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Discretion Rather than Rules: Choice of Instruments to Control Bureaucratic Policy Making

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In this paper I investigate the trade-off a legislature faces in the choice of instruments to ensure accountability by bureaucrats with private information. The legislature can either design a state-contingent incentive scheme or "menu law" to elicit the bureau's information or it can simply limit the set of choices open to the bureaucrat and let it choose as it wishes (an action restriction). I show that the optimal action restriction is simply a connected interval of the policy space. However, this class of instruments is not optimal without some sort of limitation on the set of levers of control available to the legislature. I then analyze one such limitation salient in politics, the legislative principal's inability to commit to honor a schedule of (state contingent) policy choices and transfer payments for a menu law. In this case the optimal action restriction outperforms (in terms of the legislature's welfare) the best available menu law.

1 Introduction

Delegation from the legislature to the executive is inherent in most major acts of Congress in the United States. Despite or perhaps because of its ubiquity in lawmaking, delegated authority has long raised questions of democratic legitimacy and control in the policy process.[1] The role of institutional structures in particular as determinants of accountability in delegation has long occupied the attention of scholars.

Many of those structures are designed by the legislature, an observation behind numerous important insights about bureaucratic structures and administrative procedures (McCubbins, Noll, and Weingast 1987; Calvert, McCubbins, and Weingast 1989; Kiewiet and McCubbins 1991; Epstein and O'Halloran 1999; Huber and Shipan 2002). Legislatures can be quite creative in designing instruments to mitigate the agency problem inherent in

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[1]In the United States, the first legal challenge to a federal action on the grounds that Congress had improperly delegated its legislative power came in 1813 (*Cargo of the Brig Aurora v. United States, 11 U.S. 382*). Congress had left it to the President to determine whether England was interfering with American shipping and, if so, to take punitive action against cargo imported from England. The Supreme Court sided against the petitioner and upheld the delegation.

delegation. One type of instrument can be thought of as a "menu law": a statutory rule associating occurrences the agency may observe with actions or policies the bureau is obliged to implement following such occurrences. For example, in the late 1970s, with the domestic steel industry facing stiffening competition from overseas firms, the Customs Service and the Department of Commerce faced criticism for delays in antidumping investigations. The Steel Price Trigger Mechanism was instituted to speed up the process. It specified that if an index of foreign steel prices (collected and monitored by the agencies) fell below a specific level, expedited antidumping procedures should be used. A similar law governs Department of Treasury findings of "manipulative" exchange rate practices by foreign governments. If the Treasury finds other governments' foreign exchange policies manipulative (with respect to the dollar), it must enter negotiations to mitigate them and possibly retaliate. In cases like these, the statute specifies a mapping from observed conditions to appropriate actions by agencies. If (1) the agent observes the relevant conditions better than the legislature and (2) a menu law associates with a set of conditions not only a sanctioned action but also some sort of transfer of resources or "perks" the bureau receives whenever it takes that action, it is formally equivalent to an incentive scheme for eliciting the agent's information about what has occurred.

A much simpler type of instrument—more common in statutes delegating authority to bureaucratic agencies and much more common in recent formal models of bureaucratic discretion—is a limitation on the policy choices or actions that bureaus may choose. That is, the legislature can create a "window of discretion" and allow the agency to select policy as it wishes within the window or subject to specified limitations. For example, the Interstate Commerce Commission had (as of the Transportation Act of 1920) the authority to set rail rates on specific routes. The Clean Air Act Amendments of 1970 gave the Environmental Protection Agency authority to set regional limits on concentrations of pollutants. In assessing mergers, the Federal Trade Commission is typically limited to making a simple "up or down" decision or imposing limited structural requirements and cannot, for example, impose fees or taxes to capture consumer surplus losses. Judges (whereas not bureaus) are often constrained to choose sentences between some minimum and maximum. Limits on available actions may be loose or tight, but fall in the same general class: The legislature sets the limits on the set of policies from which the bureaucrat can choose, and the bureau selects from the limited set of options as it sees fit.

These instruments—*rules* or menu laws versus *discretion* or action restrictions—are both ways in which a legislative principal can structure its delegation to an informed, but biased, agent. To adequately understand what a legislature gives up by delegating—and whether legislatures choosing one form of delegation are giving up "too much" to reconcile with democratic control over bureaucratic policy making—it is necessary to consider trade-offs and comparisons across both classes of instruments. Studies of one type of action restriction (intervals or delegation windows) are relatively common in the literature on bureaucratic delegation and discretion. However, other more general types of action restrictions have not been considered. The restriction is not trivial because by allowing the agent to choose disconnected, faraway corners of the policy space, the legislature can induce more agent types to choose different actions, and therefore more information to be revealed and used in policy making. Moreover, what I refer to as menu laws have not penetrated this literature, and comparisons across these classes of instruments are not available.

In this paper I analyze and compare these control devices available to a legislature. Well-known results about menu laws suggest that they are at least as good at solving the agency problem as action restrictions. Yet these types of rules are uncommon in situations where the agent has significant private information: in the cases cited earlier, for example, the legislature can observe the index the bureaucrat does without much difficulty (possibly with the help of sympathetic interest groups; McCubbins and Schwartz 1984). Action restrictions, or empirical evidence consistent with them, are much more common (Epstein and O'Halloran 1999; Huber and Shipan 2002; Volden 2002a). In this paper I offer a formal model that provides strategic underpinnings for this observation.

I focus on a setting in which policy choices and outcomes lie in a unidimensional policy space, and outcomes are an additive function of policy choices and a "random shock" or "state of the world." I argue that because a menu law can induce any policy outcome an action restriction can induce, some limitation on the space of available control instruments is necessary to make an action restriction preferable to a menu law with this information structure. By itself, this would seem to suggest that simply delegating a policy choice to an agent, even from a defined set, is conceding too much.

I then investigate one major such limitation on the available levers of control: the legislature's inability to commit to follow through on a schedule of policy choices or employ the transfer "payments" required in a menu law. This lack of commitment appears important in politics as often noted in formal modeling and stems from the fact that the legislature is sovereign and does not make enforceable (by courts, say) promises about perks or resources it will trade for particular reports of some state of the world or policy choices by agencies, much less about policies it will make following any report in the future.[2]

Briefly, the main findings are the following. First, an action restriction can be any set of subsets of the policy space, but the optimal action restriction is simply an interval: that is, it is compact and connected, the form of "delegation" upon which a decade of bureaucratic discretion research is based. This result allows for any probability distribution over the state of the world, and any symmetric, single-peaked utility functions for the agent and legislature (provided they are not risk seeking, an assumption I leave implicit throughout).[3] Second, I turn to a common case in the literature, that with quadratic utility functions and a uniform distribution over the state. When the legislature cannot commit to a schedule of policy choices (i.e., the outcome function of the menu law viewed formally as a mechanism) or use transfer payments in a menu law, optimal menu laws collapse to costless or "cheap talk" signaling (Crawford and Sobel 1982; Bester and Strausz 2001). In this case, optimal action restrictions are preferable to menu laws for all levels of preference conflict that still allow for nonzero delegation.[4] Otherwise, if the legislature can commit to a policy function and transfer schedule, menu laws

[2]Ting (2005) also explores the effect of limited "contracting" possibilities in legislative-bureaucratic interaction. His model is concerned with the capacity of organizations to obtain desired policy outcomes. Gailmard and Patty (2007) explore a similar issue of endogenous bureaucratic policy expertise when the legislature has limited instruments of control.

[3]These features are implied by, but more general than, the typical restrictions in bureaucratic discretion models, in which agent and legislature utility functions are quadratic and the distribution of the state is uniform. But see Bendor and Meirowitz (2004), who show that strict concavity of the loss function and uniformity of the state are not necessary for several standard results.

