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Abstract

The President and the Senate bargain over the appointment of the Head of a key government department. The operating unit of the department has private information about its operating environment. We model the appointment process as a constrained delegation of policymaking to the operating unit (agency). When the Senate is sufficiently close to the agency the President has to give the agency more authority. On the other hand, given the Senate's ideal point, when the information is more precise the President can tighten delegation bounds.

Keywords Appointments, bargaining, veto-based delegation, constrained delegation.

JEL Classification Numbers D82, H11

1 Introduction

When it comes to political control over bureaucracy, the political appointment process is of significant importance. In this process, the democratically elected President and the members of the Senate; each having different objectives interact in a complex way. For key government departments in the United States of America, the President nominates the Head (the secretary at the U.S. Department of Commerce or the U.S. Department of Labor) while the Senate has the authority to approve or reject the nominee. This process can be viewed as a bargaining game between the elected politicians, and it is arguable who has more bargaining power and how the multiplicity of political actors affects the outcome. Another important issue is that the elected politicians do not have precise information about the department operating environment. The operating units of the department possess such knowledge and usually remain unchanged under different administrations. Although each new administration tries to overcome the problem of poor information, the complexity of the environment inevitably leads to some form of delegation of policymaking authority to the department.

To address the interactions between the multiplicity of political players and the degree of discretion of the operating units of the department we propose a relatively novel concept of the appointment process - one in which a nominee (the Head) interacts with politicians, but plays no real policymaking role. In this paper, we embed a principal-agent problem within the department that is viewed as an organization which consists of two parts, the Head of the department (the principal) and the operating unit (the agency).[1] Although the Head plays the role of principal in this model, his preferences reflect a compromise between the preferred policies of the President who nominates and the Senate which confirms. We assume that the politicians have no precise knowledge of the departmental operating environment.

The model of the appointment process essential in this paper enlists two stages: the first is the bargaining stage in which the President nominates and the Senate confirms the nomination. If the Senate disapproves the nomination, then the prevailing policy is defined by the status quo, given the agency's complete authority over decisions. The second stage involves departmental policymaking. This stage is modeled as a veto-based delegation: the operating unit initiates the policy and the Head approves it or vetoes it. Thus, the department is given a certain degree of discretion which is limited by the Head's veto-power. This degree of departmental discretion is the outcome of the bargaining process between the elected politicians in the first stage and it depends on the relative bargaining power of politicians. It is convenient for our purposes to define the political weight of the politician in bargaining as the ability to move the department towards his or her preferred policy.

The principal-agent approach to the appointment process allows a consideration of two related objectives.[2] First, to study a comparative statics question, we ask how the extent of authority given to the agency changes as the degree of congruence between the Senate and the agency varies. Second, we investigate the effect of different informational structures on the delegation bounds.

To understand how informational asymmetries shape the policy design, we start with the appointments made by the President without the approval stage of the Senate (presidential dominance). In designing the delegation set, within which the agency is given an authority to make a policy, the President faces a basic trade-off between using the department's information and keeping control of policymaking. This trade-off determines the bounds of the optimal delegation set. The main outcome from the presidential dominance appointment is that the closer the agency is to the President, the more delegation to the agency is implied. On the other hand, with the Senate's approval it is possible, in a simple way, to aggregate the preferences of politicians with different ideal policies. This aggregation of preferences results in the new "government" which is closer to the agency than the President. This implies more delegation to the operating unit of the department. The political weight of the Senate is endogenous to the model and it increases when there is an asymmetry of information, hence an uncertainty has positive effect on the Senate's weight. When the Senate is sufficiently close to the department, the fact that the Senate's weight in bargaining is endogenous implies that some delegation is possible regardless of the President's ideal policy. Conversely, the presidential weight increases when more precise prior information is available. An agency will be given less discretion, and in the limit, when the information is complete, the politicians' control pins down to strict recommendations on which policy to implement.

The earlier appointment theories featured dyads of a bureau and a government institution. Moe (1989, 1990) claimed presidential dominance in the appointment process. Significant presidential influence is supported by the fact that presidential nominees for executive office are almost always confirmed by the Senate (Hammond and Hill, 1993). Recent appointment literature added Congress to the presidential dominance models. Calvert et al. (1989), Hammond and Hill (1993), Nokken and Sala (2000), McCarty and Ragazhian (2000), and Chang (2001) concluded that although the President has agenda-setting power in the appointment process, he must take into account the Senate's preferences.[3]

The idea that the appointee plays no role in policymaking but reflects the result of the bargaining between the political principals is not new in the appointment literature. This idea originated in Romer and Rothenthal's (1978) classic model of agenda-setting, and was then applied by Snyder and Weingast (2000) in their study of different appointment theories.[4] Snyder and Weingast (2000) consider a two-stage model of the appointment process, where in the first stage the President and the Senate bargain over the target policy and in the second stage the agency makes a policy. However, they did not make an informational distinction between the department and politicians. In this paper we explicitly incorporate this informational distinction by modelling the departmental policymaking stage as one of veto-based delegation.

The literature on veto-based delegation includes, among others, the influential paper by Gilligan and Krehbiel (1987) on information transmission in committees. This paper shows that veto-based delegation is the optimal way to elicit information from a privately informed agency. This kind of delegation is closely related to constrained delegation, that is when the principal commits to constrain agency policymaking to a certain set of choices (the delegation set). In particular, Melumad and Shibano (1994) and Mylovanov (2005) indicate that under some natural conditions veto-based delegation is equivalent to constrained delegation. These papers suggest the method which we apply here. Instead of considering the veto-based delegation we apply an equivalent formulation of the problem as a constrained delegation. This allows a view of the appointment process as the establishment of the bounds of the delegation set which reflects a compromise between the interested politicians.

Holmström (1984) established the existence of the optimal delegation set in a model with quadratic preferences. The optimal delegation sets for the large domain of single-peaked preferences when the agency reports their peaks only was characterized in Moulin (1980). He showed that any strategy-proof voting scheme is equivalent to the generalized median rule. Using the smaller class of quadratic single-peaked preferences, Martimort and Semenov (2006) recovered Moulin's result and provided simple conditions for the interval optimal delegation set. Alonso and Matouschek (2005) consider a general problem of constrained delegation.

The remainder of the paper is organized as follows. The next section presents the model and a complete information benchmark. In Section 3, we develop the model in presence of asymmetric information and the approval stage. In Section 4, we study the effect of information content of distribution on delegation patterns. Some concluding remarks are given in Section 5.

