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Lobbying-consistent Delegation and Sequential Policy Making

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Abstract

This paper studies the relationship between interest group political influence and allocation of decisionmaking power in a potentially divided government. We consider a simple endogenous policy model in which a legislator is in charge of setting the levels of two different policy instruments - a tax rate and a revenue redistribution scheme - and may decide to delegate policy authority over the allocation task to a bureaucracy within a hierarchy. An organized group is able to influence the political process at both tiers through the provision of policy-contingent contributions. We find conditions under which legislative delegation and sequential decisionmaking are consistent in equilibrium with the presence of two-tier lobbying, as the effects of the former on the allocation of lobbying activities exactly counterbalance the loss from bureaucracy's capture. As a consequence, we find that the possibility of multi-tier lobbying within a divided government need not be harmful to the higher level policy maker in the political equilibrium.

1. Introduction

A central issue in political economy is the role of influence-buying and financial support in public decisionmaking (e.g., Buchanan and Tullock, 1962; Olson, 1965; Bernholz, 1973; Hillman, 1982, 1989; Hillman and Katz, 1987). Seminal contributions to the theory of endogenous policy and rent-seeking have provided important insights into the working of policy making processes in which organized interest groups participate actively - through the provision of contributions to government institutions - in order to influence policy outcomes (e.g., Stigler, 1971; Grossman and Helpman, 1994, 2001; Dixit *et al.*, 1997).

In this respect, the fairly large literature on endogenous policy generally neglects the fact that government arrangements often involve multilevel governance structures. Since public policies are likely to be the outcome of a complex process of decisionmaking at distinct levels, there exists in principle a multiplicity of access points to the system of government that organized interest groups can exploit for their purposes. A growing number of empirical studies indeed documents the existence of distinct channels through which lobbies wield pressure on political institutions and public officials (e.g., Potters and Sloof, 1996; Boylan, 2002). Accordingly, a comprehensive analysis of lobbying activities calls for an evaluation of lobbies' strategic behaviour as to how best to employ resources to impinge on the process and which choices they should attempt to affect.

This observation immediately raises the question of whether and how the costs and benefits of endowing (possibly self-interested) bureaucratic agencies with policy authority are altered by the presence of organized groups which are able to capture the different decisionmakers involved in the process. While several authors have paid attention to the subject of policy formation in the presence of multilevel policy making (e.g., Hoyt and Toma, 1989; Epstein and Nitzan, 2002, 2006), relatively few studies have been devoted to the relationship between interest groups influence over decisionmaking and the delegation of policy authority (e.g., Spiller, 1990; Diermeier and Myerson, 1999; Sloof, 2000). In this paper, we present a highly stylized endogenous policy model to shed some light on this issue. The simple institutional differences considered here assume that the preferences of the bureaucracy closely reflect those of the legislature. That is, we deliberately assume away the scope for preference conflict between government agents and the related issue of strategic appointments. Though this certainly limits the ability of the model to capture the actual working of political systems, a thorough analysis of these issues would require a more complex framework accounting for nomination procedures and bargaining, which is beyond the scope of the present work. We rather focus on the interaction between multi-level lobbying in a divided government and the allocation of decision power when multiple policy instruments are available. Our main result is that, under some circumstances, legislative delegation configures an equilibrium consistent choice in the presence of two-tier (sequential) lobbying, as the legislator will not lose from restricting it at the lower decisionmaking tier. This obtains when the effects of delegation on strategic behaviour of the organized interest group as to the allocation of lobbying activities are able to counterbalance the loss from the delegate's capture - in terms of bureaucratic drift and rent-dissipation - in which the legislator incurs.

The basic model is as follows. A legislator (' L ') is in charge of setting the levels of two different policy instruments, a tax rate and a revenue redistribution scheme. Since this process is costly, it may decide to delegate policy authority over the allocation task to

a bureaucracy (B) within a standard principal-agent relationship. As the bureaucracy is assumed to be appointed by the legislator itself, we let the former be concerned with the preferences of the latter as for the effective budget allocation. More precisely, due to career prospects in the public sector or political affiliation, the political welfare function present in L 's objective serves as a hierarchical constraint for B 's behaviour (e.g., Epstein and Nitzan, 2002; Mazza and van Winden, 2008). We explicitly allow for the possibility that an organized interest group may influence the political process at both decisional levels through the provision of policy-contingent contributions. When faced with a multilevel political process, the interest group may be forced (whenever profitable) to influence decisionmaking at each tier separately, in order to obtain its desired policy pair. Though lobbying-provoked misbehaviour at the lower tier potentially engenders policy bias and rent-dissipation, a countervailing effect may arise when the legislator induces non-zero transfers to B via delegation, to be then fully seized within the agency (delegation) relationship. We therefore derive precise conditions under which legislative delegation remains a feasible equilibrium choice when two-tier lobbying and sequential decisionmaking occur. Accordingly, legislators may well be indifferent between a biased bureaucracy and an unbiased one, when this leaves unaltered the stake of the lobby in influencing the process of policy making.

