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Source: *The Review of Economic Studies*, Jan., 2001, Vol. 68, No. 1 (Jan., 2001), pp. 67-82

Published by: Oxford University Press

Stable URL: https://www.jstor.org/stable/2695919

Review of Economic Studies (2001) **68**, 67–82 0034-6527/01/00040067$02.00

Lobbying and Welfare in a Representative Democracy

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First version received September 1997; *final version accepted February* 2000 (*Eds.*)

This paper studies the impact of lobbying on political competition and policy outcomes in a framework which integrates the citizen–candidate model of representative democracy with the menu-auction model of lobbying. Positive and normative issues are analysed. On the positive side, lobbying need have little or no effect on policy outcomes because voters can restrict the influence of lobbyists by supporting candidates with offsetting policy preferences. On the normative side, coordination failure among lobbyists can result in Pareto inefficient policy choices. In addition, by creating rents to holding office, lobbying can lead to "excessive" entry into electoral competition.

1. INTRODUCTION

Lobbying is an important part of the policy process. Its existence raises two broad concerns for economists. First, how does lobbying affect policy choices? To this end, a host of models have derived a relationship between attempts to influence policy makers by organized groups and policy outcomes. Second, how does lobbying affect welfare? Various analyses have claimed that lobbying wastes resources and leads to inefficient policy choices. However, some have upheld a more benign view that lobbying complements the electoral process by incorporating information about preference intensity.

The vast majority of existing approaches focus exclusively on lobbying, rather than examining lobbying and electoral competition in tandem. This paper models the theoretical link between lobbying and policy outcomes, and investigates welfare aspects of lobbying, in a model where electoral competition determines who is to serve as a policy maker. The approach uses the "citizen–candidate" model of representative democracy due to Besley and Coate (1997*a*) and Osborne and Slivinski (1996), while lobbying is specified as a "menu–auction" of the kind introduced by Grossman and Helpman (1994).

The citizen–candidate approach models how policy-motivated citizens, who cannot commit to policy choices in advance, decide to become candidates for public office. Voters select among them based on their policy preferences. The menu–auction approach models exogenously given lobby groups that compete to influence policy-makers by offering policy-conditional favours. Representatives weigh these offers against their personal preferences in making policy choices. These two approaches fit naturally together since both assume that political actors are policy motivated citizens.

The analysis yields a number of novel insights about how lobbying affects policy outcomes. It is possible that lobbying can have no effect on equilibrium policy choices.

This can happen if citizens delegate policy making strategically to a representative who neutralizes the impact of the lobbies. For example, the existence of lobby groups who support increased public spending can induce voters to elect fiscally conservative leaders. In this instance, policy is determined entirely by electoral competition with lobbying being emasculated. At the other extreme, we develop an example where lobbying completely dominates electoral competition—a strong lobby will ensure that a candidate with *any* preference will produce their preferred outcome. The political process then serves merely to sort in those candidates whom the lobbyists find cheapest to bribe. In all cases, lobbying generates rents to office holding. This can induce competition among a number of candidates who shares the same policy preferences. However, political equilibria with non-identical candidates may exist where rents are not bid away by entry of candidates.

We discuss normative issues under two headings. First, if lobby groups use contribution schedules that are "truthful" in the sense of Bernheim and Whinston (1986), then equilibrium policy choices are Pareto efficient. However, relaxing the assumption of truthfulness can lead to Pareto dominated policy choices due to coordination failure among the lobbyists. Our second welfare approach follows the rent-seeking literature and investigates "waste" caused by lobbying. While rejecting the standard presumption that all lobbying expenditures are wasteful, we show how rents due to lobbying may lead to "excessive" entry into the race for political office. Such rents need not, however, be completely dissipated by increased electoral competition.

We incorporate electoral competition and lobbying here by assuming that lobbies provide policy-makers with transfers (such as bribes or future employment opportunities) which enhance their utility. This contrasts with an approach where lobbies reward politicians indirectly by offering campaign contributions that affect their election chances. Austen-Smith (1987), Baron (1994), and Grossman and Helpman (1996) develop models where campaign contributions buy the votes of impressionable voters or provide voters with information about candidates' positions. Candidates manipulate their stances to attract support from the lobbies. In reality, lobbies provide both political support and utility enhancing transfers to policy-makers.[1] Hence, these two broad approaches highlight complementary aspects of the relationship between electoral competition and lobbying.

The remainder of the paper is organized as follows. Section 2 outlines the general model and Section 3 studies equilibrium. We develop results for examples of one lobby with a continuous policy, then for two lobbies and a discrete issue. Section 4 discusses welfare issues and Section 5 concludes.

2. THE MODEL

The polity consists of N citizens, indexed by $i = 1, \ldots, N$. There are two goods—a private good denoted x and a public good g. Citizen i is endowed with y_i units of the private good. The public good can be produced at any level $g \in \mathcal{G}$ where $\mathcal{G}$ is a compact subset of $\Re_+$ containing 0. The cost in foregone private consumption of producing level g is cg.

Each citizen has preferences over his private consumption x_i and the public good g, of the form $u_i(x_i, g) = x_i + v(g, \theta_i)$ where the function v is smooth; increasing and concave in g (*i.e.* $v_1 > 0$ and $v_{11} < 0$); and satisfies $v(0, \theta_i) = 0$. The θ term is a public good preference parameter, with citizens with higher θ's having higher marginal valuations (*i.e.* $v_{12} > 0$).

1. They also provide information to policy-makers. For a model of this form see Lohmann (1995).

The citizens are divided into $T < N$ different "types" according to their public good preferences. Thus, for all i, $\theta_i \in \{\lambda_1, \ldots, \lambda_T\}$, where $\lambda_1 < \cdots < \lambda_T$. If $\theta_i = \lambda_t$ then citizen i is of "type t". The number of type t citizens is N_t and the median type is m.

The community chooses the level and financing of the public good. It uses a representative democracy to do so, which works along the lines described in Besley and Coate (1997*a*). Essentially, the policy decision is delegated to a representative who is selected by the community. This representative works within certain constitutional rules. In particular, the public good must be financed by a uniform head tax. Thus, providing g units of the public good results in a per-citizen tax of cg/N. Let $V(g, \theta) \equiv v(g, \theta) - cg/N$, denote the surplus from public goods level g enjoyed by an individual with valuation parameter θ.

The polity selects its representative in an election, with citizens wishing to represent the community presenting themselves as candidates for office. All citizens may run for office, although there is a utility cost of participating in the race, denoted by δ. The constitution specifies that all citizens (including candidates) have one vote which, if used, must be cast for one of the self-declared candidates. It also specifies that the candidate receiving the most votes is elected and that, in the event of ties, the winning candidate is chosen with equal probability from among the tying candidates. If only one candidate runs for office then he is automatically selected to choose policy. If nobody runs, the public good is not provided.