[4]These results are related to a recent work by Dessein (2002). He compares "full" delegation of authority (i.e., to choose any point in the policy space) and cheap talk communication. One of his key findings is that delegation can be preferred for the principal as long as the agent's bias is not too large, but that communication dominates if the preference conflict is large enough. The present paper can be viewed as generalizing the delegation instrument, so that the principal can allow the agent to choose any subset of feasible policies, rather than only making an all-or-none delegation. As a result, in this model the greatest *advantage* for the principal of delegation over (degenerate) menu laws with no commitment occurs when the preference conflict is so large that it makes informative communication impossible.

encompass any results attainable under delegation and must be better for the legislature than delegation or action restrictions.

The contribution is part substantive and part methodological. Substantively, the results help to make sense of simple delegation as an ex ante instrument of accountability in a world where the legislature wishes to control policy outcomes and yet leverage expertise. Although more subtle and complicated devices for extracting experts' information are possible, they are not as good for the principal in an empirically relevant and politically natural setting as simply delegating the choice, within limits, to an informed agent. Several scholars (e.g., Bawn 1995; Calvert, McCubbins, and Weingast 1989; Kiewiet and McCubbins 1991; McCubbins, Noll, and Weingast 1987, 1989; Epstein and O'Halloran 1996, 1999) have argued that, far from revealing "abdication," delegation can be controlled to the legislature's benefit. This paper shows that, indeed, delegation—rather than some more involved specification of appropriate choices in different circumstances—is evidence of the best available instrument of ex ante control available to the legislature.

Methodologically, the assumption that action restrictions must be intervals has been used extensively and productively in models of delegation since the seminal work of Holmström (1984), who analyzed delegation in a general organizational context. In applications to bureaucratic policy making, Epstein and O'Halloran (1994, 1995, 1996, 1999), Gailmard (2002), Huber and Shipan (2002), Volden (2002a, 2002b), and Huber and McCarty (2004) analyzed the delegation of policy-making authority as the choice of an interval in the policy space. Spatial models of delegation in economic organizations (e.g., Dessein 2002), applied to issues such as pricing authority and capital budgeting, have also relied on this assumption. Without a foundation for that assumption, this work is open to the question of whether it implicitly assumes the principal's agency losses are "too large" and of whether its comparative static predictions hold up when the legislature delegates optimally. In this paper I provide a foundation for this assumption, for a relatively general set of probability distributions and utility functions: The principal's optimal choice from the set of all action restrictions is compact and connected. Furthermore, an inability to commit to policy choices given the state of the world or employ state-contingent incentive payments makes this form of delegation better than the only menu law that is available.

The modeling approach behind menu laws—mechanism design models with adverse selection—also has some application to the politics of agency and delegation. However, it is typically in the context of service provision or output by bureaus (as motivated by Niskanen 1971). Spencer (1980); Bendor, Taylor, and van Gaalen (1987); DeFigueiredo, Spiller, and Urbiztondo (1999); and Gailmard (2009) all use such models to study legislative control of bureaucracies producing services or procuring projects.[5] Menu laws apply the optimal mechanism design approach to a spatial model with policy uncertainty. The first such application was due to Baron (2000), who contrasted a mechanism design approach to legislative organization with the well-known signaling approach (e.g., Gilligan and Krehbiel 1987). Krishna and Morgan (2006) further develop the mechanism design approach to information transmission in a spatial model. They assume the principal can commit to a transfer function, and analyze the optimal mechanism when the principal can and cannot commit to an outcome function. In contrast, given the political orientation of my model, I assume no transfer functions are available to enhance information transmission under action restrictions.

[5]See Ting (2001) for an argument about the limitations on resource-based control of bureaus.

To develop these results, I first formalize the policy-making context and specify the control instruments in each class (Section 2). I then look at optimal menu laws and action restrictions separately from each other (Section 3). Finally, I compare instruments across these classes, focusing particularly on the case where the legislature cannot commit to the policy choices in a menu law or make use of explicit transfer functions (Section 4).

2 Instruments for Controlling Agents with Private Information

The model is based on a spatial-informational setup quite standard in models of information transmission. The players are a legislature L and a bureau B; both are unitary actors (or are groups of actors each with symmetric and single-peaked preferences over outcomes that may be characterized by their median preferences).

Outcomes $x \in R$ are composed of policies $p \in R$ and the value of a random variable $\theta \in [0, \theta^h]$ drawn from a strictly positive, common knowledge density f, that is, $x = p - \theta$. As a baseline, I assume f is uniform, though this is not necessary for results on optimal action restrictions. The agent is an expert in the sense that it learns the value of θ, whereas L only knows its distribution.[6]

Preferences are defined over outcomes x relative to ideal points, as well as transfers t (available in the menu law case only). As a base case, I assume policy utilities (or loss functions) are quadratic:

$$u_L = -(p - \theta)^2 - t,$$

$$u_B = -(p - \theta - b)^2 + t.$$

The legislature simply wants the policy to match the state, whereas the bureau wants the policy to match the state plus b. In this sense, the agent is biased relative to the legislature (more simply, biased). The key aspect of these utilities is that preference over policy outcomes is characterized by their distance from the ideal point. Some results on action restrictions do not use the special case of quadratic utilities and require only that policy preferences are single peaked, symmetric, and for some results strictly concave in policy outcomes for L. This more general case is noted as relevant below.

There are two classes of control instruments available to L—menu laws and action restrictions. The set of menu laws is denoted by M, the set of action restrictions by $\tilde{R}$. A menu law is a function $m = (p(\theta), t(\theta))$ specifying a policy choice p and level of transfers t for each state θ. An action restriction $R \in \tilde{R}$ is an element of the set of all closed subsets of the interval $[0, \theta^h + b]$.[7] Note that the legislature can choose not to delegate, by choosing a real number from the policy space as the action restriction. The legislature's set of instruments to choose from is denoted $S = M \cup \tilde{R}$ and a selection from it by s.

[6] Battaglini (2002) has shown that a small change in this setup, adding more dimensions to the policy space, makes it easy for the principal to extract all information at no cost: he or she must simply elicit signals from two experts whose preferences are not collinear. Nevertheless, it is not obvious that this makes the unidimensional uniform-quadratic approach unhelpful in analyzing situations like this. The dimensionality of the policy space is always a simplification, and the whole field of social choice theory makes clear that problems arise in simple characterizations of group preferences in higher dimensions. Indeed, this is in a sense the reason why the informational legislative organization and other literatures have long relied on unidimensional models. Failure of conclusions to hold in higher dimensions has never impeded progress with one-dimensional models. That failure is in fact exactly what makes one-dimensional models so useful, or at least so widely used.

[7] The set of restricted actions must be closed to guarantee that the bureau has an optimal choice. Given the state space and preferences below, there is no loss in looking only at the policy space $[0, \theta^h + b]$.

The bureau's set of available actions $A(s)$ depends on the legislature's choice:

$$A(s) = \begin{cases} \{(p,t) : p = p(\theta'), t = t(\theta') \text{ some } \theta' \in [0,1]\} & \text{if } s \in M \\ R & \text{if } s \in \tilde{R} \end{cases}.$$

So if the legislature chooses a menu law, the agent chooses a policy-transfer pair for some state.[8] If the legislature chooses an action restriction, the agent chooses some point r in the specified set R of available policies.

The policy-making process proceeds as follows: First nature draws $\theta \in [0, \theta^h]$ according to f and shows B. Then L chooses an instrument $s \in S$. Following this, the bureau chooses an action $a \in A(S)$. Finally, the process ends and the payoffs are realized. In the next section I consider the optimum (for the legislature) in each class of instruments separately and compare across classes in the section after that.

3 Analysis of Control Instruments

The legislature's whole choice set is somewhat complicated, but analyzing each class of instruments is more straightforward. Then the optimal members of each class can be compared to determine which class of instruments to choose in different situations.

