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Abstract

This paper studies the internal organizational design of political institutions in presence of lobbying. We consider a legislature as composed of two bodies: the *floor* and an informational committee. The floor has the (formal) power to choose the policy to be implemented.

The policy outcome is ex ante unknown but the committee has an expertise to learn the payoff pattern of the feasible policies.

In this context, we investigate the impact of lobbying on the optimal allocation of political authority (*agenda control*) between the floor and the standing committee.

The allocation of the agenda control is here described as the choice between two alternative legislative rules: open versus closed rule. We show that, in presence of lobbying, the effectiveness of a closed rule as an incentive device towards the committee is noticeably reduced while the costs imposed to the floor are higher. As a consequence, we find that a closed rule is never an optimal choice for the floor.

JEL Classification: D70, D72, D80.

Keywords: Lobbying, Procedure Rule, Open/Closed Rule.

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1 Introduction

A vast literature in political science has addressed the problem of the *agenda control* where one agent, subordinate to the another, is given a differential advantage in influencing the final outcome. The issue is to rationalize this control as an efficient organizational design (Banks, 1991). Models of agenda control have pointed out how the delegation of decisional authority from politicians to bureaucrats may be a rational response to the existence of informational asymmetries between players (Gilligan and Krehbiel, 1987, 1989, 1990; Niskanen, 1971).

Less attention has been instead devoted to understand whether and to what extent the internal organization of political institutions is also influenced by the existence of lobbying - in addition to asymmetric information - in the decision making process (Diermeier and Myerson, 1999; Sloof, 2000).

As documented by the wide empirical literature, however, interest groups exert strong pressures to influence the political outcomes at the electoral as well as the legislative stage (Boylan, 1998; Potters and Sloof, 1996). Hence, it is likely that the allocation of political authority within a legislature takes into account the potential for lobbying[1].

In this paper, we study the internal organizational design of political institutions by incorporating lobbying in the political process.

We simplify the political organization by assuming that a legislature consists of two main bodies: the government, hereafter the *floor,* and an informational committee which is an agent of the floor. The committee and the floor have to choose a political action. The outcome of the feasible policies is ex ante unknown. The committee has however an expertise to acquire information about the payoff pattern but the floor is decisive for the choice of the final policy.

In this context, we look at the optimal allocation of political authority between the floor and the committee in presence of a lobby that can offer bribes to both of them.

The allocation of political authority is modeled as the choice by the floor between two alternative legislative procedures: **open** versus **closed rule**. Under a restrictive or *closed rule*, the committee makes a "take-it-or-leave-it-offer" to the floor in the sense that the rejection by the floor of the committee's proposal implies that the status quo is kept.[2] Under an unrestrictive or *open rule*, on the other hand, the floor can amend the committee's recommendation and choose any other alternative in the feasible set, in essence eliminating any agenda control by the committee (Gilligan and Krehbiel, 1987).

[1] "Agenda control" and "political authority" are here used as synonimous.

[2] The status quo can be either the policy currently implemented or a generic default policy.

In our model, three main players are involved in the political game: the floor, an informational committee and a lobby. Because of his vested interest in the political outcome, the lobby may be willing to bribe the committee and/or the floor to influence their decisions and to buy a policy in his favor. We suppose decision-makers to be non-benevolent (corruptible) in the sense that they trade-off the private (or moral) cost of misbehavior - choosing a policy else than the social optimum - with the contributions offered by the lobby.

Asymmetric information *may* arise as a consequence of the fact that the policy outcome is ex ante unknown and that the committee has an expertise to learn this information. The committee's expertise is modeled as the choice of a level of effort which determines its probability of becoming informed. However, we assume that the floor may also learn the payoff pattern according to an exogenous probability E (Aghion and Tirole, 1997). The committee's strategy consists then in choosing a level of effort and a recommendation to the floor, whereas the floor chooses the legislative procedure and the final policy.

In this context, the floor and the committee compete for the lobby's bribes. The lobby, on the other hand, intuitively offers larger bribes to those with the more agenda control, that is the committee under a closed rule, and the floor under an open rule. In our model, the loss of bribes is an additional cost of closed rules - besides the loss of decisional power and the bias of the final decision - that the floor has to take into account when choosing the optimal procedure rule.

Our result shows that, in presence of lobbying, the incentive problem *vis-à-vis* the committee becomes meaningless due to the fact that the committee chooses the recommendation mainly on the basis of the bribes offered by the lobby rather than on the information acquired. This increases, under a closed rule, the bias of the final decision since the committee is more likely to be bribed and therefore, to bias the recommendation in favor of the lobby.

More specifically, we find the floor's expected utility to be independent of the committee's level of effort, meaning that he does not care about giving the committee stronger incentives to acquire information.

In conclusion, in presence of lobbying, the benefits of restrictive procedures in terms of information transmission are much weakened while their costs increase due to the loss of bribes. Consequently, open rules always dominate closed rules.

The reminder of the paper is organized as follows. The next section briefly reviews the related literature. Section 3 sets up the model. The political game is represented as a three-stage game and solved backward. The benchmark model with no lobbying is analyzed in Section 4. The

following section derives the equilibria of the *lobbying game,* i.e. the optimal lobby's strategy under the two political structures. In section 5, we analyze the incentive problem *vis-a-vis* the committee under the two rules. The last section concludes.

2 Related Literature

Our work is inspired by the Gilligan and Krehbiel paper (1987). In this paper, the focus is on how information and expertise are generated in political institutions. The authors offer an informational rationale for granting committees special proposal and amendment prerogatives.[3] They show that instituting a closed rule in a legislative setting, thereby conferring on the committee a degree of agenda control, can be a rational response to the presence of informational asymmetries in the decision making process between the politicians and the committee. The intuition behind their result is that, under certain conditions, delegating more "formal" authority to the committee through a closed rule, increases the incentives for her to specialize and (truthfully) transmit the information acquired to the floor via its recommendation (*informational gain*). The ability of the committee to implement informed yet biased outcomes (*distributional loss*) may thus be preferable for the floor to itself implementing a less biased yet less informed decision provided that: (1) the committee's and the floor's preferences are sufficiently aligned; (2) the cost of expertise for the committee is not too high.