Once elected, the winning candidate can be lobbied. There are $L \leqq T$ exogenously given "lobby groups", indexed by $l = 1, \ldots, L$. Lobby group l consists of n_l citizens of type $\tau(l)$. The lobbies influence the policy maker by offering contributions of the private good in exchange for public goods levels. Each lobby maximizes the sum of its members' utilities, with all lobbying expenditures being divided evenly among the members. If a member of a lobby group becomes the policy-maker, then he leaves the lobby.

There are three stages to the political process. The first is the *entry stage*, where each citizen decides whether or not to run as a candidate for office. The second is the *voting stage* where voters choose from among the declared candidates and the third is the *policy selection stage* where the policy maker chooses policy in the face of any lobbying activity. We analyse these three stages in reverse order.

2.1. *Policy selection*

Suppose that citizen i has been elected. Before choosing policy he will be lobbied. Following Bernheim and Whinston (1986) and Grossman and Helpman (1994), we model the lobbying process as a two stage game. In stage one, each lobby group l chooses a non-negative contribution schedule $B_{li}(\cdot)$.[2] In stage two, citizen i selects a public good level g. An *equilibrium of the policy selection game* when citizen i is the policy-maker is a vector of contribution schedules $\{B_{li}^*(g)\}$ and a level of the public good g_i^* such that (a) $B_{li}^*(g)$ is optimal for each lobby group l given the schedules of the other lobbyists and the induced policy choice, and (b) g_i^* is optimal for the policy maker given the contribution schedules $\{B_{li}^*(g)\}$.

This policy selection game will typically have many equilibria. Bernheim and Whinston (1986) suggest focusing on "truthful" equilibria where each lobby group offers the

2. To avoid inessential complications, we do not explicitly account for the constraint that the lobby cannot promise more than any member can afford. This is not a problem as long as the utility value of the public good is small relative to citizens' incomes.

policy maker his true net willingness to pay for increments of the public good.[3] The results of Bernheim and Whinston (1986) imply that a truthful equilibrium always exists. While we use this refinement to calculate equilibria in specific examples, we do not impose it at the outset since it rules out certain types of coordination failures that have interesting implications for the efficiency of policy choices.

Any particular equilibrium $\{g_l^*; \{B_{li}^*(g)\}\}$ gives rise to a vector of utility levels for the citizens. Citizen i, the policy maker, receives a (gross of entry costs) utility level $V(g_l^*, \theta_k) + y_k + \sum_l B_{li}^*(g_l^*)$. A citizen h who belongs to the lobby group l receives a utility level $V(g_l^*, \lambda_{\tau(l)}) + y_h - B_{li}^*(g_l^*)/n_l$ if citizen i is not a member of lobby group l and $V(g_l^*, \lambda_{\tau(l)}) + y_h - B_{li}^*(g_l^*)/(n_l - 1)$ otherwise. An ordinary citizen h of type t receives $V(g_l^*, \lambda_t) + y_h$.

2.2. *Voting*

Let $\mathscr{C}$ denote the set of candidates. All citizens anticipate the same equilibrium of the policy selection game if citizen i is elected and we let $v^i = (v_1^i, \ldots, v_N^i)$ denote the utility imputation generated by this equilibrium. We let $\alpha_j \in \mathscr{C} \cup \{0\}$ denote j's voting decision, where $\alpha_j = i$ denotes citizen j voting for candidate i and $\alpha_j = 0$ denotes abstention. Given the vector of voting decisions $\alpha = (\alpha_1, \ldots, \alpha_N)$, we let $P^i(\mathscr{C}, \alpha)$ denote the probability that candidate i wins.

Individuals vote to maximize their expected utility, given the voting decisions of others. A vector of voting decisions α^* is a *voting equilibrium* if for each citizen j (i) α_j^* is a best response to α_{-j}^*, (ii) α_j^* is not a weakly-dominated strategy, and (iii) $\alpha_j^* = 0$ if $v_j^i = v_j^h$ for all candidate pairs $(i, h) \in \mathscr{C}$. The first two parts are standard. The last of these conditions, which we impose to sharpen some of the results, says that voters who are indifferent between all candidates do not vote.[4]

2.3. *Entry*

Each citizen must decide whether or not to run for office, incurring the entry cost δ if he does. Let $s_i \in \{0, 1\}$ be citizen i's strategy, where $s_i = 1$ denotes entry. A strategy profile is denoted by $s = (s_1, \ldots, s_N)$. Given s, the set of candidates is $\mathscr{C}(s) = \{i | s_i = 1\}$. All citizens anticipate the same voting equilibrium for any candidate set $\mathscr{C}$ and we let $\alpha(\mathscr{C})$ denote this equilibrium. The probability that citizen i wins if he enters is then $P^i(\mathscr{C}(s), \alpha(\mathscr{C}(s)))$. Thus citizen j's expected payoff for a given set of entry decisions is:

$$U_j(s) = \sum_{i \in \mathscr{C}(s)} P^i(\mathscr{C}(s), \alpha(\mathscr{C}(s)))v_j^i + P^0(\mathscr{C}(s))y_j - \delta s_j,$$

where $P^0(\mathscr{C}(s))$ equals one if $\mathscr{C}(s) = \varnothing$ and zero otherwise. Citizen j's payoff is therefore the probability that each candidate i wins multiplied by j's anticipated payoff from i being in office, less the entry cost if he chooses to enter. An *equilibrium of the entry game* is a strategy profile s such that for each citizen i, s_i is a best response to s_{-i}.

3. Formally, a contribution schedule $B_{li}(g)$ is *truthful* relative to the public good level g_0 if $B_{li}(g) = \max\{0, n_l^{-i} V(g, \lambda_{\tau(l)}) - [n_l^{-i} V(g_0, \lambda_{\tau(l)}) - B_{li}(g_0)]\}$. (Here, n_l^{-i} equals $n_l - 1$ if citizen i is a member of lobby group l and n_l otherwise.) An equilibrium of the policy selection game $\{g_l^*; \{B_{li}^*(g)\}\}$ is *truthful* if for all l, $B_{li}^*(g)$ is truthful relative to g_l^*.

4. All of our results would hold under the assumption that indifferent voters vote with equal probability for any candidate. However, this assumption would require introducing the possibility of randomization into voters decisions and hence a cumbersome investment in notation.

2.4. *Political equilibrium*

A *political equilibrium* is a triple $\{\{g_i^*; \{B_{li}^*(g)\}\}; \alpha(\cdot); s\}$ consisting of N equilibria of the policy selection game (one for each potential candidate), a function describing anticipated voting behaviour, and a vector of entry decisions satisfying two properties. First, for any candidate set $\mathscr{C}$, the anticipated voting behaviour $\alpha(\mathscr{C})$ is a voting equilibrium given the utility imputations implied by the equilibria of the policy selection game. Second, the entry decisions s form an equilibrium of the entry game given $\alpha(\cdot)$ and the utility imputations implied by the equilibria of the policy selection game.

In the following analysis, we will focus on particular kinds of political equilibria in the set of those that are possible. One of these is a *political equilibrium with truthful contribution schedules* where the equilibrium of the policy selection game associated with each policy maker is truthful. Another is a *political equilibrium with identical candidates* where all the candidates yield the same public goods choice and identical contribution schedules. In these equilibria, the type of candidate who is running is (typically) majority preferred to any other.

