# Influencing Agencies Through Pivotal Political Institutions

Guy L. F. Holburn
University of Western Ontario

Richard G. Vanden Bergh
University of Vermont

We draw on the positive political theory and campaign finance literatures to examine how interest groups allocate influence activities (e.g., monetary donations, lobbying) across multiple government institutions when seeking more favorable agency policy decisions. By modeling agency behavior in the context of legislative oversight, we derive testable predictions about the political conditions under which an interest group will influence (1) only the agency, (2) the legislature and/or executive instead of the agency, and (3) the legislature or executive in addition to the agency in order to induce a shift in regulatory policy. One implication of our conclusions relating to (2) and (3) is that empirical studies seeking to identify a relationship between electoral campaign contributions and public policy using data on legislative votes are potentially misspecified.

> Disagreement with the merits of a proposed SEC rule is not uncommon. Chairman Levitt has indicated his disappointment that the firms fighting the proposal have not taken the opportunity to engage the SEC but instead are focusing their resources on a *legislative* effort to limit the authority of the *agency*.
>
> Tom Daschle, U.S. Senate[1]

## 1. Introduction

Organized interest groups seeking to influence public policies face multiple government institutions that participate in policy-making procedures and that can influence final policy decisions. While legislatures and executives enact policies through the periodic passage of statutes, agencies, operating under legislative oversight, are frequently responsible for interpreting, implementing, and enforcing statutes through the design of administrative regulations. Courts also have an effect on policy outcomes, by determining

1. Letter to President Clinton, September 29, 2000. Emphasis added.

*The Journal of Law, Economics, & Organization*, Vol. 20, No. 2,
 doi:10.1093/jleo/ewh042

whether new legislation is constitutionally valid, or whether administrative rulings are consistent with enabling statutes. Interest groups must therefore decide how to allocate influence activities across multiple institutions, a task complicated by the fact that policy decisions by one institution are rarely made independently of another.

In this article we examine how interest groups design political strategies aimed at achieving more favorable agency rulings than they would otherwise obtain. In contrast to the voluminous literature considering how interest groups affect the legislative process, there are relatively few studies of how or when special interests decide to influence administrative outcomes.[2] Among existing research, studies tend to focus on interest groups' direct interactions with agencies. In a principal-agent model of the interaction between a legislature, agency, and single interest group, Spiller (1990) argues that the legislature has some incentive to allow interest groups to make resource transfers to agencies since this reduces the minimum budget required to induce agency effort. In an empirical analysis of the organization of interest groups' lobbying activities, De Figueiredo and Tiller (2001) examine why some telecommunications firms lobby the Federal Communications Commission (FCC) using internal staff, whereas other firms subcontract to external lobbying organizations. At a more conceptual level, Buchholz (1990) argues that interest groups increase their level of agency interactions—for example, by participating in hearings—when salient policy issues are under administrative consideration. According to these and related studies, interest groups are assumed to be able to receive more favorable administrative rulings by directly influencing the relevant regulatory agency.

Here we develop the argument that interest groups need not necessarily directly lobby, or otherwise influence, agencies in order to shift agency decisions. We demonstrate that special interests will influence legislatures or executives in addition to, or instead of, agencies, in order to induce changes in agency behavior in certain circumstances. As the above quote illustrates, interest groups make choices about whether to directly engage agencies when seeking favorable regulatory rulings or whether to exert pressure indirectly by influencing political principals who oversee agency decisions.

The implicit recommendation of the prior literature to lobby the relevant agency is based on the premise that the agency has latitude to shift policy in response to the interest group's approaches. The positive political theory (PPT) literature, however, which examines the interactions among administrative, legislative, and judicial branches of government, suggests that such a strategy could be counterproductive: the ability of an agency to

2. A large literature examines interest groups' political influence strategies within the context of legislative institutions, such as optimal campaign contributions or lobbying strategies within the U.S. House of Representatives and Senate (e.g., Snyder, 1990; Stratmann, 1992; 1995; 1998; Austen-Smith and Wright, 1994).

shift policy unilaterally depends on the relative preferences of other players in the policy process, such as the legislature and courts, and on the associated threat of judicial or legislative override (Weingast and Moran, 1983; McCubbins and Schwartz, 1984; McCubbins, Noll and Weingast, 1987 and 1989; Ferejohn and Shipan, 1990; Tiller, 1998; Tiller and Spiller, 1999). Indeed, attempts by the interest group to influence the agency for favorable administrative rules could leave it worse off if the new rules trigger a legislative reaction that establishes a less favorable policy through statute.

We draw on the PPT and political campaign contribution literatures by incorporating the strategic behavior of an interest group in a model of agency decision making that includes legislative and executive actors.[3] We are thus able to explicitly examine how interest groups decide to influence one branch of government rather than another in order to affect agency decisions. The central thrust of our argument is that interest groups concentrate their influence activities on influencing *pivotal institutions*. Pivotal institutions establish the position of the equilibrium public policy, and changes in the policy supported by a pivotal institution, for example, after accepting campaign contributions, translate into changes in the equilibrium policy. Due to the strategic nature of interaction between government branches, the pivotal institution in any given situation need not be the agency that has responsibility for implementing policy. When the legislature is pivotal, for example, the interest group induces a change in agency policy by shaping the legislature's policy preferences. We distinguish between primary, secondary, and tertiary pivots in different political environments, demonstrating that primary pivots receive the greatest level of an interest group's resources. As far as we know, this is the first article to analyze the allocation of interest group influence activities across multiple government branches.

Although some recent research has considered the relationship between pivotal politicians and interest groups' political strategy (Krehbiel, 1999), the focus has been on legislative actors within a single institution. We contribute also to this literature by extending the analysis of pivotal players when agencies and executive bodies are included in the policy-making game.[4] In doing so, we find that the nature of who is pivotal can be

3. Although a few existing studies have incorporated interest groups as institutional actors in broader policy games, they have typically done so in the context of a simplified version of the policy process. Spiller (1990) and de Figueiredo et al. (1999) argue that interest groups provide information as well as financial benefits to legislatures, reducing the informational disadvantage that legislatures face vis-à-vis agencies. While these articles also examine the relationship among interest groups, legislatures, and agencies, the focus is on understanding how information asymmetries affect the incentives of legislatures to allow special interests to influence agencies. This article relates to these analyses by considering, under the perfect information scenario, the conditions under which interest groups choose to lobby agencies and/or their political principals.

4. Also see Holburn and Vanden Bergh (2002) for a more conceptual approach to the problem.

quite different from the conclusions in the existing literature. While Baron concludes that, "Attention thus should be directed to those legislators in the middle, i.e., those who are mildly opposed to $x$" (Baron, 2001:28), we argue that interest groups will concentrate on influencing relatively extreme institutional actors (and yet who are still pivotal) in various situations.[5] Even though our model is quite stark, we are able to develop a rich set of predictions about interest groups' political strategies that can form the basis for future empirical testing.

## 2. Pivotal Political Institutions and Campaign Contributions

In this section we develop a three-part theoretical framework for analyzing interest groups' political strategies. In the first part we adopt a canonical model of how strategic interaction among multiple branches of the government (legislative, executive, and administrative) influences an agency's decision about where to determine policy through an administrative ruling.[6] We thus initially analyze equilibrium policies in the absence of interest groups and associated influence activities. In the second part we extend the game by introducing a single interest group as an additional player. Since our emphasis is on understanding how the structure of government institutions affects interest group political strategy, we assume that the group has no direct competition. This would arise if opposing interests face free-rider problems or high costs of implementing political actions. Our model thus builds on the client politics rather than interest group competition literature (Baron, 2001; Grossman and Helpman, 2001). The interest group makes campaign contributions which have the effect of purchasing political votes for policies that would not normally obtain. Although we use campaign contributions here as the mechanism by which interest groups influence political actors, our approach also applies to lobbying activities. Contributions are made to the government in office rather than to political candidates in election situations. Our goal here is to determine how interest groups allocate campaign contributions across different branches of government in order to influence agency policy decisions. Finally, in part three of the model, we consider how the group's optimal campaign contribution strategy changes when it may also contribute to agencies as well as to legislatures and executives (we thus introduce *elected* agency heads, as opposed to *appointed* heads as in the first two parts of the model).

5. By "extreme" we refer to the minimum and maximum in a linear ordering of the institutions' ideal points. Since we assume that the ideal point of a legislative institution is determined by the median legislator, that legislator is necessarily not "extreme" *within* his or her legislative chamber.

6. For expositional simplicity, we exclude courts from our analysis, though the game is readily extended to incorporate additional institutional players. See the following for an analysis of policy games that also include judicial actors: Ferejohn and Shipan (1990); Spiller (1990); Tiller and Spiller (1999); Vanden Bergh (2000); Spiller and Vanden Bergh (2003).