2 The outline of the model

We consider a setting where a policy alternative q (such as trade tariffs, regulated prices, or pollution standards) must be chosen by a key government department. The set of policy alternatives q is represented by the compact set $A \subset \mathbf{R}$. The department consists of two parts, the Head and the operating unit. The operating unit of the department, which we call the agency, initiates the policy q and the Head approves or vetoes it. If the Head vetoes the initiated policy the default option d prevails. The delegation nexus in the model arises because the agency has private information about the departmental operating environment $\theta \in \left[\underline{\theta}, \overline{\theta}\right] \subset A$, which is taken for simplicity to be the agency's ideal point. The Head of the department is subject to the appointment by the politicians (the President and the Senate). The President and the Senate do not observe θ, but have common prior beliefs that are distributed according to $F(\theta)$.

The payoff function of the agency $U(q, \theta)$ is quadratic with the peak at θ : $U(q, \theta) = -\frac{1}{2}(q-\theta)^2$. The politicians, the President (P) and the Senate (S), have single-peaked preferences which we assume for simplicity are also quadratic: $V_i(q, \theta, \delta_i) = -\frac{1}{2}(q-\theta-\delta_i)^2$ for $i \in \{P, S\}$. For the politician i, $q^i(\theta) = \theta + \delta_i$ is the ideal policy.[5] The parameters δ_P and δ_S represent the corresponding ideological distances or biases in the preferences of the politicians compared to the agency's ideal point.[6] All payoffs are common knowledge.

2.1 *Timing*

We model the appointment process as a two-stage game. In the first stage the politicians bargain over the candidacy of the Head and this bargain determines the Head's preferences. The status quo policy which will be implemented should the bargain fail is taken to be the agency's ideal point: $q^{SQ}(\theta) = \theta$.

The second stage specifies the policymaking process in the department. This stage of the appointment process is modelled as a veto-based delegation. The veto-based delegation as follows: Suppose that the Head of the department is appointed. Then the operating unit initiates a policy $q(\theta)$ which depends on its private information. The Head updates her beliefs about θ and then either approves or vetoes the policy, in which case the *strategic* default arrangement d is implemented. There is no commitment at this stage on which policy to approve or reject.

Melumad and Shibano (1994, the Summary Theorem) and Mylovanov (2005, the Veto-Power Principle) show that the equilibrium of the veto-based delegation replicates the outcome of constrained delegation.[7] The intuition for the replication result is the following: When the preferences are quadratic and the bias of the politician is positive, the optimal delegation set has a form $D_P = \left[\widehat{\theta}_P, \overline{\theta}\right]$, with some cut-off $\widehat{\theta}_P$ (for example, see Martimort and Semenov 2006). If the politician sets the default option $d = \widehat{\theta}_P$, then in the veto-based delegation game if the agency chooses the policy above $\widehat{\theta}_P$, the politician updates his beliefs and approves the policy. This is optimal for the politician since the default option is further away from his ideal point. Any off-the-equilibrium policies $q < \widehat{\theta}_P$ will be vetoed. For example, this is optimal if the politician believes that $\theta = q$. Given that strategy, the equilibrium strategy of the agency is $q(\theta) = \theta$ if $\theta \geq \widehat{\theta}_P$ and $q(\theta) = \widehat{\theta}_P$ otherwise. This example shows that any delegation set with one cut-off can be implemented as equilibrium of the veto-based delegation game. What is important for us is that the politician chooses the default option in such a way that the equilibrium of the veto-based delegation game replicates the optimal delegation set of the constrained delegation game. In a constrained delegation the Head proposes a set $\{q(\theta)\}_{\theta\in\Theta}$, and the agency has discretion to choose any policy from this set. This set $D = \{q(\theta)\}_{\theta\in\Theta}$, following Alonso and Matouschek (2005), is called a *delegation set*.

The general game unfolds as follows: First the agency acquires the relevant information, which is known only to the agency. Then the President makes a take-it-or-leave-it offer to the Senate regarding the appointment of the Head or, equivalently, over the delegation set D. When a compromise is achieved, the Head of the department is appointed and the operating unit initiates a policy $q \in D$. If the bargain between politicians fails the agency is free to choose its ideal point that is the status quo.

2.2 *Presidential dominance, delegation set*

Assume in this subsection that the Senate is excluded from the appointment process and the President is free to appoint the Head of the department. This way of interpreting the appointment process is sometimes referred as the presidential dominance (Moe 1989, 1991). Note that if θ is common knowledge then the President appoints a candidate who implements the presidential ideal policy, $\theta + \delta_P$. In the case when θ is private information the President appoints the Head who proposes a delegation set $D_P = \{q(\theta)\}_{\theta\in\Theta}$, and the agency has discretion to choose any policy from this set. In this paper we focus on the interval delegation sets, i.e., when the agency is constrained only above and below. To obtain this useful property of constrained delegation we assume that the distribution $F(\theta)$ satisfies the following Assumption:

Assumption 1A. The distribution $F(\cdot)$ is a log-concave function with a differentiable density f such that $f(\theta) - \delta f'(\theta) > 0$ for all θ.[8]

Martimort and Semenov (2006) show that the optimal policy $\{q(\theta)\}_{\theta\in\Theta}$ in a setting satisfying Assumption 1A is continuous and, therefore, the corresponding delegation set $D = \{q(\theta)\}_{\theta\in\Theta}$ is an interval. The following Lemma provides the description of this set.

Lemma 1 (Martimort and Semenov 2006) *Assume that the bias of the President is positive,* $\delta_P > 0$*. The optimal delegation set is the interval,* $D_P = \left[\widehat{\theta}_P, \overline{\theta}\right]$*, where the cut-off* $\widehat{\theta}_P$ *is uniquely defined by the condition:*

$$\delta_P = \frac{1}{F\left(\widehat{\theta}_P\right)} \int_{\underline{\theta}}^{\widehat{\theta}_P} F(\theta)\, d\theta. \tag{1}$$

The optimal policy $q(\theta)$ corresponding to the delegation set $D_P = \left[\widehat{\theta}_P, \overline{\theta}\right]$ is rigid on the interval $\left[\underline{\theta}, \widehat{\theta}_P\right]$, $q(\theta) = \widehat{\theta}_P$, and on the interval $\left[\widehat{\theta}_P, \overline{\theta}\right]$ it is identical to the agency's ideal policy, $q(\theta) = \theta$. This policy can be represented as[9]

$$q(\theta) = \min\left\{\theta, \widehat{\theta}_P\right\}. \tag{2}$$

The agency cannot make a policy below $\widehat{\theta}$, otherwise the policy choice is not restricted. The choice of the delegation bound highlights the trade-off faced by the President in designing the optimal delegation set. The President wants to know the agency's ideal policy in order to implement his preferred policy $q^P(\theta) = \theta + \delta_P$; however, this policy is not incentive compatible. Therefore, he has to balance between the rigid policy, which is closer in average to his preferred policy and the agency's ideal policy. The cut-off value $\widehat{\theta}_P$ in (1) reflects the balance between the two types of policies. In particular, when the agency is closer to the President it is given more discretion since the trade-off goes in favor of the agency's ideal policy.

