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POLITICAL ACTIVISM, TRUST, AND COORDINATION

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ABSTRACT

Political Activism, Trust, and Coordination

We study political activism by several agents (lobbyists, unions, etc.) who have private but imperfect policy-relevant signals, and seek to influence the decisions of a policy-maker. When agents can share information and coordinate their actions, the equilibrium is shown to be equivalent to that with a single lobbyist, and even though activism conveys valuable information, it always reduces social welfare. When interest groups act independently, two main scenarios arise. In a 'bandwagon' or low-trust equilibrium, agents have a high propensity to lobby even when it is unwarranted, and, conversely, the policy-maker does not react unless all of them are actively lobbying. In a 'mutual discipline' or high-trust equilibrium, by contrast, each agent's behaviour is more informative, and the policy-maker's response threshold correspondingly lower. The key difference is whether the event in which an agent can expect to be pivotal is one where others will be providing supporting evidence by their own activity (thus allowing him to be less truthful), or contrary evidence by their inactivity (thus forcing him to be more credible). We show that when the expected degree of conflict between the lobbyists and the policy-maker is relatively high the unique equilibrium is of the 'mutual discipline' type; when ideological distance is relatively low, it is of the 'bandwagon' type; within some intermediate range, both equilibria coexist. We also examine the welfare implications of the different equilibria and study the optimal organization of influence activities, examining when the policy-maker and the activists would prefer that the latter coordinate their actions, or act separately.

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I   Introduction

Through strikes, demonstrations or costly lobbying, private agents and organized pressure groups commonly expend resources to try and influence the decisions of policy makers. While these phenomena are present in all societies, the level of political activism differs widely across countries. For instance, interest groups are generally much more organized, and spend much more on lobbying legislators, in the United States than in Europe. Even across much more similar countries, and focussing on labor activism, the number of workdays lost to strike (per thousand workers) between 1960 and 1985 was only 37 in Germany and 76 in Sweden, but 428 in France and 1180 in Italy.[1] In the latter countries, people frequently complain that workers are "constantly" finding reasons to go on strike; unions retort that the government and employers only "understand" such strong displays of determination –perhaps even not really paying attention unless a general strike or similar action paralyzes the country. In other nations, by contrast, emerging labor conflicts are resolved through bargaining at a much earlier stage.[2]

Such variations in the intensity of political activism may reflect different fundamentals, or self-fulfilling vicious and virtuous cycles; we shall examine both. The common complaint about excessively strike-prone workers facing excessively unresponsive governments or employers suggests a form of expectational trap. Several historical episodes of sudden, permanent changes in the levels of unionization, lobbying, and street protests that we discuss later on also suggest multiplicity and regimes shifts. Of course, fundamentals such as the costs of activism and the ideological distance (or expected degree of conflict) between the policy maker and the interest groups surely matter as well. Another factor that appears empirically important is what might be called the "industrial organization" of activists and interest groups; that is, the extent to which they act independently of each other, or on the contrary coordinate their actions, through union confederations, lobbying coalitions, anti-globalization networks, and other forms of communication. For instance, countries where wage bargaining is carried out at a more centralized level generally have more flexible real wages and lower levels of unemployment; relatedly, countries with more centralized union movements experience fewer strikes (e.g., Western [1996]).

Recent work in political economy has significantly contributed to elucidating the roles played by lobbyists and activists, by showing how costly and apparently wasteful actions

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[1]We are grateful to Bruce Western for providing us with the data on strikes that we used to compute these averages. See Western [1996] for a description of this data, compiled from OECD statistics.

[2]Relatedly, Blanchard and Philippon [2002] attribute the higher levels of labor conflict and wage rigidity in the face of persistent unemployment experienced by some of the same countries, to a lower level of trust between these countries' employers and their "old-style" (formerly communist-influenced) unions.

(participating in a strike, demonstrating in the cold with the risk of being arrested, hiring expensive lobbyists, etc.) may serve as signalling devices that allow private citizens to convey useful information to decision makers, even in the presence of conflicts of interest. Most of this research has focused on two polar cases: that of a single lobbyist, and that of many small, anonymous activists.[3] This leaves relatively unexplored a set of issues pertaining to the strategic interactions between small numbers of relatively large pressure groups (industries, unions, political parties, etc.), including the impact of alternative organizational structures. Yet, just as firms' ability to cooperate is a key variable in the functioning of markets, it is important to understand how activists' and interest groups' ability to share information and coordinate their actions may influence their behavior and the policy outcome.

A brief look at the history of some major pressure groups makes clear the importance of these issues. The development of the labor movement in the United States has been marked by a recurrent tension between unity and division, and changes in the relationships among unions have generally been considered major events – starting with the merger between the American Federation of Labor (AFL) and the Congress of Industrial Organizations (CIO) in 1955, continuing with the exit of the Teamsters from the AFL-CIO in 1957 and that of the American Auto Workers in 1968, with the latter re-joining the AFL-CIO later on. In his classic work on political organizations, Wilson [1973] pointed to the rivalry between the three major Jewish organizations in the United States to illustrate the general point that the relationship between interest groups with overlapping "jurisdictions" and support bases is characterized by a fundamental tension between the need for coordination and the ambition of independence.[4] In all these cases the choice of organizational structure has been an important determinant of the behavior of influence groups, and of their interactions with policy-makers.