## 2.1 Pivotal Institutions and Policy Equilibrium with no Campaign Contributions

We begin with a simple spatial model, based on models used in the existing literature (e.g., Ferejohn and Shipan, 1990), that illustrates the intuition that agencies do not make policy decisions in a vacuum, but in the shadow of political oversight and the threat of statutory override, budget cuts, and committee hearings. The model allows us to identify the political environments when an agency moderates its rulings in deference to political actors and which particular actors have the greatest influence on the agency. This forms the basis for subsequently analyzing the interest group's political strategy regarding which actors to lobby or to donate campaign contributions to.

### 2.1.1 Players and Payoffs.

We initially model the interaction between four players: the House, the Senate, the executive, and the regulatory agency.[7] The policy preferences of elected actors reflect the interests of the relevant constituents and organized groups that determine their electoral success.[8] The preferences of the regulatory agency, which we assume for the moment is appointed, reflect those of the appointing political actors.[9] Each actor's utility depends on the distance between its ideal policy position, $j$, and the actual policy outcome, $x$. We assume that the range of policy outcomes can be captured in a single continuous dimension and that utility is linear, symmetric, and single peaked.[10] Political actor $j$'s utility is represented by $U^j = -|x - j|$. A policy that is closer to an actor's ideal point is thus preferred to one further away.

### 2.1.2 Policy Game and Equilibrium.

The policy-making game proceeds in three stages. In the first stage the agency (with ideal point A) promulgates an administrative rule that establishes the status quo policy ($x_a$)[11]. In the second stage, the House (H) and Senate (S) decide whether to offer an

7. Each institution is assumed to be a unitary actor. In the case of the House and Senate, this may be interpreted as the median legislator in each chamber.

8. Mayhew (1974) argues that, due to the electoral connection, legislators take into account the interests of voters and the electoral consequences of their actions.

9. There is some controversy over the source of an agency's preferences. Bawn (1995) posits that preferences are endogenous to the designed procedures. On the other hand, Epstein and O'Halloran (1996) aver that the agency's preferences are aligned with the executive. In this article we follow Vanden Bergh (2000), arguing that an agency's preferences reflect a bargaining game between the executive and legislature depending on the appointment rules. In most circumstances, agency heads are appointed by the executive on the advice and consent of the legislature. In other environments, agency heads are elected. In an elected state, agency preferences may be quite different from a bargaining outcome between the executive and legislature. We also consider this type of environment in our analysis.

10. Poole and Rosenthal (1991) found that a single-dimensional policy space captured most of the spatial information arising from multiple policy dimensions.

11. We assume the agency makes its decision on a continuum. This is not unreasonable since an agency often has discretion over rules on any one dimension.

alternative legislative response, $x_L$, to overturn the agency's rule.[12] In the third stage the executive (E) decides whether to sign or veto $x_L$. A veto reflects executive preference for $x_a$ versus $x_L$.[13]

To derive the equilibrium, the game is solved by backward induction. Subgame perfection and complete information are assumed throughout. The policy equilibrium is stable in the sense that there is no incentive to alter the policy by the legislature or executive because any alteration will result in at least one actor being made worse off. Here the political *core* of the game, consisting of all stable policies, lies in the region connecting the ideal points H, S, and E. We call this region W(H,S,E), where $W(\cdot) \subseteq \mathbf{R}^1$ represents the line segment connecting the ideal points H, S, and E. Thus any policy, $x^*$, that lies within W(H,S,E) is an equilibrium. Any policy ruling outside the political core will be unstable in that there exists an alternative policy that will be preferred jointly by H, S, and E.[14]

To begin, we analyze the optimal action of the executive in stage 3 given the agency's ruling $x_a$ and the legislative response $x_L$. Let $P^j(x)$ be the set of policies that actor $j$ prefers to policy $x$.[15] The executive will sign the legislation $x_L$ only if $x_L \in P^E(x_a)$, that is, if the executive prefers the legislature's bill to the agency rule.

In stage 2, the House and Senate offer a bill to overturn the agency understanding that the bill ($x_L$) will be supported by the executive only if $x_L \in P^E(x_a)$.[16] If $x_a \in W(H,S,E)$, then any $x_L \neq x_a$ will make at least one actor (H, S, or E) worse off. Two cases need to be considered. First, if $P^E(x_a) \cap W(H,S)$ is not empty, then H and S propose an alternative bill $x_L \neq x_a$ such that $x_L \in P^E(x_a) \cap W(H,S)$. The actual location of $x_L$ depends on the relative bargaining power of H and S. Second, if $P^E(x_a) \cap W(H, S)$ is empty, then $x_L$ will be the point in $P^E(x_a)$ that is closest to W(H, S). In both cases, the legislative proposal will be within the political core.

In stage 1, the agency makes its ruling such that it maximizes its utility given the best response of the executive in stage 3 and of the House and Senate in stage 2. The agency knows that if the legislature offers a bill, then

12. Both $x_L$ and $x_a$ are elements of $X$, the set of possible policy alternatives. $X$ is a subset of $\mathbf{R}^1$ (the entire policy space).

13. For simplicity, we abstract from the possibility that the House and Senate may override an executive veto. We could incorporate a fourth and final stage when the House and Senate supermajorities determine whether the veto is overridden or sustained. An override reflects maximum supermajority preference for $x_L$ versus $x_a$. While incorporating the veto override possibility better reflects the institutional rules of the game, the added complexity does not contribute to the qualitative results of the model.

14. In the extant campaign contribution literature, for example, Snyder (1990), the game occurs within a single house of the legislature. Thus alternatives must receive majority support only. Here, by incorporating the agency and executive, our model better reflects the checks and balances present in a political system with a separation of powers.

15. Formally, $P^j(x) = \{y: U^j(y) \geq U^j(x); \forall\, y \neq x\}$.

16. We do not assume that H and S receive any benefit simply by offering a bill. They only receive incremental utility if the alternative policy $x_L$ is implemented in favor of the agency ruling.

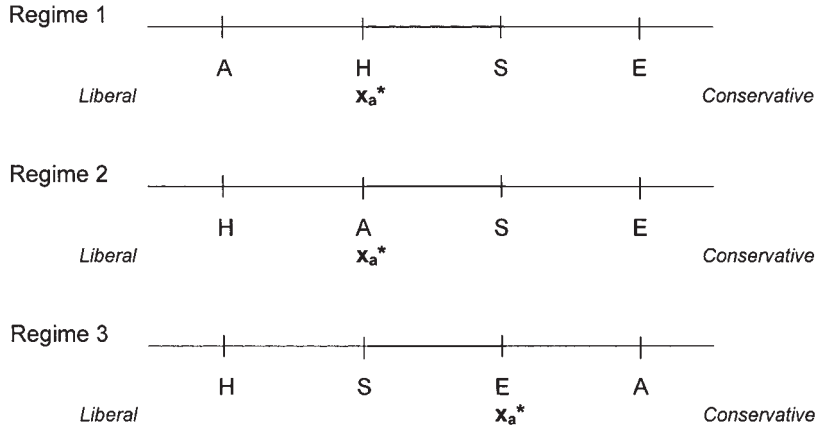


Figure 1. Political regimes and policy equilibria ($x_a$*).

the final outcome depends on whether that bill is supported by the executive, that is, if $x_L \in P^E(x_a)$. The agency also knows that if its ruling, $x_a$, is outside the political core, W(H,S,E), then there exists an alternative bill that will be preferred by all the other actors. The agency thus establishes the equilibrium at the point in the core closest to its ideal.

The precise location of the agency's equilibrium ruling depends on the relative spatial preferences of the players. Three distinct political regimes are discernible where the agency has a different policy preference relative to the House, Senate, and executive (see Figure 1). In each regime, the agency sets policy at the pivotal institution's position. *Pivotal* means that a movement in that institution's preferred policy position induces the agency to make a corresponding adjustment to the policy outcome.[17] The pivotal institution thus establishes the equilibrium. In each regime, a different institutional player is pivotal. To illustrate this, consider the three different regimes depicted in Figure 1.

In Regime 1, the agency is relatively liberal, with its ideal point lying to the left of the ideal points of H, S, and E.[18] In this situation, the agency establishes the equilibrium at H, the lower boundary of the political core. Consider a ruling by the agency, $x_a$, between its ideal and H (i.e., outside the political core). In this case, any movement in policy closer to H is

17. See Krehbiel (1999) for a discussion of pivotal legislators in the context of a single legislative chamber.

18. This preference ordering can occur if the tenure cycle of the agency's political appointees is not aligned with that of the legislature or executive. Reelections can generate new political coalitions with preferences differing from those of the incumbent agency—whose preferences are likely to reflect those of prior political generations—or at least until the legislature has an opportunity to replace key agency officials through the appointment process. State public utility commissioners, for example, are generally appointed for five or more years and typically remain in office beyond one political election cycle. This preference ordering can also occur when agency actors are elected to office.

preferred by H, S, and E. Since the actual location of $x_L$ depends on the bargaining power between H and S, there is a possibility that $x_L$ would not be equal to H and still be an element of W(H,S), leaving the agency worse off than if it had ruled at H. The best the agency can achieve is to set policy at H's ideal point. At H, no alternative policy will be supported by the House. In this regime, the House is the pivotal institution.