Closely related to our approach are the works by Spiller (1990), Sloof (2000), and Mazza and van Winden (2008). The former develops a multiple principals agency model to investigate the extent to which legislators could be willing to allocate policy authority to regulators when the latter might be targeted by organized interest groups. Using a signaling game, Sloof (2000) studies the interdependencies between the internal organization of government and the choice of an organized interest group on which layer to approach via a strategic information transmission mechanism (see also Falconieri, 2001). We contribute to this literature by focusing on the interplay between sequential decisionmaking and multi-level lobbying in a complete information endogenous policy framework. In the same vein, Mazza and van Winden (2008) investigate multi-tier lobbying in a hierarchical government. In the monopsonistic case (i.e. when only one special interest group is able to lobby), they find that the reaction of the legislative agent to bureaucratic capture is always harmful to the former and may even make lobbying wasteful for the organized group in the political equilibrium. However, this result strictly hinges on the reduced form hierarchical relationship between the two political bodies, which involves the absence of any advantages from allocation of decisionmaking power between the public agents and the net loss from lobbying at the bureaucrat's tier in which the legislator always incurs. In this respect, our results partly restore the conventional wisdom about one-tier lobbying, according to which lobbying proves beneficial for the special interest group while policy makers do not lose from financial support whenever incentives exist for accepting it.

The remaining paper is organized as follows. Section 2 introduces the theoretical model, while in Section 3 the benchmark case of absence of lobbying is presented. Section 4 carries out the equilibrium analysis for the lobbying game. Section 5 concludes.

2. The model

The model mostly builds upon Mazza and van Winden (2008). We consider an economy with a population of N individuals divided into two groups of size n_i and within-group

homogeneous preferences, with $\sum_{k=1}^2 n_k = N$. Utility (welfare) is derived from disposable income, which is taken to be exogenous, and redistribution of the public tax revenue:

$$U_i = n_i u_i, \quad u_i = (1 - t)y_i + h_i(s_i R) \quad (1)$$

where:

- y_i denotes gross income for individuals of group i ;
- $t \in T = [0, 1]$ is the common (endogenously determined) tax rate on gross income;
- $h_i(\cdot)$ is a twice-differentiable function measuring utility derived from budget allocation $s_i R$, with $s_i \in S = [0, 1]$ denoting the (endogenously determined) shares of the tax revenue $R = t \sum_i n_i y_i$, with $\sum_i s_i = 1$ ¹;
- $h_i(\cdot)$ is strictly increasing and concave in $s_i R$ and satisfies $\lim_{s_i R \rightarrow 0} h'_i(\cdot) = \infty$ and $\lim_{s_i R \rightarrow \infty} h'_i(\cdot) = 0$, $i = 1, 2$.

A legislator (L) has the institutional role of setting the levels of the policy instruments, i.e. the tax rate t and the budget shares s_i . Since policy implementation entails a cost $\Gamma > 0$, the legislator may decide to delegate policy authority over the allocation task to a bureaucrat (B) in order to gain from bureaucracy expertise and wipe out the implementation cost. The delegation process is simply modeled through a binary categorical variable $I_{\{D, ND\}}$ which can take on two attributes only, namely $I_{\{D, ND\}} = D$ if delegation occurs, and $I_{\{D, ND\}} = ND$ otherwise. Under delegation, public policies then result from the sequential interplay of two government institutions at different decisionmaking tiers, each enjoying full discretion over the policy instrument within its domain.

Given its interest in the political outcome, an organized interest group i may influence the political process by submitting policy-contingent contributions to decisionmakers, who are supposed to be concerned with financial support and (a political measure of) social welfare². Groups may exhibit different abilities in capturing institutions and outbidding rival seekers of favorable policies. Here we consider the asymmetric case, where group 1 only is modeled as a transfer provider. Let $C_1(t, s)$, with $s_1 = s$, denote the transfer schedule which maps any feasible pair ($t \in T, s \in S$) into a non-negative contribution to L . Under delegation, the lobby may be restricted to lobbying L for this to perform the undelegated task only (i.e., the budget determination).

L 's preferences are thus defined over the contributions tendered by the lobby and a political welfare function³:

$$P_L = \begin{cases} l_1 C_1(t, s) + l \sum_{i=1}^2 \theta_i V_i(t, s) - \Gamma & \text{if } I_{\{D, ND\}} = ND \\ l_1 C_1(t) + l \sum_{i=1}^2 \theta_i V_i(t, s) - H_L(s) & \text{if } I_{\{D, ND\}} = D \end{cases} \quad (2)$$

$$l_1, l, \Gamma, \theta_i > 0,$$

¹We could think of $s_i R$ as being group-specific public goods, which are produced via a linear transformation function (e.g., Mazza and van Winden, 2008).

²Contribution schedules are interpreted as a measure of transferable utility, that interest groups are able to assign to policy makers. They can be thought of as explicit incentive contracts or rather promises of future earnings in the private sector (e.g., Bennesen and Feldmann, 2007). Technically, we require that the transfer functions be differentiable for strictly positive contributions.