Denote $\delta_P^{\max} = \int_{\underline{\theta}}^{\overline{\theta}} F(\theta)\, d\theta$ as the maximum bias of the President when the non-trivial delegation is possible, i.e., the delegation set $D_P = \left[\widehat{\theta}_P, \overline{\theta}\right]$ is not a singleton.

Example 1 *For a uniform distribution on* $[0,1]$, *a constrained delegation is possible for all* $\delta_P < \delta_P^{\max} = \frac{1}{2}$. *The optimal policy has the form (2) with the cut-off:*

$$\widehat{\theta}_P = \frac{1}{F\left(\widehat{\theta}_P\right)} \int_{\underline{\theta}}^{\widehat{\theta}_P} F(\theta)\, d\theta = 2\delta_P. \tag{3}$$

Thus the President delegates to the agency the right to choose the policy on the interval $D_P = [2\delta_P, 1]$.

2.3 *Bargain over appointment*

In contrast to the presidential dominance appointment, now the President and the Senate bargain when they are faced with an appointment opportunity. We model this stage as a simple take-it-or-leave-it bargaining game. As the veto-based delegation in our setting is equivalent to the constrained delegation over the set $D_{P,S} = \left[\widehat{\theta}_{P,S}, \overline{\theta}\right]$, the natural way to address the bargain between the President and the Senate is related to the choice of the default option $d = \widehat{\theta}_{P,S}$.

Consider first the possible pairs (δ_P, δ_S). Note that for $\delta_S \geq \delta_P \geq 0$ the optimal Senate-constrained policy coincides with the optimal policy for presidential dominance, $\widehat{\theta} = \widehat{\theta}_P$. The presidential proposal calls for more delegation than the Senate wishes, but the complete delegation which is a status quo is even worse for the Senate. When δ_S and δ_P are of different signs, i.e., the ideal points of the politicians lie on different sides of the agency's ideal point, the President cannot find a better solution than to propose the agency's ideal point as the policy. It is not surprising that the Senate agrees with the proposal, and the agency always implements the status quo.[10] Summarizing, in order to have a non-trivial problem, it is reasonable to consider only pairs (δ_P, δ_S) with $\delta_P \geq \delta_S \geq 0$.

Assumption 2. From now on we assume that $\delta_P \geq \delta_S \geq 0$, i.e., the President has a greater bias than the Senate.

2.4 *Complete Information Benchmark*

When θ is a common knowledge the model has a simple spatial structure; the Senate will approve of all the presidential proposals which are closer to its ideal point than the status quo. Formally, the President has to solve the following optimization problem:

$$\max_q V_P(q, \theta, \delta_P) = -\frac{1}{2}(q - \theta - \delta_P)^2, \tag{4}$$

subject to the Senate's constraint:

$$V_S(q, \theta, \delta_S) = -\frac{1}{2}(q - \theta - \delta_S)^2 \geq V_S\left(q^{SQ}(\theta), \theta, \delta_S\right) = -\frac{\delta_S^2}{2}. \tag{5}$$

If the President proposes his ideal point, $q^P(\theta) = \theta + \delta_P$, the Senate will approve that policy if, and only if, it is closer to its ideal point than to the status quo θ. Hence, if $2\delta_S \geq \delta_P$, then the presidential proposal is approved by the Senate. If $2\delta_S < \delta_P$, then, if the President proposes his ideal point, the Senate rejects it and the agency is free to implement the status quo. The President is then ready to offer the policy which is less than his ideal point, and this policy has to be equidistant for the Senate to the status quo, $q^*(\theta) = \theta + \min\{2\delta_S, \delta_P\}$.

The political weight of the Senate in the bargaining process can be expressed by the Lagrange multiplier $\lambda = \lambda^c$ of the constraint (5):

$$\lambda^c = \max\left\{0, \frac{\delta_P - 2\delta_S}{\delta_S}\right\}. \tag{6}$$

This multiplier reflects the fact that it is harder for the Senate to exploit its confirmation authority if the status quo is far away (δ_S is large). On the other hand if the President is ideologically more distant (δ_P is large) the Senate has more political weight.

In this section we defined the model and considered two benchmarks: presidential dominance under private information and bargaining between the President and the Senate under complete information. As a convenience, Table 1 presents each parameter references in the paper.

Table 1: Parameters in the model

Parameter	Interpretation	Range
q	policy alternative	$A \subset \mathbf{R}$
θ	agency's ideal point	$\left[\underline{\theta}, \overline{\theta}\right] \subset A$
$\delta_P, \delta_S, \delta_{P,S}$	biases of the politicians	$\mathbf{R}_+ = [0, \infty)$
$\widehat{\theta}_P, \widehat{\theta}_{P,S}$	cut-offs	$\left[\underline{\theta}, \overline{\theta}\right]$
$D_P, D_{P,S}$	delegation sets	$2^{\left[\underline{\theta}, \overline{\theta}\right]}$
σ	information content of $F(\theta)$	$\mathbf{R}_+$
λ^c, λ	political weights of the Senate	$\mathbf{R}_+$

3 Constrained delegation with an approval stage

Assuming that the parameter θ is private information to the agency, the delegation set is an interval $D = \left[\widehat{\theta}, \overline{\theta}\right]$, with the corresponding policy:

$$q(\theta) = \min\left\{\theta, \widehat{\theta}\right\}, \tag{7}$$

where the cut-off $\widehat{\theta}$ represents the lower bound of delegation. The expected utility of the political player $i \in \{P, S\}$ is then given by

$$E_\theta V_i\left(\widehat{\theta}\right) = -\frac{1}{2}\left\{\int_{\underline{\theta}}^{\widehat{\theta}} \left(\widehat{\theta} - \theta - \delta_i\right)^2 dF(\theta) + \delta_i^2\left(1 - F\left(\widehat{\theta}\right)\right)\right\}.$$

The first integral member in the above expression represents the expected payoff corresponding to the rigid part of the policy (7): $q(\theta) = \widehat{\theta}$. Second term corresponds to the flexible part of the policy: $q(\theta) = \theta$.