3.1 *Menu Laws*

A menu law is a device allowing the principal to direct the use of the agent's information in setting policy. The optimal menu law in a "complete contracting" framework comes from a straightforward application of the Bayesian mechanism approach to the informational environment. This subsection reviews the use of such incentives for information extraction.

The sequence of events in this specific case is as follows: the bureau observes θ; the legislator offers a menu law or incentive scheme specifying a policy $p(\theta)$ and transfer $t(\theta)$ associated with each state θ; the bureau chooses a policy; the legislator observes the policy chosen; and finally, the legislator makes a transfer contingent on the policy selected.[9] For example, in the case of the Steel Price Trigger Mechanism, the bureau observes the state (index of foreign steel prices) and chooses a policy (expedited or turgid processing). The policy is observed by the legislative overseer, who then transfers some benefits to the bureau (or declines to extract some punishment from it) according to the prespecified schedule it selected earlier.

Clearly, a menu law must have transfers associated with it. The state-contingent transfers in a menu law are most easily conceived as incentive payments, as a firm might make to an employee or a regulator to a utility as in the mechanism design literature (e.g., Baron and Myerson 1982). But other possible interpretations make more sense in a legislative-bureaucratic setting. The legislature may associate with each state a level of budgetary resources, punishment at the hands of oversight committees, or other perks that affect the bureau's final utility in that state in exactly the same way as a transfer payment. The key assumptions are that these perks are valued by the bureau, and costly for the legislature to provide, and that the legislature can commit to a specific schedule of

[8]This is equivalent to a direct mechanism where B reports a state to L, which then chooses a policy and transfer contingent on that state. The revelation principle implies that only incentive-compatible direct mechanisms need be considered, as discussed below.

[9]It is equivalent to suppose that the agent reports the state directly to the principal, which then sets policy as $p(\theta)$ itself and returns to the agent a transfer of $t(\theta)$.

them—associating payments with specific reports of the agent's private information and following through on the transfer *after* the information is reported. The valuation assumptions are straightforward: several scholars have documented bureau concerns over standing with legislatures and the rewards (budgetary and nonbudgetary) legislative committees have at their disposal (e.g., Fenno 1966; Wildavsky 1978; Kaufman 1981; Wilson 1989). Legislatures, for their part, face opportunity costs (in terms of time or money) for using available resources in one way rather than another.

A menu law is formally equivalent to a "direct mechanism," in which B makes a report $\hat{\theta}(\theta)$ to L, that is, claims the state to have a certain value as a function of the true value. The analysis of optimal mechanisms is made tractable by the[10] "revelation principle," which asserts there is no loss in generality in examining only the menu laws for which the bureau's optimal choice is truthfully to report θ, so $\hat{\theta}(\theta) = \theta$. The critical idea is that if B wanted to lie about θ, it could either (1) observe θ and apply a "fib function" of its choice that transforms θ into the report to L or (2) observe θ, tell L what it is, and tell L to use the same fib function on its behalf. The fib function can simply be rolled into the mechanism, which L has no problem doing so because it can commit to an incentive scheme (i.e., a function specifying the policy as a function of the state θ, and a schedule of transfer payments for each report of θ).

As noted previously, conditional on θ, L's utility is $u_L = -(p - \theta)^2 - t$. In terms of direct mechanisms, the legislature's problem is to maximize this in expectation with respect to its choice "variables," which in the direct mechanism case are the entire functions $t(\theta)$ and $p(\theta)$. Because of the quadratic policy utilities and uniform distribution on the state, this maximization problem is

$$\max_{p(\cdot),t(\cdot)} - \int_0^{\theta^h} ((p(\theta) - \theta)^2 + t(\theta)) \frac{d\theta}{\theta^h}. \tag{1}$$

This problem reflects that L can specify a policy $p(\theta)$ and transfer $t(\theta)$ as a function of θ. Assume $p(\cdot)$ and $t(\cdot)$ are differentiable. Let

$$v(\theta, \hat{\theta}) \equiv - \left(p(\hat{\theta}) - \theta - b\right)^2 + t(\hat{\theta}) \tag{2}$$

be B's rent as a function of the true type θ and the announced type $\hat{\theta}$ and let $U(\theta) \equiv v(\theta, \theta)$ be the rent of type θ from truthfulness. L can only take truthful reporting as given in its maximization problem in equation (1) because it is a best response. This in turn requires

$$\frac{\partial v(\theta, \hat{\theta})}{\partial \hat{\theta}}\Big|_{\theta = \hat{\theta}} = -2p'(\theta)(p(\theta) - \theta - b) + t'(\theta) = 0 \tag{3}$$

for all but a measure zero set of types θ. Equation (3) is a first-order condition in the agent's reporting problem: It asserts that truthful reporting maximizes the agent's utility. It is also an identity in that it must hold for every θ; thus, terms can be rearranged around the equal sign to express the slope of a transfer function in terms of the slope of the associated policy function $p(\theta)$. Using this to eliminate $t'(\theta)$ in $\frac{dU(\theta)}{d\theta} = -2(p'(\theta) - 1)(p(\theta) - \theta - b) + t'(\theta)$ gives the first-order necessary condition for incentive compatibility:

[10]"The" revelation principle actually comes in several forms, depending on the game theoretic equilibrium concept applied to the game defined by the mechanism. The original statement in Myerson (1979) was for dominant strategy mechanisms, but subsequent versions with similar logic were developed for Nash equilibrium, Bayes Nash equilibrium, and so on.

$$\frac{dU(\theta)}{d\theta} = 2(p(\theta) - \theta - b), \quad \forall\theta \in [0, \theta^h]. \tag{IC − 1}$$

Integrating (IC-1) allows a reinterpretation of the utility of any type θ. It is

$$U(\theta) = -2\int_{\theta}^{\theta^h} (p(\theta') - \theta' - b)d\theta' + U(\theta^h). \tag{4}$$

The integrand $(p(\theta') - \theta' - b)$ is the distance between the policy for type θ' specified by the mechanism (i.e., $p(\theta')$) and the ideal policy of type θ'; note that the former will generally be less than the latter because L's ideal policy given θ is less than B's. Equation (4) then asserts that the utility to type θ from truthful reporting equals the utility to the highest type θ^h plus an extra rent that increases in the distance between the actual type and the maximum type. This extra rent is necessary to ensure that truth telling is optimal for the agent. The highest type θ^h gets no extra rent (the lower and upper limits of integration are the same when $\theta = \theta^h$) because it does not need extra inducement to report this type truthfully.

Setting equation (4) equal to $U(\theta) = -(p(\theta) - \theta - b)^2 + t(\theta)$ and rearranging yields a transfer function that makes truthful reporting of θ incentive compatible given the policy function $p(\theta)$:

$$t(\theta) = -2\int_{\theta}^{\theta^h} (p(\theta') - \theta' - b)d\theta' + (p(\theta) - \theta - b)^2 + U(\theta^h). \tag{5}$$

The steps leading to equation (5) highlight how the need to induce truthful reporting is built into and constrains L's choice of mechanism. The revelation principle ensures that nontruthful equilibria are no better for L than truthful equilibria, but it does not mean the principle gets truthful reporting "for free." Given a policy function $p(\theta)$, incentive compatibility of truthful reporting restricts what the associated transfer function $t(\theta)$ can be. In particular, L can implement any policy $p(\theta)$ that is a weakly increasing function of θ, provided the transfers to the bureau are as specified in equation (5) given that policy function.

An example is L's first-best policy function $p(\theta) = \theta$. This specifies L's most preferred policy state by state. A's "natural" temptation in this case is to overstate θ: if the state is θ but A reports $\theta + \epsilon$ and L sets policy on this basis, the outcome is ϵ, which A prefers to the outcome 0 that results from truthful reporting. The transfer $t(\cdot)$ must counteract this temptation and ensure that truthful reporting is optimal for A. Inserting the policy function $p(\theta) = \theta$ into equation (5) returns the transfer function required to implement it as $t(\theta) = -2b\theta + 2b\theta^h + b^2 + U(\theta^h)$. Only the first term is a function of θ and indicates that $t'(\theta) < 0$: This is necessary to neutralize A's temptation to overstate θ. The agent receives larger transfers from reporting smaller θ values.