To study these issues, we develop in this paper a simple model of interaction among multiple pressure groups. We derive and contrast the equilibria of the signalling game when activists can coordinate and when they act independently, and characterize the welfare implications of these two organizational structures. The analysis brings to light two novel strategic effects that shape the informativeness and welfare properties of the outcome: a "disciplinary" effect and a "bandwagon" effect. When the first one dominates, the presence of other independent interest groups –even with perfectly congruent interests– limits each informed agent's ability to bias the policy choice, and allows the decision maker to extract information more effectively. In this case trust is higher, lobbying costs lower,

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[3]See Section I.A for a brief review of this literature, and Grossman and Helpman [2001] for a much more comprehensive treatment (including some results with multiple interest groups).

[4]A specific quotation is given in Section III.

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and social welfare consequently greater, as a result of the independence of the interest groups. When the second effect dominates, however, the equilibrium is characterized by low trust and a low responsiveness on the part of the policy maker, as well as by higher lobbying costs. The decision maker does not act unless a larger number of agents actively lobby, and conversely each of them exploits the "confirmation" provided by the presence of the others to engage in more unwarranted lobbying.

The idea behind these two effects and their welfare consequences is intuitive. Consider n interest groups (unions, lobbyists for the defense industry, etc.) who observe noisy signals on the state of the world, and independently try to convince the policy maker that the state is one where she would also want to reallocate resources in a way that benefits their constituency (unemployment benefits, weapons procurement). When there is a single interest group, the policy maker's anticipated reaction to his lobbying is a known random variable. In particular, it is independent of the state of the world, since the policy maker only observes whether lobbying occurred or not. With multiple interest groups, by contrast, the return to each one's lobbying depends on how many others also "show up" to help convince the policy maker. It therefore becomes state-contingent, since the other lobbyists' actions depend on their private signals, which are correlated with the underlying state. In determining an agent's incentive to lobby, it is therefore essential to determine in which event he can induce the policy maker to change her action, and the likelihood of that "pivotal event". For instance, the decision maker may respond even when only a few of the agents actively lobby, require a larger "quorum", or even be swayed only by a unanimous front (e.g., a general strike). The important point is thus not that each lobbyist considers when he is going to be pivotal, and conditions his behavior on this event, as in the voting models of Austen-Smith and Banks [1996] or Feddersen and Pesendorfer [1997]. The novelty in the problem we consider is that *the pivotal event is endogenous:* it is defined by the *action threshold* of the policy maker, which may be high or low depending on her level of *trust* in agents' reports. In voting models, the consequence of an agent's behavior are mechanic: with majority rule, for instance, the pivotal event for an individual is when $(n-1)/2$ others express in favor of his preferred option.[5] While the informational content of that event depends on agents' voting strategies, the event itself is fixed, and so are its policy consequences. By contrast, in the settings that we study, and in models of persuasion more generally, the "pivotal event" –the minimal number of active agents that will convince the policy maker to act– depends on the decision maker's beliefs, and these in turn are jointly determined with the informed agents' equilibrium strategies. Different regimes may thus emerge, corresponding

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[5]Indeed, his vote matters only in that event. Austen-Smith and Banks [1996] consider the more general case of any anonymous monotonic decision rule, but the intuition is the same.

to different pivotal events that endogenously alter interest groups' incentives to reveal or misrepresent their information. To see how this gives rise the two key effects mentioned earlier, consider here the simple case of $n = 2$ lobbyists.[6]

1. *The "bandwagon" effect.* When it takes lobbying by both pressure groups to sway the decision maker, the "pivotal event" is such that the presence of the second lobbyist generates a positive externality for the first one. Indeed each one's action provides confirmatory evidence for the other's claim, so even when each has a greater propensity to lie they can still, together, convince the policy-maker. Note that this spillover on the first activist (say) occurs only when the second one also turns out to lobby; but with a (rightly) distrustful policy maker who responds only to generalized pressure, it is only in that event that the action of the first activist matters anyway. In equilibrium, there is thus more "unjustified" lobbying than with a single activist, and the planner is less responsive to it.

2. The *"disciplinary" effect.* When lobbying by a single agent suffices to convince the policy-maker to act, on the other hand, the presence of a second activist generates, in the pivotal event, a negative externality for the first one. By his abstention, the second lobbyist implicitly contradicts the other one's claim. To counteract this adverse evidence and convince the decision maker on his own, each lobbyist must be more credible, meaning that he can afford to lie less often. In equilibrium, the presence of a second lobbyist thus disciplines the first one's behavior, resulting in less unwarranted lobbying and allowing the planner to be more responsive.

When will each of these effects prevail? We show that when the expected degree of conflict between the lobbyists and the policy maker is relatively high (e.g., they come from opposite sides of the political spectrum), the *unique equilibrium* with activism is of the "mutual discipline" type; when expected conflict is relatively low (they represent relatively similar interests), it is of the "bandwagon" type; for an intermediate range of values, *both equilibria* may coexist. We also examine the welfare implications of the different equilibria, comparing them in particular to the non-activism and the coordination benchmarks. Lobbying in the bandwagon equilibrium is always socially harmful, even more so than in the coordinated game. The mutual-discipline equilibrium, however, shows that political activism can actually be beneficial, generating information whose social value exceeds the costs dissipated on signaling. This stands in contrast to the previous

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[6]For reasons explained in footnote 18, we shall actually model the case $n = 3$ rather than that of $n = 2$, which in a symmetric setting is somewhat degenerate. The situation sketched above thus really corresponds to one where the third activist is lobbying (one is conditioning on this event), and the issue is whether the policy maker requires lobbying by just two agents, or by all three.

literature, which either focussed on the single-agent case (where we show that lobbying is always wasteful), or largely abstracted from the issue of social welfare.