3. POSITIVE ANALYSIS

This section studies some implications of lobbying for political competition and policy choice in this model. We develop two examples, each of which illuminate key aspects of the interaction between lobbying and elections.

3.1. *One lobby with a continuous public good*

The set of possible public goods levels $\mathscr{G}$ is $[0, \bar{g}]$. Each type of citizen desires a positive quantity of the public good ($V_1(0, \lambda_1) > 0$), with no type desiring the maximal level $V_1(\bar{g}, \lambda_T) < 0$). We assume the single lobby group represents a type with stronger public good preferences than the median type; *i.e.* $\tau(1) > m$.

We are interested in the effect of lobbying on political equilibrium. As a benchmark, we briefly review applicable results on the nature of political equilibrium without lobbying from Besley and Coate (1997*a*). First, for a range of entry costs, a political equilibrium exists in which a single citizen of the median type runs unopposed. Moreover, for δ sufficiently small, this is the only kind of single candidate equilibrium, a result which parallels the median voter theorem for direct democracy. If a single candidate is not of the median type, then another citizen can enter and defeat him.

Second, assuming that $\sum_{t=1}^{m-1} N_t = \sum_{t=m+1}^{T} N_t$, so that the median group splits the electorate in two, equilibria may exist in which two candidates with different preferences face each other. Specifically, if the median group is indifferent between the preferred public goods levels of two types q and r then, for a range of entry costs, there is an equilibrium in which a citizen of type q runs against a citizen of type r. If the type q candidate chooses a level of public goods below that preferred by the median type, while the type r candidate chooses a higher level, then all those types below the median type vote for the q candidate and all those above vote for the r candidate. No citizen switches his vote to an entrant for fear of causing his preferred candidate to lose.[5]

5. There are no political equilibria involving three candidates, but equilibria with four or more candidates are possible. These latter equilibria involve at most two candidates winning and the others running as "spoilers". They are made possible by the multiplicity of voting equilibria in elections with three or more candidates.

Turning now to political equilibrium with lobbying, observe that in the one lobby case there is a unique equilibrium of the policy selection game associated with each citizen. The public good level maximizes the combined surplus of the policy maker and the members of the lobby group, with the contribution from the lobby being just sufficient to bring the policy-maker to the utility level that he would obtain without lobbying.[6] The lobby group extracts all of the surplus from dealings between itself and the policy-maker. However, a policy maker still earns a rent relative to ordinary citizens of his type—his utility being what he would earn if he implemented his private preference for public goods.

This fact implies that the utility imputation associated with each citizen i's leadership is uniquely defined. It is also implies that any two ordinary citizens of the same type (or any two lobby group members) generate the same public good choice and contribution. There are therefore $T+1$ types of leaders—T types of ordinary citizens and lobby group members. To understand political equilibrium, it is necessary to understand citizen's preferences over these candidate types.

First, let $g^*(M, \lambda)$ be the public goods level that maximizes the combined utility of M citizens of type $\lambda_{\tau(1)}$ and a single citizen of type λ; that is,

$$g^*(M, \lambda) = \arg\max_{g \in \mathscr{G}} \{MV(g, \lambda_{\tau(1)}) + V(g, \lambda)\}.$$

If the policy maker is an ordinary citizen of type t the public goods level will be $g^*(n_1, \lambda_t)$, while if he is a lobby group member it will be $g^*(n_1 - 1, \lambda_{\tau(1)})$. The (net of income) payoff of an ordinary citizen of type r from having an ordinary citizen of type t as policy-maker is therefore $V(g^*(n_1, \lambda_t), \lambda_r)$. Since $g^*(n_1, \lambda_{\tau(1)}) = g^*(n_1 - 1, \lambda_{\tau(1)})$, the payoff from a lobby group member is the same as that from an ordinary citizen of type $\tau(1)$.

We assume that, for each type r, there exists a unique optimal type of policy maker $t^*(r)$; *i.e.*[7]

$$t^*(r) = \arg\max \{V(g^*(n_1, \lambda_t), \lambda_r) : t \in \{1, \ldots, T\}\}.$$

Absent lobbying, ($n_1 = 0$) it is clear that $t^*(r) = r$. However, lobbying implies that ordinary citizens prefer a policy maker of a different type to offset the "distortion" that lobbying creates in the selection of the public good. Citizens with types $r < \tau(1)$ prefer a lower type than themselves, while those for whom $r > \tau(1)$ prefer a higher type. Only type $\tau(1)$ citizens prefer a candidate just like themselves. Since $g^*(n_1, \lambda)$ is increasing in λ, citizens' optimal types are ordered, *i.e.* $t^*(1) \leqq \cdots \leqq t^*(T)$. In addition, citizens' preferences over ordinary candidates are single peaked, with each citizen preferring the candidate whose type is closest to their optimum from among any pair.

Turning to the preferences of lobby group members, let B_t denote the equilibrium contribution paid by the lobby group to a policy maker of type t, for all $t \in \{1, \ldots, T+1\}$. As noted earlier,

$$B_t = V(g^*(0, \lambda_t), \lambda_t) - V(g^*(n_1, \lambda_t), \lambda_t) \quad \text{for } t \in \{1, \ldots, T\} \quad \text{and} \quad B_{T+1} = 0.$$

The payoff of a lobby group member with an ordinary citizen of type r in power is $V(g^*(n_1, \lambda_r), \lambda_{\tau(1)}) - B_r/n_1$, while the payoff from electing a fellow lobby group member is $V(g^*(n_1, \lambda_{\tau(1)}), \lambda_\tau(1))$. Since $g^*(0, \lambda_{\tau(1)}) = g^*(n_1, \lambda_{\tau(1)})$, lobby group members are also indifferent between an ordinary citizen of their own preference type and a fellow lobby group member. Not surprisingly, a lobby group member regards having a candidate of

6. The Appendix describes how this may be proved.

7. The integer constraint that $t \in \{1, \ldots, T\}$ means that uniqueness does not follow from our primitive assumptions.

their own type as optimal—such a candidate need be paid nothing to deliver their preferred level of public goods. Moreover, lobby group members' preferences over ordinary candidates are single peaked.