As it happens, L will not generally want to induce the agent to choose its ideal policy in every state. By instead giving up some utility in the ideological or policy dimension, the legislature can reduce its cost of transfers. These results—that monotonicity of the policy function is sufficient for implementability and that the principal can do better than to implement the full-information (first best) policy function—are standard in the theory of incentives (Baron and Myerson 1982) and carry through (though not at all trivially) to this informational environment as well (Krishna and Morgan 2006). For purposes of my argument, the key point is simply that the optimal solution under a menu law with full commitment to the policy and transfer functions captures any outcome that can be implemented with any other specific control instrument and generally more. This is another way of stating the revelation principle.

3.2 *Action Restrictions*

An action restriction is a particular type of ex ante control device in which the legislature simply restricts the bureau's choice set, with no transfers associated with specific choices. The agent chooses an observed action from its choice set, but the principal has no option for ex post reward or punishment after the outcome is observed and the game ends. Although it is the actions of the agent that are constrained in this approach, its value to the legislative principal, as with menu laws, is informational. That is, an action restriction is simply a specific approach to eliciting or extracting the agent's information. It does so by allowing the agent to act on its information directly, and it is useful to the principal only insofar as it induces the agent to link information about θ (the agent's type, in parlance of adverse selection) to policy choices. Effecting this link is also the purpose of a menu law, and therefore, menu laws and action restrictions are two alternatives for accomplishing this goal.[11]

I assume that L can restrict A's actions to any closed set of points in the policy space it desires; A then selects from that collection as it sees fit. Note that no results in this section depend on quadratic loss functions (i.e., utilities in policy outcomes); they require loss functions to be symmetric, single peaked, and in some cases strictly concave as noted. Like the results for menu laws, these results also do not fully restrict the density over the state θ; for example, it need not be uniform.

The optimal action restriction is simply a connected interval in the unidimensional policy space. It is not immediately obvious that this should be the case. For example, one possibility is that gaps in a disconnected choice set help to extract more information from the agent. Consider changing from a simple interval restriction to the same interval and, in addition, one disconnected point in the policy space. Some agent types that, before the change, would have pooled at the edge of the interval will instead pool at the disconnected point after the change; other agent types will continue to pool at the edge of the original interval even after the change. Thus, this proposed change in the action restriction increases the information revealed by different agent types in that more types choose different policies. However, the information revelation per se is not valuable to the legislature, because in order to get it, the legislature must commit to allowing the agent to use its information in a particular, unattractive way.

The legislature's ranking of action restriction depends on the policy-making behavior they induce from the agent. Therefore, the first step in analyzing general closed action restrictions is to characterize agent responses to sets of available actions, whether or not they contain gaps.

For any state θ, the agent's induced ideal policy is $p_b^*(\theta) = b+\theta$. Consider first an action restriction R that is a single closed interval of the form $[\underline{r}, \bar{r}]$, with $\bar{r} \leqslant \theta^h + b$ (including policies above this is dominated for L). If a type can obtain its ideal with a choice in the set of available actions, it does; otherwise, it chooses the nearest available policy. When $\underline{r} > b+\theta' = p_b^*(\theta')$, the type wishes to choose a policy below the lower bound of the interval. Its ranking of policies on either given side of $p_b^*(\theta')$ is increasing in proximity to this ideal, so this agent type simply chooses the lowest policy it can. Similarly, when $\bar{r} < b+\theta'' = p_b^*(\theta'')$, the type's most preferred action exceeds the largest one available,

[11]Indeed, action restrictions are simply one mechanism in the more general class of menu laws. The outcome function under any action restriction can be implemented via a menu law with no transfers. In other words, the principal could use a menu law to announce zero transfers but exactly the policy outcomes as under an action restriction, and the agent would face the same incentive compatibility conditions. This is how the two classes of instruments are linked.

so B chooses the largest policy available. This is an often-used result in delegation models and is summarized in Lemma 1.

Lemma 1. Assume u_B is symmetric and single peaked. The bureau's best response to a closed interval action restriction of the form $[\underline{r}, \bar{r}]$ is

$$p^a(\theta) = \begin{cases} \underline{r} & \text{if } \theta < \underline{r} - b \\ b+\theta & \text{if } \underline{r} - b < \theta < \bar{r} - b \\ \bar{r} & \text{if } \bar{r} - b < \theta \end{cases}.$$

To evaluate action restrictions with gaps, it is necessary to specify the agent's best response in that case.

Lemma 2 Assume u_B is symmetric and single peaked. Consider an action restriction R containing $\underline{r}$ and $\bar{r}$ but no other policies in $[\underline{r}, \bar{r}]$.

- If $\frac{\underline{r}+\bar{r}}{2} - b \geqslant 0$, then for $\theta \in [\max\{\underline{r}-b, 0\}, \frac{\underline{r}+\bar{r}}{2}-b)$, B chooses $\underline{r}$, and for $\theta \in (\frac{\underline{r}+\bar{r}}{2} - b, \bar{r} - b]$, B chooses $\bar{r}$.
- If $\frac{\underline{r}+\bar{r}}{2}-b<0$, then for $\theta \in [0, \bar{r}-b]$, B chooses $\bar{r}$.

Proof: Note that if $\theta^c = \frac{\underline{r}+\bar{r}}{2} - b \geqslant 0$, single peakedness and symmetry of u_B imply

$$u_B\left(\underline{r} - b - \theta^c\right) = u_B\left(\underline{r} - b - \frac{\underline{r}+\bar{r}}{2} + b\right) = u_B\left(\frac{\underline{r}}{2} - \frac{\bar{r}}{2}\right) = u_B\left(\frac{\bar{r}}{2} - \frac{\underline{r}}{2}\right)$$
$$= u_B\left(\bar{r} - b - \frac{\underline{r}+\bar{r}}{2} + b\right) = u_B\left(\bar{r} - b - \theta^c\right).$$

Now consider $0 < \theta' = \frac{\underline{r}+\bar{r}}{2} - b - d < \theta^c$ (where $d > 0$); such a θ must exist for d small enough. Then again because of single peakedness and symmetry of u_B, $u_B(\underline{r}-b-\theta') = u_B\left(d - \frac{\bar{r}+\underline{r}}{2}\right) > u_B\left(d + \frac{\bar{r}+\underline{r}}{2}\right) = u_B\left(\bar{r}-b-\theta'\right)$, where the inequality results because u_B is decreasing in the absolute value of its argument. Thus, for $\theta' < \theta^c$, the bureau chooses $\underline{r}$. Consider instead $\theta'' = \frac{\underline{r}+\bar{r}}{2} - b + d > \theta^c > 0$; similar reasoning shows that for such θ'', the bureau chooses $\bar{r}$.

Finally, if $\theta^c = \frac{\underline{r}+\bar{r}}{2} - b < 0$, then $\bar{r} - b < b - \underline{r}$. Clearly, $\underline{r} - b < 0$ in this case and for a nontrivial action restriction $\bar{r} - b > 0$, so this implies $|\bar{r}-b| < |\underline{r}-b|$ so that $u_B(\underline{r}-b-0) \leqslant u_B(\bar{r}-b-0)$. Therefore, at the minimum value of θ, B prefers $\bar{r}$ to $\underline{r}$, and per force prefers it for higher values of θ. ■

So if $\frac{\underline{r}+\bar{r}}{2} - b > 0$, then for $\theta \in (\underline{r}-b, \bar{r}-b)$, the induced outcome as a function of θ has slope -1, except for a discontinuity at the midpoint—where it jumps to $b + \frac{\bar{r}+\underline{r}}{2}$ from $b - \frac{\bar{r}+\underline{r}}{2}$. This is illustrated in Fig. 1. But if $\frac{\underline{r}+\bar{r}}{2} - b \leqslant 0$, then the induced outcome has slope -1 for $\theta \in [0, \bar{r}-b)$.