In the same line, Aghion and Tirole (1997) develop a theory of the allocation of formal authority (the right to decide), and real authority (the real control over decisions) within organizations, more generally. They compare two organizational forms, the *P-formal authority* or "integration", and the *A-formal authority* or "delegation", which allocate the formal authority respectively to the principal and to the agent. They derive the conditions under which it is optimal for the principal to delegate formal authority to the agent. As before, delegation encourages the agent's initiative to become informed but results in final decisions biased in his favor. The analysis is conducted in a principal-agent model combined with an incomplete contracting approach. The initial contract specifies an allocation of formal authority between the two parties while the actions are supposed not to be contractible upon.

In Gilligan and Krehbiel as in Aghion and Tirole, asymmetric information is considered as the only determinant of the choice of the allocation of the agenda control while we investigate the possibility that this choice is also influenced by the presence of interest groups in the political

[3] Their starting point is the observation that, in the past, the American government has several times adopted *non-amendment rules*.

game. Other papers have underlined the link between the internal organization of governments and the potential for lobbying.

Diermeier and Myerson (1999) investigate the effect of different constitutional features (e.g. multi-cameralism) on the internal organization of legislatures. They show that the separation of legislatures in several independent chambers gives different incentives to delegate political authority within each chamber in a way which is meant to circumvent collusive behavior. Our paper differs from this one with respect to the model since they use a vote-buying model which implies that politicians only care about money. Also, they look at the internal organization of legislature from a different and, in a sense, broader perspective than what we do.

A closer paper is the one by Sloof (2000) where the question of the relationship between lobbying by interest groups and delegation of political authority between politicians and bureaucrats is explicitly addressed. The two papers however differ in several respects. First, Sloof assumes that interest groups try to affect the political outcome through a strategic information transmission rather than monetary contributions. Second, the informational structure. In his model, bureaucrats have an expertise to assess the specific value of the information transmitted by the interest groups while, in our model, the committee's expertise is the ability to acquire some relevant information. Furthermore, we allow for the possibility that the government as well becomes informed. Last, the political game is described as a signalling game as in most of the literature in political science. Instead, we model the game as a principal-agent model combined with an incomplete contracting approach *à la* Aghion and Tirole, by positing that the initial contract only specifies the legislative rule and that political actions cannot be contracted on.

3 The Model

Players - There are three players participating in the political game, the floor, the informational committee and the lobby, each of them having preferences over the political outcomes.

In our very simplified picture of the political institution, the Congress is composed only by the floor (the government) and the committee which is an agent of the floor.

Policies - The committee and the floor can select an action out of a one-dimensional policy space $A \subset R$ which we assume to consist of $n \geq 3$ potential and ex ante identical political projects (*policies*) a_k with $k \in \{1, ..., n\}$.

With each policy a_k is associated a payoff pair (b_k, B_k) respectively for the lobby and for

the society, where the lobby's payoff b_k is interpreted as a private benefit. We denote by a_0 the status quo policy which yields a known outcome (b_0, B_0).

Lobby's and social preferences - The lobby's preferred policy, denoted by a_L^* , yields a payoff b^* to the lobby; whereas the socially optimal policy, denoted by a_S^* , yields a payoff B^* to the society.

The lobby's preferences differ from the social preferences with probability π. We thus distinguish two states of nature, the *congruent* and the *non congruent* state of nature, happening with a probability $1-\pi$ and π respectively. In the non congruent state of nature, the lobby's and the social preferences are mis-aligned, in the sense that the lobby's optimal policy differs from the socially optimal one. In this situation, if the lobby's optimal policy is implemented, society gets a fraction α of its optimal outcome B^*, meaning its payoff is αB^*.

Similarly, if the social optimal policy is picked, the lobby gets a fraction β of its optimal payoff b^*, that is a payoff βb^*, with α and $\beta \in (-\infty, 1)$. The parameters α and β can be interpreted as *congruence parameters*.

Conversely, in the congruent state of nature the social and the lobby's optimal policies coincide (*aligned* or *congruent preferences*), $a_L^* = a_S^* = a^*$, with the policy a^* yielding a payoff pair (b^*, B^*).

We make the following assumption on the preference ordering:

Assumption 1: With mis-aligned preferences, the lobby's and social preferences are such that:

$$b^* > b_0 > \beta b^*$$

and

$$B^* > B_0 > \alpha B^*$$

i.e. the status quo policy is strictly preferred by the lobby to the social optimum and by the society to the lobby's optimal policy.

In the non congruent state of nature, the lobby may thus have an interest to bribe the committee and/or the floor only in order to get his optimal policy (more generally a better policy than the social optimum) implemented.

His objective function consists therefore in minimizing his total cost determined by the bribes paid to the floor and/or the committee plus the disutility of having a final policy different from

his optimal policy. Formally,

$$G_L = -(b^* - b_i) - \sum_{j=C,F} C_j$$

where, C_j with $j= C, F$ denote the contributions paid respectively to the committee and to the floor.

We simplify the notation by positing: *a)* $d_0 = (b^* - b_0)$, the lobby's disutility from having the status quo implemented instead of his optimal policy; and *b)* $d^* = (b_0 - \beta b^*)$, the lobby's disutility from having the social optimum implemented instead of the status quo, in the non congruent state of nature.

Information - We assume that the lobby has complete information, that is he knows the payoff pattern and he also observes the state of nature.

The floor and the committee are instead ex ante uncertain about the consequences of political actions. They do not observe the state of nature either, and only know the probability π of being in the non congruent state of nature. Yet, the committee has an expertise to screen among all the projects. The expertise is modeled as the choice of an effort level e which implies a probability e of becoming informed (and thus a probability $1 - e$ of staying uninformed) and a disutility of effort $g(e)$, with $g(e)$ increasing in e and convex, that is $g'(e) > 0$ and $g''(e) > 0$, and with $g'(0) = 0$ and $g'(1) > 0$ (in order to get an interior solution). Finally, we assume that the floor may also learn the payoff pattern according to an exogenous probability $E > 0$.[4]

Consequently, there are four possible informational states depending on whom, the committee and/or the floor, acquires the information: 1) both informed, with probability eE; 2) only the floor informed with probability $(1 - e)E$; 3) only the committee informed with probability $e(1 - E)$; and 4) both uniformed with probability $(1 - e)(1 - E)$.[5]

The lobby observes who has acquired the information, whereas the committee and the floor cannot.