Since all citizens have single peaked preferences and the optimal type of candidate for lobby group members is the same as that for ordinary citizens of type $\tau(1)$, the type of candidate preferred by citizens of the median type ($t^*(m)$) will be majority preferred to any other type of candidate. This suggests that equilibria with identical candidates will involve candidates of type $t^*(m)$. The following proposition makes this precise.[8]

Proposition 1. *Suppose that either* $t^*(t^*(m)) = t^*(m)$ *or there exists* $t \in \{1, \ldots, T\}$ *such that* $t^*(t^*(m)) < t < t^*(m)$. *Then, for sufficiently small* δ, *if* $\{\{g_i^*; B_{1i}^*(g)\}; \alpha(\cdot); s\}$ *is a political equilibrium with identical candidates,* (i) *the candidates are of type* $t^*(m)$ *and* (ii) *the number of candidates is the largest integer less than or equal to* $\max\{1, B_{t^*(m)}/\delta\}$. *Furthermore, if* $\delta \in (0, B_{t^*(m)}/2]$ *and* s *is any vector of entry decisions generating a candidate set satisfying* (i) *and* (ii), *a political equilibrium with entry decisions given by* s *exists.*

Thus, under the stated condition, equilibria with identical candidates of the type preferred by the median group exist. Furthermore, these are the only possible type of equilibria with identical candidates. In these equilibria, each candidate wins with equal probability.[9] No candidate of the non median-preferred type has an incentive to enter because they anticipate that the majority of voters would mass behind one of the median-preferred candidates and cause their defeat. No additional candidate of the median-preferred type has an incentive to enter because his probability of winning office is sufficiently small as not to justify the entry costs.

The condition plays an important role in ruling out the existence of equilibria with identical candidates who are not of type $t^*(m)$. Such equilibria are ruled out by showing that if equilibrium involved candidates of some type t other than $t^*(m)$ then some other type would wish to enter. Notice that while a candidate of type $t^*(m)$ would win if he entered, he would not necessarily wish to enter because the type t candidate might be delivering his optimal level of public good. (Recall that the payoff he gets from running and winning is just the payoff he gets if he had his optimal level of the public good less the entry cost.) This would be the case if $g^*(n_1, \lambda_t) = g^*(0, \lambda_{t^*(m)})$ which would imply that $t^*(t^*(m)) = t$. Thus, we need a condition guaranteeing that in this case there must exist at least one type t' such that a citizen of type t' would win if he entered and would wish to enter. The stated condition plays this role. Essentially, it amounts to ruling out large holes in the space of types.

This proposition parallels the result for the one candidate equilibrium in the non-lobbying case. The median voter flavour of that result is preserved here since, even with a lobby group, the median group gets its preferred candidate type. However, a citizen from the median group does not actually hold office in this equilibrium; decisions are delegated to a candidate with preferences who can offset the influence of the lobby group.[10] Furthermore, with lobbying, the office holder earns a rent. This generates the incentive for citizens with identical policy preferences to compete for office.

8. Sketches of the proof of this and the subsequent propositions may be found in the Appendix. The reader interested in more detail is referred to our discussion paper (Besley and Coate (1997*b*)).

9. Each candidate receives one vote (his own) and all non-candidates abstain. The same result would hold if indifferent voters voted with equal probability for all candidates.

10. This is similar in spirit to Persson and Tabellini (1992) who suggest that strategic delegation through voting would be important in a world where governments bargain among one another. The delegation is used there to offset the influence of other regions' governments.

Proposition 1 implies that, while it may affect the number of candidates, the existence of a lobby group need have no effect on the policy outcome. If $g^*(n_1, \lambda_{t^*(m)})$ is close to $g^*(0, \lambda_m)$, the electoral process compensates for the influence of the lobby group. The lobby group is therefore *neutralized.*[11] The result illustrates the potential pitfalls with assuming that policy-makers' preferences are fixed when trying to predict the impact of lobbying.

Nonetheless, Proposition 1 shows how the ability of the electoral process to withstand the influence of lobbying is limited by the range of preference types in the population and the size of the lobby group. Even electing the most conservative type into office ($t = 1$) may produce more public spending than the median group desires ($g^*(n_1, \lambda_1) > g^*(0, \lambda_m)$). In this case, the equilibrium level of public goods will exceed the median type's ideal and the lobby group does influence the policy outcome. Since $g^*(\cdot, \lambda_1)$ is a non-decreasing function, this is more likely to occur if the lobby group is large.[12] Similarly, the lobby is more likely to influence the outcome if its preference is more extreme ($\lambda_{\tau(1)}$ is higher). Even in these cases, the tendency for electoral competition to offset the effects of lobbying remains. Under no conditions, does the lobby get their preferred policy outcome.

Equilibria with non-identical candidates remain a possibility with lobbying. The following result presents sufficient conditions for equilibria with two opposing candidates.

Proposition 2. *Suppose that the median group exactly splits the electorate in two (i.e. that* $\sum_{t=1}^{m-1} N_t = \sum_{t=m+1}^{T} N_t$*) and that the number of citizens in the median group is less than* $N/3 - 1$*. Suppose further that preference types* $q, r \in \{1, \ldots, T\}$ *exist such that* (i) $q < r \leqq \tau(1)$, (ii) *citizens of the median type are indifferent between* $g^*(n_1, \lambda_q)$ *and* $g^*(n_1, \lambda_r)$, *and* (iii) $g^*(n_1, \lambda_q) \neq g^*(0, \lambda_r)$*. Then, for sufficiently small* δ*, a two-candidate equilibrium exists in which a citizen of type q runs against a citizen of type r.*

Condition (ii) implies that all ordinary citizens of types $t \leqq m - 1$ prefer the candidate of type q, while ordinary citizens of types $t \geqq m + 1$ prefer the type r candidate. Condition (i) implies that the lobby group members support the type r candidate.[13] The electorate is, therefore, divided equally between supporters of the two candidates. The final condition guarantees that, for sufficiently small δ, the type r candidate has an incentive to run.

In common with Proposition 1, this result demonstrates the tendency of political competition to neutralize the effect of lobbying. Without lobbying, a two candidate equilibrium generating the same policy choices would exist if there were types t and t' such that $g^*(0, \lambda_t) = g^*(n_1, \lambda_q)$ and $g^*(0, \lambda_{t'}) = g^*(n_1, \lambda_r)$. Lobbying again results only in a change in the policy preferences of the candidates who deliver the policy outcomes, and not the public goods levels.

This neutrality result again requires qualification. If the lobby group is sufficiently large and/or extreme so that the median group prefers candidates with the lowest preference type ($t^*(m) = 1$), then there can be no political equilibrium involving two candidates of different types running against each other. This is because, in a two candidate race, the median group together with all those who prefer lower levels of public expenditure, will

11. Our discussion paper shows that the neutrality result can be generalized to the two lobby case where the preferences of the two lobbies are on either side of the median.

12. One should not infer from this that large groups are more likely to have policy influence. The free rider problem means that such groups are likely to experience greater difficulty forming a lobby.

13. If the types of the candidates who generate policy outcomes between which the median group is indifferent are such that $\lambda_q < \lambda_{\tau(1)} < \lambda_r$ (so that condition (i) of Proposition 2 is violated), then there is no guarantee that members of the lobby group will prefer the candidate of type r. This means that there is no guarantee that a pair of candidates from these groups will divide the electorate in two.

always vote for the candidate with the lowest type. Since this group represents over half the electorate, the candidate with the lowest type will win, leaving the other candidate with no incentive to run. In this case, lobbying eliminates all two candidate equilibria.[14]

3.2. *Two lobbies with a discrete public good*

The set of public goods levels is now $\mathscr{G} = \{0, 1\}$. Lobby group 1 is against the public good, while lobby group 2 favours it and the number of ordinary citizens who favour provision exceeds the number who oppose it. This implies that, for sufficiently small δ, all political equilibria without lobbying have a single citizen who favours provision running unopposed. Thus we are comparing the equilibrium with lobbying with a situation where the public good would otherwise be provided, and a single candidate contests the election.