Finally, we study the optimal organization of influence activities, asking whether the policy maker and the activists would prefer that the latter coordinate their actions, or act separately. We show that when the ex ante conflict between the policy-maker and the activists is relatively small, all players agree that an organizational structure in which informed agents can cooperate, and avoid the bandwagon equilibrium, is superior. When anticipated conflict is high, on the contrary, a configuration with independent activist groups is unanimously preferred. In intermediate cases the policy maker and the interest groups may have conflicting preferences over the organizational structure.

A   Related literature

Signalling models of political action can be divided into two broad classes: those where information transmission is costly, and those of "cheap talk". Our paper is more closely related to the first line of research, but also develops some of the issues discussed in the second literature.

Potters and van Winden [1992] and Austen-Smith [1995] were among the first papers to explain how the expensive lobbying observed empirically can be understood as a form of costly informational transmission. They focussed on political action by a single informed agent, and therefore did not investigate strategic interactions among multiple activists. Lohmann [1993a, 1994] showed that, despite the free-rider problem first pointed out by Olson [1965] in his classic work, effective signalling may take place even with many agents who are each informationally insignificant with respect to the aggregate. These papers provided detailed analyzes of the necessary conditions characterizing an informative equilibrium with many activists, but did not study the existence or multiplicity of equilibria. They also did not compare the welfare properties of equilibria generated by different organizational structures or self-fulfilling beliefs.[7] Austen-Smith and Wright [1994] studied a model where two lobbyists seek to influence a policy maker, but their main concern was the ex-ante decision to acquire information, rather than the organization of lobbyists (their ability to cooperate or be independent) or the coordination of expectations ("trust", or lack thereof).[8] More closely related is Chapter 5 in Grossman and Helpman [2001], who pointed out the potential for multiple equilibria in a simple example with

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[7]Lohman [1993b] analyzed the sources of welfare loss involved in a decentralized political equilibrium, relative to the first-best case of a social planner who could directly control agents' political strategies (lobbying probabilities).

[8]There are also some important differences in modelling assumptions. Thus, in Austen-Smith and Wright [1994] the lobbyists observe perfectly informative private signals, and can communicate with the policy maker costlessly. The latter, can, at a cost, directly verify their veracity.

two like-minded lobbyists. They then dismissed this phenomenon, however, because in their framework the "low trust" equilibrium could be supported only through implausible out-of equilibrium beliefs.

The impact of the organization of multiple interest groups has been studied in more detail in the literature on cheap talk initiated by Crawford and Sobel [1982]. In an important series of papers, Austen-Smith [1990,1993a,1993b] examined how different organizational structures affect the transmission of information through cheap talk, focusing particularly on comparing the properties of the equilibrium when informed agents report simultaneously or sequentially. More recently, Krishna and Morgan [2000, 2001] have analyzed communication between two senders and a receiver with a one-dimensional policy space, and Battaglini [2002a, 2002b] the case of multiple senders with noisy signals and a multidimensional policy space. None of these papers, however, directly addressed the questions of how coordination problems impact welfare, or the preferences of the policy maker and informed agents over the organizational structure.

The paper is organized as follows. We present the model in Section II, then consider in Section III the benchmark case where there is either a single informed lobbyist, or several of them who are able to coordinate their actions (in a weak sense). In Section IV we then turn to the case of activists who cannot coordinate, and derive our main results on endogenous informational externalities and their implications for multiplicity and social welfare. In Section V we examine the policy maker and activists' preferences over the organization of the latter, by comparing their respective welfare levels under coordination with those that prevail in the different uncoordinated equilibria. Section VI concludes.

II   The model

We consider a simple model of information-driven activism. A policy maker needs to make a decision that should depend on the state of the world $\theta \in \{H, L\}$. As indicated on Figure 1.a, when the state is low (L) the status quo or default option d is optimal; in the high state (H), a different action a is called for. Conditional on her information $\mathcal{I}_0$, the policy maker has a prior belief $\rho \equiv \Pr(H | \mathcal{I}_0)$. We assume that ρ is low enough that, if no evidence in favor of an active policy is received, she will maintain the status quo; this means that

$$\rho < \frac{a_L}{a_L + a_H} \equiv \overline{\rho}. \tag{1}$$

Additional information on the state of the world is available to $n \geq 1$ agents, who may try to influence the policy decision through some form of activism such as lobbying, strikes, public demonstrations, etc. These agents all share the same preferences, which differ from

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those of the policy maker: the later is concerned not just about the activists' utility, but about social welfare more generally. Figure 1.a depicts this conflict of interests: in state H, where an active policy is really needed, both the policy maker and the informed agents would agree on taking the action a; in state L, however, the former prefers the status quo, but the latter would still like the active policy, since $b_L > 0$. We also assume that action a is relatively more beneficial in the high state for the activists, as it is for the policy maker: $b_H > b_L$. The decision maker is aware of this potential conflict of interest, as the payoff structure is common knowledge.[9]