Objective Functions - The committee's strategy consists in choosing a level of effort and a recommendation to the floor, whereas the floor chooses the legislative procedure and the final policy. They are both non-benevolent (corruptible) in the sense that they trade-off the private

[4] We think it is quite realistic to assume that there exist other sources of information for the floor, e.g. mass-medias or the press.

[5] We could simplify the information structure by assuming that when the floor is informed, its information about the payoff pattern becomes common knowledge. The results would not change qualitatively. For the sake of completeness, we prefer this way of modelling the information structure. By so doing, we can account for the possibility that only the floor is informed which can be explained by the existence of frictions in the transmission of information from the floor to the committee.

(or moral) cost of misbehavior - choosing a policy else than the social optimum - with the contributions offered by the lobby.

This is modeled by objective functions which are weighted sums of cost of misbehavior and of the contributions offered by the lobby.[6]

For both the committee and the floor there is at least one political project which yields a "sufficiently negative" loss, so that in the absence of bribe and when uninformed, the optimal strategy for both of them is to choose the status quo.

So, for a given policy $a_i \in \{a_0\} \cup \{a_k\}_1^n$ and a bribe C_F, the floor's utility is defined as follows

$$G_F = -(B^* - B_i) + \theta_F C_F$$

where, the weight attached to lobby's contributions, θ_F, represents the floor's *degree of corruptibility*. The cost of mis-behavior for the floor can be related to a decrease in the probability of re-election associated with a negative updating of voters' belief about its honesty (Boylan, 1997).

Likewise, the committee's objective function is,

$$G_C = -L_C(a; a_S^*) + \theta_C C_C$$

with C_C denoting the bribe (if any) received by the committee; θ_C the committee's degree of corruptibility and $L_C(a; a_S^*)$ being the loss of having a final policy different from the social optimum. We assume this function to be separable and additive, i.e. for any $a_k \in (a; a_S^*)$, we can split $L_C(a; a_S^*)$ as follows

$$L_C(a; a_S^*) = L_C(a; a_k) + L_C(a_k; a_S^*)$$

with $L_C(a_S^*; a_S^*) = 0$. Suppose $a_k = R$. Then, we have an easy interpretation of the committee's preferences. $L_C(R; a_S^*)$ represents the loss the committee incurs when she recommends something different from the social optimum; and $L_C(a; R)$ is the loss of a final policy is different from its recommendation. Therefore, the committee's disutility is a private loss which may be due to credibility or reputation concerns. It depends on the committee's recommendation as well as on the floor's choice of the final policy.

The allocation of the agenda control between the committee and the floor consists in the choice by the floor between two alternative legislative procedures: **open** versus **closed rule**. Under a restrictive or *closed rule*, the committee makes a "take-it-or-leave-offer" to the floor

[6] See Grossmann and Helpman (1994).

in the sense that the rejection by the floor of the committee's proposal implies that the status quo is kept. Under an unrestrictive or *open rule*, on the other hand, the floor can amend the committee's recommendation and choose any other alternative in the feasible set, in essence eliminating any agenda control by the committee.

Timing - The game unfolds in four stages:

0) the nature draws the state of nature, congruent or non congruent preferences;

1) the floor selects a legislative rule: open or closed rule;

2) the committee chooses a level of effort e;

3) information is learned, by the committee with a probability e and by the floor with a (exogenous) probability E;

4) the lobbying (sub)game unfolds:

   i) the lobby decides whether to bribe the committee;

   ii) the committee sends a recommendation R to the floor and receives the bribe, if any;

   iii) the lobby decides whether to propose a bribe to the floor;

   iv) the floor chooses the final policy and receives a bribe, if relevant.[7]

We suppose that the lobby can commit to pay the bribes promised to the floor and/or the committee.[8]

The game is solved backward. We will start by deriving the equilibria of the lobbying (sub)game. This is the main block of our analysis and provides interesting results. We characterize the optimal lobbying strategies under the two rules and show that they change significantly depending on the rule in place. Before that, however, in the next section we describe a useful benchmark model with no lobbying.

4 The Benchmark: No lobbying

Suppose that there is no lobbying. The committee and the floor chooses their action on the basis of their information. Consequently, under a closed rule, when the committee is uninformed the

[7] The results would not change if bribes were paid at the end of game.

[8] This assumption is reasonable to the extent that the interaction between the lobby and the decision-makers is likely to be repeated. In this case, reputation concerns arise and force the agents to fulfill their promises.

status quo is kept, no matter what the floor's information is. In contrast, under the open rule, if the floor is informed, he can pick the social optimum. So the only case in which the status quo is maintained is when both the committee and the floor are uninformed. Thus, the following result holds:

Proposition 1 *In absence of lobbying, the committee makes higher effort under a closed rule and the floor optimally chooses a closed rule for any* $E < 1 - \frac{1-e^C}{1-e^O}$.

Proof: Let $E(G_F^j)$ and $E(G_C^j)$ be, respectively, the floor's and the committee's expected payoff under the rule j, with j =O,R. We start by looking at the committee's behaviour. The committee's expected payoff under a closed and an open rule are, respectively,

$$E(G_C^C) = -(1-e)L_C(a_0; a_S^*) - g(e)$$

$$E(G_C^O) = -(1-E)(1-e)L_C(a_0; a_S^*) - g(e)$$

Denote by e^C and e^O the optimal level of effort under an open and a closed rule, respectively. They are the solution of the following FOC:

$$L_C(a_0; a_S^*) = g(e^C)$$

$$(1-E)L_C(a_0; a_S^*) = g(e^O)$$

which, by the strict convexity of the function $g(e)$, imply that $e^C > e^O$. In other words, there is an informational gain under a closed rule.

As far as the floor is concerned, his expected payoff under the two rules, given the effort chosen by the committee, are

$$E(G_F^C) = -(1-e^C)(B^* - B_0)$$

and

$$E(G_F^O) = -(1-E)\left(1-e^O\right)(B^* - B_0)$$

Thus, the floor will optimally choose a closed rule if and only if

$$E < 1 - \frac{1-e^C}{1-e^O}$$

that is, if the probability that he becomes informed is sufficiently low. In this case, delegating the decisional power to the committee is worthwhile because the distributional loss is outweighed by the informational gain. ■

5 The Lobbying Game

5.1 The Open Rule

In any state of nature, the lobby can make an offer to the committee and the floor.[9] An offer to the committee consists in a monetary contribution and a recommendation to be transmitted to the floor. We denote it by $C_C(R)$. Similarly, an offer to the floor consists in a monetary contribution and a policy to be implemented. We denote it $C_F(a_k)$. The committee and the floor can accept or reject the offer. If they accept, they receive the money and commit to choose the policy asked by the lobby. If they reject the offer, they get no money but they can take any decision.