In Regime 2, the agency is more moderate, with an ideal point between the House and the Senate on the policy dimension ($H < A < S < E$). In contrast to Regime 1, the agency enjoys greater policy-making discretion in this situation since the House and Senate are "pulling" the agency in opposing directions. The agency is able to establish its ideal point as the equilibrium policy, since any attempt by the House to propose a policy alternative closer to H will be vetoed by S. The same applies for policy alternatives proposed by the Senate: they will be vetoed by the House.[19] Since the policy outcome lies at the agency's ideal point, the agency is the pivotal player.

In Regime 3, where the agency is conservative relative to the legislature and executive (i.e., $H < S < E < A$), the agency is unable to obtain its ideal point as an equilibrium since, as in Regime 1, A lies outside the core. The best policy the agency can obtain without triggering a legislative response is to set $x_a$ at E's ideal point. To understand this, suppose that in fact the agency mistakenly set $x_a$ by an amount $\delta$ to the right of E. H and S could then propose an $x_L$ equal to E minus $\delta$, which H and S would both prefer to $x_a$, and which E would still support.[20] E minus $\delta$ would then become the equilibrium policy, making the agency worse off. We can see that the best the agency can achieve in this situation is to set $x_a = E$, since H and S cannot propose an alternative that E prefers. In this situation, the executive is pivotal. In summary,

*Proposition 1*. The agency sets the equilibrium policy ($x_a$*) at the pivotal institution's ideal point, the identity of which depends on the political regime:

$$x_a^* = \begin{cases} \min(H, S, E) & \text{for } A < \min(H, S, E) & \text{Regime 1} \\ A & \text{for } A \in W(H, S, E) & \text{Regime 2} \\ \max(H, S, E) & \text{for } A > \max(H, S, E) & \text{Regime 3.} \end{cases}$$

To summarize, in an environment without interest group influences, the agency establishes the equilibrium policy through the initial rule $x_a$* subject to the constraints imposed by the legislature and executive.

19. This result also holds (i.e., $x_a^* = A$) if $H < S < A < E$. In this case, any attempt by the House and Senate to move policy closer to W(H,S) will be vetoed by the executive.

20. We assume throughout that political actors support an alternative if it is indifferent between the original policy and the alternative. To be precise, H and S would offer an alternative policy equal to E minus $(\delta - \varepsilon)$, where $\varepsilon$ is an arbitrarily small amount. In this case, H, S, and E all prefer the alternative policy.

Specifically, the agency selects policy as close as possible to its ideal point without triggering a legislative override. We can see that the location of the equilibrium is determined by the political institution with the most *extreme* policy preferences in the situations where the agency has relatively extreme preferences (Regimes 1 and 3).[21]

### 2.2 Pivotal Institutions and Campaign Contributions

We now expand the preceding game by introducing an interest group (a firm) as an additional player to the government actors. The firm moves first in the game by proposing a campaign contribution schedule, $c_j(x)$, to political actor $j$ if policy $x$ is implemented. Stages 2, 3, and 4 are equivalent to the game above.[22] Firms use campaign contributions to purchase the support (i.e., votes) of political actors for policies that are different from the equilibrium policies that would arise in the absence of contributions. To begin with, we assume that the agency head is appointed and cannot accept contributions. The firm is thus constrained to offering contributions only to the legislature or executive, though, as we will see, such contributions will influence agency equilibrium rulings in certain political regimes. We assume also that the political actors' voting intentions, net of the contributions received, are common knowledge.

Campaign contributions increase political actors' utility. We assume now that each player's utility is the weighted sum of the utility deriving from the policy outcome and that deriving from contributions received. Actor $j$'s utility, $\pi^j = -\alpha|x-j| + (1-\alpha)c_j(x)$, where $\alpha \in [0, 1]$ represents the weight the political actor places on his direct utility from the policy or on that from campaign contributions; $\alpha$ is interpreted as an actor's relative preference intensity over policy. To illustrate, if $\alpha = 1$ then the policy is perfectly salient and the politician has no desire for campaign contributions. In contrast, if $\alpha = 0$, then the policy outcome does not affect the politician's utility, which depends entirely on the amount of campaign funds received. We assume the firm has maximum preference intensity ($\alpha = 1$) to reflect its incentive to implement policy that maximizes profitability. The firm's payoff also depends on the distance between the policy outcome and the firm's preferred policy, and on total campaign expenditures. Formally, $\pi^{\mathrm{F}} = -|x - \mathrm{F}| - \Sigma_j\, c_j(x)$, where F is the firm's preferred policy.

21. Introducing an agency into the policy game modifies conclusions of the existing literature on pivotal politics (Snyder, 1990; Krehbiel, 1999); this stream of research identifies moderate political players as being pivotal, usually in the context of a multimember single institution formulating a legislative decision. By incorporating multiple legislative and administrative institutions in the model here, extreme rather than moderate politicians can become pivotal. In Regimes 1 and 3, although moderate individuals *within* the pivotal institution are still pivotal, the pivotal institution is itself relatively extreme. The pivotal individuals thus have more extreme preferences than the median individuals in nonpivotal institutions.

22. We abstract from any contractual or enforcement challenges that may arise in the firm's payments to politicians for policy outcomes.

As before, to derive the equilibrium, the game is solved via backward induction, and subgame perfection is assumed throughout. In this environment, however, the firm maximizes its payoff (net of campaign contributions) subject to the constraint imposed by the agency game described above. To simplify the exposition, we restrict our attention to political environments in which the firm's ideal policy, F, is to the right of each of the political actor's. That is, F > max(A, H, S, E). While this assumption eliminates some environments from the analysis, the qualitative results of the model will not change under different spatial assumptions for F.[23]

Since stages 2, 3, and 4 are equivalent to the game above, we know that the agency rule ($x_a$) will be an element of the postcontribution political core. To derive the equilibrium ruling, $x_a{}^{*C}$, we determine the optimal campaign contributions offered by the firm in stage 1.[24] The firm maximizes its payoff by offering a contribution schedule $c_j(y)$ to actor $j$ such that the actor is just indifferent between the policy, $y$, he supports with the contributions and the equilibrium policy outcome in the absence of campaign contributions ($x_a{}^*$). Actor $j$ will be indifferent between the following two payoffs:

$$-\alpha|y-j| + (1-\alpha)c_j(y) = -\alpha|x_a^* - j|.$$

Rearranging terms, it is easy to see that the campaign contributions must compensate the political actor for the marginal increased distance of the policy $y$ relative to $x_a{}^*$ based on the saliency of the policy ($\alpha$). Thus

$$c_j(y) = -(\alpha/1-\alpha) * (|y-j| - |x_a{}^* - j|).$$

While in theory this equality suggests that campaign contributions could be negative, we assume contributions flow only from the firm to the political actor. Rearranging terms, we derive the least-cost campaign contribution schedule that the firm offers actor $j$ to ensure that actor will vote for a given policy, $y$:

$$c_j^*(y) = \frac{\alpha}{1-\alpha} * \begin{cases} 0 & \forall y \leq \max(2j - x_a{}^*, x_a^*) \\ |y - \max(2j - x_a^*, x_a^*)| & \forall y > \max(2j - x_a^*, x_a^*). \end{cases}^{25}$$

23. More specifically, we assume that the ideal point of $F$ is greater than 2*max(A,H, S,E) – $x_a$*. This point identifies the policy point where max(A,H,S,E) is indifferent with the policy that arises in an environment with no campaign contributions ($x_a$*). For reasons that become apparent below, this assumption eliminates some unnecessary computations.

24. We assume that the firm makes a contingent offer to the political actors such that it is individually rational for each to accept the offer, irrespective of the other political actors' decisions. This would arise if the firm makes an offer schedule contingent on acceptance by all parties.

25. Given the simplifying assumption that $F$ > max(H,S,E,A), $F$ will only compensate actor $j$ for policy $y$ > max($2j - x_a$*, $x_a$*). Compensation thus occurs for policies that are closer to $F$ than $x_a$*. More generally, firms compensate political actors for policies that move further from their indifference sets.