If there was only one (risk-neutral) informed agent, we would not need to consider the possibility of his being mistaken, since the signal he received would be the only relevant state of the world: no action could be contingent on anything else. To study strategic interactions between several activists, however, it is important that their signals be imperfectly correlated, hence noisy. This information structure is described in Figure 1.b: in any state $\theta \in \{H, L\}$, each activist receives a "correct" signal with probability $\xi \geq 1/2$, and a "wrong" signal with probability $1 - \xi$. We assume that the precision ξ is high enough that, if the policy maker were to observe the favorable signal $s = h$ herself, her posterior would increase enough to cause her to switch to the action a:

$$\Pr\left(H \,|\, s = h; \rho\right) > \overline{\rho}. \tag{2}$$

Since $\Pr\left(H \,|\, s = h; \rho\right)$ increases with ρ, this corresponds (for a given ξ) to assuming that $\rho > \underline{\rho}$, where $\underline{\rho}$ solves (2) as an equality. In the single-agent case, (2) is a necessary and sufficient condition for an equilibrium with information transmission (via activism) to exist.

Following an established literature, we assume that activism is costly: if an agent wants to advocate his cause, he must spend c. Several situations may then arise, depending on the relative costs and benefits of activism. We shall assume here that $c < b_L$, so that even in the low state of the world it would be worth incurring c, if it convinced the policy maker to switch from the status quo to the desired action a. This assumption is not essential, but corresponds to the most realistic and interesting case. First, it rules out the rather obvious cases of an equilibrium in which types perfectly separate ($b_L < c < b_H$), or where activism is prohibitively costly ($b_H < c$). Second, it is empirically more plausible to assume that the costs of activism are far less than the potential benefits of influence. For instance, Lohmann [1995, p.278] reports that in 1985 insurance companies contributed a total of $129,326 to the chairman of the Finance Committee of the U.S. Congress; by comparison, "for these companies, tax-exempt status of fringe benefits ...

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[9]This payoff matrix was introduced by Potters and van Winden [1992], who studied the single-lobbyist case under the assumption that his signal is perfectly informative.
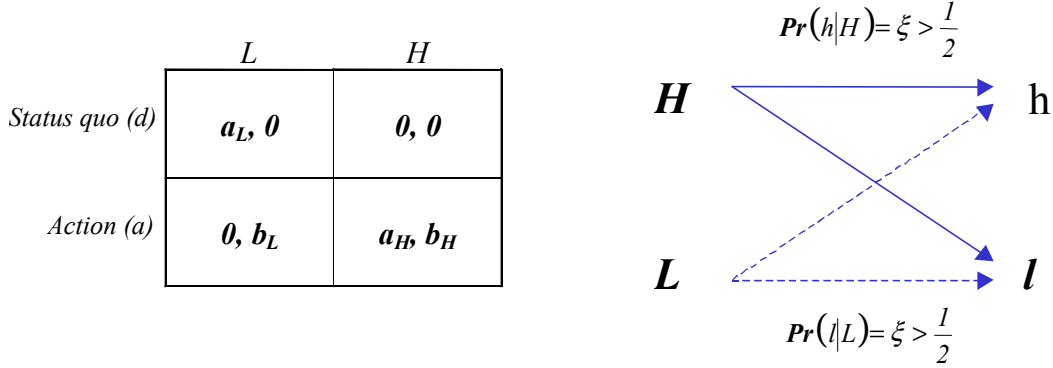
Figure 1: payoffs and private signals. The left panel gives the decision maker's and activists payoffs (in that order) for each state-policy combination $(\theta, \alpha) \in \{L, H\} \times \{d, a\}$. The right panel gives the activists' distribution of signals in each state θ.

is worth millions". Similarly, in 1995 all Japanese companies together spent "only" 23.5 millions on lobbying the U.S. government. More recently, De Figueiredo [2002] reports that contributions to congressional candidates from PACs' averaged about \$123 million annually during the 1999-2000 election cycle , while corporations, unions and other interest groups gave about \$76 million annually in "soft money" during the 1997-1998 cycle. The average is thus about \$200 million per year, and "yet Congress controls a \$2 trillion budget, about 40% of which is discretionary spending".[10]

Finally, the case where c is relatively small also allows us to focus attention on the key issue of potential misrepresentation by agents seeking to influence public policy. Indeed, we show (see Lemma 3 in the appendix) that for all c below some threshold $c^* > 0$, there can be no equilibrium with activism in which the policy maker is as responsive as if the informed agents never lied . We shall assume that $c < c^*$ throughout the paper.

Let us now describe players' strategies. A behavioral strategy for an activist is a pair of lobbying probabilities $\tilde{x} \equiv (x(l), x(h)) \in [0,1]^2$, one for each possible signal that he might receive; we shall also refer to $s \in \{l, h\}$ as the agent's (low or high) type. As explained below, in the equilibria of interest agents will always lobby after receiving a favorable signal $(x(h) = 1)$, so their strategy space will in fact be unidimensional.

Turning now to the planner, the only event she observes is the number of lobbyists who are active. Her strategy is thus a mapping associating to each $i \in \{0, 1, ..., n\}$ a probability y_i of taking the action a. The posterior beliefs on which she bases her decision,

$$\mu_{n,i}(\tilde{x}, \rho) \equiv \Pr[\theta = H \mid i; \tilde{x}, \rho], \tag{3}$$

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[10]De Figueiredo [2002], p.1. For more data on lobbyists' contributions that confirms this general point, see for example Hrebenar and Scott [1990].

are given by standard Bayesian updating.