We denote a strategy for the lobby as:

$$s_L = \{C_C(R); (C_F(a)\}$$

We focus on the non congruent state of nature, since this is the only situation in which there is some scope for lobbying.[10] We characterize the lobby's optimal contribution schedules in the four possible informational states.

Informed Floor (with Informed or Uninformed Committee)

When the floor is informed, it is irrelevant whether the committee is also informed or not, because the floor would always disregard her recommendation. (From here onward, we will use the masculine pronoun to refer to the floor, and the feminine one to refer to the committee)

The floor takes his decision on the basis of his information. The lobby's offer, if there is any, will therefore be addressed exclusively to the floor, a bribe to the committee being useless to influence the final decision.

We give a full characterization of the equilibrium outcome in the following statement.

Lemma 1 *In an open rule with non congruent preferences, with informed floor, under the following condition,*

$$\frac{B_0 - \alpha B^*}{\theta_F} \leq d_0 \tag{1}$$

and the lobby's participation constraint,

$$\frac{(1-\alpha)B^*}{\theta_F} \leq (1-\beta)\, b^* \tag{PC$_1$}$$

[9] The state of nature specifies the state of lobby's preferences as well as the state of information.

[10] We implicitely assume that, in the congruent state of nature, the lobby can credibly transmit its information at no cost. We could think about alternative ways of modelling this situation. The results would remain qualitatively the same.

at the equilibrium, (a) the lobby makes an offer only to the floor, this offer being $C^*_{F(fi)} = \frac{(1-\alpha)B^*}{\theta_F}$; *(b) the floor accepts the offer and, the lobby's optimal policy is implemented; c) the committee recommends the social optimum, when informed, and the status quo, when uniformed.*

Proof: In absence of any bribe, the floor optimally chooses to implement the social optimum a^*_S. The lobby may thus want to bribe him to get his optimal policy, a^*_L, chosen instead of the social optimum. In this case, the lobby should offer the floor a bribe which at least compensate him for the loss of moving from the social optimum to a^*_L. That is

$$C_F(a^*_L) \geq \frac{(1-\alpha)B^*}{\theta_F}$$

At the equilibrium, the inequality will be binding, the lobby's utility being decreasing in the contributions paid. So

$$C^*_F = \frac{(1-\alpha)B^*}{\theta_F}$$

with C^*_F denoting the optimal bribe under an open rule (we drop out the argument for the sake of simplicity). In what follows, we will often refer to this as the *full information bribe* and denote it by $C^*_{F(fi)}$.

Condition (1) ensures that bribing for his optimal policy is not more expensive, for the lobby, than bribing for a *second best policy*, i.e. the status quo. That is,

$$\frac{(1-\alpha)B^*}{\theta_F} \leq \frac{(B^* - B_0)}{\theta_F} + d_0$$

where the right-hand side is the cost of bribing for the status quo. Splitting the left-hand side argument and re-arranging yields:

$$\frac{B_0 - \alpha B^*}{\theta_F} \leq d_0.$$

Last, in equilibrium the lobby's participation constraint must be met, i.e.

$$C^*_{F(fi)} \leq (1-\beta)\, b^* \qquad (\mathrm{PC}_1)$$

this ensures that the cost of bribing does not offset its benefit. ■

Uninformed Floor

Informed Committee: In this state of nature, the lobby plays a quite different strategy. The committee is now more likely to be bribed, due to her informational advantage *vis-à-vis* the floor.

Let us sketch intuitively how the game unfolds in these circumstances. Assume again that preferences are not aligned. The equilibrium concept we adopt here is the Perfect Bayes-Nash Equilibrium.

The lobby decides whether to make an offer to the committee depending on which strategy the floor is expected to play, *rubberstamping the committee* versus *rejecting her recommendation.* The floor's optimal strategy, on the other hand, is conditional on his beliefs about the probability that the committee has been corrupted and is therefore recommending the wrong policy (the lobby's optimal policy). The equilibrium outcome depends in the end on the probability of being in the non congruent state of nature.

The next proposition formally states the results:

Lemma 2 *: Consider an open rule. With non congruent preferences, when the committee is informed and floor is not, there exists a cut off value* $\widehat{\pi} = \dfrac{B^* - B_0}{(1-\alpha)B^*}$*, such that:*

- *for all values of the probability of being in the non congruent state of nature* $\pi \leq \widehat{\pi}$*, provided that the following conditions, together with condition (1), hold:*

$$\frac{L_C(a_L^*; a_S^*)}{\theta_C} \leq \frac{(1-\alpha)\, B^*}{\theta_F} \tag{2}$$

$$\frac{L_C\,(a_0, a_S^*)}{\theta_C} + d_0 \geq \frac{L_C(a_L^*, a_S^*)}{\theta_C} \tag{3}$$

$$\frac{L_C(a_L^*, a_S^*)}{\theta_C} \geq \frac{B^* - B_0}{\theta_F} \tag{4}$$

and the lobby's participation constraint is met,

$$\frac{L_C(a_L^*, a_S^*)}{\theta_C} \leq b^*\,(1-\beta) \tag{PC$_2$}$$

the lobbying game has a unique equilibrium which is in pure strategies. In this equilibrium, a) the lobby makes an offer only to the committee, this offer being $C_C^* = \dfrac{L_C(a_L^*, a_S^*)}{\theta_C}$*; b) the committee accepts the offer and recommends the lobby's optimal policy; c) the floor rubberstamps the committee and implements the lobby's optimal policy.*

- *For values of* $\pi > \widehat{\pi}$*, under the following condition:*

$$\frac{(1-\alpha)\, B^*}{\theta_F} \geq d_0 \tag{5}$$

there exists, in the lobbying game, a unique equilibrium which is in mixed strategies.

Proof: See the Appendix.