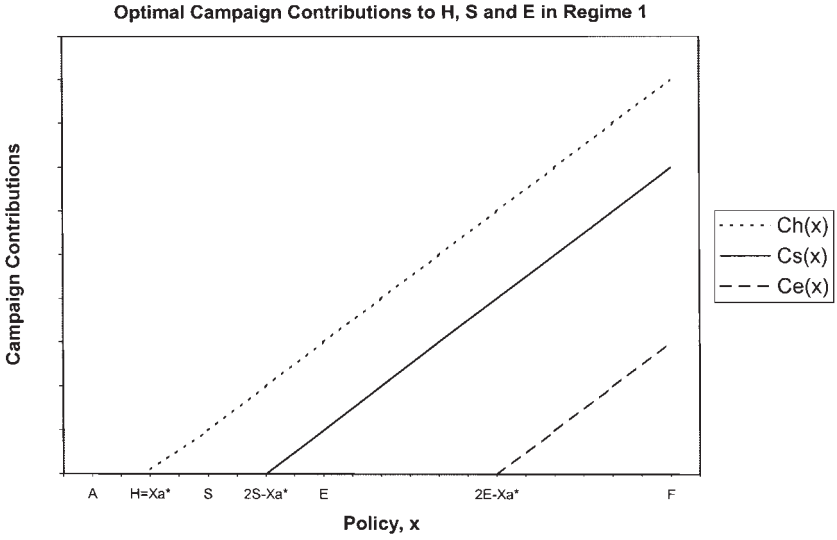


Figure 2. Optimal campaign contribution schedules in regime 1.

Note that the interval $[2j - x_a^*, x_a^*]$ is the set of policies that are closer to actor $j$'s ideal point than $x_a^*$ and which each actor prefers to the no-contribution policy equilibrium. Thus for a policy, $y$, that is inside this set, the political actor is actually better off than under the no-contribution equilibrium and will correspondingly support the policy without receiving contributions from the firm. This creates a discontinuous contribution schedule as illustrated in Figure 2. Thus the firm only compensates political actors for policies that are further from their ideal points than the no-contribution equilibrium policy, $x_a^*$.

Substituting the firm's optimal campaign contribution schedule for any given policy outcome into the firm's profit function allows us to derive the equilibrium policy and associated contributions:

$$\pi^F(y, c(y)) = y - F - \sum_j \frac{\alpha}{1-\alpha} \begin{cases} 0 & \forall y \leq \max(2j - x_a^*, x_a^*) \\ y - \max(2j - x_a^*, x_a^*) & \forall y > \max(2j - x_a^*, x_a^*) \end{cases}.^{26}$$

We can see that the firm must contribute to multiple political actors in order to obtain certain policies. In Regime 1 (see Figure 2), for example, the firm always compensates H to induce the agency to move policy away from $x_a^*$. Movements of policy toward F do not require contributions to the Senate until the movement is so great that the Senate prefers $x_a^*$ to the new policy proposal. This occurs for all policies $y > 2S - x_a^*$. The firm can

26. Given our assumption that $F > 2*\max(A,H,S,E) - x_a^*$, and that the firm only compensates political actors for movements in policy closer to its ideal point, we are able to simplify the profit function for the firm and eliminate the absolute value signs.

move policy up to $2E - x_a^*$ by contributing to H and S. Beyond $2E - x_a^*$, where E prefers $x_a^*$, the firm must additionally contribute to E.

The firm makes contributions to the set of $n$ political actors that results in the least cost to obtain policy $y$. Hence

$$\pi^F(y, c(y)) = y - F - \frac{\alpha}{1-\alpha}\sum_{j=1}^{n}\left\{y - \max(2j - x_a^*, x_a^*) \quad \forall y > \max(2j - x_a^*, x_a^*)\right\}.$$

Taking the first derivative with respect to $y$ leads to the following insight. The maximum number of political actors that the firm will make positive campaign contributions to is found to be

$$\frac{d\pi}{dy} \Rightarrow n^{\max} = \frac{1-\alpha}{\alpha}.$$

The maximum number of political actors to whom the firm makes campaign contributions, $n^{\max}$, thus depends on the degree of policy saliency, $\alpha$. When $\alpha$ is greater than 0.5, reflecting a high level of saliency, $n < 1$, meaning that the firm contributes to no actors. Campaign contributions would reduce utility by more than the resulting gain in policy. While the $\alpha = 0.5$ threshold value arises here as an artifact of the particular profit equation for the firm, it nonetheless reflects the intuitive characteristic that gains from trade between politicians and firms are less likely to exist when politicians care strongly about a given issue. As $\alpha$ moves below 0.5, the firm contributes to a positive and increasing number of political institutions. When $\alpha$ is less than 0.5 but greater than 0.33, the firm finds it profitable to move only one actor (which we term the firm's primary pivotal actor). When $\alpha$ is less than 0.25 but greater than 0.20, the firm contributes to up to three political actors. By moving multiple political actors, the firm is typically able to shift policy closer to its ideal point than the situation where it finds it profitable to move only one actor.

The firm's profit function, as a function of $\alpha$, is thus

$$\pi^F(y, c^*(y)) = y - F - \begin{cases} c_k^*(y) - \begin{cases} c_l^*(y) - \begin{cases} c_m^*(y) & \forall \alpha < 0.25 \\ 0 & \forall \alpha \in [0.25, 0.33) \end{cases} \\ 0 \quad \forall \alpha \in [0.33, 0.5) \end{cases} \\ 0 \quad \forall \alpha \geq 0.5 \end{cases}.$$

From the firm's perspective, actor $k$ is the primary pivot, $l$ is the secondary pivot, and $m$ is the tertiary pivot. The identity of the pivotal institutions depends on the political regime and the firm's policy preference relative to the regime. While the firm may contribute to multiple political institutions in equilibrium, we can determine that the primary pivotal institution receives (weakly) the largest share of the firm's total campaign contributions. Since no actor's utility (before contributions) will be reduced by more than the primary pivot's after a shift in policy from the no-contribution equilibrium, the cost to the firm of purchasing other

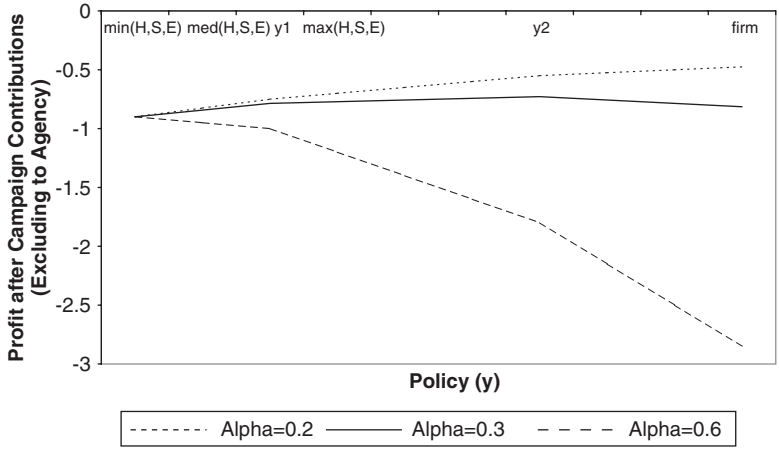


Figure 3. Simulated firm profits in political regime 1 ($A < \min(H,S,E)$; $x_a^* = \min(H,S,E)$).

actors' support for a new policy will therefore be (weakly) less than that for the primary pivot.

The discontinuous nature of the optimal campaign contribution schedule means that the profit function is also discontinuous (see Figure 3). We therefore identify the profit-maximizing $y^*$ and corresponding contribution offer to each political actor by evaluating the firm's profits at different intervals along the range of $y$ in each political regime.

2.2.1 Regime 1. Consider Regime 1, where the agency is relatively liberal compared to the elected political actors ($A \leq \min(H,S,E)$) and to the firm. The firm wishes to move the noncontribution equilibrium policy, which the agency establishes at the liberal boundary of the core, $x_a^* = \min(H,S,E)$. For small movements in policy to the right of $x_a^*$, the firm need only compensate $\min(\cdot)$,[27] the primary pivotal actor, since $\text{med}(\cdot)$ and $\max(\cdot)$, whose ideal points lie to the right of $\min(\cdot)$, are made better off by this change. Along the range $x_a^* < y < 2\text{med}(\cdot) - x_a^*$, the firm's profits are

$$\pi^F(y, c(y)) = y - F - \frac{\alpha}{1-\alpha}(y - x_a^*)$$
$$\Rightarrow \partial\pi/\partial y = 1 - \frac{\alpha}{1-\alpha} \Rightarrow \partial\pi/\partial y > 0 \quad \text{if } \alpha < 0.5$$
$$\Rightarrow y_1 = 2\text{med}(H, S, E) - x_a^*.$$

Since the first derivative in this range is positive when $\alpha$ is less than 0.5, the firm increases its profits by purchasing $\min(\cdot)$'s support for the highest policy level in this range, that is, at $y_1 = 2\text{med}(\cdot) - x_a^*$. Note that at this

27. $(\cdot) \equiv (H, S, E)$

point, med(·) is just indifferent between $y_1$ and $x_a$* and max(·) prefers $y_1$ to $x_a$*. The firm thus need not make contributions to these players in order to achieve $y_1$. When $\alpha$ is greater than 0.5 (i.e., policy is too salient), profits net of campaign contributions decrease in $y > x_a$*, so the firm makes no attempt to move policy from the original equilibrium.