The bargaining problem between the President and the Senate results in the maximization of the expected utility of the President:

$$\max_{\widehat{\theta}} -\frac{1}{2}\left\{\int_{\underline{\theta}}^{\widehat{\theta}}\left(\widehat{\theta}-\theta-\delta_P\right)^2 dF(\theta)+\delta_P^2\left(1-F\left(\widehat{\theta}\right)\right)\right\}, \tag{8}$$

subject to the Senate's constraint:

$$-\frac{1}{2}\left\{\int_{\underline{\theta}}^{\widehat{\theta}}\left(\widehat{\theta}-\theta-\delta_S\right)^2 dF(\theta)+\delta_S^2\left(1-F\left(\widehat{\theta}\right)\right)\right\} \geq E_\theta V_S\left(q^{SQ}(\theta),\theta,\delta_S\right). \tag{9}$$

$E_\theta V_S\left(q^{SQ}(\theta),\theta,\delta_S\right) = -\frac{\delta_S^2}{2}$ is the expected utility of the Senate under the status quo policy: $q^{SQ}(\theta) = \theta$. Thus the problem of the President is to find the lowest bound of discretion of the agency $\widehat{\theta}_{P,S}$ that makes the Senate at least as well off as under the status quo in expected terms.

Denoting $\lambda \geq 0$ as the Lagrange multiplier associated with the Senate's constraint (9), we have the following characterization of the optimal delegation set:

Lemma 2 *The optimal delegation set in the Senate-constrained problem* $D_{P,S} = \left[\widehat{\theta}_{P,S},\overline{\theta}\right]$ *is characterized by the cut-off* $\widehat{\theta}_{P,S}$ *determined from the equation*

$$\delta_{P,S} = \frac{1}{F\left(\widehat{\theta}_{P,S}\right)}\int_{\underline{\theta}}^{\widehat{\theta}_{P,S}} F(\theta)\,d\theta, \tag{10}$$

where the bias

$$\delta_{P,S} = \frac{\delta_P+\lambda\delta_S}{1+\lambda} \in [\delta_S,\delta_P]. \tag{11}$$

Since the Senate prefers more delegation than the President the bargain results in the intermediate range of delegation corresponding to the delegation set $D_{P,S} = \left[\widehat{\theta}_{P,S},\overline{\theta}\right]$, where $\widehat{\theta}_{P,S} \leq \widehat{\theta}_P$. The policy $q(\theta) = \min\left\{\theta,\widehat{\theta}_{P,S}\right\}$ is more moderate than it would be in the absence of the Senate. The President has to distort the policy towards the Senate's interests; otherwise the policy will be rejected. So, the status quo $q^{SQ}(\theta) = \theta$ is more attractive for the Senate from the ex-ante perspective than the presidential dominance policy $q(\theta) = \min\left\{\theta, \widehat{\theta}_P\right\}$ depicted on Figure 1 by dashed line. The Senate's optimal policy would be much lower, but since it is the President who proposes the Head, the compromise policy (the solid line) gives the Senate exactly the same expected payoff as the status quo. As a result, the optimal delegation set $D_{P,S} = \left[\widehat{\theta}_{P,S}, \overline{\theta}\right]$ assumes more delegation than the President-only delegation set $D_P = \left[\widehat{\theta}_P, \overline{\theta}\right] : D_P \subset D_{P,S}$. The cut-off $\widehat{\theta}_{P,S}$ implicitly defined by (10) reflects the compromise between the desire of the President to have more control and the Senate's preferences for more delegation.

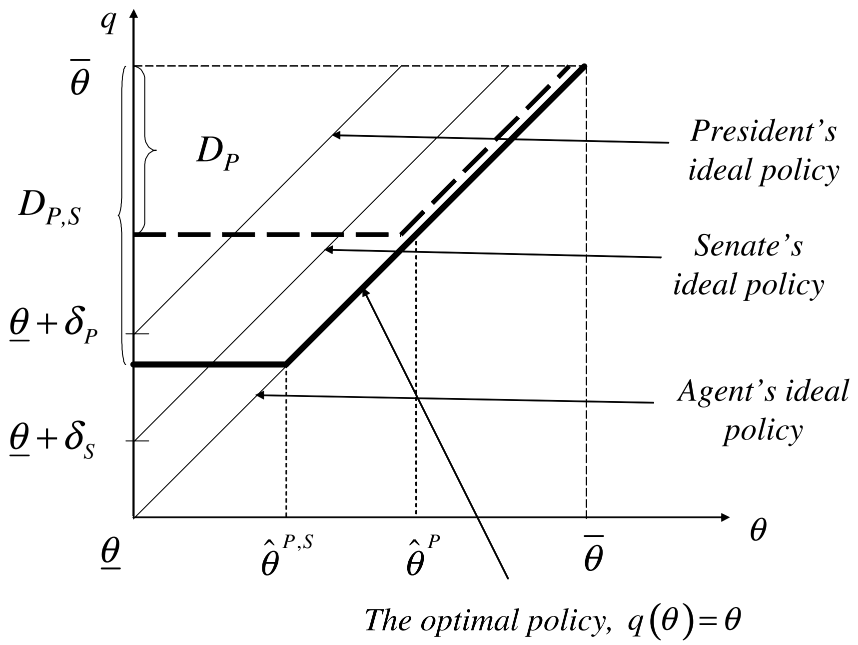

Figure1. Optimal delegation set and policy.

The bargain between the President and the Senate leads to the problem similar to the presidential dominance case where the "President" can be treated as an aggregated government with bias $\delta_{P,S} \in [\delta_S, \delta_P]$. The agency is closer to this aggregated government than the President and, therefore, it has more discretion.