Uninformed Committee: The result are very similar to the previous case. As before, for all values of $\pi \leq \widehat{\pi}$, under the same conditions stated in Lemma 2 and the following additional one,

$$\frac{L_C\left(a_L^*, a_0\right)}{\theta_C} \leq \frac{B_0 - \alpha B^*}{\theta_F} \tag{6}$$

there exists a unique equilibrium for the lobbying game which is in pure strategies. In this equilibrium, the lobby optimally bribes only the committee, paying a contribution $C_C^* = \dfrac{L_C\left(a_L^*, a_0\right)}{\theta_C}$. The floor accepts the recommendation and implements the lobby's optimal policy.

Concerning this equilibrium, notice that:

- Condition (6) simply ensures that bribing the committee is less expensive than bribing the floor for the same policy (here, the lobby's optimal one), given that in absence of bribes the status quo would be picked;
- The monetary reward to the committee is smaller than what he would get if informed. The lobby must just compensate the committee for the loss of moving from the status quo - the implemented policy in absence of bribes - to the lobby's optimal policy.
- The lobby's participation constraint, given by

  $$\frac{L_C\left(a_L^*, a_0\right)}{\theta_C} \leq d_0 \tag{PC$_3$}$$

  is trivially satisfied holding Conditions (1) and (5).
- Contrary to when the committee is informed, we do not observe here any information disclosure via the lobby's bribes, what makes bribing itself less costly for the lobby.[11]

For values of $\pi > \widehat{\pi}$, we can rule out any possible equilibrium in pure strategies. The same reasoning as before applies. There exists a unique equilibrium which is in mixed strategies. In this equilibrium, the lobby and the floor play respectively according to the following random strategies:

$$\left\{x^* = \frac{\widehat{\pi}}{\pi};\ y^* = 1 + \left(\frac{L_C\left(a_L^*, a_0\right)}{\theta_C} - \frac{B_0 - \alpha B^*}{\theta_F}\right)\frac{1}{d_0}\right\}.$$

We leave the computations to the reader.

[11] Notice that, the transmission of information to the floor through the lobby's bribes happens only out-of-equilibrium paths and requires the committee to be informed.

5.2 The Closed Rule

Under a closed rule, the agenda control moves from the floor to the committee. The feasible set of final policies shrinks to the status quo and to the committee's recommendation since a rejection of the committee's recommendation implies that the status quo is kept. As a consequence of her larger formal authority, the committee is able to attract more bribes from the lobby. In general, compared to the open rule, in equilibrium we observe a shift of bribes from the floor to the committee.

From the floor's point of view, a closed rule involves then a cost due to the loss of lobby's contributions and a cost due to the loss of decisional power as far as he cannot exploit the information possibly acquired. This is a very specific feature of our model, where the cost of restrictive procedures is linked to the existence of lobbying as well as to the possibility for the floor to become informed.

Informed Floor

Under a closed rule, the floor cannot use the information acquired in an optimal way. Suppose the committee recommends the lobby's optimal policy and that the lobby does not bribe the floor. The best the floor can do is to reject the recommendation and keep the status quo. He cannot modify the final policy.

The next Lemma describes the equilibria in the two cases, with informed and uninformed committee.

Lemma 3 *Consider a closed rule, in the state of nature with non congruent preferences and informed floor. Holding conditions (1) and the following further condition,*

$$(1-\beta)b^* \leq \frac{L_C(a_L^*;a_S^*)}{\theta_C} + \frac{B_0 - \alpha B^*}{\theta_F} \leq \frac{B^* - B_0}{\theta_F} + d_0 \tag{7}$$

the equilibrium of the lobbying game is characterized as follows:

- if the committee is also informed, the lobby bribes both the committee and the floor, with the offers being, respectively, $\widehat{C}_C = \dfrac{L_C(a_L^*;a_S^*)}{\theta_C}$ *and* $\widehat{C}_F = \dfrac{B_0 - \alpha B^*}{\theta_F}$*. The committee and the floor accept the offers and therefore* $R = a_L^* = a$*.*

- if the committee is uninformed, the lobby makes no offer and the status quo is kept.

Proof: See the Appendix.

Uninformed Floor

Informed Committee. The results are very similar to the ones in the analogous situation under the open rule. For values of the probability $\pi \leq \widehat{\pi}$, the outcome is exactly the same as in

the open rule. Holding conditions (2) and (3), the strategic profile $\{x = 1; y = 1\}$ is the unique equilibrium of the lobbying game. The same reasoning as in the open rule applies.

For values of $\pi \geq \widehat{\pi}$, there exist two equilibria, one in mixed strategies and one in pure strategies. Unlike in the open rule, the strategic profile $\{x = 1; y = 0\}$, in which the lobby bribes the committee and the floor optimally rejects her recommendation, is now also sustainable as an equilibrium. In this case, the lobby has to pay an additional bribe to the floor to make him accept the committee's recommendation, with a total cost of $\frac{L_C^*(a_L^*; a_S^*)}{\theta_C} + \frac{B_0 - \alpha B^*}{\theta_F}$. The alternative strategy would be to bribe only the floor and get the status quo kept, bearing a total cost of $\frac{B^* - B_0}{\theta_F} + d_0$.[12] But, by condition (5) the latter strategy is always more costly for the lobby.

As far as the equilibrium in mixed strategy is concerned, the lobby's random strategy, denoted by $\widehat{x}$, is the same as under the open rule, $\widehat{x} = x^* = \frac{\widehat{\pi}}{\pi}$, with $\widehat{x} < 1$ for $\pi > \widehat{\pi}$. It is easy to check that the floor's optimal randomization, $\widehat{y}$, is instead

$$\widehat{y} = \frac{L_C^*}{\theta_C \left(\frac{B^* - B_0}{\theta_F} + d_0 \right)}$$

with $\widehat{y} \geq 0$, by condition (4) and (5); and $\widehat{y} \leq 1$ by conditions (2) and (7).

Uninformed Committee. Holding condition (6), for values of $\pi \leq \widehat{\pi}$, the game has a unique equilibrium which is in pure strategies and is the same as in the analogous situation under the open rule. For values of $\pi \geq \widehat{\pi}$, the game has a unique equilibrium which is in mixed strategies. The lobby plays according to the same optimal randomization as in the previous case, $\widehat{x} = x^* = \frac{\widehat{\pi}}{\pi}$ whereas the floor's optimal randomization can be proven to be $\widehat{y} = \frac{L_C^0}{\theta_C \cdot d_0}$, with $\widehat{y} \leq 1$ under conditions (1) and (6).