Figure 3 illustrates the firm's profits for different policies and for different saliency levels. We can see that for $\alpha = 0.6$, the slope of the profit function is negative, whereas for $\alpha < 0.5$, the slope is initially positive.

In order to move policy beyond $y_1$, the firm must contribute to the min(·) and med(·) players, since med(·) is additionally made worse off. Profits in the range $y_1 < y < 2\max(\cdot) - x_a$* are

$$\pi^F(y,\, c(y)) = y - F - \frac{\alpha}{1-\alpha}\{(y - x_a^*) + (y - (2\text{med}(\cdot) - x_a^*))\}$$
$$\Rightarrow \partial\pi/\partial y = 1 - \frac{2\alpha}{1-\alpha} \Rightarrow \partial\pi/\partial y > 0 \quad \text{if } \alpha < 0.33$$
$$\Rightarrow y_2 = 2\max(\text{H},\, \text{S},\, \text{E}) - x_a^*.$$

As long as $\alpha$ is less than 0.33, the firm increases its profits beyond the level achieved at $y_1$ by contributing to the secondary pivotal actor, med(·), in addition to the primary pivot, and by thus moving $y$ beyond med(·)'s indifference point. Profits in this range are maximized when the firm makes contributions that purchase support for policy at the upper end of the range, at $y_2 = 2\text{max(H,S,E)} - x_a$*. When policy is too salient (i.e., $0.33 < \alpha < 0.5$), the firm's contributions to min(·) and med(·) outweigh the gains from moving $y$ beyond $y_1$, so equilibrium policy is established at $y^* = y_1 = 2\text{med(H,S,E)} - x_a$*, which the firm achieves by contributing to just min(·).

Beyond $y_2$, the firm must contribute to the tertiary pivot, max(·), which becomes worse off as policy moves to the right of $y_2$. In the range $y_2 < y < F$, profits are

$$\pi^F(y,c(y)) = y - F - \frac{\alpha}{1-\alpha}\{(y - x_a^*) + (y - (2\text{med}(\cdot) - x_a^*)) + (y - (2\max(\cdot) - x_a^*))\}$$
$$\Rightarrow \partial\pi/\partial y = 1 - \frac{3\alpha}{1-\alpha} \Rightarrow \partial\pi/\partial y > 0 \quad \text{if } \alpha < 0.25$$
$$\Rightarrow y_3 = F.$$

When $\alpha$ is less than 0.25, the firm maximizes its profits by contributing to all political actors and by purchasing support for policy at its ideal point (i.e., $y^* = y_3 = F$). In Figure 3, the profit function has a positive slope at all values of $y$ when $\alpha$ equals 0.2 and thus reaches its peak at $y = F$. For values of $\alpha$ between 0.33 and 0.25, the firm's optimal strategy is to set $y^* = y_2 = 2\max(\cdot) - x_a$*, achieved by contributing to the min(·) and med(·) actors. We can see that when $\alpha$ equals 0.3 in Figure 3, the profit function has a positive slope until $y_2$, but a negative slope thereafter.

In Regime 1, the firm's primary pivotal institution is min(H,S,E); the firm must always contribute to min(H,S,E) in order to induce the agency to move policy closer to F. Med(H,S,E) is the firm's secondary pivotal institution. As $\alpha$ falls to a value in the range 0.5 to 0.3, the firm takes advantage of further gains from trade by purchasing the support of med(H,S,E), as well as min(H,S,E), for policy that is even closer to F. Finally, as $\alpha$ falls into the 0 to 0.33 range, the firm exhausts gains from trade by additionally contributing to max(H,S,E), which becomes the tertiary pivot, and by inducing the agency to rule at $y^* = \mathrm{F}$. The firm contributes the greatest amount to min(·), a lesser amount to med(·), and the least to max(·); this arises because min(·) witnesses the greatest reduction in utility following a movement in policy toward F, while max(·) witnesses the smallest reduction.

2.2.2 Regime 2a. In Regime 2a, where the agency is moderate-liberal ($\min(\cdot) < \mathrm{A} < \mathrm{med}(\cdot)$), the analysis of the firm's optimal contribution strategy yields similar results in terms of the identity of the firm's primary, secondary, and tertiary pivotal actors. Note that while the agency is pivotal in that it sets policy at its ideal point in the no-contribution game (see Proposition 1), it is not pivotal from the *firm's perspective* since, in this game, the firm cannot make resource transfers to the agency. Instead, for the firm, the primary pivot is the player that establishes the minimum boundary of the political core (min(H,S,E)). In order to induce the agency to move policy closer to F, the firm must purchase min(H,S,E)'s support for a policy that is a binding constraint on the agency—that is, that lies between the agency's ideal point and the firm's. As with Regime 1, the firm contributes the most to min(·), the least to max(·).

2.2.3 Regime 2b. In Regime 2b, the agency still lies in the political core, but closer to F than the med(·) player (i.e., $(\mathrm{med}(\cdot) < \mathrm{A} < \max(\cdot))$. In contrast to Regime 2a, the firm must now compensate both min(H, S, E) and med(H, S ,E) to support policy $y$ closer to F than $x_a^* = \mathrm{A}$. Thus, in this regime, the firm will not realize gains from trade unless the saliency of the issue is relatively small. To illustrate, consider $\alpha \in [0.33, 0.5]$. The firm finds it profitable to invest in a maximum of one actor. The agency, however, no matter which actor is influenced, will not adjust its ruling away from $x_\mathrm{a}^* = \mathrm{A}$ because the agency will still be an element of the postcontribution political core.

For $\alpha \in [0.25,0.33]$, however, the firm finds it profitable to buy both min(·) and med(·)'s support for policy to the right of A such that the agency is no longer an element of the core. The agency will then adjust policy closer to F at the minimum boundary of the postcontribution political core. In this way neither min(H,S,E) nor med(H,S,E) are unique primary pivots, but both are jointly primary pivotal actors for the firm. When $\alpha < 0.25$, max(H,S,E) becomes the tertiary pivot and the firm must offer nonnegative contributions to this actor to motivate the agency to

rule $x_a^* > \max(H,S,E)$. The firm thus contributes most to min(·) and med(·), the least to max(·) in Regime 2b.

The preceding analysis of the firm's optimal campaign contribution strategy in Regimes 1, 2a, and 2b is summarized in the following proposition.

*Proposition 2a*. When the agency has liberal or moderate policy preferences relative to political actors and to the firm, and when policy is not too salient, the firm induces a change in the agency's policy ruling by allocating campaign contributions to legislative and executive institutions in the following manner:

1. Greatest level of contributions to min(H,S,E).
2. Smallest level of contributions to max(H,S,E).

Table 1. Optimal Campaign Contributions When Agencies are Appointed[a]

| Regime | Policy saliency | Equilibrium policy | Contributions to political actors[b] | | |
|---|---|---|---|---|---|
| | | | min (H, S, E) | med (H, S, E) | max (H, S, E) |
| *Regime 1* | | | *Primary pivot* | *Secondary pivot* | *Tertiary pivot* |
| | $\alpha > 0.25$ | min(·) | 0 | 0 | 0 |
| | $\alpha \in [0.33,0.25]$ | 2med(·)-min(·) | + | 0 | 0 |
| | $\alpha \in [0.25,0.33]$ | 2max(·)-min(·) | ++ | + | 0 |
| | $\alpha < 0.25$ | F | +++ | ++ | + |
| *Regime 2a* | | | *Primary pivot* | *Secondary pivot* | *Tertiary pivot* |
| | $\alpha > 0.5$ | A | 0 | 0 | 0 |
| | $\alpha \in [0.33,0.25]$ | 2med(·)-A | + | 0 | 0 |
| | $\alpha \in [0.25,0.33]$ | 2max(·)-A | ++ | + | 0 |
| | $\alpha < 0.25$ | F | +++ | ++ | + |
| *Regime 2b* | | | *Primary pivot* | *Primary pivot* | *Tertiary pivot* |
| | $\alpha > 0.5$ | A | 0 | 0 | 0 |
| | $\alpha \in [0.33,0.5]$ | A | 0 | 0 | 0 |
| | $\alpha \in [0.25,0.33]$ | 2max(·)-A | + | + | 0 |
| | $\alpha < 0.25$ | F | ++ | ++ | + |
| *Regime 3* | | | *Secondary pivot* | *Secondary pivot* | *Primary pivot* |
| | $\alpha > 0.5$ | max(·) | 0 | 0 | 0 |
| | $\alpha \in [0.33,0.5]$ | A | 0 | 0 | + |
| | $\alpha \in [0.25,0.33]$ | A | 0 | 0 | + |
| | $\alpha < 0.25$ | F | ++ | ++ | ++ |

[a] (·) ≡ (H,S,E).
[b] 0 ≡ actor receives no resources from firm in equilibrium;
+ ≡ actor receives strictly positive resources from firm in equilibrium.