As in the complete information benchmark we may associate the political weight of the Senate with the Lagrange multiplier λ of the Senate's constraint (9). If $\lambda = 0$, then the

Senate has no political weight in bargaining and the President is not restricted in designing the optimal policy. The bias of the aggregated government is the one whereby $\delta_{P,S} = \delta_P$. The cut-off $\widehat{\theta}_{P,S} = \widehat{\theta}_P$ can be drawn from the same expression (1) which characterizes the case of presidential dominance. If $\lambda > 0$, then the Senate's constraint (9) is binding, and the cut-off $\widehat{\theta}_{P,S}$ is given by

$$\delta_S = \frac{1}{\int_{\underline{\theta}}^{\widehat{\theta}_{P,S}} F(t)\, dt} \int_{\underline{\theta}}^{\widehat{\theta}_{P,S}} \left[\int_{\underline{\theta}}^{\theta} F(t)\, dt \right] d\theta. \tag{12}$$

Equations (1) and (12) allow us to study the comparative statics question of interest, namely how changes in the bias of the Senate δ_S affect the delegation bounds. The justification for the choice of δ_S as a changing parameter is two-fold: First, the Senate's elections are held twice as often as the presidential ones. Second, only one-third of the Senate stands for reelection every two years.

Proposition 1 *At the Senate approval stage there exists a cut-off level of the Senate's bias with the agency* $\delta_S^* \in [0, \delta_P]$ *so that:*

i) For all $\delta_S \geq \delta_S^*$ *the Senate has no influence on the President in choosing the optimal delegation bounds;*

ii) For all $\delta_S < \delta_S^*$ *the lower bound* $\widehat{\theta}_{P,S}$ *of the optimal delegation set* $D_{P,S} = \left[\widehat{\theta}_{P,S}, \overline{\theta}\right]$ *is characterized by (12). The agency is given more authority compared to the presidential dominance.*

Proof. The right-hand sides of (1) and (12) determine the increasing functions

$$\varphi(\theta) = \frac{1}{F(\theta)} \int_{\underline{\theta}}^{\theta} F(x)\, dx, \text{ and } \psi(\theta) = \frac{1}{\int_{\underline{\theta}}^{\theta} F(t)\, dt} \int_{\underline{\theta}}^{\theta} \left[\int_{\underline{\theta}}^{x} F(t)\, dt \right] dx,$$

with the graph of $\varphi(\theta)$ situated strictly above the graph of $\psi(\theta)$, $\varphi(\theta) > \psi(\theta)$. Therefore there exists a unique level of Senate bias $\delta_S^* < \delta_P$, determined by

$$\delta_S^* = \psi\left(\varphi^{-1}(\delta_P)\right), \tag{13}$$

for which the cut-off value $\widehat{\theta}(\delta_S^*) = \varphi^{-1}(\delta_S^*)$ is equal to the cut-off for the President-only optimal policy $\widehat{\theta}_P = \psi^{-1}(\delta_P)$. It follows by construction that for cut-offs δ_S greater than δ_S^* and the constraint of the Senate is not binding. Indeed, because of the log-concavity of F, $\widehat{\theta}(\delta_S) < \widehat{\theta}(\delta_S^*) = \widehat{\theta}_P$ and we obtain

$$\frac{1}{\int_{\underline{\theta}}^{\widehat{\theta}_P} F(t)\,dt} \int_{\underline{\theta}}^{\widehat{\theta}_P} \left[\int_{\underline{\theta}}^{\theta} F(t)\,dt\right] d\theta > \frac{1}{\int_{\underline{\theta}}^{\widehat{\theta}(\delta_S)} F(t)\,dt} \int_{\underline{\theta}}^{\widehat{\theta}(\delta_S)} \left[\int_{\underline{\theta}}^{\theta} F(t)\,dt\right] d\theta = \delta_S.$$

Then the Senate constraint is slack the political weight of the Senate, λ, is zero. When $\delta_S < \delta_S^*$ we have $\widetilde{\delta} < \delta_P$; therefore the political weight of the Senate is strictly positive. Since in this case $\widehat{\theta}(\delta_S) < \widehat{\theta}_P$, the introduction of the approval procedure by the Senate benefits the agency by allowing more delegation compared to the presidential dominance case. The optimal policy is uniquely characterized by $\widehat{\theta} = \min\left\{\varphi^{-1}(\delta_P), \psi^{-1}(\delta_S)\right\}$. ■

3.1 *Discussion and example*

This proposition portrays the crucial role played by the Senate in the appointment process when it is not too far away from the agency. The hidden cooperation with the agency allows the Senate to exploit its confirmation authority in order to influence the presidential nomination decision. From Figure 1, the Senate's ideal policy $q^S(\theta) = \theta + \delta_S$ in the middle of the state space is closer to the rigid part of the President-only optimal policy (dashed line) than to the agency ideal policy. However, this comes at the cost of more distanced policy on the left tail of the state space. If the distribution puts sufficient weight on this tail (as with a uniform distribution), it is more profitable for the Senate to turn to the status quo. To prevent this outcome, the President has to distort his proposal downward (solid line). Intuition says that if the prior puts less weight to the tails (as for the normal case) the President does not have to distort the policy too much. In any case for sufficiently small conflicts, the Senate values information more than control and it has more political weight in forcing the decision towards delegation. If the President is significantly biased, then there is too little delegation in the President's optimal policy so the Senate interferes in the appointment process.

Example 2 (Uniform distribution.) *For a uniform distribution $f \sim Uniform\,[0,1]$:*

$$\varphi(\theta) = \frac{1}{F(\theta)} \int_0^\theta F(x)\,dx = \frac{\theta}{2}, \text{ and } \psi(\theta) = \frac{1}{\int_0^\theta F(t)\,dt} \int_0^\theta \left[\int_0^x F(t)\,dt \right] dx = \frac{\theta}{3}.$$

The threshold conflict δ_S^* defined by (13) is $\delta_S^* = \psi\left(\varphi^{-1}(\delta_P)\right) = \frac{2}{3}\delta_P$.

Let us fix the bias of the President, $\delta_P = \frac{1}{3}$, and the Senate, $\delta_S = \frac{1}{6}$. Then the threshold level after which the Senate has no weight in the bargain is $\delta_S^* = \frac{2}{3}\delta_P = \frac{2}{9}$. Since $\delta_S = \frac{1}{6} < \delta_S^*$, the weight of the Senate in bargain is non-zero and equal to:

$$\lambda = \frac{2\delta_P - 3\delta_S}{\delta_S} = 1.$$

The bias of the Senate-constrained problem is given by (11): $\delta_{P,S} = \frac{\delta_P + \lambda\delta_S}{1+\lambda} = \frac{1}{4}$. Hence, the lower bound of the delegation set $\widehat{\theta}_{P,S} = 2\delta_{P,S} = \frac{1}{2}$.