The following proposition compares the equilibria of the lobbying game under the two rules and concludes:

Proposition 2 *Assume non congruent preferences and values of $\pi \leq \widehat{\pi}$. Under conditions (1)-(5) and (7), the equilibrium outcomes of the lobbying game are the same under the two rules if the floor is uninformed. Conversely, if the floor is informed, the equilibrium of the lobbying game under a closed rule exhibits a shift of bribes from the floor to the committee compared to the open rule.*

[12] Recall that, if the lobby chooses $x = 0$, the floor' optimal response, given his beliefs ($\widehat{\pi} = 0$), would be to rubberstamp the committee.

6 Procedures Rules as an Incentive Device

In this section, we analyze the choice by the committee of the optimal level of effort given the equilibrium outcomes of the lobbying game. We show that the effectiveness of the closed rule as an *incentive device* to the committee to choose higher levels of effort is weakened when we introduce lobbying in the political process. In particular, it emerges that the cost of a closed rule for the floor is too high and is not counterbalanced by the informational gain. In our model, closed rules involve an additional cost due to the inability of the floor to fully exploit the information possibly acquired.

We proceed as follows. We first derive the optimal level of effort for the committee under the two rules. We then compare of the floor's (expected) payoff under the two rules given the committee's behavior, and finally select the optimal procedure rule.

In what follows, in order to get clearer insights, we restrict the analysis exclusively to the pure strategy equilibria of the lobbying game by assuming the following:

Assumption 2. $\pi \leq \widehat{\pi}$.

Recall that $E(G_F^j)$ and $E(G_C^j)$ are respectively the floor's and the committee's expected payoff under the rule j, with j =O,R.

Under the open rule, the committee's (ex ante) expected payoffs, that is before the information disclosure - before an effort is made - are given by:

$$E(G_C^O) = -EL_C^*(a_L^*; a_S^*) - (1-e)(1-E)\left(L_C^*(a_L^*; a_S^*) - \theta_C C_C^*\right) - g(e) \Longrightarrow$$

$$E(G_C^O) = -EL_C(a_L^*; a_S^*) - (1-e)(1-E)L_C(a_0; a_S^*) - g(e) \tag{8}$$

whereas, under a closed rule they become,

$$E(G_C^C) = -(1-e)L_C(a_0; a_S^*) - g(e) \tag{9}$$

We can state the following result.

Proposition 3 *Let e^* and $\widehat{e}$ denote the committee's optimal level of effort under an open and a closed rule, respectively. By the (strict) convexity of the disutility function $g(e)$, we get that:*

$$\widehat{e} > e^*$$

with e^* decreasing in the probability E that the floor becomes informed.

Proof: The optimal level of effort is obtained by minimizing the committee's expected disutility.

In particular, under an open rule the optimal level of effort, e^*, is determined by the F.O.C derived by equ. (7). That is:

$$(1-E)L_C(a_0;a_S^*) = g'(e^*) \tag{10}$$

Notice that, by the (strict) convexity of the disutility function $g(e)$, e^* negatively depends on the probability E that the floor becomes informed, that is $e^* = e(\underline{E})$.

This result is quite intuitive. Under the open rule, a higher probability E, decreases the chances for the committee to get a bribe in equilibrium. Consequently, the committee has less incentive to acquire information by choosing a higher level of effort.

Similarly, under the closed rule, the optimal level of effort, $\widehat{e}$, is given by the solution of the following F.O.C. equation,

$$L_C(a_0;a_S^*) = g'(\widehat{e}) \tag{11}$$

By the (strict) convexity of the disutility function $g(e)$, it is straightforward that

$$\widehat{e} > e^*$$

■

Therefore, the committee makes higher effort under a closed rule. Notice that, we get the same result as in the benchmark model as far as the choice of the effort by the committee is concerned. However, as we show below, this does not affect at all the floor's expected payoff.

Proposition 4 *Under Assumption 2, comparing open with closed rules yields the following results:*

1. *in neither of the two rules, does the floor's expected payoff depend on the committee's level of effort;*

2. *the costs of a closed rule exceed its benefits, for the floor.*

Consequently, an open rule strictly dominates a closed rule.

Proof: The floor's expected payoffs, before the information disclosure, under the open and the closed rule are respectively,

$$E(G_F^O) = -(1-E)(1-\alpha)B^* \tag{12}$$

and,

$$E(G_F^C) = -[E\,(B^* - B_0) + (1-E)(1-\alpha)B^*] \tag{13}$$

which then imply that

$$\Delta E(G_F) = E(G_F^O) - E(G_F^C) = E\,(B^* - B_0) > 0 \tag{14}$$

i.e. the floor's expected payoff is strictly higher under an open rule. than the expected payoff under a closed rule. Notice that, the additional cost the floor incurs under a closed rule stems from his inability of fully exploiting the information possibly acquired and that the result holds for any positive value of E.

Also, by equations (12) and (13) it is clear that the floor's expected payoff does not depend on the committee's level of effort, in any of the two rules. ■

The above result is quite intuitive. In our setting, the committee's recommendation is mainly decided on the basis of the bribes the committee is offered rather than of her information. The committee is willing to recommend any policy the lobby is bribing for, provided the contribution paid is large enough. Under a closed rule, at the equilibrium, the committee is more likely to be bribed and, hence, to bias her proposal in favor of the lobby. So, the lobby's optimal policy is more likely to be implemented as the final policy. This explains why the incentive problem to the committee is no longer an issue in our model.

On the other hand, the committee gets larger bribes when informed. Consequently, she has incentive to make higher level of efforts under a closed rule, to increase her probability to be informed for the purpose of extracting larger contributions from the lobby.

The floor, however, is not fully compensated for the distributional loss due to a final policy different from the social optimum and, additionally, he does not receive any benefit in terms of information transmission.[13] So, it is never optimal for him to institute a closed rule.

7 Discussion

This paper investigate how the co-existence of lobbying and asymmetric information affects the internal organization of political institutions.