Lemma 2 only specifies the behavior of agent types $\theta \in [\underline{r}-b, \bar{r}-b]$. When the action restriction is a subset of $[\underline{r}, \bar{r}]$, this is the range of agent types whose behavior is nontrivially affected. If $\max\{R\} = \bar{r}$, then $\theta > \bar{r} - b$ all choose $\bar{r}$. If $s > \bar{r}$ is contained in R, then that part of the action restriction falls under a case already covered in the lemma.

The basic implication of this optimal agent behavior is that a strictly optimal action restriction over an interval of the policy space can never contain just two points with

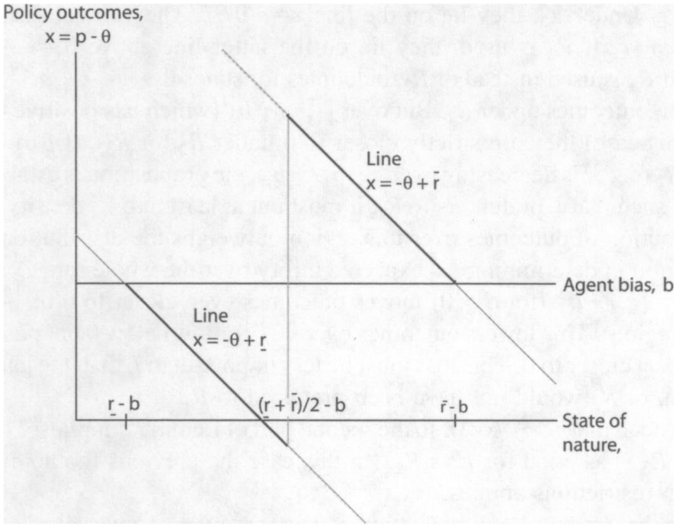

Fig. 1 Policy outcomes for an action restriction $R=\{\underline{r},\bar{r}\}$. The outcomes lie on the dark diagonal lines. The policy choice changes from $\underline{r}$ to $\bar{r}$ at $\frac{\bar{r}+\underline{r}}{2}-b$.

a gap of unavailable actions in between them.[12] For any distribution, a legislature with symmetric, single-peaked preferences does better either by limiting the action restriction to just one of the two points or by including another policy in between them in the action restriction.

Proposition 1. Assume u_L is symmetric and single peaked. For any density $f(\theta)$ and any interval of the policy space, L's most preferred action restriction R cannot include only the endpoints of the interval.

Proof: Consider an interval of the policy space whose endpoints are $\underline{r}$ and $\bar{r}$ and three action restrictions over the interval: $R_1=\{\underline{r}\}$, $R_2=\{\underline{r},\bar{r}\}$, and $R_3=\{\bar{r}\}$. Suppose first that $\frac{\underline{r}+\bar{r}}{2}-b\geqslant 0$ so the first part of Lemma 2 applies. There are two cases to consider.

Case 1—$b-\frac{\bar{r}+\underline{r}}{2}\geqslant 0$: In this case L prefers R_1 to R_2. For $\theta\leqslant\frac{\bar{r}+\underline{r}}{2}-b$, the agent chooses $\underline{r}$ whether or not $\bar{r}$ is available, so the distribution of induced outcomes is the same under R_1 and R_2. For θ above this point, the agent chooses $\bar{r}$ if it is available. If so, Lemma 2 implies that the induced outcome ranges from $b+\frac{\bar{r}+\underline{r}}{2}$ to b. If $\bar{r}$ is not available, the agent chooses $\underline{r}$ for $\theta>\frac{\bar{r}+\underline{r}}{2}-b$. The induced outcome ranges from $b-\frac{\bar{r}+\underline{r}}{2}$ to $\underline{r}-\bar{r}+b$. But the assumption that $b-\frac{\bar{r}+\underline{r}}{2}\geqslant 0$ implies $|b|>|\underline{r}-\bar{r}+b|$. Therefore, for $\theta>\frac{\bar{r}+\underline{r}}{2}-b$, all outcomes under R_1 are closer to 0 than the closest outcome under R_2. Moreover, the induced policy as a function of θ has slope -1 in each action restriction, so for $\theta>\frac{\bar{r}+\underline{r}}{2}-b$ the distribution under R_2 is a shift of the distribution under R_1, and they have the same variance. Therefore, L prefers R_1 to R_2.

Case 2—$b-\frac{\bar{r}+\underline{r}}{2}<0$: Depending on $f(\theta)$, L either prefers R_1 to R_2 or prefers some other two-choice action restriction to R_2. Under R_1, outcomes as a function of the state lie on the

[12]However, for any action restriction, L could include a disconnected group of very low points and be no worse off for doing so—because the agent never chooses them. In such cases, the results imply that L is always at least as well off with a connected action restriction, and there is no loss of generality in models focusing only on connected restrictions. The main points of this paper are unaffected by this, but for emphasis I sometimes note that strictly optimal action restrictions cannot have gaps. It would also be possible to focus on the smallest optimal action restriction, which would exclude these uninteresting weakly dominated cases.

line $x = -\theta + \underline{r}$. Under R_3, they lie on the line $x = -\theta + \bar{r}$. The vertical distance between these lines is $\bar{r} - \underline{r}$. If R_2 is used, they lie on the latter line above $\theta = \frac{\bar{r}+\underline{r}}{2} - b$ (see Fig. 1). Note that if R_1 is used instead of R_2, outcomes for states $\theta \in \left(\frac{\bar{r}+\underline{r}}{2} - b, \frac{\bar{r}+\underline{r}}{2}\right)$ are strictly closer to 0 than outcomes under R_2. But over $\left[\frac{\bar{r}+\underline{r}}{2}, \bar{r} - b\right]$ (which has positive width by construction in this case) they are strictly closer to 0 under R_2 (or R_3). If $f(\theta)$ is such that L prefers R_1 to R_2 (e.g., f is decreasing over $[\underline{r} - b, \bar{r} - b]$), the proposition is established for this case. If $f(\theta)$ is such that L prefers R_2 to R_1, it must put at least half its density above $\frac{\bar{r}+\underline{r}}{2}$ (so that the distribution of outcomes over this region outweighs the distribution of outcomes below this region in determining L's expected utility over the whole range). Then another restriction $R' = \{\underline{r}, \bar{r} - d\}$ (for $d > 0$) moves outcomes even closer to 0 in $\left[\frac{\bar{r}+\underline{r}}{2}, \bar{r} - b\right]$ (the high-density region). This lowers outcomes over $\theta \in \left[\underline{r}, \frac{\underline{r}+\bar{r}}{2}\right]$ below 0 but pushes outcomes over $\theta \in [\underline{r} - b, \underline{r}]$ closer to 0. This loss must be less important to L than the gain in the high-density region, or R_2 would not have been preferred to R_1.

Suppose instead that $\frac{\underline{r}+\bar{r}}{2} - b < 0$, so the second part of Lemma 2 applies. The agent never chooses $\underline{r}$, so R_3 is as good for L as R_2. (In this case the previous footnote about strictly optimal action restrictions applies.) ■

This shows that (strictly) optimal action restrictions over an interval of policies cannot have gaps, as any restriction with gaps fits into one of the cases. Holmström (1984) proved the existence of an optimal action restriction in the unidimensional model. Therefore, the optimal R must be connected—either a singleton $p \in R$ or an interval. The fact that $\underline{r}$ and $\bar{r}$ are both (by assumption) included in an optimal action restriction implies something about other points that must be optimal to include as well. For example, there is no benefit to including another point not in the interval as a de facto means of information extraction. So when choosing from the set of possible action restrictions as a means of controlling bureaus in a unidimensional world, it is without loss of generality to focus on the connected delegation windows used in Epstein and O'Halloran (1994, 1995, 1996, 1999), Gailmard (2002), Huber and Shipan (2002), Volden (2002a, 2002b), and Huber and McCarty (2004).

