offer and does not implement any policy. As a consequence, the second legislator legislators without proposal power will not be able to amend any proposal, and the mandate terminates with no policy implemented.  $\square$

## H Lemma A3

**Lemma A3** *Under open rule, the voting strategy  $\sigma^* = [\sigma^*(C^H) = 0, \sigma^*(C^L) = 1, \sigma^*(\emptyset) = 1]$  is an equilibrium voting strategy. Moreover, under unrestricted amendment rights it is unique.*

**Proof.** Since the voting strategy depends only on the policy outcome, the optimality of the voting strategy relies on the same arguments as in the unicameral case. In particular,  $\sigma^*$  is an equilibrium voting strategy since the voter is strictly better off by choosing  $\sigma^*$  than under any alternative strategy  $\sigma'$  such that either  $\sigma'(C^H) = 1$  or  $\sigma'(C^L) = 0$ . Moreover, under unrestricted amendment rights this is the unique equilibrium voting strategy because  $\sigma^* = [\sigma^*(C^H) = 0, \sigma^*(C^L) = 1, \sigma^*(\emptyset) = 1]$  is strictly preferred to  $\sigma' = [\sigma'(C^H) = 0, \sigma'(C^L) = 1, \sigma'(\emptyset) = 0]$ , since punishing or rewarding the legislators for not implementing any policy is not pay-off irrelevant. In fact, note that with unrestricted amendment rights,  $g_1$  might not find it optimal to pass any policy in order to prevent the final implementation of  $C^H$ . As a result,  $\emptyset$  can be an outside option. Suppose now that the voter adopts the voting strategy  $\sigma' = [\sigma(C^H) = 0, \sigma(C^L) = 1, \sigma(\emptyset) = 0]$ . In this case, because of the punishment  $\sigma(\emptyset) = 0$ , not choosing any policy is strictly dominated by choosing either  $C^L$  or  $C^H$ . Hence, either the first legislator chooses  $C^L$  and the last legislator amends it passing  $C^H$ , or both legislators pass  $C^H$ . Since for the voter  $v_k^1(C^H) < v_k^1(\emptyset)$ , then he strictly prefers  $\sigma^*$  to  $\sigma'$ .  $\square$

## References

- Ansolabehere, S., J. Snyder, James M., and M. M. Ting (2003a). Bargaining in bicameral legislatures: When and why does malapportionment matter? *The American Political Science Review* 97(3), 471–481.
- Ansolabehere, S., J. M. Snyder, and M. M. Ting (2003b). Bargaining in bicameral legislatures: When and why does malapportionment matter? *American Political Science Review* 97(471–481).
- Baron, D. and J. Ferejohn (1989). Bargaining in legislatures. *American Political Science Review* 83, 1181–1206.
- Bernheim, B. D., A. Rangel, and L. Rayo (2006). The power of the last word in legislative policy making. *Econometrica* 74, 1161–1190.
- Bradbury, J. C. and W. M. Crain (2001). Legislative organization and government spending: Cross-country evidence. *Journal of Public Economics* 82, 309–332.
- Chang, E. and G. Tsebelis (2002). Veto players and the structure of budgets in advanced industrialized countries. In G. Tsebelis (Ed.), *Veto players: How institutions work*, Chapter 8.

- Princeton, NJ: Princeton University Press.
- Corporate Crime Reporter (2004). Public corruption in the United States. pp. 1–16.
- Cox, G. W. (2006). The organization of democratic legislatures. In B. R. Weingast and D. A. Wittman (Eds.), *The Oxford Handbook of Political Economy*, pp. 140–161. Oxford: Oxford University Press.
- Cutrone, M. and N. McCarty (2006). Does bicameralism matter? In B. R. Weingast and D. A. Wittman (Eds.), *The Oxford Handbook of Political Economy*, pp. 180–195. Oxford: Oxford University Press.
- Diermeier, D., H. Eraslan, and A. Merlo (2007). Bicameralism and government formation. *Quarterly Journal of Political Science* 2, 227–252.
- Diermeier, D. and R. B. Myerson (1999). Bicameralism and its consequences for the internal organization of legislatures. *American Economic Review* 89, 1182–1196.
- Druckman, J. N. and M. Thies (2002). The importance of concurrence: The impact of bicameralism on government formation and duration. *American Journal of Political Science*, 760–771.
- Eckl, C. (1998). Late state budgets. *NCSL Legisbrief* 6, no.14.
- Ewing, C. M. D. (1937). Lobbying in Nebraska’s legislature. *The Public Opinion Quarterly* 2, 103–104.
- Facchini, G. and C. Testa (2009). Reforming legislatures: Is one house better than two? Working Paper 2659, CES-Ifo.
- Ferejohn, J. (1986). Incumbent performance and electoral control. *Public Choice* 50, 5–25.
- Fiorina, M. P. (1981). *Retrospective voting in American national elections*. New Haven, CT: Yale University Press.
- Franzese, R. J. (2007). Fiscal policy with multiple policymakers: Veto actors and deadlock, collective action and common pools, bargaining and compromise. In H. Magara (Ed.), *Veto Players and Policy Change*, pp. 118–161. Tokyo, Japan: Waseda University Press.
- Glaeser, E. L. and R. E. Saks (2006). Corruption in America. *Journal of Public Economics* 90, 1053–1072.
- Grier, K. B. and M. C. Munger (1993). Comparing interest group pac contributions to House and Senate incumbents, 1980–1986. *Journal of Politics* 55(3), 615–43.
- Groseclose, T. and J. Snyder (1996). Buying supermajorities. *American Political Science Review* 90, 303–315.