The internal organization of political institutions is here modeled as the choice of a procedure rule. Two procedure rules are compared: *open rule* versus *closed rule,* which differ for the

[13] As we have seen, even though he receives a bribe this will not be big enough to outweigh the distributional loss.

allocation of the decisional power between the government (the *floor*) and an informational committee within the Congress. Closed (or restrictive) rules allow the committee to makes a "take-it-or-leave-offer" to the floor in the sense that the rejection by the floor of the committee's proposal implies that the status quo is kept. Conversely, under an open (or unrestrictive) rule the floor can amend the committee's recommendation and choose any other alternative in the feasible set of policies, thereby keeping all the agenda control.

Our results also show that *a)* the lobby concentrates his bribes on the agent with the most decisional power; *b)* the committee chooses a higher level of effort under a closed rule; *c)* the floor's expected payoff does not depend at all on the committee's effort and, *d)* the floor's expected payoff is higher under an open rule.

As a consequence, we get that, in presence of a lobby, a closed rule becomes too costly for the floor because of *a)* the loss of bribes; *b)* the high distributional loss; *c)* the lack of an informational gain and *d)* the inability to exploit his information. So, the open rule is always optimal.

Notice, however, that, welfare considerations would lead to the opposite result. From a social standpoint, a closed rule would dominate an open rule. The reason is that, under an open rule the final policy is always the lobby's optimal policy, which is the most harmful for the society. Under a closed rule instead, at least in some circumstances - namely when the floor is informed and the committee is not - the status quo is kept at the equilibrium, what is welfare-improving. Consequently, if the choice of the procedure rule were to be assigned to a *benevolent superprincipal,* caring only about the social welfare, the closed rule would be instituted.

Informational committees and restrictive procedures are not an exclusive feature of the U.S. Congress. Although congressional committees in the U.S. are extremely powerful, other countries exhibit a rich institutional structure (Diermeier and Myerson, 1999). Among those, Italy. In the Italian legislature, restrictive procedures are currently used and, in principle, could be even more restrictive than in the US. By the Italian Constitution, the so called *parliamentary* committees, which are thirteen, take actively part into the legislative process: as a general rule, any bill proposal must be examined by a parliamentary committee before being submitted to the approval of the Parliament. In some circumstances, however, the Parliament can decide to fully delegate the legislative function to a parliamentary committee[14]. In this case, the committee decides about the bill proposal which, once defined in all its details, comes into place without any

[14]There are topics however for which this procedure cannot be adopted, i.e. changes of the Costitution, international treaties, budget approval, etc.

need of a further approval by the Parliament. And, the process can be stopped only by either a decision of the Government or of 1/10 of the Parliament members. The Italian political system is also characterized by pervasive interest group lobbying. Italy offers another example to stress the importance of understanding how to better shape the internal organization of political institutions in presence of lobbying.

8 Appendix

Proof of Lemma 2. Let us denote by x be the probability that the lobby bribes the committee to get a *favorable recommendation* ($R = a_L^*$) - conditionally on being in the non congruent state of nature - and by y the probability that the floor rubberstamps the committee ($a = R$). So, $1 - y$ is the probability that the floor rejects the recommendation and keeps the status quo, *if* no bribe is offered to him.

We also denote by $\widetilde{\pi}$ the floor's beliefs about the probability that the committee has been bribed and therefore that her recommendation is different from the social optimum. This is the probability of being in the non congruent state of nature with the lobby bribing the committee, so

$$\widetilde{\pi} = \Pr\{bribe\,to\,the\ committee\} = \pi x$$

and the probability of "*no bribe to the committee*" is then:

$$\Pr\{no\,bribe\,to\,the\ committee\} = (1-\pi) + (1-x)\pi = 1 - \pi x = 1 - \widetilde{\pi}.$$

Equilibria in Pure Strategies.

We check whether the strategic profile $\{x = 1; y = 1\}$ can be an equilibrium of the lobbying game.

When $x = 1$, the lobby offers the committee a monetary contribution $\dfrac{L_C(a_L^*; a_S^*)}{\theta_C}$, the committee accepts and recommends the lobby's optimal policy, so $R = a_L^*$. The floor's beliefs just coincide with the probability of being in the non congruent state of nature, so $\widetilde{\pi} = \pi$.

Thus, given the lobby's strategy, for the floor to be optimal to rubberstamp the committee it must be,

$$(1-\pi)0 - \pi(1-\alpha)B^* \geq -(B^* - B_0)$$

that is, the expected payoff from accepting the recommendation (the left-hand side term of the inequality) must be no smaller than the (certain) payoff of rejecting the recommendation and

keeping the status quo (the right-hand side term). The condition above is equivalent to say the floor optimally rubberstamps the committee if and only if the probability of being in the non congruent state of nature is low enough. That is,

$$\pi \leq \frac{B^* - B_0}{(1-\alpha)B^*} = \widehat{\pi}$$

Given that the floor rubberstamps the committee, by Condition 2 below,

$$\frac{L_C(a_L^*; a_S^*)}{\theta_C} \leq \frac{(1-\alpha)\, B^*}{\theta_F}$$

bribing the committee is, for the lobby, less expensive than bribing the floor for the same policy.

This happens because the lobby conveys information to the floor via his bribes. The floor infers the strategy played by the lobby, learns that the committee is recommending the social optimum and could then extract the "full information bribe" (on the right-hand side of the inequality above).

Last, Condition (3) ensures that bribing for his optimal policy is less costly than bribing for the status quo.

Consequently, if the lobby's participation constraint is met, that is

$$\frac{L_C(a_L^*; a_S^*)}{\theta_C} \leq b^* \left(1 - \beta\right). \tag{PC$_2$}$$

the strategic profile $\{x = 1; y = 1\}$ is an equilibrium of the lobbying game for values of $\pi \leq \widehat{\pi}$.

If instead $\pi > \widehat{\pi}$, the floor optimally rejects the recommendation, that is he plays $y = 0$. If the floor's optimal response is to reject the committee's recommendation, then for the lobby is no more optimal to play $x = 1$.

In fact, condition (1) implies the following,

$$\frac{L_C(a_L^*; a_S^*)}{\theta_C} + \frac{(B_0 - \alpha B^*)}{\theta_F} \leq \frac{L_C(a_L^*; a_S^*)}{\theta_C} + d_0$$

which means that, once the committee has been bribed, it is better for the lobby to make an additional offer to the floor rather than letting him reject the recommendation and pick the status quo, thereby wasting the money already paid. But then, condition (4) implies that the optimal strategy for the lobby is to bribe only to the floor. Notice that, the lobby should pay the floor the *full information bribe,* because bribing implies some information transmission to the floor. Hence, under conditions (1) and (4) the strategic profile $\{x = 1; y = 0\}$ is not sustainable as an equilibrium of the lobbying game.