Lobbyists seek to maximize their expected payoff, represented in Figure 1.a, given the strategy of the decision maker. By definition, the latter's payoffs reflect all the social welfare implications of the policy choice (a versus d), and thus already incorporate its value to the lobbyists. We also assume that resources spent for pure signalling purposes have little or no social value. This is most obvious for those forms of activism, such as strikes, mass layoffs or riots, that directly hurt other agents. All that really matters, however, is that signalling costs not represent pure transfers, but involve some deadweight loss. The net payoff of the policy maker (net social welfare) when i agents lobby and she chooses action $y \in \{0, 1\}$ is therefore:

$$W(y; i, \theta) \equiv y \cdot a_\theta - \lambda i c, \tag{4}$$

where $\theta \in \{H, L\}$ is the true state of the world, a_θ the corresponding payoff to taking action a (given by Figure 1.a), and λ the shadow cost of burning money. The planner thus seeks to maximize $E_\theta [W(y; i, \theta) \mid i; \tilde{x}, \rho]$.

In this model there is always an uninformative equilibrium, where no political activity ever occurs. Agents abstain from lobbying because the policy maker pays no attention to their actions, always choosing the status quo; conversely, this is rational because she believes that only those with a low signal would lobby. This equilibrium is not plausible empirically, and relies on very special out-of-equilibrium beliefs.[11] To eliminate this and other uninteresting cases, we shall restrict attention to *equilibria with activism,* defined as those where both types of agents lobby with positive probability, and at least the high type does so with probability greater than some arbitrarily small but fixed $\varepsilon > 0$.[12] We shall also assume that the relative profitability of influencing policy in the two states, b_H/b_L, is greater than some given lower bound, β^*. This will ensure that equilibria with activism always exist, and that, in any such equilibrium, one must actually have $x(h) = 1$ (see Lemma 2 in the appendix); accordingly, a lobbying strategy will from now on just be described by $x \equiv x(l)$. The above conditions thus allows us to focus on the real issue of interest, namely activists' incentives to strategically misrepresent their information, and the decision maker's limited ability to sort valid claims from false ones.[13] Finally, to

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[11]It cannot even be interpreted as corresponding to a low level of lobbying, because it is essential that the realized probability of lobbying be exactly zero: even a small probability would destroy this equilibrium. This would occur, for instance, if one added noise by assuming that there are (perhaps with an infinitesimal probability) "honest" citizens who would always lobby for a "just cause".

[12]That is, $x(h) \geq \varepsilon > 0$ and $x(l) > 0$. Clearly, for any signalling to occur one must have $x(h) > x(l)$ (otherwise lobbying would always be counterproductive, hence unprofitable). Thus, if any equilibria with $x(h) < \varepsilon$ exist, they involve only a negligible probability of information transmission.

[13]In the one-agent case, the activism refinement just rules out the uninformative equilibrium. With

avoid technicalities we shall focus on symmetric equilibria. The analysis of asymmetric equilibria is a little more complicated, and does not yield significant additional insights.

III   Lobbying and coordination

One of our aims is to explain how coordination issues affect the informativeness of equilibrium behavior, and may even lead to multiple regimes. To this end, we first consider here the benchmark case where there is either a single informed lobbyist, or several of them who are able to coordinate their actions –at least in a relatively weak (non-binding) sense, defined below. In the next section we then turn to the case of activists who cannot coordinate.

The single-lobbyist case has been studied in the literature under the assumption that he observes a perfectly informative signal ($\xi = 1$).[14] Although we shall allow his signal to be noisy, the basic intuition about the nature of the equilibrium remains essentially unchanged. We shall, on the other hand, point out some new *welfare* implications, and also generalize the results to the case of *many* activists who can share their information.

With a single informed agent there is a unique informative equilibrium, determined by two simple conditions that we shall term the *informativeness constraint* and the *incentive constraint.* Let us first focus on the activist's strategy. Observe that $x = 0$ can never be an equilibrium, or else lobbying would raise the decision maker's posterior to $\mu_{1,1}(x, \rho) = 1$, and would therefore always be profitable –a contradiction. It also cannot be that an informed agent lobbies regardless of his signal: with $x = 1$, the policy maker's posterior belief would not change; she would thus never depart from the status quo, so lobbying could not be optimal. More generally, after having observed lobbying (event $\mathcal{I}_{1,1}$) the decision maker's posterior must be such that:

$$\mu_{1,1}(x, \rho) = \frac{\rho\left[\xi + (1-\xi)x\right]}{\rho\left[\xi + (1-\xi)x\right] + (1-\rho)\left[1 - \xi + \xi x\right]} \geq \overline{\rho}. \tag{5}$$

Since $\mu_{1,1}(x, \rho)$ is increasing in ρ and decreasing in x, this determines an upper bound $x_1(\rho)$ on the equilibrium lobbying strategy x. A illustrated on Figure 2, $x_1(\rho)$ is increasing

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multiple agents it also combines with the assumption on b_H/b_L to rule out two other uninteresting cases. The first is where agents never lie ($x(l) = 0$) but those with a high signal do not necessarily report it ($x(h) < 1$), because they are unsure of whether others will back them up. This can be thought of as an "attenuated version" of the uninformative equilibrium. The second case is where both types lobby with probabilities $0 < x(l) < x(h) < 1$, but $x(l)/x(h)$ has the same value as in the mutual-discipline equilibrium we analyze, where $x^*(h) = 1$. This invariance of relative activism (required to maintain the same posterior belief for the decision maker) makes the two equilibria very similar in terms of the key screening problem. In terms of total lobbying expenditures, they would differ by a scaling factor.