With a discrete public good there is a unique truthful equilibrium of the policy selection game for any given policy-maker. In this equilibrium, the public goods level maximizes the sum of the lobbies and the policy-maker's surplus. The lobby group failing to obtain its preferred public goods level, makes no contribution in equilibrium, while the lobby group getting its desired outcome contributes an amount equal to the combined loss of surplus of the policy-maker and the losing lobby group.[15] We focus on this in what follows.

Extending the logic of the one lobby case, there are now effectively $T+2$ different types of citizens, with ordinary citizens of different preferences types and the two groups of lobby group members being differentiated. Again, we must understand citizens' preferences over these types. Let $g^*(M_1, M_2, \lambda)$ be the level of public goods that maximizes the combined utility of M_1 citizens of type $\lambda_{\tau(1)}$, M_2 citizens of type $\lambda_{\tau(2)}$, and a single citizen of type λ; that is,

$$g^*(M_1, M_2, \lambda) = \arg\max_{g \in \mathscr{G}} \{M_1 V(g, \lambda_{\tau(1)}) + M_2 V(g, \lambda_{\tau(2)}) + V(g, \lambda)\}.$$

Then, the equilibrium public good level will be $g^*(n_1, n_2, \lambda_t)$ if the policy-maker is an ordinary citizen of type t, $g^*(n_1 - 1, n_2, \lambda_{\tau(1)})$ if he is a member of lobby group 1 and $g^*(n_1, n_2 - 1, \lambda_{\tau(2)})$ if he is a member of lobby group 2.

The payoff to an ordinary citizen of type t when an ordinary citizen of type r is the policy-maker is $V(g^*(n_1, n_2, \lambda_r), \lambda_t)$. The principal difference between this and the previous example, is that different types of policy-makers generate the same policy outcome. Thus, citizens are likely to be indifferent between many (and possibly all) pairs of candidates. The payoff from having a member of lobby group 1 in office is $V(g^*(n_1 - 1, n_2, \lambda_{\tau(1)}), \lambda_t)$, while that from a member of lobby group 2 is $V(g^*(n_1, n_2 - 1, \lambda_{\tau(2)}), \lambda_t)$. Since $g^*(n_1 - 1, n_2, \lambda_{\tau(1)}) = g^*(n_1, n_2 - 1, \lambda_{\tau(2)})$, ordinary citizens are indifferent between electing a member of either lobby group.

Understanding lobby group members' preferences requires accounting for their contributions. Let $B_{lt}(g)$ denote the equilibrium contribution paid to a citizen of type $t \in \{1, \ldots, T+2\}$ by lobby group l when the public good decision is g. Since the lobby group failing to obtain its preferred public goods level makes no contribution in equilibrium, $B_{1t}(1) = B_{2t}(0) = 0$ for all t. Thus, the payoff to a member of lobby group 1 from having an ordinary citizen of type r as policy-maker is $V(1, \lambda_{\tau(1)})$ if $g^*(n_1, n_2, \lambda_r) = 1$ and $-B_{1r}(0)/n_1$ otherwise. The payoff from electing a member of lobby group 1 is $V(1, \lambda_{\tau(1)})$ if

14. As in the case without lobbying, it can be shown that there are no equilibria involving three candidates at least two of which are of a different type. Equilibria with four or more candidates remain a possibility.

15. Again, the Appendix describes how this may be proved.

$g^*(n_1 - 1, n_2, \lambda_{\tau(1)}) = 1$ and $-B_{1T+1}(0)/[n_1 - 1]$ otherwise, while the payoff from electing a member of lobby group 2 is $V(1, \lambda_{\tau(1)})$ if $g^*(n_1, n_2 - 1, \lambda_{\tau(2)}) = 1$ and $-B_{1T+2}(0)/n_1$ otherwise. The payoff to a member of lobby group 2 is calculated analogously.

Three observations about these preferences are useful. First, the contribution that a type 1 lobbyist makes to the policy-maker is smaller if the latter has a weaker preference for the public project, *i.e.* if q and r are two types such that $q < r$ then $B_{1q}(0) < B_{1r}(0)$. This follows from the fact that the lobby group getting its desired outcome contributes an amount equal to the combined loss of surplus of the opposing lobby group *and the policy maker*. Second, members of lobby group 1 prefer an ordinary citizen of their own type to a member of their lobby group. This is because the total contribution paid to either type of policy-maker is the same ($B_{1T+1}(0) = B_{1\tau(1)}(0)$), while in the latter case it is spread over a larger group of contributors. Finally, members of lobby group 1 prefer an ordinary citizen who is opposed to the public good to a member of lobby group 2 who would not provide the public good. Formally, $B_{1T+2}(0) > B_{1t}(0)$ if $V(1, \lambda_t) < 0$. Parallel observations can be made about the preferences of lobby group 2.

We can now describe the political equilibrium in this situation. We deal with the case in which lobby 1 is sufficiently strong to get its preferred outcome, even when faced with a policy maker with the strongest public good preferences; *i.e.* $g^*(n_1, n_2, \lambda_T) = 0$. The analysis of the remaining cases is left to the reader.

Proposition 3. *Suppose that* $g^*(n_1, n_2, \lambda_T) = 0$ *and that* $\min\{B_{1T}(0)/(n_1 - 1), B_{21}(1)/(n_2 - 1)\} \leqq \delta \leqq \max\{B_{11}(0), B_{2T}(1)\}$. *Then, if* $\{\{g_l^*\}; \{B_{li}^*(g)\}\}; \alpha(\cdot); s\}$ *is a political equilibrium with truthful contribution schedules* (i) *the candidates are ordinary citizens of type* 1 *and* (ii) *the number of candidates is the largest integer smaller than* $B_{11}(0)/\delta$. *Furthermore, if* s *is any vector of entry decisions generating a candidate set satisfying* (i) *and* (ii), *a political equilibrium with truthful contribution schedules with entry decisions given by* s *exists.*

Since any citizen would fail to introduce the project, all citizens, other than the candidates themselves and the members of lobby group 1 are indifferent between all sets of candidates. Members of lobby group 1 prefer candidates for whom the per capita political contribution is minimized, in this case a candidate from the preference group with the strongest aversion to the public project (group 1). The equilibrium thus involves candidates from this group competing for the rents from office. The restriction on the range of costs is necessary to ensure that the contribution paid by the winning lobby is large enough to induce entry by a type 1 citizen. However, it also has to be small enough so that *all* members of the lobby group do not choose to enter.

The political equilibrium here is similar to that described in Proposition 1 in the sense that all candidates are (trivially) of the type preferred by the median group. However, there is now a set of types who are preferred by the median group. The candidates contesting the election are those that minimize the per-capita contributions of the winning lobby group, subject to being in the median preferred set.[16] This electoral function of lobby group members is the key additional insight from the discrete example.