Proposition 1 shows that the optimal action restriction does not contain any gaps, but the argument does not rely on interval restrictions or say when an interval restriction directly dominates a restriction with gaps. But there are densities f, including the most common case in applied delegation models, that ensure that some interval restriction is preferred to any restriction with gaps in a direct comparison between the two.

A sufficient condition for this specifies that the density above the midpoint of a specific interval be at least as great as the density the same distance below the midpoint. Formally, I define a density $f(\theta)$ to be "skewed symmetric" over the interval $[a, b]$ if $f\left(\frac{a+b}{2} - \hat{\theta} \middle| \theta \in [a,b]\right) \leqslant f\left(\frac{a+b}{2} + \hat{\theta} \middle| \theta \in [a,b]\right)$. I refer to a density as "strictly skewed symmetric" if the inequality is strict for a set of θ values with positive measure. A density that is symmetric around the midpoint of $[a, b]$ is skewed symmetric over that interval. A sufficient condition for a density to be skewed symmetric over *all* intervals in the set of subsets of θ is that it be weakly increasing (e.g., uniform). A sufficient condition for strict skewed symmetry over all intervals is that a density be strictly increasing (e.g., beta distributions for certain regions of parameter values).

Proposition 2 Assume L has symmetric, single-peaked preferences; and either (1) f is strictly skewed symmetric over $[\underline{r} - b, \bar{r} - b]$ and u_L is linear or (2) f is skewed symmetric over $[\underline{r} - b, \bar{r} - b]$ and u_L is strictly concave. In any optimal action restriction that is a closed set, R includes two points $\underline{r}$ and $\bar{r}$ only if it includes all points $p \in (\underline{r}, \bar{r})$.

Proof: Consider the case $\underline{r}-b \geqslant 0$ so the first part of Lemma 2 applies. Suppose that all points in $(\underline{r}, \bar{r})$ are included in R; then all states θ in this interval result in induced outcome b. Thus, the expected outcome is b and the variance around it is 0.

Suppose instead no points in $(\underline{r}, \bar{r})$ are included in R. By Lemma 2, the induced outcomes over the interval $\theta \in \left(\underline{r}-b, \frac{\underline{r}+\bar{r}}{2}-b\right)$ range from b to $b-\frac{\underline{r}-\bar{r}}{2}$. Those over $\theta \in \left(\frac{\underline{r}+\bar{r}}{2}-b, \bar{r}-b\right)$ range from $b+\frac{\underline{r}-\bar{r}}{2}$ to b. Then we have the following.

- If $f(\theta)$ is strictly skewed symmetric, then the expected outcome strictly exceeds b when points in $[\underline{r}, \bar{r}]$ are excluded from R. Every induced outcome less than b can be paired with an induced outcome the same distance above b but with greater density of the θ that produces it. When u_L is weakly concave, the principal prefers to include all points in the interval.
- If $f(\theta)$ is skewed symmetric, then the expected outcome is at least b but has positive variance when points in $[\underline{r}, \bar{r}]$ are excluded from R. When u_L is strictly concave, the principal prefers to include all points.

Consider next the case where $\underline{r}-b \leqslant 0$ but $\frac{\underline{r}+\bar{r}}{2}-b>0$. The first part of Lemma 2 applies here as well. When $(\underline{r}, \bar{r})$ are included in R, B never chooses actions between $\underline{r}$ and b (i.e., there is unused discretion). The outcome is constant at b for all $\theta \in [0, \underline{r}-b]$. However, when no points in $(\underline{r}, \bar{r})$ are included in R, induced outcomes over the interval $\theta \in \left[0, \frac{\underline{r}+\bar{r}}{2}-b\right)$ range from $\underline{r} \leqslant b$ to $b-\frac{\bar{r}-\underline{r}}{2}$. Therefore, the same arguments as in the previous case $\underline{r}-b \geqslant 0$ apply.

Consider last the case where $\frac{\underline{r}+\bar{r}}{2}-b \leqslant 0$ but $\bar{r}-b>0$, so the second part of Lemma 2 applies. When $(\underline{r}, \bar{r})$ are included in R, the induced outcome is again constant at b (again actions below b are never taken by B). When no points in $(\underline{r}, \bar{r})$ are included in R, the induced outcome is always at least b. In particular, for any f that puts positive density below $\theta = \bar{r}-b$, the expected outcome strictly exceeds b when R has gaps, and a legislative principal with u_L weakly concave prefers to include all points $p \in [\underline{r}, \bar{r}]$ in R.

Finally, any gap in R can be represented in the form $(\underline{r}, \bar{r})$ for the right choice of $\underline{r}$ and $\bar{r}$, so this choice is without loss of generality. Thus, in intermediate cases where some points in $(\underline{r}, \bar{r})$ are included in R, the argument above applies to all cases where some subinterval is excluded, for $\underline{r}$ and $\bar{r}$ suitably redefined. ■

With these results, it is straightforward to obtain the optimal action restriction for any given parameters and density $f(\theta)$. In all cases $\underline{r}=b$. Holding constant $\bar{r}$, if $\underline{r}=r'>b$, then the outcome x is uncertain over $\theta \in [0, r' - b]$ and ranges from r' to b. But if $\underline{r}=b$, the outcome over $\theta \in [0, r' - b]$ is constant at b. So only the upper bound $\bar{r}$ must be analyzed. For the commonly addressed uniform-density quadratic utility model, $R = [b, \theta^h - b]$. Then the delegation window has width $\theta^h - 2b$ (provided this is positive; otherwise, the action restriction is a single point) and is centered at $E\theta$.

These particular features of the width and center generalize somewhat beyond a uniform distribution for θ. Consider any density that is symmetric at least over $[\theta^h - 2b, \theta^h]$—the type whose ideal policy is the upper bound of the delegation window, to the largest possible type. For states below $\theta^h - 2b$, the outcome is constant at b. For states above $\theta^h - 2b$, the outcome is symmetrically distributed from $[-b, b]$. On the other hand, setting $\bar{r}=r''=\theta^h-b+\epsilon$ causes types in $[\theta^h - 2b, \theta^h - 2b + \epsilon]$ to produce outcomes at b instead of less than b. Therefore, the expected outcome over $\theta \in [\theta^h - 2b, \theta^h]$ exceeds 0. This establishes the following result.

Proposition 3. Assume u_L and u_B are symmetric and single peaked, u_L is linear, and $f(\theta)$ is symmetric over $[\theta^h - 2b, \theta^h]$. If $b \leqslant E\theta$, the optimal action restriction is the interval $[b, \theta^h - b]$. If $b > E\theta$, the optimal action restriction is the point $E\theta$.

The previous results all take as given that the agent has something to offer the legislature; they specify the structure optimal delegation takes given that it is worthwhile from L's point of view. For a more general sense of optimal delegation, it is worth considering what conditions on preferences make the use of nondegenerate action restrictions (a delegation window with strictly positive width) worthwhile at all. For action restrictions as with menu laws, the key is that each actor's optimal policy $p_i^*(\theta)$ moves the same way as θ changes.[13] To formalize this, say that the utility u_i generates a "monotone ideal policy function" if, for any θ'', either $p_i^*(\theta')> p_i^*(\theta'')$ for all $\theta' > \theta''$, or $p_i^*(\theta') > p_i^*(\theta'')$ for all $\theta' > \theta''$. The induced optimal policy for actor i can either be increasing or decreasing as a function of the state, but it must be increasing or decreasing for every value of θ. The ideal policies move in the same direction if either they are increasing in θ for both L and B or they are decreasing in θ for both L and B.