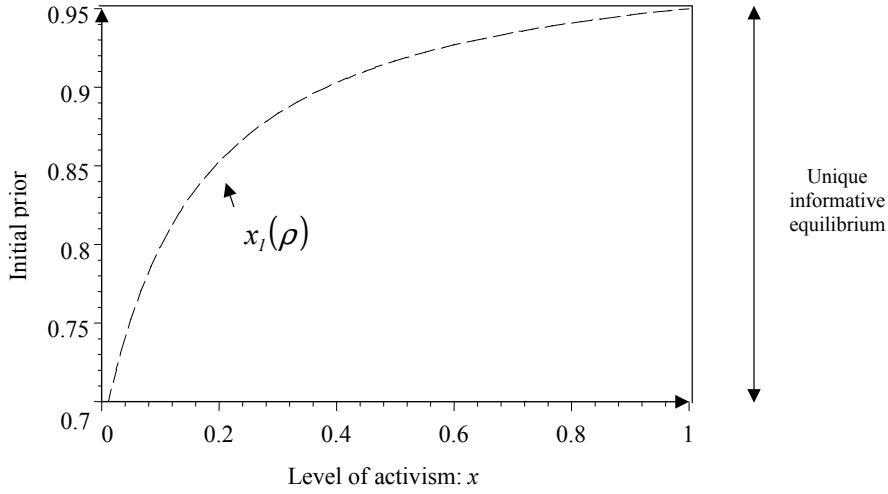[14]See Potters and van Winden [1991] and Grossman and Helpman [2001].

Figure 2: equilibrium level of activism following a low signal $(s = l)$, in the single-agent case.

in the prior ρ, and strictly between 0 and 1 for all $\rho \in \left(\underline{\rho}, \overline{\rho} \right)$.[15] We shall refer to this locus as the *informativeness constraint*, because it imposes a limit on the lobbyist's ability to lie (being active after having observed a low signal): one must have $0 < x \leq x_1(\rho) < 1$.

We now turn to the policy maker's reaction, y_1. In order for an agent who received a low signal $(s = l)$ to choose an interior level of x, he must be indifferent between lobbying and remaining passive. This means that:

$$y_1 \cdot [\xi b_L + (1 - \xi)b_H] = c. \tag{6}$$

We shall refer to this as the *incentive constraint*, because it requires the policy maker's behavior to make the agent's decision to lobby (when $s = l$) just break even, in expectation. Since $c < b_L$ it is clear that $y_1 \in (0, 1)$, so the decision-maker must also be indifferent after observing lobbying activity; consequently, the informativeness constraint $\mu_{1,1}(x, \rho) \geq \overline{\rho}$ must hold with equality.

In summary, the unique equilibrium with activism is characterized by the two conditions (5)-(6), or $x_1^* = x_1(\rho)$ and $y_1^* = c[\xi b_L + (1 - \xi)b_H]^{-1}$. We now show that this characterization remains valid when there are many lobbyists who can coordinate their actions in a relatively weak sense, which essentially amounts to information-sharing. The equivalence is of course obvious when agents can perfectly coordinate, for instance by

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[15]Both this graph and Figure 3 in the next section depict the equilibria for parameter values $\xi = 0.9$, $b_H = 10$, $b_L = 5$, $c = 3.5$ and $\overline{\rho} = 0.95$.

11

delegating their decisions to a third party. More interestingly, the result holds even under a weaker and more realistic form of coordination, that requires *no commitment.*

We shall say that lobbyists *weakly coordinate* when: i) they can share their information; ii) if, among the action profiles that constitute Nash equilibria, there is that one makes all of them better off, they are able to coordinate on it.[16] This corresponds for instance to the situation of activists who have access to a communication device such as a trade newspaper or e-mail group, a common lobbying firm, or a confederation of unions, that allows them to *aggregate* their individual signals. Another example is that of centralized bargaining with the policy maker.

Proposition 1 *When there are $n \geq 1$ lobbyists who can weakly coordinate, there is a unique equilibrium with activism, and it is such that all act as a single agent, by playing a perfectly correlated mixed strategy. Thus only two outcomes may occur in equilibrium: either no one lobbies, or everyone does . In the latter event, the decision maker's posterior is equal to $\mu_{n,n}(x, \rho) = \overline{\rho}$, and the policy a is implemented with probability y_1^*. If less than all lobbyists are active, the status quo is always chosen.*

The intuition for these results is simple. Agents need to use an informative strategy to convince the policy maker, so their probability of lobbying must be increasing in the number $m \leq n$ of positive signals ($s = h$) that they received. Thus, generically, they will remain inactive when m is below some threshold $\bar{m}$, mix when $m = \bar{m}$, and lobby with probability one when $m > \bar{m}$. Conversely, the policy maker's strategy is nondecreasing in the number of active lobbyists. Suppose now that when $m = \bar{m}$, lobbyists mix in a less than fully coordinated way (e.g., independently). Each one must then be indifferent, given the mixing strategies of the others. Given the policy maker's decision rule, however, the expected benefit from lobbying is supermodular in agents' strategies: if all of them except j set $x = 1$ when $m = \bar{m}$, then j is no longer indifferent, but strictly prefers to also set $x = 1$. Lobbying with probability one when $m = \bar{m}$ would thus yield a Pareto improvement, and weakly coordinating lobbyists would deviate to this behavior.[17]