The level of contributions to each actor depends on the degree of policy saliency. See Table 1 for contribution levels and equilibrium policies.

2.2.4 Regime 3. When the agency is relatively conservative, lying closer to the firm's ideal point than any other political actor, conclusions about the pivot identities are quite different from the other regimes. Recall that when A > max(H,S,E), $x_a^* = \max(H,S,E)$. The political actor that establishes the upper boundary of the political core is the constraining player on the agency and is the primary pivot from the firm's perspective. In this environment, the firm thus contributes to max(H, S ,E) in order to initially shift policy closer to F when $\alpha \in [0.33,0.5)$.[28]

Interestingly, for $\alpha \in [0.25,0.33)$ the firm will still only invest in one political actor even though, hypothetically, the firm could realize gains from trade with two actors. Whether the firm invests in one actor or two political actors, the agency will still remain an element of the post-investment political core and will rule $x_a = A$. An investment in two actors will not bring about a policy closer to F than A. Only if $\alpha < 0.25$, when the firm can realize gains from trade with all three actors, will the new policy shift even closer to F than A's ideal. In this setting, the lower boundary of the postinvestment political core shifts to the right of A. Med(H,S,E) and min(H,S,E) are joint secondary pivots. In Regime 3, then, the firm will contribute the most resources to max(H,S,E), the least to min(H,S,E).

Hence, *Proposition 2b*. When the agency has conservative policy preferences relative to political actors but liberal preferences relative to the firm, and when policy is not too salient, the firm induces a change in the agency's policy ruling by allocating campaign contributions to legislative and executive institutions in the following manner:

1. Greatest level of contributions to max(H,S,E).
2. Smallest level of contributions to min(H,S,E).

The level of contributions to each actor depends on the degree of policy saliency. See Table 1 for contribution levels and equilibrium policies.

Regarding Propositions 2a and 2b, we emphasize a couple of general implications for interest group influence activities. In an environment where an interest group is not allowed to influence an agency directly, when the agency is relatively aligned with (opposed to) the interest group, the interest group will tend to concentrate its campaign contributions on institutions with relatively aligned (opposed) preferences, all else being

28. Technically, any one of the political actors is a unique primary pivot. Since $x_a^* = \max(H,S,E)$, any $y > x_a^*$ will reduce each political actor's utility by the same amount. An investment in any one political actor such that the political actor supports policy $y > \max(H,S,E)$ will thus cost the firm the same amount for each political actor. We assume that when such ties exist, the firm contributes to the political actor whose ideal point is closest to the firm's. This would obtain automatically if utility was a quadratic rather than a linear function of distance.

equal. The intuition here is that the interest group is more likely to need to relax political constraints on a favorably aligned agency and to tighten them on an opposed one.

### 2.3 Pivotal Institutions, Elected Agencies, and Campaign Contributions

We now adapt the prior game by allowing the firm to invest in influencing the agency, which we assume is now elected, as well as the political actors. While not frequent, in some jurisdictions agency heads are selected through election rather than through appointment. Heads of public utility commissions (PUCs) are elected in 10 states in the United States, and research has found that the method of PUC commissioner selection affects policy outcomes. Elected commissioners tend to set residential consumer utility rates at lower levels than their appointed counterparts and to allow utilities to earn lower financial rates of return (Besley and Coate, 2003; Holburn and Spiller, 2003). Interest groups thus have an incentive to adapt their political strategies according to the method of agency selection.

Assuming that agencies are elected affects the firm's optimal strategy and the policy equilibrium of our game dramatically. Reconsider Regime 1. We continue to refer to $x_a^*$ as the equilibrium outcome when no resources are allocated to political actors by the firm. Recall that in this regime $x_a^* = \min(H,S,E)$. As before, the firm maximizes its profits by recruiting the least-cost set of actors in order to fully realize the gains from trade available to the firm (a function of $\alpha$). Consider the firm's optimal contribution strategy over various ranges of the policy space. The boundaries of the ranges coincide with the boundaries of each political actor's preferred set of policies to $x_a^*$. In Regime 1, therefore, we first consider the range from $x_a^*$ to $2\max(H,S,E) - x_a^*$. We know from the previous discussion that the firm could achieve $y = 2\max(H,S,E) - x_a^*$ by recruiting the min(H,S,E) and med(H,S,E) actors. In an environment with an elected agency, however, the firm can achieve the same policy outcome by recruiting only the agency. Profits from the two alternative contribution strategies are

$$\pi^F(y \mid \text{Agency elected}) = y - F - \frac{\alpha}{1-\alpha}(y - x_a^*)$$

and

$$\pi^F(y \mid \text{Agency appointed}) = y - F - \frac{\alpha}{1-\alpha}\left\{(y - x_a^*) + (y - (2\text{med}(H,S,E) - x_a^*))\right\}.$$

It is clear that the firm's profits from investing only in the agency are greater than those from investing in both the min(H,S,E) and med(H,S,E) actors. Furthermore, the firm exploits all gains from trade with the agency for all values of $\alpha$ less than 0.5. In contrast, for the firm to exploit gains from trade with both min(H,S,E) and med(H,S,E), $\alpha$ must be even less salient, with a value less than 0.33. As such, the firm's primary pivotal institution becomes the agency when the agency is elected.

Now consider attempts by the firm to achieve a policy outcome in the range 2max(H,S,E) to F. From the above, we know that the firm will first recruit its primary pivotal institution, the agency, and then contribute to the secondary pivotal institution to move the policy even closer to F. Notice that in an environment where the agency can be influenced by the firm, the firm only needs to recruit one other actor to achieve policy very close to its ideal point. The firm needs to establish the upper boundary of the political core at its ideal point—by moving one institution—so legislative attempts to overturn the agency through statutory means will be vetoed by the secondary pivot. The firm's secondary pivotal actor is the institution that has its ideal point closest to the firm's ideal F and which thus requires the least compensation for supporting policy at the firm's ideal. Under our spatial ordering assumption, this institution is max(H,S,E).

Qualitatively the results for Regimes 2a and 2b are similar to Regime 1. In each of these regimes, the firm first achieves the support of the agency for the best possible policy that will survive legislative override (i.e., at the maximum of the political core). The firm then relaxes this political constraint by gaining the support of the constraining political institution to enable the agency to rule at F. The agency is thus the firm's primary pivotal player and max(H,S,E) is the firm's secondary pivot.

In Regime 3, however, the agency's rule making is constrained by max(H,S,E) such that $x_a^* = \max(\mathrm{H,S,E})$. In order to move policy, the firm relaxes the constraint on the agency by recruiting the support of max(H,S,E) for a new policy to the right of $x_a^*$. Max(H,S,E) is thus the primary pivot, in contrast to the agency in Regimes 1, 2a, and 2b. The firm is able to establish $y = 2\mathrm{A} - x_a^*$ by contributing to max(H,S,E). At this point, the agency is just indifferent between $y$ and $x_a^*$. The firm's profits in this range are

$$\pi^{\mathrm{F}}(y,\, c(y)) = y - \mathrm{F} - \frac{\alpha}{1-\alpha}(y - x_a^*).$$

As before, the firm realizes gains from trade if $\alpha < 0.5$. For less salient policies ($\alpha < 0.33$), the firm realizes gains from trade by recruiting two or more actors. The secondary pivotal institution is the agency in this setting. The firm's payoff for policy $y$ over the range $2\mathrm{A} - x_a^*$ to F is

$$\pi^{\mathrm{F}}(y,\, c(y)) = y - \mathrm{F} - \frac{\alpha}{1-\alpha}(y - x_a + y - (2\mathrm{A} - x_a^*)).$$

The change in profits is positive for all policies closer to F over this range of the policy space as long as $\alpha < 0.33$. In this case, the firm maximizes its profits by recruiting support for $y^* = \mathrm{F}$. This analysis leads to the following proposition:

*Proposition 3a*. When the agency has liberal or moderate policy preferences relative to political actors and to the firm, and when the firm is able to influence the agency as well as legislative and executive institutions,

the firm induces a change in the agency's policy ruling by allocating campaign contributions in the following manner:

1. Greatest level of contributions to the agency.
2. Smallest level of contributions to max(H,S,E).

*Proposition 3b*. When the agency has conservative policy preferences relative to political actors, but liberal preferences relative to the firm, and when the firm is able to influence the agency as well as legislative and executive institutions, the firm induces a change in the agency's policy ruling by allocating campaign contributions in the following manner:

1. Greatest level of contributions to max(H,S,E).
2. Smallest level of contributions to the agency.

Table 2. Optimal Campaign Contributions when Agencies are Elected[a]

| Regime | Policy saliency | Equilibrium policy | Contributions to political actors[b] | | | |
|---|---|---|---|---|---|---|
| | | | Agency | min (H,S,E) | med (H,S,E) | max (H,S,E) |
| *Regime 1* | | | *Primary pivot* | | | *Secondary pivot* |
| | $\alpha > 0.5$ | min(·) | 0 | 0 | 0 | 0 |
| | $\alpha \in [0.33,0.5]$ | 2max(·)-min(·) | + | 0 | 0 | 0 |
| | $\alpha \in [0.25,0.33]$ | F | ++ | 0 | 0 | + |
| | $\alpha < 0.25$ | F | ++ | 0 | 0 | + |
| *Regime 2a* | | | *Primary pivot* | | | *Secondary pivot* |
| | $\alpha > 0.5$ | A | 0 | 0 | 0 | 0 |
| | $\alpha \in [0.33,0.5]$ | 2max(·)-A | + | 0 | 0 | 0 |
| | $\alpha \in [0.25,0.33]$ | F | ++ | 0 | 0 | + |
| | $\alpha < 0.25$ | F | ++ | 0 | 0 | + |
| *Regime 2b* | | | *Primary pivot* | | | *Secondary pivot* |
| | $\alpha > 0.5$ | A | 0 | 0 | 0 | 0 |
| | $\alpha \in [0.33,0.5]$ | 2max(·)-A | + | 0 | 0 | 0 |
| | $\alpha \in [0.25,0.33]$ | F | ++ | 0 | 0 | + |
| | $\alpha < 0.25$ | F | ++ | 0 | 0 | + |
| *Regime 3* | | | *Secondary pivot* | | | *Primary pivot* |
| | $\alpha > 0.5$ | max(·) | 0 | 0 | 0 | 0 |
| | $\alpha \in [0.33,0.5]$ | 2A-max(·) | 0 | 0 | 0 | + |
| | $\alpha \in [0.25,0.33]$ | F | + | 0 | 0 | ++ |
| | $\alpha < 0.25$ | F | + | 0 | 0 | ++ |

[a] (·) ≡ (H,S,E)
[b] 0 ≡ actor receives no resources from firm in equilibrium;

The level of contributions to each actor depends on the degree of policy saliency. See Table 2 for contribution levels and equilibrium policies.

Proposition 3 states that even when the firm has the ability to directly influence an agency—by lobbying or making campaign contributions, for example—when seeking improved regulatory rulings, it will not necessarily do so. Since agencies operate under the watchful eyes of political principals, the firm must first relax political constraints whenever they are binding (as in Regime 3) by influencing legislative or executive institutions. Lobbying the agency in such a situation without simultaneously gaining the support of the legislature or executive would be fruitless since the agency could not move policy without triggering punishment by political principals. Relaxing such constraints by lobbying or otherwise influencing political institutions allows the agency to move policy closer to the firm's preferred position.

By comparison, even in situations where the firm can achieve some favorable policy gain by influencing the agency alone (i.e., Regimes 1 and 2), there are limits. To induce the agency to rule outside the political core, the firm must also purchase the support of one political institution. When policy is not too salient, the firm enlists the support of both administrative *and* legislative or executive institutions when aiming to improve its regulatory environment. Influencing the agency and influencing the agency's political principals are thus not substitute, but complementary activities in these environments.

## 3. Discussion

In this article we examine how interest groups allocate political influence activities across government institutions in order to gain more favorable agency rulings than would otherwise obtain. The critical assumption in our article is that agencies behave strategically with regard to their political principals. Since legislatures and executives have the ability to punish errant agencies through budgetary cuts, committee hearings, and the enactment of new statutory constraints, agencies have an incentive to make policy rulings that account for political preferences. As such, agency-determined public policies are shaped not by agencies alone, but also by the shadow of legislative and executive bodies. The implication for organized interest groups is that they may be able to induce changes in administrative decisions not by directly influencing the agency, for example, by lobbying, but instead, by shifting the policy preferences of political principals. In the right circumstances, agencies will modify their rulings in response to changed political preferences. Interest groups may thus find it optimal to "buy" agencies through legislatures.

We derive predictions in Propositions 2 and 3 that explicitly consider the conditions when interest groups find it more profitable to influence legislatures and/or executives instead of or in addition to agencies, in order to indirectly shift agency rulings. Our analysis builds on the structured-interaction models of policy making used in the political science literature

(Weingast and Moran, 1983; Ferejohn and Shipan, 1990) by introducing an interest group as an additional player to the political actors. We identify the situations when legislative or executive preferences are binding constraints on agency decisions, and when these institutions are *pivotal* in shaping policy. In general, we argue that interest groups will invest in influencing pivotal institutions. When an interest group is prevented from directly lobbying the agency—or finds it prohibitively costly, for instance, if policy is highly salient for the agency—the interest group will manipulate the political constraints on the agency, either by relaxing them or by imposing them, by investing in pivotal legislative or executive players. When the interest group has the additional option of investing in the agency—this may be interpreted here as permitting campaign contributions to elected agency heads or by allowing the firm to lobby agency staff—the interest group will enlist the support of the agency and, in addition, relax political constraints so that the agency's decision will be insulated from subsequent statutory override.

Our findings contribute to the literature on how interest groups influence policy outcomes in several ways. First, by incorporating administrative, legislative, and executive institutions in the underlying model of policy making, we develop testable predictions about how interest groups allocate influence resources across multiple government branches—an issue that has not yet received attention in the political action literature. Our analysis of primary, secondary, and tertiary institutional pivots demonstrates how political actions centered on one branch (e.g., a legislature) can induce a change in behavior in another branch (e.g., an agency). So far, the majority of political action research has focused on how groups design strategy within the context of a single branch of government. The campaign contribution literature, for example, has concentrated on understanding how interest groups design contribution strategies in the context of a legislature making a legislative decision (Snyder, 1991; Stratmann, 1998; Krehbiel, 1999). Here we identify the conditions when, in seeking improved agency decisions, interest groups will influence (1) only the agency, (2) the legislature and/or executive instead of the agency, (3) the legislature or executive in addition to the agency.

Second, our model suggests that empirical analyses that attempt to establish a causal link between inputs and outputs within the same institution may be misspecified. There is a large theoretical and empirical literature questioning whether electoral campaign contributions influence legislators' votes on legislative bills (e.g., Stratmann, 1995, 1998), yielding mixed conclusions. Other studies have similarly considered the impact of interest groups' lobbying of legislators on subsequent roll call votes (e.g., Wright, 1990; Caldeira and Wright, 1998). Most of this research is conducted in the context of either the U.S. House of Representatives or the U.S. Senate. However, the assumption in these studies that, following interest group approaches, changes in deduced policy preferences of legislators will be correlated with observed votes on legislation is

challenged by our structured-interaction model. Campaign contributions to legislators, for example, may instead be correlated with modified agency decisions if the agency is closely tracking its political principals. Legislation—which frequently directs agencies in their policy-making decisions—is less likely to arise when astute agencies preempt it by updating regulatory policy in response to changing political preferences. Studies which conclude that campaign contributions are ineffectual strategic tools, on the basis of inconclusive empirical vote analyses, should thus be treated with some caution.

While we explore the theoretical implications of our model, we believe there are also opportunities for substantial empirical development. The 50 U.S. states, for example, provide a quasi-natural experiment in which to empirically test our predictions. At any given point in time, there exists significant cross-sectional variation in the political environments where the same policy issues are determined. For instance, we observe variation in both PUC commissioner selection rules as well as in the spatial configuration of the political actors that determine intrastate utility regulation. Firms affected by these regulatory decisions have high-powered incentives to optimally allocate their campaign contributions to influence PUC decisions. We would predict that the observed campaign contributions vary according to the specifics of the regime that determine the identity of the pivotal institution.

Alternatively, one could test the implications of our model by looking at changes in the spatial configuration of political actors over time within a single political environment. When firms are restricted from making contributions to agencies, a shift from Regime 1 or 2 to Regime 3 (see Figure 1) should be accompanied by an increase in the share of contributions made to the firm's political supporters (E) and a reduction in the share made to the firm's opponents (H), all else being equal.

Whether testing the model cross-sectionally or over time, the researcher will find that some of the data required are readily available. Detailed historic data on campaign contributions to candidates is publicly available in the United States, enabling an examination of the relative allocation among the two legislative chambers and the executive, both at the state and federal levels. Precisely identifying underlying relative preferences of different government actors may present more of a challenge. Using observed measures of preferences (e.g., public statements or votes) on a specific policy dimension is likely to be problematic since such measures will reflect the impact of interest groups' influence. Political ideology scores or measures of partisan control, however, may provide suitable proxies that allow the researcher to gauge the political regime. Although the specifics of such an empirical approach need to be worked out, we believe this offers a potentially fruitful avenue for future empirical tests of our propositions.