3.3. *Summary*

Our two examples illustrate three main points. First, lobbying creates rents from holding office which result in elections being contested by candidates who generate identical policy

16. This result depends critically on the contributions being transfers rather than campaign spending. In the latter case, a candidate attracting larger contributions may be more likely to be successful.

choices. Second, the presence of lobbying need have little effect on policy outcomes. Citizens may be able to offset the influence of lobby groups by electing policy-makers with diametrically opposed preferences. This does, however, rest on there being a sufficiently broad range of preference types in the population and, in the single lobby case, the lobby group not being "too powerful" in the sense of having many members with extreme preferences.[17] Third, in circumstances in which lobby groups are powerful and policies are not perfectly divisible, candidates with different policy preferences may nonetheless be expected to choose the same policy outcomes. In this case, the contributions they take for producing these outcomes will be a key determinant of their electoral success. Roughly speaking, the electoral process should be expected to select those candidates who will deliver the policy outcome for the smallest contributions.[18]

4. NORMATIVE ANALYSIS

We discuss the welfare consequences of lobbying under two headings. The first concerns how lobbying affects the efficiency of the policy choices arising in representative democracy. The second, following in the tradition of the rent-seeking literature, focuses on the "waste" caused by citizens trying to influence the policy outcome through lobby groups.

4.1. *Lobbying and coordination failure: ex post Pareto inefficiency of the policy choice*

Any political equilibrium $\{\{g_i^*; \{B_{li}^*(g)\}\}; \alpha(\cdot); s\}$ *generates* a set of possible public goods choices and we are interested in whether these are efficient. Following our earlier work (Besley and Coate (1997*a*) and (1998)), the notion of efficiency used here follows the standard normative benchmark in public economics—a policy choice is efficient if there is no feasible choice that Pareto dominates it. Thus, a level of public goods $g' \in \mathscr{G}$ is *efficient* if there is no alternative $g \in \mathscr{G}$ such that $V(g, \theta_j) \geqq V(g', \theta_j)$ for each citizen j with the inequality holding strictly for some citizens.

There is a close link between the assumption that contribution schedules are truthful and efficient policy choices. From Bernheim and Whinston (1986), we know that in any truthful equilibrium of the policy selection game the public goods level maximizes the sum of the lobbies and the policy-maker's surplus. This implies that the policy choices generated by a political equilibrium with truthful contribution schedules are efficient (assuming $s \neq 0$). However, in a non-truthful equilibrium of the policy selection game, the public goods level need not be Pareto inefficient as the following example shows.[19]

Example 1. There are four types of citizens ($T = 4$) and three lobby groups ($L = 3$). There are 20 citizens of type 1, none of whom are organized as a lobby and ten citizens of types 2, 3 and 4 all organized into lobbies. There are three levels of a public good:

17. With multiple lobbies, powerful groups do not necessarily create a problem provided that there are opposing lobby groups to offset their influence. It is the *aggregate* effect of the lobbies that must not be too powerful.

18. In a model in which two or more lobbies pay contributions in equilibrium, the notion of the smallest contribution is not well-defined. Thus, it would be possible for one candidate to receive a lower contribution from lobby group 1 and a higher contribution from lobby group 2. The outcome would then depend on the relative size of the lobby groups.

19. Bernheim and Whinston (1986) demonstrated that policies that do not maximize the sum of lobby group and policy-maker surplus can be chosen in non-truthful equilibria. Our example demonstrates the stronger claim of Pareto inefficiency.

$\{0, g_L, g_H\}$, with L standing for low and H for high. The payoffs are

	0	g_L	g_H
$V(g, \lambda_1)$	0	0·5	–8
$V(g, \lambda_2)$	0	1	–6
$V(g, \lambda_3)$	0	1·5	–4
$V(g, \lambda_4)$	0	2	6

Suppose that a type 1 citizen is policy maker. Then, there is a (non-truthful) equilibrium of the policy selection game where lobby group 2s contribution schedule is $B_{2i}(0) = 33$, $B_{2i}(g_L) = 0$, and $B_{2i}(g_H) = 0$, lobby 3's is $B_{3i}(0) = 19$, $B_{3i}(g_L) = 0$, and $B_{3i}(g_H) = 0$ and that of lobby 4 is $B_{4i}(0) = 0$, $B_{4i}(g_L) = 0$, and $B_{4i}(g_H) = 60$. The policy maker chooses $g = 0$, which is Pareto dominated by g_L.

The source of the problem here is a *coordination failure* among the lobbyists. Lobby groups 2 and 3 would both be better off inducing the policy maker to select g_L rather than 0. However, given that each expects the other to bribe the policy maker to select 0 rather than g_H, neither has an incentive to bribe him to select g_L. In essence, the two lobbies see the battle as being between 0 and g_H, with the mutually preferred g_L not being on the table. This problem would not arise in a truthful equilibrium, because each lobby's contribution schedule reflects its true willingness to pay.

The above example *assumed* that a type 1 citizen was in power. However, it is straightforward to extend it to establish that such a citizen would be elected in political equilibrium.

Example 1. (continued) Suppose that the entry cost (δ) is 24. We will show that there exists a political equilibrium in which two type 1 citizens compete for the right to choose policy. We first specify the equilibrium of the policy selection game associated with types 2, 3 and 4. If a type 2 citizen holds office, then lobby group 2's contribution schedule is $B_{2i}(0) = 34$, $B_{2i}(g_L) = 0$, and $B_{2i}(g_H) = 0$, lobby 3's is $B_{3i}(0) = 20$, $B_{3i}(g_L) = 0$, and $B_{3i}(g_H) = 0$ and that of lobby 4 is $B_{4i}(0) = 0$. $B_{4i}(g_L) = 0$, and $B_{4i}(g_H) = 60$. The policy maker chooses $g = 0$. If a type 3 citizen holds office, then lobby group 2's contribution schedule is $B_{2i}(0) = 35$, $B_{2i}(g_L) = 0$, and $B_{2i}(g_H) = 0$, lobby 3's is $B_{3i}(0) = 21$, $B_{3i}(g_L) = 0$, and $B_{3i}(g_H) = 0$ and that of lobby 4 is $B_{4i}(0) = 0$, $B_{4i}(g_L) = 0$, and $B_{4i}(g_H) = 60$. The policy maker again chooses $g = 0$. Finally, if a citizen of type 4 holds office, then lobby group 2's contribution schedule is $B_{2i}(0) = 37$, $B_{2i}(g_L) = 0$, and $B_{2i}(g_H) = 0$, lobby 3's is $B_{3i}(0) = 23$, $B_{3i}(g_L) = 0$, and $B_{3i}(g_H) = 0$ and that of lobby 4 is $B_{4i}(0) = 0$, $B_{4i}(g_L) = 0$, and $B_{4i}(g_H) = 54$, with the policy maker again choosing $g = 0$. Citizens of type 1 and 4 are indifferent between all of the candidates. Those of type 2 and 3 determine the election outcome. Since all candidates deliver $g = 0$, they are only interested in finding the candidate who delivers this outcome for the lowest per capita contributions. It is easy to check that this is a citizen of type 1. Intuitively, this is because this citizen dislikes the g_H outcome most. To see that only two citizens of this type will enter, note that the rent earned by a type 1 citizen when in office is 52. With two candidates winning with probability 1/2, their expected payoff is 26 which exceeds the entry cost. Moreover, it is not worthwhile for any other type 1 citizen to enter.