Proposition 1 already shows that a signaling model with a single interest group, or which abstracts from the difficulty of coordination among influence seekers, will have

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[16]This is thus not an assumption on behavior, but only a refinement of the equilibrium set: we do not assume commitment, but just eliminate equilibria that are Pareto dominated. Technically, we rule out strategies that are not coalition proof for the group.

[17]It is interesting to note that, although only two outcomes are possible (all agents are active, or none), the equilibrium is independent of the definition of out-of equilibrium beliefs. As the proposition makes clear, when less than all agents are active different posterior are possible for the policy-maker, but they must *necessarily* all be such that action a is not optimal. So, while there is some indeterminacy of beliefs out of equilibrium, it is totally irrelevant for the outcome.

trouble explaining certain phenomena like a multiplicity of regimes (e.g. the very different levels of lobbying and labor activism in otherwise similar countries), as well as sudden changes in the levels of strikes and public protests. The following proposition identifies anther problem with restricting attention to the coordinated equilibrium.

Proposition 2 *When $n = 1$, or when lobbyists are able to weakly coordinate, social welfare is always lower in the equilibrium with lobbying then in the one without, independently of the number of informed agents. Yet trying to discourage lobbying by increasing its cost c would, at the margin, unambiguously reduce welfare.*

Thus, perhaps surprisingly, the fact that there is lobbying in equilibrium and that it truly conveys information ($x < 1$) does not imply that the policy maker is better off. She is in fact strictly worse off than when no lobbying ever occurs and the default option is always chosen. The intuition is simple. From Proposition 1 we know that in the only event that may lead the policy maker to act (all lobbyists are active), her posterior is just equal to $\bar{\rho}$, so she is indifferent between the two policy options. Thus, ex-ante welfare gross of signaling costs is the same as if she were constrained to always choose the status quo. The occurrence of lobbying implies, however, a social welfare loss associated with the money burned (or the costs inflicted on other parties) in the signalling process. This social loss occurs as long as the shadow cost of lobbying expenditures, λ, is strictly positive.

Proposition 2 also shows that ignoring the possibility that coordination might be difficult to achieve would preclude analyzing how the "industrial organization" of activists groups (e.g., whether there are a few large ones or many small ones) affects public decisions and social welfare. There are in fact many factors that can hinder coordination among activists or influence groups, even when communication is relatively easy. First, their interests with respect to the setting of policy may be only imperfectly aligned. Alternatively, unions, parties, churches and similar organizations may derive private benefits from their autonomy (control rights), due to an agency problem between themselves and the larger constituencies they represent. Wilson [1973, Chapter 3] cites the example of three major Jewish organizations, the American Jewish Congress, the American Jewish Committee and the Anti-Defamation League of B'nai B'rith, which

> "...never fully settled the question of domain, [...] and the resulting rivalry has frequently been intense and on one occasion led to a major piece of self-analysis, the MacIver report. This report recommended [...] subordination to a larger coordinating agency, but of course for many agencies involved that was no solution at all, because joining such a body would only further reduce autonomy...".

Finally, our analysis will show that even when all activists have perfectly congruent preferences and face no agency problem, they may still prefer (and commit) to remain uncoordinated, because the heightened overall level of activism that results allows them to manipulate policy more effectively (see Proposition 5 below).

IV Interactions between interest groups

A Mutual discipline versus the bandwagon effect

We now study the implications of coordination problems for the informativeness and welfare properties of political activism. For simplicity, we limit the analysis to the case of $n = 3$ lobbyists; the case $n > 3$ leads to very similar insights.[18]   As with a single agent, we first derive the informativeness and incentive constraints, then characterize the equilibria resulting from their interaction.[19]

1. The informativeness constraints. The number of agents who actively lobby can now be any $i \in \{0, 1, 2, 3\}$. It will be essential to determine in which of these events, denoted $\mathcal{I}_{3,i}$, a given agent can expect his action to be "pivotal', prompting the policy maker to take the desired action a.

When only one agent is active ($i = 1$), the policy maker never finds it optimal to abandon the status quo: the positive information conveyed by the active lobbyist is not enough to compensate the negative signals represented by the inactivity of the other two.[20] The pivotal events, i.e. those in which the decision maker will change policy with positive probability, can thus only be $\mathcal{I}_{3,2}$ or $\mathcal{I}_{3,3}$, meaning that respectively two or three lobbyists are simultaneously active. Corresponding to these two events are two *informativeness constraints*, defined by the solutions $x_{3,2}(\rho)$ and $x_{3,3}(\rho)$ to the equations

$$\mu_{3,2}\left(x_{3,2}(\rho), \rho\right) = \overline{\rho}, \tag{7}$$

$$\mu_{3,3}\left(x_{3,3}(\rho), \rho\right) = \overline{\rho}, \tag{8}$$

for any $\rho \in (\underline{\rho}, \overline{\rho})$. Recall that $\mu_{3,i}(x, \rho)$ is decision maker's posterior after event $\mathcal{I}_{3,i}$, so the locus $x_{3,i}(\rho)$ determines the strategy x that makes her exactly indifferent between a and

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[18]It might seem odd, on the other hand, to focus on $n = 3$ rather than $n = 2$. This is because, due to the symmetry inherent in our analysis, the case $n = 2$ yields only a subset of the equilibria of interest. Indeed, lobbyists have the same reliability of information ξ and use the same strategy, which is never entirely truthful ($x > 0$). Therefore, when one is active and the other not, the decision maker's posterior $\mu_{1,2}$ is lower than her prior. Consequently, with $n = 2$ there can be no analogue to the "mutual discipline" equilibrium that can arise with any $n \geq 3$.