Under presidential dominance the delegation set is determined by the lower bound $\widehat{\theta}_P$ from (3), $\widehat{\theta}_P = 2\delta_P = \frac{2}{3}$.

Note that under complete information $\lambda^c = \frac{\delta_P - 2\delta_S}{\delta_S} = 0$. Since the Senate's ideal point is half-way between the ideal points of the agency and the President, the Senate cannot exploit its closeness to the agency and the resulting policy will be as if there were no agency. Instead, under asymmetric information the Senate has positive weight and the resulting policy gives more authority to the agency: $\widehat{\theta}_P = \frac{2}{3} > \widehat{\theta}_{P,S} = \frac{1}{2}$.

Let us change the Senate's bias, $\delta_S = \frac{1}{12}$*. Then* $\widehat{\theta}_{P,S} = \frac{1}{4}$*, and the agency is delegated policymaking over* $D_{P,S} = \left[\frac{1}{4}, 1\right]$*. In general, when* $\delta_S \to 0$*, then* $\lambda = \frac{2\delta_P - 3\delta_S}{\delta_S} \to \infty$ *and* $\widehat{\theta}_{P,S} = 2\left(\frac{\delta_P + \lambda\delta_S}{1+\lambda}\right) \to 0$*. In the limit, since there is no conflict of interests, the agency is granted full freedom to make policy.*

The maximum bias in (12) which allows for a constrained delegation is for $\widehat{\theta}_{P,S} = \overline{\theta}$. This leads to

Corollary 1 *If* $\delta_S < \delta_S^{\max} = \frac{1}{\int_{\underline{\theta}}^{\overline{\theta}} F(t)dt} \int_{\underline{\theta}}^{\overline{\theta}} \left[\int_{\underline{\theta}}^{x} F(t)\, dt \right] dx$ *then there is always a constrained delegation of policymaking to the agency.*

Comparing $\delta_S^{\max}$ with the highest ideological distance $\delta_P^{\max}$ of the President when the constrained delegation is possible under the presidential dominance appointment yields

$$\delta_S^{\max} = \frac{1}{\int_{\underline{\theta}}^{\overline{\theta}} F(t)\, dt} \int_{\underline{\theta}}^{\overline{\theta}} \left[\int_{\underline{\theta}}^{x} F(t)\, dt \right] dx \leq \delta_P^{\max} = \int_{\underline{\theta}}^{\overline{\theta}} F(\theta)\, d\theta. \tag{14}$$

The agency is always delegated policymaking rights on some interval if the bias of the Senate is not too large irrespective of the presidential ideological distance. Compared to the presidential dominance appointment, even if the President's bias is great and does not allow for delegation in the absence of the Senate, with the Senate, it is still possible to have constrained delegation. To gain intuition assume that the bias of the President δ_P is large, so that there is no delegation in the presidential dominance appointment: $\widehat{\theta}_P = \overline{\theta}$. As can be seen from Figure 1 this policy will never pass the Senate's confirmation if the bias of the Senate is not too high. The status quo policy is more attractive for the Senate than the rigid policy $q(\theta) = \overline{\theta}$. So, although the President has the right to propose any alternative, his position may be weakened by the implicit cooperation between the agency and the Senate.

It is difficult to compare the weight of the Senate under asymmetric information and its complete information analog. The status quo policy is no longer a point - rather, it is a rule which depends on the state of nature. However, one can compare the $\lambda = \max\left\{0, \frac{2\delta_P - 3\delta_S}{\delta_S}\right\}$ under uniform priors with $\lambda^c = \max\left\{0, \frac{\delta_P - 2\delta_S}{\delta_S}\right\}$ in the complete information benchmark. This leads to

$$\lambda > \lambda^c.$$

More about this inequality will be given in the next Section where we will see the effect the information content of the prior distribution has on the bounds of delegation.[11] In this case it is possible explicitly to relate the weight of the Senate under asymmetric information to its complete-information analog.

4 Information content of distribution

In this Section we study the impact of the information content of the prior distribution on the bounds of the delegation set. Some of the regulatory agencies or federal departments are better known to the general public and/or to the politicians owing to media publicity. Some may operate in an environment in which special knowledge is not required. What happens if the politicians have more accurate information about the distribution of the ideal points of the agency? In the absence of the Senate, the President benefits from the information content because prior information itself allows the principal to design a policy and the information privately held by the agency becomes less important. We will show that this effect is still present with the Senate's approval of appointments, although it is less pronounced.

Assume that the status quo θ is normally distributed, $\theta \sim N\left(0, \frac{1}{\sigma^2}\right)$, where σ, the inverse of standard deviation, is the measure of the information content of the distribution.

In our framework the politicians delegate policymaking in the interval D.[12] Since the normal distribution does not satisfy Assumption 1A we need another assumption to obtain an interval delegation set.

Assumption 1B. $\delta_P \geq \delta_S > \frac{1}{\sigma}\sqrt{\frac{2}{\pi}}$.

For our purposes this Assumption is not restrictive since we are interested in the effect of increase of information content σ. The optimal policy under the Assumption 1B is continuous (see Semenov 2005, Proposition 2.2., p. 55). and, therefore, the delegation set is an interval. To see the effect of the information content of distribution on delegation bounds we fix the biases δ_P and δ_S, where $\delta_P \geq \delta_S > \frac{1}{\sigma}\sqrt{\frac{2}{\pi}}$. The optimal policy is then $q(\theta,\sigma) = \max\left\{\theta, \widehat{\theta}_{P,S}(\sigma)\right\}$, where $\widehat{\theta}_{P,S}(\sigma)$ is characterized by

$$\delta_{P,S}(\sigma) = \frac{1}{F\left(\widehat{\theta}_{P,S}(\sigma),\sigma\right)} \int\limits_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)} F(\theta,\sigma)\, d\theta. \tag{15}$$