Thus, the policy choices generated by a political equilibrium with non-truthful contribution schedules may be inefficient.[20] The issue remains of how plausible are the

20. It is essential to the result that there be at least three lobbies that are not all on the same side of the equilibrium policy choice.

coordination failures which drive the inefficiency. Bernheim and Whinston (1986), Grossman and Helpman (1994), and Dixit, Grossman and Helpman (1997) have all argued that we should expect equilibria with truthful contribution schedules to be played. At the end of the day, however, they do not offer an account of the decision making process which guarantees convergence to these equilibria. The possibility of coordination failure in lobbying is strengthened by invoking costs of communicating information about contributions to policy-makers. In such a world, it appears unlikely that lobbies would provide information about their contribution for every conceivable policy action. If they were to offer contributions for certain specific policy choices, their selection of these will be influenced by what other lobbies are doing. This will tend to generate the kind of "clumping" of contributions illustrated in the example and lead to non-truthful contribution schedules. Overall, then, we believe that it is reasonable to entertain the implications of non-truthful schedules and the possible Pareto inefficiencies we have uncovered here.[21]

4.2. *Rent seeking and waste through entry*

The rent-seeking literature has focused attention on the resources used up in competition among citizens to influence policy outcomes (see Tullock (1967), (1980), Krueger (1974) and Posner (1975)). The standard assumption is that resources used to influence policy are a form of "waste". In our model, this assumption does not apply since contributions by lobbies are transfers to the citizen who is elected to office.[22] Nonetheless, the transfers made by lobby groups create *rents from holding office*. The potential for wasted resources in our model then arises if citizens are induced to run for office to earn these rents. The entry costs incurred by candidates seeking the rents from office may legitimately be considered a social cost of lobbying.

To what extent are these rents from office dissipated by electoral competition? Full dissipation is certainly a possibility. In the equilibrium described in Proposition 3, the winning candidate receives a transfer of $B_{11}(0)$. If $B_{11}(0)/\delta$ is an integer, then the total resources used up in competing to be policy maker are exactly $B_{11}(0)$. Hence, the rents from holding office are completely dissipated by electoral competition.

However, the lesson from this example is not general. Political equilibria exist in which rents are not completely dissipated. Consider, for example, the two candidate equilibrium described in Proposition 2. For δ sufficiently small, it is clear that both candidates are receiving rent, *i.e.* the expected transfer exceeds the entry cost. No additional candidates have an incentive to enter, since they do not expect to change the outcome of the election. Rent dissipation results hinge on every rent-seeker (here a candidate) having an equal chance of getting the rent. This arises in equilibria with identical candidates, because voters are indifferent between all candidates. This is not true in equilibria with different types of candidate, where entrants may have no chance of capturing the rent from political office. In effect, the ideological conflict between candidates protects office holding rents by preventing entry. This is a general caveat to the view that free entry will lead to rent dissipation in electoral contexts.[23]

21. Prat and Rustichini (1998) considers the possibility that sequential lobbying could eliminate inefficiencies of this form.

22. In models (such as Grossman and Helpman (1996)) in which lobbies provide campaign contributions which buy the votes of noise voters the standard assumption is warranted.

23. This argument ignores the possibility that the two candidates would compete away their rents. The simplest way this might happen is if the candidates just went out and bribed citizens to vote for them. However, since such payments would represent a transfer, this would just redistribute the rents from office among the citizenry. Another possibility is that the candidates could buy the votes of "noise" voters with campaign contributions. Thus, one could think of candidates using their own money to buy votes in order to win office and collect rent from lobbyists. One could then legitimately view the rents from office as both fully dissipated and wasted. Introducing such noise voters into our framework is an interesting subject for future research.

Two further points should be noted. First, even in the case of full dissipation, it is the rents from holding office which will be dissipated, not the rents generated by the policy choice. These are not necessarily the same thing. In the equilibrium described in Proposition 3, the rents from holding office are $B_{11}(0)$, while the rents stemming from the policy choice, which here is lobby group 1's willingness to pay to avoid the policy, are given by $-n_1 V(1, \lambda_{\tau(1)})$. Thus, our model does not support the practice in some of the empirical literature on rent-seeking (see, for example, Posner (1975)) of assuming that all the rents generated by policy choices are dissipated.[24]

Second, our model also suggests that the democratic process may tend to minimize the rents from holding office (and hence the social costs of lobbying) by selecting in citizens for whom this rent transfer is the smallest. In the full dissipation example above, the rent dissipated is $B_{11}(0)$. This is the smallest possible contribution conditional on the public good not being implemented, *i.e.* $B_{11}(0) \leqq B_{1t}(0)$ for all $t \neq 1$.

5. CONCLUSION

This paper has developed a formal framework to study the impact of lobbying on political competition and policy outcomes in a representative democracy. The framework combines the citizen–candidate model of representative democracy with the menu–auction model of lobbying. In the public choice tradition, all political actors are self-interested citizens.

The paper delivers three main novel insights. First, we have identified circumstances in which lobbying has no effect on policy outcomes. Thus, policy biases that are identified in lobbying models may not always be robust to including an election stage. Second, we showed how coordination failure among lobbyists can result in Pareto inefficient policy choices. Third, we demonstrated how rent dissipation through entry may be prevented when candidates have different policy positions.

Much remains to be done to develop a more complete picture of the effects of lobbying and its impact on welfare. We have assumed that lobbies influence a single candidate rather than an elected legislature or committee. It is important to extend our understanding in this direction. It would also be interesting to extend the citizen–candidate model to incorporate lobby group competition via campaign contributions. A helpful prior step would be to develop a micro-foundation for why rational citizens should be influenced by campaign expenditures (see Austen-Smith (1987)). Another pressing issue is to understand how and why lobbies form. While the framework presented here advances the lobbying literature by endogenizing the policy-maker's preferences, policy outcomes still depend on the number and characteristics of lobby groups. It is unsatisfactory to treat this as exogenous. Progress on this awaits a satisfactory model of the production technology of lobbying, perhaps by recognizing explicitly the costs of information transmission.

Acknowledgements. The authors are grateful to three anonymous referees, an editor of this review, Torsten Persson and Wolfgang Pesendorfer for their very helpful comments. The Suntory and Toyota International Centres for Economics and Related Disciplines at the LSE provided valuable financial support.