Proposition 4. Assume u_L and u_B are symmetric, single-peaked, and generate monotone ideal policy functions and that $b < E\theta$. The optimal action restriction is an interval (with strictly positive width) if and only if the ideal policies of L and B move in the same direction.

Proof: (If) The only singleton action restriction L would choose is $E\theta$. Consider instead the restriction $[E\theta - \epsilon, E\theta]$. For $\theta \in [E\theta - b, \theta^h]$, L's utility is the same in each case. For $\theta \in [E\theta - \epsilon - b, E\theta - b]$, the outcome under the singleton restriction ranges from $b + \epsilon$ to b, whereas it is constant at b under the interval restriction. For $\theta \in [0, E\theta - \epsilon - b]$ the outcome under the singleton restriction ranges from $E\theta$ to $b + \epsilon$, whereas it ranges from $E\theta - \epsilon$ to b under the interval restriction. Given $b > 0$, the outcome under the interval restriction is at least as close to 0 for all θ as it is under the singleton restriction and sometimes closer. The best singleton restriction is not optimal so by the previous results an interval is.

(Only if) Suppose the ideal policies move in opposite directions—for concreteness, L is increasing in θ and B is decreasing in θ—and the action restriction consists of an interval $[\underline{r}, \bar{r}]$. Because $\theta \geqslant 0$, b chooses $\underline{r}$ for all θ and the outcome is $\underline{r}-\theta$. In this case L's expected utility is $\int_0^{\theta^h} u_L(\underline{r}-\theta)f(\theta)d\theta$, which has a unique maximum at $\underline{r}=E\theta$. Thus, the (weakly) optimal action restriction is just $E\theta$. ∎

This gives necessary and sufficient conditions for a grant of discretion in the form of a nontrivial action restriction to be useful to the legislature. In case the bureau and legislature have no common interest in reacting to changes in θ, the legislature can do no better than to allow no discretion. Any action restriction whose lower bound is $E\theta$ is equally as good, but the bureau is of no value to the legislature.

4 Comparison of Control Instruments under Limited Commitment

As noted, menu laws and action restrictions are alternative approaches for overcoming a problem of hidden information or adverse selection. Moreover, in a world of unrestricted levers of ex ante bureaucratic control, menu laws are never worse than action restrictions. They are sometimes equivalent,[14] but not generally so. A revelation mechanism is strictly more general than an action restriction in the outcomes it can implement. A menu law,

[13]The key characteristic is that the set of states θ for which the agent prefers a policy above any given p to that p itself is a subset of the same set for the principal, for all policies p.

[14]In particular, if (1) $b = 0$ so L and B have identical preferences or (2) $\theta^h = 0$, so the legislature is perfectly informed. In these cases there is either no relevant preference conflict or no information asymmetry. Thus, even an action restriction allows the legislative principal to obtain its ideal outcome with certainty.

which is simply a revelation game, covers anything that can be implemented in equilibrium with an action restriction and more. The reason menu laws are more potent than action restrictions in this respect is the extra flexibility that a menu law's transfers afford the legislative principal. This is the point of the revelation principle; given that result, this assertion requires no independent proof or argument.

To put it differently, the previous results imply that *if* an action restriction is used as the instrument of accountability, it is a compact and connected set. But they do not imply that action restrictions are ever optimal ex ante control instruments when compared to the larger class that includes menu laws. Given that action restrictions are observed (or at least, empirical implications of their existence is observed), the question becomes, what kinds of limitations on the contracting opportunities would ever make a legislature prefer an action restriction over a menu law?[15]

An obvious possible limitation on the control instruments especially relevant in politics is lack of commitment. Specifically, in a menu law the legislature must follow through on a prespecified policy choice for each state of the world and honor a prespecified transfer of resources to the agent in each state. This is obviously crucial for the incentive properties of the menu law to hold. It is also politically suspect: once the information about the state is revealed, the agent cannot appeal to any higher authority in case the principal reneges and chooses its favorite policy given that state or fails to follow through with promised transfers. Absent this commitment, the agent's report simply amounts to one following which the principal can choose any policy it wishes. In this case the incentive design problem reduces to a costless signaling problem, and the available menu laws (no-commitment menu laws) are degenerate, allowing only cheap talk communication (Bester and Strausz 2001).[16]

The well-known result in the costless signaling model with quadratic utilities and a uniformly distributed shock is that the Pareto efficient perfect Bayesian equilibrium is semi-separating, where all agent types in a given interval of types $[\theta_1, \theta_2)$ send the same message, but agents in different intervals send different messages (Crawford and Sobel 1982). The number of intervals is strictly decreasing in preference divergence b as long as $b < .25$, and the number of intervals is 0 for greater preference divergence. In particular, the number of intervals of separation is the largest integer less than $\frac{1}{2}\left(1+\left(1+2b^{-1}\right)^{\frac{1}{2}}\right)$. Denoting this integer by N^* and the integer part of x by $[x]$, Crawford and Sobel show that L's equilibrium expected utility in the most informative equilibrium is

$$EU^L_{\text{menu}}(b) = -\frac{1}{12(N*)^2} - \frac{b^2((N*)^2-1)}{3}$$
$$= -\frac{1}{12\left(\left[\frac{1}{2}\left(1+\left(1+2b^{-1}\right)^{\frac{1}{2}}\right)\right]\right)^2} - \frac{b^2\left(\left(\left[\frac{1}{2}\left(1+\left(1+2b^{-1}\right)^{\frac{1}{2}}\right)\right]\right)^2-1\right)}{3}. \quad (6)$$

[15] Epstein and O'Halloran (1999) explore a question with a similar formal structure: what determines the legislature's decision to delegate to legislative committees versus executive branch bureaucracies? They model committee delegation as a cheap talk game between committee and floor and bureaucratic delegation as a grant of discretion chosen by the floor. The point in this section is to provide foundations for this assumed form of bureaucratic delegation, when some other form of delegation may be used to control the same agent.

[16] An intermediate type of commitment failure in mechanism design, the case without transfers, is analyzed by Baron and Meirowitz (2006). They relate fully revealing equilibria in costless signaling games to the existence of transfer-free mechanisms that implement the principal's ideal policy in every state.

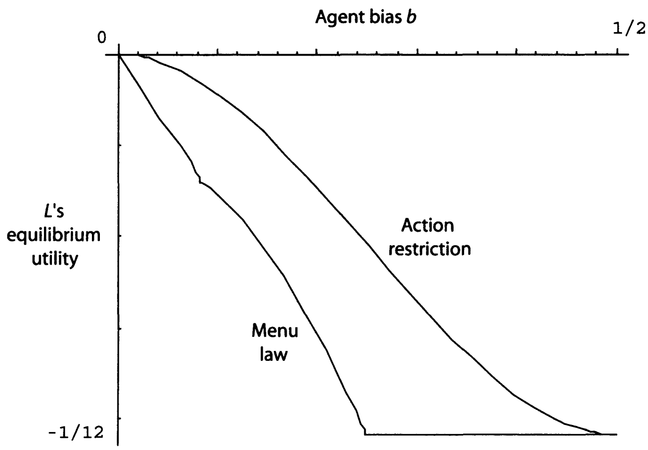

Fig. 2 Equilibrium utilities to L under optimal action restriction and menu law with limited commitment. The utility under delegation exceeds that under the menu law for all levels of bias b such that delegation is strictly positive.