Last, suppose that the lobby does not bribe the committee, so $x = 0$.

Floor's beliefs become $\widetilde{\pi} = 0$, and therefore the floor's optimal response to the lobby's strategy is to accept the committee's recommendation . But then, by Assumption (3), for the lobby it would be optimal to deviate from his strategy and play instead $x = 1$.

Therefore, the lobbying game has only one possible equilibrium in pure strategies for values of $\pi \leq \widehat{\pi}$.

Equilibria in Mixed Strategies.

Suppose the lobby randomizes between bribing or not the committee, so that $x \in (0, 1)$.

The floor's beliefs about the probability that the committee has received a bribe are $\widetilde{\pi} = \pi x$, as defined above. According to these beliefs, the floor, in order to play a random strategy, must be indifferent between accepting and rejecting the committee's recommendation. That is,

$$-\widetilde{\pi}(1-\alpha)B^* + (1-\widetilde{\pi}) \cdot 0 = -(B^* - B_0) \qquad (i)$$

On the left-hand side there is the floor's expected payoff of rubberstamping the committee. With probability $\widetilde{\pi}$, the committee has been bribed and is recommending the lobby's optimal policy. By accepting the recommendation, the floor will therefore get a disutility $-(1-\alpha)B^*$. With the complementary probability $1-\widetilde{\pi}$, the lobby bribes instead only the floor to get his optimal policy implemented and the floor's payoff is in this case $-(1-\alpha)B^* + C_F^*(a_L^*) = 0$.

On the right-hand side of the equation, there is the floor's expected payoff of rejecting the committee's recommendation. With a probability $\widetilde{\pi}$ the lobby must now pay two bribes, to the committee to make her recommend the lobby's optimal policy and to the floor to prevent him from rejecting the committee's proposal. The floor's disutility net of the contribution received is $-(1-\alpha)B^* + (B_0 - \alpha B^*) = -(B^* - B_0)$, as if the status quo had been implemented. With probability $1-\widetilde{\pi}$, the recommendation suggests the social optimum, and, provided condition (5) below holds,

$$\frac{(1-\alpha)B^*}{\theta_F} \geq d_0$$

the optimal strategy for the lobby is letting the floor reject the recommendation and pick the status quo rather than bribing him for his best policy (*inaction*).

Re-arranging equation (i) yields the lobby's optimal randomization,

$$x^* = \frac{(B^* - B_0)}{\pi(1-\alpha)B^*} = \frac{\widehat{\pi}}{\pi}$$

with $x^* < 1$ for $\pi > \widehat{\pi}$.

Similarly, the floor's optimal mixed strategy y^*, is the one that makes the lobby indifferent between bribing or not bribing the committee. In other words, y^* must be such that:

$$y^* \frac{L_C(a_L^*; a_S^*)}{\theta_C} + (1 - y^*) \left[\frac{L_C(a_L^*; a_S^*)}{\theta_C} + d_0 \right] = \frac{(1-\alpha) B^*}{\theta_F}$$

where, on the left-hand side term there is the lobby's expected payoff of bribing the committee and on the right-hand side instead the lobby's expected payoff of bribing only the floor ($x = 0$). This finally yields,

$$y^* = \left[1 + \left(\frac{L_C(a_L^*; a_S^*)}{\theta_C} - \frac{(1-\alpha) B^*}{\theta_F} \right) \cdot \frac{1}{d_0} \right]$$

with $y^* \geq 0$ by condition (1) and (4) and also $y^* \leq 1$ by Condition (2). ■

Proof of Lemma 3.

Informed committee. A possible strategy for the lobby is to bribe the committee to have his optimal policy recommended. The floor, being informed, would reject the recommendation and implement the status quo. Condition (1) implies however that,

$$\frac{L_C(a_L^*; a_S^*)}{\theta_C} + \frac{B_0 - \alpha B^*}{\theta_F} \leq \frac{L_C(a_L^*; a_S^*)}{\theta_C} + d_0$$

so that, it is optimal for the lobby to make another offer to the floor, to make him rubberstamp the committee, rather than let him pick the status quo.

Alternatively, the lobby can decide to by-pass the committee which, being informed, will then recommend the social optimum. The floor, on his side, in absence of bribes, would accept the recommendation. The best the lobby can do in this situation is bribing the floor to get the status quo implemented instead of the social optimum. In equilibrium, the lobby chooses the first strategy if and only if the following condition is satisfied,

$$\frac{L_C(a_L^*; a_S^*)}{\theta_C} + \frac{B_0 - \alpha B^*}{\theta_F} \leq \frac{B^* - B_0}{\theta_F} + d_0$$

together with the lobby's participation constraint,

$$\frac{L_C(a_L^*; a_S^*)}{\theta_C} + \frac{B_0 - \alpha B^*}{\theta_F} \leq (1 - \beta) b^* \qquad (\text{PC}_4)$$

Uninformed committee. Suppose the lobby bribes the committee for his optimal policy. The contribution to pay is now lower and equal to $\frac{L_C(a_0; a_S^*)}{\theta_C}$, because it must just outweigh the committee's loss of moving from the status quo - the implemented policy in absence of bribes - to the lobby's optimal policy. The floor would reject the recommendation and the lobby, by

condition (1), will additionally bribe the floor to make him accept the recommendation. The overall bribe would be $\frac{L_C(a_0;a_S^*)}{\theta_C} + \frac{B_0 - \alpha B^*}{\theta_F}$.

The lobby may alternatively choose *inaction* - no offer to anyone - thereby having the status quo maintained and bearing a disutility d_0.[15] At the equilibrium, the lobby chooses *inaction* if and only if,

$$\frac{L_C(a_0;a_S^*)}{\theta_C} + \frac{B_0 - \alpha B^*}{\theta_F} \geq d_0$$

which simply means that the lobby's participation constraint is violated. In other words, there is no lobbying game. ■

[15] This is due to the tightness of the closed rule which applies to lobby as well as to the floor. If the lobby does not make an offer to the committee in the first step, the committee recommends the status quo, thereby leaving no choice to the floor.

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