³In a complete information framework as the contribution game we deal with, policy makers are plausibly concerned with lobbying expenditures and therefore with the *net* utility of all individuals, lobbying or not.

where $V_i(t, s) \equiv U_i(t, s) - C_i(t, s)$ under no delegation and $V_i(t, s) \equiv U_i(t, s) - C_i(t) - E_i(s)$ under delegation, with $C_2 = E_2 = 0$ by assumption and $E_1(s)$ denoting the transfer offered by the lobbying group in order to influence B 's decision over $s \in S$, given the tax rate as predetermined by the legislator at the upper tier. In (2), l_1 reflects the shadow price of lobbying L faced by the special interest group, l measures the (exogenous) degree of preference of L for political welfare relative to contributions, and θ_i represent the weights the legislator attaches to net payoffs and stand as a measure of political relevance of group i ⁴. Under no delegation, feasibility of lobbying at L 's tier requires $(l_1 - l\theta_1) > 0$.

Delegation may occur against the reward $H_L(s)$ in a standard (complete information) agency relationship. While the bureaucrat can accept contributions from the lobby for skewing the budget allocation in a certain direction, it will not discard - given the effective size of the tax revenue R - the role of political weights on social welfare aggregation in absence of lobbying. The relationship between the legislator, the bureaucrat and the organized interest group is partly analyzed in reduced form by specifying B 's objective as:

$$P_B = \begin{cases} \Pi, & \Pi > 0 & \text{if } I_{\{D, ND\}} = ND \\ b_1 E_1(s) + H_L(s) + bl \sum_{i=1}^2 \theta_i V_i, & b_1, b > 0 & \text{if } I_{\{D, ND\}} = D \end{cases} \quad (3)$$

where Π indicates a non-zero outside opportunity for the bureaucracy, b is the weight B attaches to L 's preferences over groups' well-being, whereas b_1 denotes the bias parameter according to which lobbying at this tier proves feasible only if $(b_1 - bl\theta_1) > 0$. The complete information optimal contract is implemented through the transfer $H_L(s^*) = \Pi - \{b_1 E_1(s^*) + bl \sum_i \theta_i V_i(t, s^*)\}$ with $s^* \in S$ denoting the optimal choice of the bureaucracy. That is, when delegation occurs, the legislator fully seizes the benefit, while lobbying at L 's tier is possible only if $(l_1 - (1 + b)l\theta_1) > 0$. The objectives (2) and (3) are taken to be known to L , B and the organized interest group.

The delegation-lobbying game described above unfolds as follows⁵:

- (i) the nature draws a bureaucracy B , as described by the parameters (b_1, b, Π) ;
- (ii) L decides over delegation of the allocation task to B ; if delegation has not occurred (i.e. $I_{\{D, ND\}} = ND$) then: (iii) the organized interest group 1 chooses whether to lobby L by submitting a transfer schedule $C_1(t, s)$; (iv) L selects both the tax rate t and the budget shares $(s, 1 - s)$ maximizing (2) and payoffs are realized;
- (ii') conversely, if delegation has occurred (i.e. $I_{\{D, ND\}} = D$) by designing an optimal contract (H_L^*, s^*) , then: (iii') at the upper decisionmaking tier the organized interest group 1 chooses whether to lobby L by submitting a transfer schedule $C_1(t)$; (iv') L chooses only the tax rate t maximizing (2); (v') at the lower decisionmaking tier the same group 1 decides whether to lobby B via a transfer schedule $E_1(s)$; (vi') B chooses a budget allocation $(s, 1 - s)$ maximizing (3) and payoffs are realized⁶.

⁴See Coughlin *et al.* (1990) for an interpretation of weights on social welfare aggregation as the outcome of electoral competition in a lobbying perspective.

⁵Note that we do not allow a first-mover advantage to the lobby with respect to L 's choice over delegation of policy authority. As it will be made clear in the following, this assumption would restrict the equilibrium strategy profiles, as the organized interest group would have incentive to lobby L for delegation versus no-delegation - being L indifferent in equilibrium between the two settings - when the shadow price of lobbying L proves higher than that of influencing B .

⁶We assume, as it is typically done in the literature on endogenous policy (e.g., Grossman and Helpman,

In the following Sections, we derive the subgame-perfect equilibrium (SPE) of the model through backward induction.

3. Equilibrium in absence of lobbying

As a useful benchmark, we first consider the case in which lobbying is unfeasible, i.e. when both $l_1 \leq l\theta_1$ and $b_1 \leq bl\theta_1$ hold. Let $(t^{nd,nl}, s^{nd,nl})$ denote the optimal policy pair chosen by L when it elects not to delegate decision power over the budget allocation to the bureaucracy ($I_{\{D,ND\}} = ND$), and $(t^{d,nl}, s^{d,nl})$ the policies that result from delegation ($I_{\{D,ND\}} = D$) and sequential decisionmaking. In this case, the equilibrium policy pair must be jointly efficient for the legislator and the bureaucracy, and it is implemented via the transfer $H^*(\cdot)$ involving full surplus extraction. Optimal policies are implicitly defined by⁷:

$$\sum_{i=1}^2 \theta_i U_{is}(t^w, s^w) = 0, \quad \sum_{i=1}^2 \theta_i U_{it}(t^w, s^w) = 0$$

where $w = \{nd, nl; d, nl\}$. While the bureaucracy has aligned preferences and delegation generates no policy bias, L must compensate the bureaucracy for its outside opportunity Π and thus the gains from trade are to be traded-off against the implementation cost Γ . For the purposes of the paper, we make the subsequent:

Assumption 1. *Under absence of lobbying, the parameters $(b, l, \theta_i, \Gamma, \Pi)$ are such that:*

$$\Pi - \Gamma = bl \sum_{i=1}^2 \theta_i U_i(t^{d,nl}, s^{d,nl}) \quad (4)$$

Thus, we suppose that in the lobby free world, no advantages from delegating decision power to the bureaucracy agency exist.

4. Two-tier lobbying and delegation choice

We now turn to the analysis of the optimal delegation choice and sequential decisionmaking under lobbying. The following claim is straightforward:

Proposition 1. *Let $l_1 > (1+b)l\theta_1$ and $b_1 \leq bl\theta_1$. Then L is indifferent between $I_{\{D,ND\}} = D$ and $I_{\{D,ND\}} = ND$.*

Proof. - See Appendix A. □

that is, allowing lobbying at the legislator's level solely does not alter the indifference result with respect to the allocation of policy authority between L and the bureaucracy. Intuitively, delegation involves no indirect gain for L via the agency contract, since no additional rents would be generated at the lower level.

1994), that policies and schedules are adhered to in order to preserve the possibility of future cooperation.

⁷The subscripts s and t denote partial derivatives. First-order requirements fully characterize optimal policy pairs, since U_i is concave in t and $s = s_1$ for $i = 1, 2$.

Let us now focus on the case when $l_1 > (1 + b)l\theta_1$ and $b_1 > bl\theta_1$, this meaning that both decisionmakers are in principle willing to trade-off welfare maximizing behaviour with the transfers made by the lobbying group. We want to derive conditions, if any, under which political delegation to the bureaucracy can arise in equilibrium under multi-tier lobbying. To this end, let us assume $I_{\{D,ND\}} = D$, then a SPE for the two-tier lobbying subgame entails optimal policy-contribution pairs $(t^{d,l}, C_1^{d,l})$ and $(s^{d,l}, E_1^{d,l})$, and an optimal contract $(s^{d,l}, H^{d,l})$ such that: (i) at each stage, the lobby acts as a principal by submitting policy-contingent contributions to policy makers and equates at the margin the utility loss from transfers to the benefit from policy shifts they induce; (ii) $s^{d,l}$ maximizes P_B under the contribution $E_1^{d,l}$, for predetermined $t^{d,l}$ and $C_1^{d,l}$; (iii) $t^{d,l}$ maximizes P_L given the contribution $C_1^{d,l}$ and the best-response function $s^{d,l}(t)$; (iv) legislative delegation over the allocation task is implemented via the optimal contract $(s^{d,l}, H^{d,l})$.

It is easy to show that, at each tier separately, the interest group may have an incentive to lobby the decisionmaker acting at that level of the political process. More precisely, for any pair $(t, C_1(t))$ chosen at the legislative tier, there exist instances in which the interest group cannot prevent itself from contributing B once the lower decisional tier has been reached, whereas it will find it non-detrimental to engage in lobbying behaviour at the legislative level if also lobbies the bureaucracy. As a consequence, if delegation has occurred, two-tier lobbying may emerge in the political equilibrium whenever feasible.

The effects of the endogenous interaction of sequential decisionmaking and lobbying are less evident. In fact, optimal (strategic) behaviour of policy makers and the lobby relies on the exchanges between any government tier and the interest group, which in turn prove strongly interdependent. Since the policy switch induced by lobbying at B 's level can represent a loss for the superior L , the latter may be tempted to prevent B 's capture by either choosing not to assign the allocation task to the bureaucracy (direct control) or limiting the scope for lobbying at that tier - through a cut in the budget R (indirect control). On the other hand, L may also have incentive to make lobbying B viable by making it responsible for the budget redistribution, for lobbying contributions would then be seized within the delegation relationship. In Mazza and van Winden (2008), the first effect dominates insofar as the second is absent. That is, while no advantages from government division are present under unfeasible lobbying, in the sequential game lobbying at B 's level triggers a strategic response by L which always finds itself worse off under two-tier lobbying when compared to the no lobbying setting - in fact, both the transfer to B and the policy change it induces represent a net loss for the legislator. A strategic incentive for the latter then arises toward biasing its policy choice (i.e. reducing the size of the "cake") in order to lower the stakes for political influence over the budget allocation process. This mechanism may in turn bring about an overall worse outcome for the organized interest group itself, if the shift in the redistribution decision of the bureaucracy is dominated by the legislative reaction to its capture.