- Heller, W. B. (2001). Political denials: The policy effect of intercameral partisan differences in bicameral parliamentary systems. *Journal of Law, Economics and Organizations* (17), 34–61.
- Hickey, R. (2011). Bicameral bargaining and federation formation. *Public Choice*, forthcoming.
- Knight, B. (2005). Estimating the value of proposal power. *The American Economic Review* 95(5), 1639–1652.
- Knight, B. (2008). Legislative representation, bargaining power and the distribution of federal funds: Evidence from the us congress. *Economic Journal* 118, 1785–1803.
- Kofman, F. and J. Lawarree (1993). Collusion in hierarchical agency. *Econometrica* 61, 629–656.
- Kofman, F. and J. Lawarree (1996). On the optimality of allowing collusion. *Journal of Public Economics* 61, 383–407.
- Kolasa, B. D. (1971). Lobbying in the nonpartisan environment: the case of Nebraska. *The Public Opinion Quarterly* 24, 65–78.
- Levmore, S. (1992). Bicameralism: When are two decisions better than one. *International Review of Law and Economics* 12, 145–162.
- Madison, J. (1788). Federalist Paper 62. In J. Jay, A. Hamilton, and J. Madison (Eds.), *The Federalist or the new Constitution*. London: Everyman Edition.
- Maskin, E. and J. Tirole (2004). The politician and the judge: Accountability in government. *American Economic Review* 94, 1034–1054.
- Mishra, A. (2002). Hierarchies, incentives and collusion in a model of enforcement. *Journal of Economic Behaviour and Organisation* 47, 165–178.
- Muthoo, A. and K. A. Shepsle (2008). The constitutional choice of bicameralism. In E. Helpman (Ed.), *Institutions and Economics Performance*. Cambridge, MA: Harvard University Press.
- Osborne, M. and A. Rubinstein (1990). *Bargaining and Markets*. San Diego: Academic Press.
- Persson, T., G. Roland, and G. Tabellini (1997). Separation of powers and political accountability. *Quarterly Journal of Economics* 112, 1163–1202.
- Riker, W. H. (1992). The justification of bicameralism. *International Political Science Review* 12, 101–116.
- Rogers, J. M. (1999). Judicial review standards in unicameral legislative systems: A positive theoretic and historic analysis. *Creighton Law Review* 33, 65–120.
- Romer, T. and J. M. Snyder (1994). An empirical investigation of the dynamics of PAC contributions. *The American Political Science Review* 38, 745–69.

- Rose-Ackerman, S. (2006). *International Handbook on the Economics of Corruption*. Northampton, MA, USA: Edward Elgar Publishing.
- Shumate, R. V. (1952). The nebraska unicameral legislature. *The Public Opinion Quarterly* 52, 504–512.
- Snyder, James M., J., M. M. Ting, and S. Ansolabehere (2005). Legislative bargaining under weighted voting. *The American Economic Review* 95(4), 981–1004.
- Testa, C. (2010). Bicameralism and corruption. *European Economic Review* 54, 181–198.
- Tsebelis, G. (1995). Decision making in political systems: Veto players in presidentialism, parliamentarism, multicameralism, and multipartyism. *British Journal of Political Science* (25), 289–326.
- Tsebelis, G. and J. Money (1997). *Bicameralism*. Cambridge, UK: Cambridge University Press.
- Ventura, J. (1998). Jesse Ventura on Government Reform. *On the issues: Every political leader on every issue*. [www.ontheissues.org](http://www.ontheissues.org).
- Voigt, S. (2012). *Design of Constitutions*. Northampton, MA, USA: Edward Elgar Publishing.