On the other hand, L's equilibrium utility under the optimal action restriction is

$$EU_{\text{del}}^{L}(b) = \frac{4}{3}b^3 - b^2. \tag{7}$$

These equilibrium utility functions are illustrated in Fig. 2. Then letting

$$\Delta^{EU^L}(b) \equiv EU_{\text{del}}^{L}(b) - EU_{\text{menu}}^{L}(b) \tag{8}$$

represent the difference in equilibrium utilities under the optimal action restriction and optimal no-commitment menu law, we have the following proposition.

Proposition 5. (1) The legislature strictly prefers the optimal action restriction to the optimal no-commitment menu law for any preference divergence $b \in (0, .5)$, (2) the legislature is indifferent between the optimal action restriction and the optimal no-commitment menu law for $b \geqslant .5$, and (3) the legislature's preference for the optimal action restriction over the optimal no-commitment menu law is greatest for $b = .25$.

Proof: (1) For $b < .25$, $N^* \geqslant 2$ and rewriting equation (6) as $EU_{\text{menu}}^{L}(b) = \alpha(N) - \beta(N)b^2$,, where $\alpha(N) > 0$ and $\beta(N) > 1$, makes clear that $EU_{\text{menu}}^{L} < -b^2$, but as equation (7) notes, $EU_{\text{del}}^{L} > -b^2$. For $b \in [.25, .5)$, $EU_{\text{menu}}^{L} = -\frac{1}{2}$ but $EU_{\text{del}}^{L} > -\frac{1}{2}$. (2) $EU^L = \frac{1}{2}$ when $b \geqslant .5$ under both instruments because the agency is not part of policy making in either case and L chooses $-E\theta$. (3) Clearly, $\arg\max_b \Delta^{EU^L}(b)$ cannot exceed .25 because EU_{menu}^{L} is constant in b but EU_{del}^{L} is decreasing. On the other hand, for $b < .25$, EU_{menu}^{L} decreases in b faster than EU_{del}^{L} decreases: in $EU_{\text{menu}}^{L} = -\alpha(N) - \beta(N)b^2$, $\alpha(N)$ increases in b (there are weakly fewer partitions of communication so N^* gets smaller) and $\beta(N) > 1$ for $b < .25$. Therefore, EU_{menu}^{L} decreases at a rate faster than $-2b$. But $-2b < \frac{\partial EU_{\text{del}}^{L}}{\partial b} = 2b(2b-1) < 0$. Because $\Delta^{EU^L}(0) = 0$ (they start at the same point and EU_{menu}^{L} decreases faster up to $b = .25$), the maximum difference is at $b = .25$. ■

In short, optimal action restrictions are preferred by the legislature to the optimal menu law (i.e., cheap talk) when the legislature cannot commit to a menu law's policy function or employ state-contingent transfers of resources. For a legislature to simply give away authority to an agent to choose as it wishes over some defined set of policies is quite consistent with the best ex ante control it can exercise, given this set of tools. Moreover, the preference for action restrictions over no-commitment menu laws is strongest at the level of bias at which informative cheap talk signaling becomes impossible. For $b \in (.25, .5)$, only the babbling equilibrium exists in the cheap talk game, so L's optimal choice is simply $E\theta$ and expected utility is $-\frac{1}{12}$. But using an action restriction for b in this interval strictly improves on this result (otherwise, L would simply replicate the menu law result by setting the singleton action restriction at $E\theta$ and granting zero discretion).

Intuitively, the reason that action restrictions are preferred by the legislative principal to no-commitment menu laws is that delegation essentially allows the legislature to make an implicit commitment after all—not to adopt a prespecified policy choice following the agent's report of the state of the world, but to let the agent use its information in certain ways beneficial to the agent (thereby inducing the agent to reveal them).[17] The source of this implicit commitment in the action restriction is the principal's ability to give away decision-making authority to the agent with no chance of subsequently taking it back or overturning the agent's choice. This commitment may be parameterized by the probability that the principal can overturn the agent's policy choice after it is made, and any information contained in it is revealed. The analysis above then applies for the special case in which this probability is zero. At the other extreme, when this probability is one, the action restriction is equivalent to the costless signaling game in its incentives for the agent: the agent's policy choice in that case is isomorphic to a message about the state θ, and the principal observes that choice and then implements her ideal policy conditional on it. This realization then highlights another important aspect of modeling control of bureaucratic policy making with action restrictions: They may appear to be desirable modeling tools in part because they do not require the explicit commitments that a mechanism requires, but in fact they do imply a commitment that may merely be suppressed in the extensive form of the game.

From the standpoint of positive theorizing about control of delegated authority and interpreting empirical patterns, the relevant question is whether or why the commitment in an action restriction is substantively more palatable than that assumed by mechanism design models. Arguably it is; once authority has been delegated in an action restriction, the onus is on the legislature to overturn a policy made by the agent pursuant to that authority. If the legislature takes no further action, the agent's choice sticks. The commitment implicit in an action restriction could reflect, for example, the probability that the bureaucratic policy choice arouses the attention of the legislative principal. Because of gaps in legislative policy attention and imperfections in oversight, it is not unreasonable that this probability might be less than 1. On the other hand, implementing a prespecified policy choice in response to information reported by agents or making transfers conditional on specific reports does require action by the legislature subsequent to the agent's action. Without such action, the commitment is not honored. Although these actions may be nominally preprogrammed in statutes, no statute passed before a report by the agent can prevent a future amendment or nullification after the agent's report. This is especially relevant because, as noted in Section 3.1, the optimal policy function in the mechanism design problem with full

[17]Given that a generalized revelation principle still holds in case the legislature cannot commit (Bester and Strausz 2001), and all the allocations and utilities attainable by the legislature are captured by it, it is obvious that a mechanism that does better allows some degree of commitment.

commitment does not generally implement *L*'s state-contingent ideal policy. So when the agent reveals the state, reneging on the commitment embodied in the mechanism allows *L* to avoid paying costly transfers *and* to obtain a more desirable policy.

5 Conclusion

In this paper I investigated the trade-off a legislature faces between two classes of instruments to control the choices of bureaus who are experts relative to the legislature. One class of instruments, menu laws, covers rules associating states of the world observed by the bureaucrat with approved policy choices. The other class, action restrictions, covers grants of restricted policy-making discretion, an instrument widely studied in the political economy literature and widely used by legislatures. The main points are, first, that the optimal action restriction is simply an interval of the policy space, as long as there is some common view between the legislature and bureau about the right direction of policy change given a change in the state of the world. This is true provided that the utilities are symmetric and single peaked and holds for any distribution over the state of the world. Second, in the uniform-quadratic model when the legislature cannot commit to a schedule of policy choices in a menu law and cannot commit to state-contingent transfers of resources, optimal action restrictions are preferable to the degenerate menu law that is available. (When the principal can commit the revelation principle guarantees that menu laws are better for the legislature than delegation or action restrictions.)

Delegation of authority is one of many natural institutions that is difficult to rationalize with unlimited commitment by the principal. But inability of the legislative principal to commit to a specific policy choice or transfer of resources given a specific reported state of the world is a natural and relevant limitation on the use of incentives in political settings. When the legislature cannot commit to a policy function, the menu law instrument collapses to communication via costless signals from the agent. In the limited commitment case, the optimal menu law is strictly worse for the legislature than simply delegating the choice from a specified set of policies to the agent, for any value of preference divergence that still allows nonzero delegation to occur. Moreover, the utility difference for the legislature is greatest at the level of preference divergence where informative costless signaling breaks down.

These conclusions lead into several interesting directions for future work. The legislature's cost or inability of foreseeing and describing future contingencies (cf. Huber and Shipan 2002; Huber and McCarty 2004) also seems to interact importantly with incentives to delegate. Moreover, when the agent must be induced to acquire expertise, rather than being exogenously endowed with it, the optimal control instrument for the legislature ought to reflect this. Understanding how this affects the legislature's choice of levers of control and how this interacts with, say, ex post oversight by the legislature updating its beliefs after bureau policy choice could also lead to interesting insights about bureaucratic discretion and accountability.

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