Our influence model maintains the assumption of absence of gains from multilevel decisionmaking if political lobbying is unfeasible. Conversely, we show that giving access to two-tier (feasible) lobbying through delegation is not harmful for the legislator, if the marginal benefit from lobbying expenditures directed to B is positive. In the following proposition, we provide a full characterization of the equilibrium outcome of the model:

Proposition 2. *Let $l_1 > (1 + b)l\theta_1$ and $b_1 > bl\theta_1$. Then: (i) L does not lose from two-*

tier lobbying and sequential decisionmaking if and only if $b_1 > (1 + b)bl\theta_1$: (ii) under delegation, the lobby makes (not simultaneously zero) offers $C_1^{d,l} := C_1(t^{d,l}) \geq 0$ and $E_1^{d,l}(t^{d,l}) := E_1(s^{d,l}(t^{d,l})) \geq 0$; (iii) L and B accept the offers and the resulting policy pair $(t^{d,l}, s^{d,l})$ is implemented.

Proof. - See Appendix B. □

Thus, while the overall impact of lobbying is shaped by the strategic choices triggered at the different tiers, the group's contribution leaves the upper level decisionmaker no worse off than it would be in the absence of any financial support. Welfare results for the players involved in the game can be stated as follows:

Corollary 1. *Let $b_1 > (1 + b)bl\theta_1$. Then, when compared to the outcome of the no lobbying game, the process of two-tier lobbying involves: (i) no effect on L 's welfare; (ii) no effect on B 's welfare; (iii) an increase in the welfare of the lobby; (iv) a decrease in the unorganized group's welfare.*

Proof. - See Appendix C. □

5. Concluding remarks

This paper studies the interaction between the allocation of lobbying activities and sequential policy making in a simple model of (potentially) divided government. While two-tier lobbying can induce policy bias and rent-dissipation, it is shown that delegation and sequential decisionmaking can still configure a feasible equilibrium option under some circumstances, namely when the effects of the former on the allocation of lobbying activities suffice to counterbalance the loss arising from bureaucracy's capture. Though it neglects several issues concerning optimal delegation and policy formation, our model highlights the importance of further improving our understanding of multilevel governance structures and bureaucracy decisionmaking in modern democracies, where special interest politics is observed to be a pervasive phenomenon.

Appendix

A. Proof of Proposition 1 - When $l_1 > (1 + b)l\theta_1$ and $b_1 \leq bl\theta_1$, lobbying proves viable at L 's level solely, both under delegation and no delegation. In either case, the lobby implements its desired policy via political contributions by making L 's participation constraint be binding at the optimum. Given Assumption 1, the legislator cannot be better off by delegating the allocation task to the bureaucracy, as the optimizing behaviour of the latter over the choice of the budget share s is not affected by the interest group. Formally, let $(t^{nd,lL}, s^{nd,lL})$ denote the optimal policy pair implemented by the legislator when faced with the policy-contingent contribution schedule $C_1(\cdot, \cdot)$ offered by the lobby, and $(t^{d,lL}, s^{d,lL})$ the optimal policies under delegation to a bureaucrat that cannot be lobbied, implicitly given by:

$$l_1 U_{1t}(t^{nd,lL}, s^{nd,lL}) + l\theta_2 U_{2t}(t^{nd,lL}, s^{nd,lL}) = 0$$

$$l_1 U_{1s}(t^{nd,lL}, s^{nd,lL}) + l\theta_2 U_{2s}(t^{nd,lL}, s^{nd,lL}) = 0$$

and:

$$l_1 U_{1t}(t^{d,lL}, s^{d,lL}) + l\theta_2 U_{2t}(t^{d,lL}, s^{d,lL}) = 0, \quad \sum_i \theta_i U_{i,s}(t^{d,lL}, s^{d,lL}) = 0$$

Then, a fortiori the equilibrium contributions $C_1(t^{nd,lL}, s^{nd,lL})$ and $C_1(t^{d,lL})$ are such that:

$$\begin{aligned} (l_1 - l\theta_1) [C_1(t^{nd,lL}, s^{nd,lL}) - C_1(t^{d,lL})] + bl\theta_1 C_1(t^{d,lL}) \\ = l \sum_{i=1}^2 \theta_i [U_i(t^{d,lL}, s^{d,lL}) - U_i(t^{nd,lL}, s^{nd,lL})] \end{aligned} \quad (5)$$

B. Proof of Proposition 2 - As we apply backward induction starting from the lower tier, we assume that delegation has occurred ($I_{\{D,ND\}} = D$) at stage 1. At the end of the proof, we will characterize delegation as a feasible choice for the legislator on the SPE path of the game.