Naturally our model is incomplete in a number of ways, inviting extensions and further refinements. For simplicity, we excluded the courts from the set of institutional players, though recent research suggests that courts

behave in a strategic manner regarding legislative actors (Gely and Spiller, 1990; Spiller and Gely, 1992; Spiller and Vanden Bergh, 2003). We believe introducing courts into the analysis will not affect our findings qualitatively. Including the court expands the set of distinct political regimes. Depending on the preferences of the court, the judicial selection rules, and the relative spatial configuration of the other actors, the court will be pivotal in certain political environments and not in others. The identity of the pivotal institutions does depend then to some extent on whether the courts are included. The choice of players in the game will be informed by the specific policy issue that the researcher wishes to represent and whether the courts are salient.[29]

Our assumptions of complete information and costless policy changes are responsible for perfectly adapting agency behavior; introducing costs would generate some more realistic "stickiness" into the predictions, though it is not obvious that the expense of a more complex analytical structure would be outweighed by additional theoretical insights.

More substantively, we have restricted our analysis to the case of a single interest group seeking to influence policy outcomes rather than multiple competing interest groups. While introducing another interest group would increase the complexity of the model, we can see that moving policy in one direction is likely to be more costly than moving it in another, and that the identity of pivotal institutions depends on whose perspective one adopts. Consider a consumer group, for example, that is diametrically opposed to the firm's policy preferences, with an ideal point to the far left of the policy spectrum illustrated in Figure 1. In Regime 2a, where the agency is relatively moderate, the consumer group's primary pivotal actors are the Senate and executive, whereas for the firm the primary pivot is the House.[30] We thus expect that opposing interest groups will focus their lobbying or influence activities on different sets of government institutions over a common issue.

Furthermore, to induce the agency to shift policy to the left of $H = x_a^*$ is likely to be more costly for the consumer group than for the firm to move policy to the right of H, since the former must purchase the support of two institutional actors, whereas the latter requires the support of only one. Opposing groups thus face asymmetric costs in purchasing new regulatory policies by leveraging political actors. Irrespective of how organized interest groups are in demanding regulatory favors (Stigler, 1971;

29. For simplicity, we also ignore the veto override rules. As Krehbiel (1998) notes, incorporating a veto override into the game introduces an additional pivotal actor within each legislative chamber. In our model, as with the courts, the qualitative results will not change. The identity of the pivotal institution, however, will reflect the details of the override rule and the regime's relative spatial configuration. Intuitively we expect that actors pivotal to a veto override within a legislative chamber will be pivotal in our model only when the executive's preferences are extreme relative to median preferences in the legislative chambers.

30. These are the pivotal actors under the assumption that the firm cannot directly influence the agency—as in the first game involving campaign contributions.

Peltzman, 1976), differences in the cost of supply (i.e., buying) favors will lend an advantage to one interest group. Extending the model to include multiple interest groups should thus yield further predictions about the distribution of campaign contributions conditional on each interest group's position on the issue at hand. We leave exploration of this topic and other limitations of the article for future work.

## References


Austen-Smith, D., and J. R. Wright. 1994. "Counteractive Lobbying," 38 *American Journal of Political Science* 25–44.

Baron, D. P. 2001. "Theories of Strategic Nonmarlet Participation: Majority-Rule and Executive Institutions," 10 *Journal of Economics and Management Strategy* 47–89.

Bawn, K. 1995. "Political Control versus Expertise: Congressional Choices About Administrative Procedures," 89 *American Political Science Review* 62–73.

Besley, T., and S. Coate. 2003. "Elected versus Appointed Regulators: Theory and Evidence," 1 *Journal of the European Economics Association* 1176–1206.

Buchholz, R. A. 1990. *Essentials of Public Policy for Management*. Englewood Cliffs, N.J., Prentice Hall.

Caldeira, G. A., and J. R. Wright. 1998. "Lobbying for Justice: Organized Interests, Supreme Court Nominations and the U.S. Senate," 42 *American Journal of Political Science* 499–523.

De Figueiredo, J. M., and E. H. Tiller. 2001. "The Structure and Conduct of Corporate Lobbying: How Firms Lobby the Federal Communications Commission," 10 *Journal of Economics and Management Strategy* 91–122.

De Figueiredo, R. J., P. T. Spiller, and S. Urbiztondo. 1999. "An Informational Perspective on Administrative Procedures," 15 *Journal of Law, Economics, & Organization* 283–305.

Epstein, D., and S. O'Halloran. 1996. "Divided Government and the Design of Administrative Procedures: A Formal Model and Empirical Test," 58 *Journal of Politics* 373–97.

Ferejohn, J., and C. Shipan. 1990. "Congressional Influence on Bureaucracy," 6 *Journal of Law, Economics, & Organization* 1–20.

Gely, R., and P. T. Spiller. 1990. "A Rational Choice Theory of the Supreme Court Statutory Decisions with Applications to the *State Farm* and *Grove City* Cases," 6 *Journal of Law, Economics, & Organization* 263–301.

Grossman, G. M., and E. Helpman. 2001. *Special Interest Politics*. Cambridge, Mass.: MIT Press.

Holburn, G. L. F., and P. T. Spiller. 2003. "Interest Group Representation in Administrative Procedures: The Impact of Consumer Advocates and Commissioner Selection Methods on Regulatory Policy in the U.S," working paper, University of California Energy Institute

Holburn, G. L. F., and R. G. Vanden Bergh. 2002. "Policy and Process: A Game-Theoretic Framework for the Design of Non-Market Strategy," 19 *Advances in Strategic Management* 33–66.

Krehbiel, K. 1998. *Pivotal Politics: At Theory of U.S. Lawmaking*. Chicago: University of Chicago Press.

———. 1999. "Pivotal Politics: A Refinement of Nonmarket Analysis for Voting Institutions," 1 *Business and Politics* 63–81.

Mayhew, D. 1974. *Congress: The Electoral Connection*. New Haven, Conn.: Yale University Press.

McCubbins, M. D., R. G. Noll, and B. R. Weingast. 1987. "Administrative Procedures as Instruments of Political Control," 3 *Journal of Law, Economics, & Organization* 243–77.

———. 1989. "Structure and Process, Politics and Policy: Administrative Arrangements and the Political Control of Agencies," 75 *Virginia Law Review* 431–508.

McCubbins, M. D., and T. Schwartz. 1984. "Congressional Oversight Overlooked: Police Patrols vs. Fire Alarms," 28 *American Journal of Political Science* 165–79.

Peltzman, S. 1976. "Towards a More General Theory of Regulation," 19 *Journal of Law and Economics* 211–40.

Poole, K.T., and H. Rosenthal. 1991. "Patterns of Congressional Voting," 35 *American Journal of Political Science* 228–78.

Snyder, J. 1990. "Campaign Contributions as Investments: The U.S. House of Representatives, 1980–1986," 98 *Journal of Political Economy* 1195–227.

Snyder, J. 1991. "On Buying Legislatures," 3 *Economics and Politics* 93–109.

Spiller, P. T. 1990. "Politicians, Interest Groups, and Regulators: A Multiple-Principals Agency Theory of Regulation, or 'Let Them Be Bribed'," 33 *Journal of Law and Economics* 65–101.

Spiller, P. T., and R. Gely. 1992. "Congressional Control or Judicial Independence: The Determinants of U.S. Supreme Court Labor-Relations Decisions, 1949–1988," 23 *Rand Journal of Economics* 463–92.

Spiller, P. T., and R. G. Vanden Bergh. 2003. "Toward a Positive Theory of State Supreme Court Decision Making," 5 *Business and Politics* 7–43.

Stigler, G. J. 1971. "The Theory of Economic Regulation," 2 *Bell Journal of Economics* 3–19.

Stratmann, T. 1992. "Are Contributors Rational? Untangling Strategies of Political Action Committees," 100 *Journal of Political Economy* 647–64.

———. 1995. "Campaign Contributions and Congressional Voting: Does the Timing of Contributions Matter?" 77 *Review of Economics and Statistics* 127–36.

———. 1998. "The Market for Congressional Votes: Is Timing of Contributions Everything?" 41 *Journal of Law and Economics* 85–113.

Tiller, E. H. 1998. "Controlling Policy by Controlling Process: Judicial Influence on Regulatory Decision Making," 14 *Journal of Law, Economics, & Organization* 114–35.

Tiller, E. H., and P. T. Spiller. 1999. "Strategic Instruments: Legal Structure and Political Games in Administrative Law," 15 *Journal of Law, Economics, & Organization* 349–77.

Vanden Bergh, R. G. 2000. "The Evolution of Institutions: Politics and Process in the American States," Ph.D. dissertation, University of California, Berkeley.

Weingast, B. R., and M. J. Moran. 1983. "Bureaucratic Discretion or Congressional Control? Regulatory Policymaking by the Federal Trade Commission," 91 *Journal of Political Economy* 765–800.

Wright, J. R. 1990. "Contributions, Lobbying and Committee Voting in the U.S. House of Representatives," 84 *American Political Science Review* 417–38.