In the above expression the bias $\delta_{P,S}(\sigma) = \frac{\delta_P + \lambda(\sigma)\delta_S}{1+\lambda(\sigma)}$, where the Senate's political weight, $\lambda = \lambda(\sigma)$ is a function of the information content of the distribution. For a fixed level of the information content σ, either the Senate has no political weight, $\lambda(\sigma) = 0$, or $\lambda(\sigma) > 0$ in which case the cut-off level $\widehat{\theta}_{P,S}(\sigma)$ is given by

$$\delta_S = \frac{1}{\int\limits_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)} F(t,\sigma)\, dt} \int\limits_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)} \int\limits_{-\infty}^{x} F(t,\sigma)\, dt dx. \tag{16}$$

We rewrite (15) as

$$\delta_{P,S}(\sigma) = \widehat{\theta}_{P,S}(\sigma) - \frac{1}{\sigma^2 F\left(\widehat{\theta}_{P,S}(\sigma),\sigma\right)} \int\limits_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)} \theta f(\theta,\sigma)\, d\theta,$$

hence $\widehat{\theta}_{P,S}(\sigma) \underset{\sigma\to\infty}{\longrightarrow} \delta^{\infty}_{P,S}$, where $\delta^{\infty}_{P,S}$ is the limit of the bias $\delta_{P,S}(\sigma)$. The normal distribution $N\left(0, \frac{1}{\sigma^2}\right)$ for a very small parameter σ can be approximated by the uniform distribution with support $[-R, R]$ for R great enough and when $\sigma \to \infty$ it converges to the case of complete information. Therefore, the limit $\delta_{P,S}^{\infty}$ is equal to the complete information bias: $\delta_{P,S}^{\infty} = \frac{\delta_S+\delta_P}{2}$. Since in the case of a uniform distribution (see example) $\delta_S^{*} = \psi\left(\varphi^{-1}(\delta_P)\right) = \frac{2}{3}\delta_P$, we have the following:

Lemma 3 *a) The political weight of the Senate is equal to zero if* $\delta_S \geq \frac{2}{3}\delta_P$, *b) If* $\frac{1}{2}\delta_P < \delta_S < \frac{2}{3}\delta_P$ *then there exists* σ^{*} *such that* $\forall\sigma < \sigma^{*},\ \lambda(\sigma) > 0$ *and* $\forall\sigma \geq \sigma^{*},\ \lambda(\sigma) = 0$, *c) If* $0 \leq \delta_S \leq \frac{1}{2}\delta_P$ *then* $\forall\sigma,\ \lambda(\sigma) > 0$.

The next Proposition says that more precise information leads to a smaller delegation set.

Proposition 2 *As the information content of* $F(\theta,\sigma)$ *increases, the President gives less authority to the agency, i.e., the cut-off level* $\widehat{\theta}_{P,S}(\sigma)$ *is an increasing function of the information content of the distribution* σ : $\frac{d}{d\sigma}\widehat{\theta}_{P,S}(\sigma) > 0$.

Proof. From (16) it follows that $\int_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)}\left(\widehat{\theta}_{P,S}(\sigma) - \theta - \delta_S\right)F(\theta,\sigma)\,d\theta = 0$. Differentiating this equation with respect to σ yields

$$\frac{d\widehat{\theta}_{P,S}(\sigma)}{d\sigma}\left[\int_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)} F(\theta,\sigma)\,d\theta - \delta_S F\left(\widehat{\theta}_{P,S}(\sigma),\sigma\right)\right] + \int_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)}\left(\widehat{\theta}(\sigma) - \theta - \delta_S\right)F_{\sigma}(\theta,\sigma)\,d\theta = 0.$$

Thus the sign of $\frac{d\widehat{\theta}_{P,S}(\sigma)}{d\sigma}$ is the same as the sign of the expression

$$-\int_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)}\left(\widehat{\theta}_{P,S}(\sigma) - \theta - \delta_S\right)F_{\sigma}(\theta,\sigma)\,d\theta = -\int_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)}\left(\widehat{\theta}_{P,S}(\sigma) - \theta - \delta_S\right)\theta e^{-\frac{\theta^2\sigma^2}{2}}\,d\theta =$$

$$= \frac{1}{\sigma^2}\int_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)}\left(\widehat{\theta}_{P,S}(\sigma) - \theta - \delta_S\right)de^{-\frac{\theta^2\sigma^2}{2}} = \frac{1}{\sigma^2}\left[-\delta_S e^{-\frac{\widehat{\theta}_{P,S}^2(\sigma)\sigma^2}{2}} + \int_{-\infty}^{\widehat{\theta}_{P,S}(\sigma)} e^{-\frac{\theta^2\sigma^2}{2}}\,d\theta\right] > 0.$$

■

4.1 *Discussion and example*

The previous Proposition says that the better the information, the less the politicians delegate. Ideally, when the information is precise, $\sigma = \infty$, there is no uncertainty and the complete information policy $\delta^{\infty}_{P,S} = \frac{\delta_S+\delta_P}{2}$ (Figure 2), situated between the ideal points of the President and the Senate, is implemented. When there is uncertainty and the information content of the prior distribution σ increases, the threshold level $\widehat{\theta}_{P,S}(\sigma)$ also increases. In the Figure 2, $\widehat{\theta}_{P,S}(\sigma_1) > \widehat{\theta}_{P,S}(\sigma_2)$ for $\sigma_1 > \sigma_2$. The intuition is that the rigid policy that is close to the average bias of politicians performs relatively well since the normal distribution in this case is more centered and the weight of tails is smaller. Technically, the expression (15) implies that the bias $\delta_{P,S}(\sigma)$ increases with σ. Therefore the objective of the aggregated government becomes closer to those of the President and the political weight of the Senate $\lambda(\sigma)$ decreases.

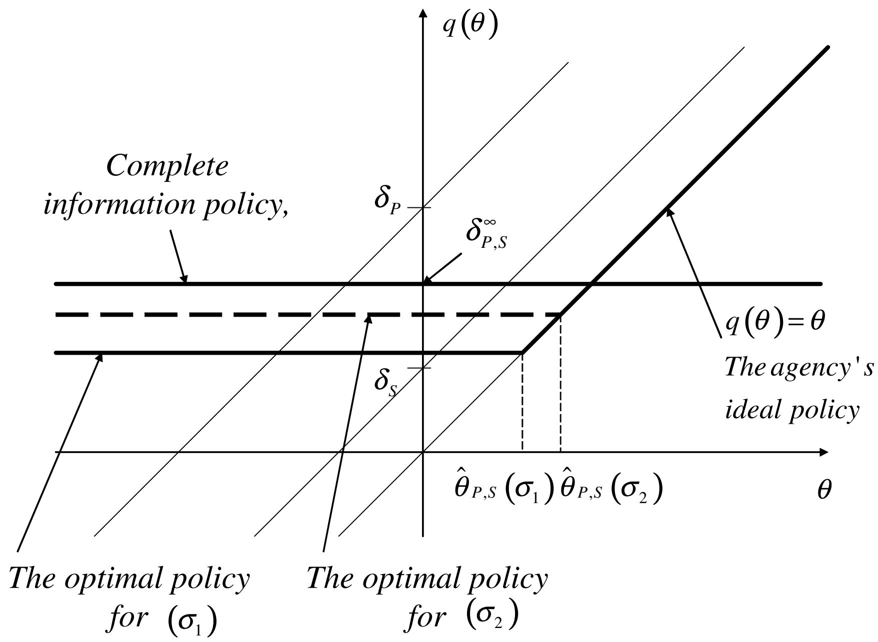

Figure 2. The effect of increase of informativeness.