Under delegation, the first-mover advantage allows the lobby to fully seize the surplus within its relationship with the decisionmaker acting at each tier, the latter being exactly compensated for its failure in maximizing political welfare. At the lower tier, a policy-contribution pair $(s^{d,l}, E_1^{d,l})$ with $E_1^{d,l} := E_1(s^{d,l})$ is thus required such that, for any (t, C_1) chosen at the upper level, the policy $s^{d,l}$ jointly maximizes the objectives of B and the lobbying group, the latter acting as a principal:

$$(b_1 - bl\theta_1)E_{1s}^{d,l} + H_{Ls}^{d,l} + bl \sum_{i=1}^2 \theta_i U_{is}(s^{d,l}) = 0 \quad s.t. \quad U_{1s}(s^{d,l}) - E_{1s}^{d,l} = 0 \quad (6)$$

or:

$$b_1 U_{1s}(s^{d,l})(s^{d,l}) + H_{Ls}^{d,l} + bl\theta_2 U_{2s}(s^{d,l}) = 0 \quad (7)$$

where $H_L^{d,l} := H_L(s^{d,l})$, while the contribution $E_1^{d,l}$ cannot be lowered further without making B switch to the policy it would optimally select without any lobbying⁸:

$$E_1^{d,l} = (b_1 - bl\theta_1)^{-1} \left\{ \left(H_L^{d,nl} - H_L^{d,l} \right) + bl \sum_{i=1}^2 \theta_i [U_i(s^{d,nl}) - U_i(s^{d,l})] \right\} \quad (8)$$

Under delegation, any gain from the agency relationship between L and B is seized by the former with the reward $H_L^w = \Pi - [b_1 E_1(s^w) + bl \sum_i V_i(t, s^w)]$ for any t as predetermined at L 's tier and $w = \{d, l; d, nl\}$. From (8), it may thus appear that, since any (nonnegative) transfer $E_1^{d,l}$ could serve the purpose, the lobby would optimally set $E_1^{d,l} = 0$. However, as it will be proven in the following, the only case in which this zero-contribution choice will succeed in affecting the allocation of the tax revenue obtains when the lobby can credibly commit to submitting a unique transfer to L contingent on both the policy instruments. Conversely, there exist conditions under which the lobby is forced to directly support the bureaucracy for it to skew the budget allocation choice toward the desired direction. At this stage, we can only claim that $E_1^{d,l} \geq 0$ and $[U_1(s^{d,l}) - E_1^{d,l}] > U_1(s^{d,nl})$ for we have:

$$\{b_1 [U_1(s^{d,l}) - U_1(s^{d,nl})] + [H_L(s^{d,l}) - H_L(s^{d,nl})] + bl\theta_2 [U_2(s^{d,l}) - U_2(s^{d,nl})]\} > 0$$

whenever $E_1^{d,l} > 0$. Thus, the lobby has an incentive to contribute B at the lower decisionmaking tier.

At the upper level, L considers B 's best response $s^{d,l} := s^{d,l}(t)$ when choosing its optimal policy $t^{d,l}$ under lobbying, which solves:

$$l_1 [U_{1t}(t^{d,l}, s^{d,l}) - E_{1t}^{d,l}(t^{d,l})] + l\theta_2 U_{2t}(t^{d,l}, s^{d,l}) - H_{Lt}^{d,l} = 0 \quad (9)$$

where $H_L^{d,l}(t) := H_L(s^{d,l}(t))$ and $E_1^{d,l}(t) := E_1(s^{d,l}(t))$ for any $t \in T$. Again, the transfer $C_1^{d,l} := C_1(t^{d,l})$ is such that:

$$P_L(t^{d,l}, s^{d,l}(t^{d,l}), H_L^{d,l}(t^{d,l}), C_1^{d,l}, E_1^{d,l}(t^{d,l})) = P_L(t^{d,lB}, s^{d,l}(t^{d,lB}), H_L^{d,l}(t^{d,lB}), E_1^{d,l}(t^{d,lB}))$$

where $t^{d,lB} = \operatorname{argmax}_{t \in T} \left\{ \sum_i \theta_i U_i(t, s^{d,l}) - H_L^{d,l}(t) - l\theta_1 E_1^{d,l}(s^{d,l}(t)) \right\}$ denotes the tax rate that L would optimally choose if B only were faced with contributions from the lobby. We have accordingly:

$$\begin{aligned} C_1^{d,l} = & (l_1 - l\theta_1)^{-1} [H_L^{d,l}(t^{d,l}) - H_L^{d,l}(t^{d,lB})] \\ & + (l_1 - l\theta_1)^{-1} l\theta_1 [U_1(t^{d,lB}, s^{d,l}) - E_1^{d,l}(t^{d,lB}) - U_1(t^{d,l}, s^{d,l}) + E_1^{d,l}(t^{d,l})] \\ & + (l_1 - l\theta_1)^{-1} l\theta_2 [U_2(t^{d,lB}, s^{d,l}) - U_2(t^{d,l}, s^{d,l})] \end{aligned} \quad (10)$$

⁸Note that the main effect of the lobbying activity relative to the unfeasible lobbying case is to have the weight B grants the lobby's marginal utility increased (since $b_1 > bl\theta_1$). Given concavity assumption, lobbying indeed enhances its budget share (i.e. $s^{d,l} > s^{d,nl}$).

From the definitions of $t^{d,l}$ and $t^{d,lB}$ we obtain⁹ $C_1^{d,l} \geq 0$ and:

$$V_1(t^{d,l}, s^{d,l}, C_1^{d,l}, E_1^{d,l}(t^{d,l})) \geq V_1(t^{d,lB}, s^{d,l}, E_1^{d,l}(t^{d,lB}))$$

Therefore, lobbying at the legislative tier is non-detrimental for the organized interest group even when the latter also lobbies the bureaucracy.