24. Posner (1975) presents the following justification for including monopoly profits as part of the social costs of monopoly in a world in which monopoly rights are granted by public officials. "It might seem that where monopoly is obtained by bribery of government officials the additional loss of monopoly... would be eliminated, since a bribe is a pure transfer. In fact, however, bribery merely shifts the monopoly profits from the monopolist to the officials receiving the bribe and draws real resources into the activity of becoming an official who is in a position to receive these bribes." p. 812. Our model shows that the bribes received will not necessarily equal the monopoly profits and, furthermore, that the real resources expended on competition to acquire policy discretion may be considerably less than the level of bribes.

APPENDIX

In this Appendix, we first outline how to establish our claims about the equilibrium of the policy selection game. We then sketch proofs of the three propositions in Section 3—a complete treatment may be found in our discussion paper (Besley and Coate (1997*b*)).

A1. *Characterizing equilibria of the Policy Selection Game*

Dixit, Grossman and Helpman (1997) provide a useful characterization of equilibrium that can be used to establish our results. Applied to our model, their result establishes that $\{g^*, \{B_{li}(g)\}\}$ is an equilibrium of the policy selection game when citizen i is policy maker if and only if (i) for all l, $B_{li}^*(g) \geqq 0$ for all $g \in \mathscr{G}/\{g_l^*\}$; (ii) $g_l^* \in \arg\max \{V(g, \theta_i) + \sum_l B_{li}(g): g \in \mathscr{G}\}$; and (iii) for all l, $(g_l^*, B_{li}^*(g_l^*))$ solves the following problem

$$\max_{(g, B_l) \in \mathscr{G} \times \Re_+} n_l^{-i} \cdot V(g, \lambda_{\tau(l)}) - B_l,$$

$$\text{s.t.} \quad V(g, \theta_i) + \sum_{k \neq l} B_{ki}^*(g) + B_l \geq \max_{g' \in \mathscr{G}} \{V(g', \theta_i) + \sum_{k \neq l} B_{ki}^*(g')\},$$

where n_l^{-i} is as defined in Footnote 3. Condition (ii) represents the policy-maker's optimization decision, while condition (iii) represents optimization by each lobby group. To understand it, consider the situation of lobby group l. It takes as given the schedules of the other lobbies in contemplating its own choice. The inequality constraint represents the fact that the lobby must provide the policy-maker with at least the pay-off that he could get were lobby group l to make no contribution. Subject to this, lobby group l can propose a public good choice and a feasible contribution which maximizes its members' utilities. The result says that such constrained maximization by each lobby is equivalent to the condition that each lobby uses a best response.

Using this result, it is straightforward to show that, in the one lobby case, if $\{g_i^*, B_{1i}^*(g)\}$ is an equilibrium of the policy selection game when citizen i is the policy-maker, the choice of public goods level is

$$g_i^* = \arg\max_{g \in \mathscr{G}} \{n_1^{-i} \cdot V(g, \lambda_{\tau(1)}) + V(g, \theta_i)\},$$

and the contribution from the lobby is

$$B_{1i}^*(g_i^*) = \max_{g' \in \mathscr{G}} V(g', \theta_i) - V(g_i^*, \theta_i).$$

Moreover, in the two lobby case with the discrete public good, if $\{g_i^*, \{B_{1i}^*(g), B_{2i}^*(g)\}\}$ is a truthful equilibrium of the policy selection game when citizen i is policy-maker, the public good decision is given by $g_i^* = g^*(n_1^{-i}, n_2^{-i}, \theta_i)$ and the contribution levels if the good is not provided are

$$B_{1i}^*(0) = \text{Max}\{0, n_2^{-i} \cdot V(1, \lambda_{\tau(2)}) + V(1, \theta_i)\} \quad \text{and} \quad B_{2i}^*(0) = 0,$$

while if it is provided they are

$$B_{1i}^*(1) = 0 \quad \text{and} \quad B_{2i}^*(1) = \text{Max}\{0, -[n_1^{-i} \cdot V(1, \lambda_{\tau(1)}) + V(1, \theta_i)]\}.$$

A2. *Sketches of the Proofs of Propositions*

Proof of Proposition 1. As noted in the text both ordinary citizens and lobby group members have preferences over ordinary candidates which are single peaked. Moreover, the preferred candidate types of ordinary citizens are such that $t^*(1) \leqq \cdots \leqq t^*(T)$ and lobby group members prefer candidates of the same type as ordinary citizens who share their type. Accordingly, the type of candidate preferred by citizens of the median type ($t^*(m)$) is majority preferred to any other type of candidate. This is key to the result.

To prove the first part of the proposition, we consider any political equilibrium with identical candidates $\{\{g_i^*; B_{1i}^*(g)\}; \alpha(\cdot); s\}$. There are three possibilities: (i) the candidates are ordinary citizens of type $\tau(1)$; (ii) the candidates are lobby group members; and (iii) the candidates are ordinary citizens of some type $t \neq \tau(1)$. Possibilities (i) and (ii) are ruled out by showing that a citizen of type $t^*(m)$ would have an incentive to enter for sufficiently small δ. Such a candidate could win if he entered and controlling policy permits the achievement of a higher level of utility. Similarly, if the candidates are ordinary citizens of some type t different from $\tau(1)$ or $t^*(m)$, then it can be shown that some type of citizen has an incentive to enter. (It is at this step that the condition in the first line of the statement of the proposition is required.) In this way, we conclude that the candidates must be of type $t = t^*(m)$. That the equilibrium number of candidates is the largest integer smaller than $\max\{1, B_{t^*(m)}/\delta\}$ is established by considering the entry incentives for a type $t^*(m)$ candidate. The cost of running is δ, while the benefit is the chance of receiving the bribe $B_{t^*(m)}$. Since each candidate is equally likely to win, the expected benefit of running is decreasing in the number of candidates.

For the second part of the proposition, we let $\delta \in (0, B_{t^*(m)}/2]$ and let $\hat{s}$ be any vector of entry decisions such that (i) all the candidates are of type $t^*(m)$ and (ii) the number of candidates is the largest integer smaller than $\max\{1, B_{t^*(m)}/\delta\} = B_{t^*(m)}/\delta \geqq 2$. We then demonstrate that there exists a political equilibrium with entry decisions given by $\hat{s}$ by construction. The voting behaviour supporting the equilibrium, has voters rallying behind a particular type $t^*(m)$ candidate when a candidate of a different type enters. Since the majority of citizens prefer a type $t^*(m)$ candidate to any other type, such candidates would lose if they entered.

Proof of Proposition 2. To prove this proposition, we consider an electoral contest between two citizens i and j, one of whom is type q and the other of whom is type r. Conditions (i) and (ii) together with the assumption that $\sum_{t=1}^{m-1} N_t = \sum_{t=m+1}^{T} N_t$, imply that the number of citizens preferring i to j exactly equals the number preferring j to i. Furthermore, since $N_m < N/3 - 1$, the number of citizens indifferent between the two candidates plus one is less than the number preferring i to j. Condition (iii) implies that $\frac{1}{2}[v_i^i - v_j^i] \geqq \delta$ and $\frac{1}{2}[v_j^j - v_i^j] \geqq \delta$ for sufficiently small δ. The result now follows from Proposition 3 of Besley and Coate (1997*a*).

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