Example 3 *Let us put the biases of the President and the Senate at* $\delta_P = 3$ *and* $\delta_S = 1$ *respectively. Since* $\delta_S < \delta^{\infty}_{P,S} = 2$*, the optimal policy is given by (16). Fix the initial* *information content at* $\sigma_1 = 1$*, then (16) becomes*

$$1 = \frac{1}{\int\limits_{-\infty}^{a}\int\limits_{-\infty}^{t} e^{-\frac{x^2}{2}} dxdt} \int\limits_{-\infty}^{a}\int\limits_{-\infty}^{\theta}\int\limits_{-\infty}^{t} e^{-\frac{x^2}{2}} dxdtd\theta,$$

which leads to $\widehat{\theta}_{P,S}(\sigma_1) = 1.34$.

When $\sigma_2 = 3$ *then* $\widehat{\theta}_{P,S}(\sigma_2) = 1.94$. *Generally, when* $\sigma \to \infty$*, the optimal threshold approaches the complete information policy:* $\delta_{P,S}^{\infty} = \frac{\delta_S + \delta_P}{2} = 2$.

5 Concluding remarks

This paper develops a bargaining model between politicians in the appointment process when there is an asymmetric information between a key government department and politicians. We described the bargain over an appointment when the President takes into account the Senate's preferences when considering a nomination of the Head of the department. The main goal of the Head is to establish the limits of the departmental discretion and these limits are the subjects of bargaining between politicians.

Although we model the policymaking process as veto-based delegation, we do so in the context of the more convenient constrained-delegation framework. This approach allows us to aggregate the preferences of the politicians. The Senate's political weight in aggregated government is endogenous and it depends on its ideological bias as well as that of the President. It also depends on the prior beliefs of politicians. Using the tools developed in the paper it is possible to study different comparative statics questions. Tables 2 and 3 summarize the general thrust of the results for different cases.

Table 2: Presidential dominance vs. the Senate's approval of appointments

Appointment process	
Presidential dominance	Senate's approval stage (Senate-constrained)
1. Delegation in D_P	Delegation in $D_{P,S}(\supset D_P)$
2. Partial communication is possible	Partial communication is possible
for $\delta_P \leq \delta_P^{\max}$	for any δ_P given that $\delta_S \leq \delta_S^{\max}$
3. Weight of the Senate $\lambda = 0$	Weight of the Senate $\lambda > 0$ if $\delta_S \leq \delta_S^{\max}$

Table 3: Common knowledge vs. private information

Information structure	
Common knowledge	Private information
1. No delegation	Delegation in D
2. Weight of the Senate λ^c	Weight of the Senate $\lambda > \lambda^c$

We believe that our approach to modeling the appointment process may prove useful for future research. A constrained-delegation framework greatly simplifies the modeling of the appointment process without losing its realistic content. However, in this paper we assumed appointments to departments with only a single appointee at the helm. Although this assumption simplifies the exposition, it reduces the applicability of the model to a limited number of cases. The policymaking in a "standard" regulatory agency such as the Federal Communications Commission is a result of voting amongst commissioners. A more complete discussion of the appointment process would examine the majority voting in such a commission.

Another interesting aspect of the appointment process related to the role of the Senate committee to which presidential nominations are assigned. The civil servant (Head), as is studied in the political literature, may play an active role in the policymaking. The

Senate receives an imperfect signal from the committee about the nominee's preferences. These and many other issues can be addressed using the tools proposed in this paper.

Notes

[1] To simplify matters we do not consider commission nominations. In our model only the Head is subject to nomination by the President and confirmation by the Senate. Although the model in the paper is motivated by non-commission departments, it may also be applied to regulatory agencies with a commission structure under the condition that the decisive body is entirely subject to nomination, which, for example, is often the case at the state level of government.

[2] Niskanen (1971) pioneered the application of the principal-agent theory to bureaucratic politics.

[3] Chang, de Figueiredo and Weingast (2001) provide a thorough survey of the theories of the appointment process.

[4] In the appointment framework, the President is the setter, the nominee is the proposal and the Senate is the confirmer.

[5] In the paper, for the sake of simplicity, the ideal points of the President and the Senate change in lock-step with the agency's ideal point. However, the ideal points of the politicians may be sensitive to the agency's operating environment: $q^i(\theta) = k\theta + \delta_i$ for $i \in \{P, S\}$, where the parameter k is taken in such a way that the ideal policies for politicians and the agency do not intersect. If so, then all results are unchanged.

[6] In the political economy literature, the politician's bias is explained by the broader set of constituencies, voters' interests and/or reelection concerns.

[7] The replication result was established for regular preferences, i.e. such that the ideal policies of the players do not intersect. This class is sufficiently broad to include our quadratic preferences.

[8] Many distributions satisfy this property: any distribution with decreasing density, such as the uniform and exponential distributions.

[9] These continuous policies (2) were already described in Moulin (1980). However, his characterization was obtained by imposing a dominant strategy on a larger domain including all single-peaked preferences. Our restriction to quadratic preferences could a priori leave open the possibility that other policies might arise, but Lemma 1 shows that this is actually not the case.

[10] Remarks 1 and 2 are trivial in the complete information setup of Romer and Rothenthal (1978). I thank the referee for this and other useful remarks.

[11] The Editor suggested to use the term "information content of distribution". I thank the Editor for this and many other sugestions.

[12] If the distribution F does not satisfy Assumption 1A the set D may not be an interval (Martimort and Semenov, 2006).

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