Finally, we need to show that that $I_{\{D,ND\}} = D$ can represent an equilibrium choice for L . To reduce notation, let us exploit the following definitions:

$$\Omega := (l_1 - (1+b)l)\theta_1; \quad \Psi := (b_1 - (1+b)l)\theta_1$$

Under feasible lobbying at both tiers, legislative delegation can occur if and only if:

$$P_L(t^{nd,l}, s^{nd,l}, C_1^{nd,l}) \leq P_L(t^{d,l}, s^{d,l}, H_L(s^{d,l}), C_1^{d,l}, E_1^{d,l}(t^{d,l})) \quad (11)$$

where $(t^{nd,l}, s^{nd,l}) \equiv (t^{nd,lL}, s^{nd,lL})$ since no delegation involves absence of the bureaucracy's decisionmaking tier, and $H_L(s^{d,l}) = \Pi + bl\theta_1 C_1^{d,l} - \left[(b_1 - bl\theta_1) E_1^{d,l}(t^{d,l}) + bl \sum_i U_i(t^{d,l}, s^{d,l}) \right]$. Owing to Assumption 1 and Proposition 1, we can restate the above relation as:

$$(1+b)l \sum_{i=1}^2 \theta_i U_i(t^{d,nl}, s^{d,nl}) \leq \Omega C_1^{d,l} + \Psi E_1^{d,l}(t^{d,l}) + (1+b)l \sum_{i=1}^2 \theta_i U_i(t^{d,l}, s^{d,l}) \quad (12)$$

whose right-hand side can be rewritten, using (10), as:

$$(1+b)l \sum_{i=1}^2 U_i(t^{d,lB}, s^{d,lB}) + \Psi E_1^{d,l}(t^{d,lB})$$

Therefore, (11) is equivalent to:

$$(1+b)l \sum_{i=1}^2 \theta_i [U_i(t^{d,nl}, s^{d,nl}) - U_i(t^{d,lB}, s^{d,lB})] \leq \Psi E_1^{d,l}(t^{d,lB}) \quad (13)$$

By adding and subtracting $(1+b)l \sum_i \theta_i U_i(t^{d,lB}, s^{d,nl})$, and from the definitions of $t^{d,nl}$ and $s^{d,nl} \in \operatorname{argmax}_{s \in S} \{H_L(s) + bl \sum_i \theta_i U_i(s)\}$, the left-hand side of this inequality turns strictly positive; since $E_1^{d,l}(t) \geq 0 \forall t \in T$, for it to hold it must be that $\Psi > 0$ and:

$$E_1^{d,l}(t^{d,lB}) \geq \Psi^{-1} (1+b)l \sum_{i=1}^2 \theta_i [U_i(t^{d,nl}, s^{d,nl}) - U_i(t^{d,lB}, s^{d,lB})] \quad (14)$$

that is, delegation is not excluded from the equilibrium strategy profile of the game if and only if the marginal effect on L 's welfare of lobbying at B 's tier is strictly positive (i.e. $\Psi > 0$) and the contribution received by the bureaucracy when lobbying at the legislator's tier is unfeasible, is not lower than a given (strictly positive) threshold. Under full seizing, this threshold coincides with the maximum transfer the organized interest group is willing

⁹Strict inequalities result when $t^{d,l} \neq t^{d,lB}$.

to submit to B when $l_1 < l\theta_1$ in order for L not to lose from delegation and sequential decisionmaking, defined by:

$$l \sum_{i=1}^2 \theta_i U_i(t^{d,nl}, s^{d,nl}) - H_L^{d,nl}(t^{d,nl}) = l \sum_{i=1}^2 V_i(t^{d,lB}, s^{d,l}) - H_L^{d,l}(E_1(t^{d,lB}, s^{d,lB})) \quad (15)$$

where $V_i(t^{d,lB}, s^{d,l}) \equiv U_i(t^{d,lB}, s^{d,l}) - E_1(t^{d,lB}, s^{d,lB})$ ¹⁰. Indeed, in this case the transfer to B is strictly positive and contingent on both the policies as this is the only avenue the lobby can exploit in order to achieve the desired outcome. To complete the proof, we thus have to show under what conditions the lobby makes strictly positive contributions to either of the policymakers. When delegation occurs under feasible two-tier lobbying, L 's objective can be expressed as:

$$P_L = \Omega C_1(t) + \Psi E_1(s) + (1+b)l \sum_{i=1}^2 \theta_i U_i(t, s) - \Pi \quad (16)$$

from which:

$$(t^{d,l}, s^{d,l}) : \begin{cases} l_1 U_{1t}(t^{d,l}, s^{d,l}) + (1+b)l\theta_2 U_{2t}(t^{d,l}, s^{d,l}) = 0 \\ b_1 U_{1s}(t^{d,l}, s^{d,l}) + (1+b)l\theta_2 U_{2s}(t^{d,l}, s^{d,l}) = 0 \end{cases} \quad (17)$$

Depending on whether $\Omega \stackrel{\geq}{\leq} \Psi$, the interest group could thus simultaneously condition the contribution to L or B on the policies of L and B , according to the magnitude of the lobbying shadow prices l_1 and b_1 . Precisely, when $\Omega > \Psi$ (i.e. $l_1 > b_1$) the lobby will optimally choose not to submit any contribution to the lower-tier policy maker, still succeeding in inducing policy bias in the budget allocation as determined at B 's level by making the transfer to the superior legislator contingent on both t and s . Conversely, when $\Omega < \Psi$ (i.e. $l_1 < b_1$), only the bureaucracy will be lobbied via a strictly positive contribution, again conditioned on both the policy instruments¹¹. Finally, when $\Omega = \Psi$ (i.e. $l_1 = b_1$), any contribution pair:

$$\begin{aligned} 0 &\leq C_1^{d,l}(t^{d,l}) \leq \Phi(t^{d,l}, s^{d,l}) \\ 0 &\leq E_1^{d,l}(s^{d,l}) \leq (1 - \Phi(t^{d,l}, s^{d,l})) \end{aligned}$$

where:

$$\Phi(t^{d,l}, s^{d,l}) = \Omega^{-1}(1+b)l \sum_{i=1}^2 \theta_i [U_i(t^{d,nl}, s^{d,nl}) - U_i(t^{d,l}, s^{d,l})]$$

will serve the purpose. In this final case, strictly positive transfers to both the policy makers can occur.

¹⁰Note that the proof of Proposition 2 rests on the assumption that $l_1 > (1+b)l\theta_1$. One further possibility is that lobbying at L 's tier is possible under no delegation but unfeasible under delegation, which occurs when $l\theta_1 < l_1 < (1+b)l\theta_1$. In this case, the legislator would still be indifferent between not delegating and delegating, since the interest group would seize all the surplus from the lobbying activity.

¹¹It is indeed straightforward, by exploiting the definition of the optimal delegation contract, to show that in either case optimal policies are implicitly defined by equation (17). Details are available upon request.

C. Proof of Corollary 1 - Points (i) and (ii) readily follow from Proposition 2 and the form of the optimal delegation contract. As to point (iii), we first need to demonstrate that:

$$U_1(t^{d,l}, s^{d,l}) - C_1^{d,l} - E_1^{d,l}(t^{d,l}) > U_1(t^{d,nl}, s^{d,nl}) \quad (18)$$

where we have made use of the fact that $(t^{d,nl}, s^{d,nl}) \equiv (t^{nd,nl}, s^{nd,nl})$. According to the proof of Proposition 2, we have the following three cases:

(I) $b_1 > l_1$: in this case the contributions to the policy makers take the form:

$$C_1^{d,l} = 0, \quad E_1^{d,l}(s^{d,l}, t^{d,l}) = \Psi^{-1}(1+b)l \sum_{i=1}^2 \theta_i [U_i(t^{d,nl}, s^{d,nl}) - U_i(t^{d,l}, s^{d,l})]$$

By substituting these relations back into (18), we see that the lobby's welfare will improve from lobbying if and only if:

$$b_1 [U_1(t^{d,l}, s^{d,l}) - U_1(t^{d,nl}, s^{d,nl})] + (1+b)l\theta_2 [U_2(t^{d,l}, s^{d,l}) - U_2(t^{d,nl}, s^{d,nl})] > 0 \quad (19)$$

which follows immediately from (17);

(II) $l_1 > b_1$: same as the previous case, with $C_1^{d,l} \equiv C^{d,l}(t^{d,l}, s^{d,l}) > 0$ and $E_1^{d,l} = 0$, and l_1 (resp. Ω) replacing b_1 (resp. Ψ);

(III) $b_1 = l_1$: same as the previous case, with $C_1^{d,l}(t^{d,l}) \in [0, \Phi(t^{d,l}, s^{d,l})]$ and $E_1^{d,l}(s^{d,l}) \in [0, (1 - \Phi(t^{d,l}, s^{d,l}))]$, for $\Phi(t^{d,l}, s^{d,l})$ as defined above.

Finally, we demonstrate point (iv) of the Corollary. Owing to Proposition 2, let $\Psi > 0$, then $P_L(t^{d,nl}, s^{d,nl}) = P_L(t^{d,l}, s^{d,l})$ obtains. Since group 1 always profits from lobbying, the unorganized group 2 loses for we have:

$$\begin{aligned} & (1+b)l\theta_2 [U_2(t^{d,nl}, s^{d,nl}) - U_2(t^{d,l}, s^{d,l})] \\ & = l_1 C_1^{d,l} + b_1 E_1^{d,l}(t^{d,l}) + (1+b)l\theta_1 [U_1(t^{d,l}, s^{d,l}) - C_1^{d,l} - E_1^{d,l}(t^{d,l}) - U_1(t^{d,nl}, s^{d,nl})] > 0 \end{aligned}$$

for the described cases (I), (II) and (III), all derived under the requirement that $\Psi > 0$.

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