[19]We again focus on equilibria with activism, as defined at the end of in Section II. This refinement will be implicit in our statement of Proposition 3 below.

[20]A formal proof is given in the appendix, but this should be intuitive since all lobbyists have the same quality of information ξ, and use the same (symmetric) equilibrium strategy x.
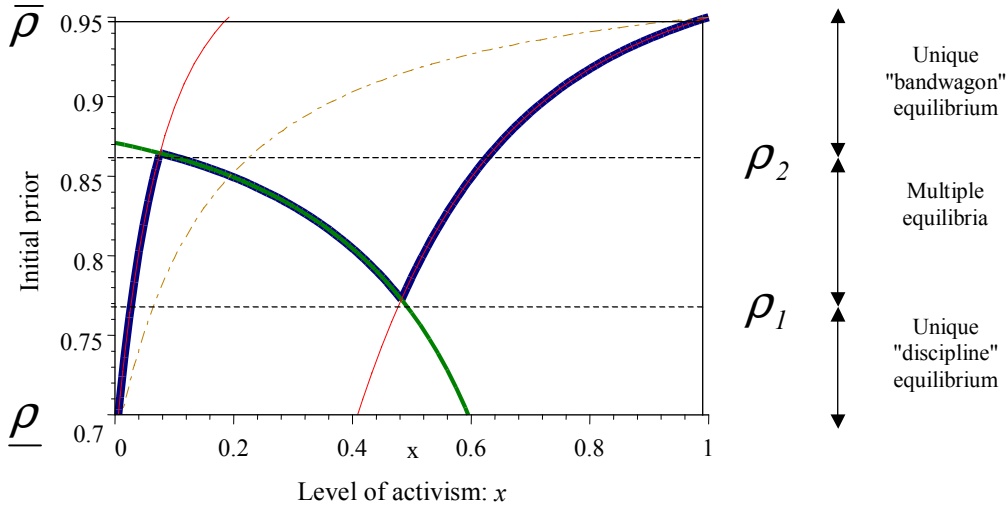
Figure 3: the informativeness constraints, incentive constraint, and equilibria in the three-agent case.

d in that event. Figure 3 plots these loci as functions of ρ, together with the benchmark $x_1(\rho)$ corresponding to the single-agent case.

The locus $x_{3,3}(\rho)$ lies uniformly to the right of $x_1(\rho)$, because of the *positive externality* provided by the fact that two additional lobbyists are active in the event $\mathcal{I}_{3,3}$, compared to $\mathcal{I}_{1,1}$. As a result, the posterior $\bar{\rho}$ required to convince the policy maker can be achieved even when everyone lies with a higher probability. Conversely, because the decision maker *expects* the agents to lie more, she requires more of them to incur the cost c in order for her to be persuaded. The decision maker's *mistrust* of the agents, and their actual *untrustworthiness,* are mutual best responses.

The locus $x_{3,2}(\rho)$, by contrast, lies uniformly to the left of $x_1(\rho)$, because a *negative externality* is now at work. In the event $\mathcal{I}_{3,2}$ the abstention of one agent constitutes for the decision maker a negative signal about the state of the world, and it is *less than fully compensated* by the activism of one other.[21] In order to achieve the required posterior of $\bar{\rho}$, the strategy used by each agent must therefore be more credible, i.e. involve a lower x. Conversely, it is the decision maker's greater *trust* in activists' veracity that makes her willing to respond even when only two of them are lobbying, thereby making $\mathcal{I}_{3,2}$ the pivotal event. To summarize, we have:

$$x_{3,2}(\rho) \le x_1(\rho) \le x_{3,3}(\rho). \tag{9}$$

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[21]Both might have received misleading signals (in opposite directions) with the same probability ξ, but the latter might also be lying, i.e., lobbying even though he received $s = l$.

15

The informativeness constraints will now allow us to characterize the equilibrium set. First for any ρ, the equilibrium level of x can never above $x_{3,3}(\rho)$, otherwise we would have $\mu_{3,3}(x,\rho) < \overline{\rho}$; the policy maker would then always choose the status quo, and lobbying would not be optimal. Second, in equilibrium x can also not be below $x_{3,2}(\rho)$, or else we would have $\mu_{3,2}(x,\rho) > \overline{\rho}$; the policy maker would then choose a with probability 1 even when only two agents lobbied (and still with probability zero when one or less lobbied), thus behaving exactly as if she believed the activists to always be truthful. But we show in in the appendix (Lemma 3) that for $c < c^*$, no such equilibrium can exist: intuitively, with such an "accommodating" policy maker and relatively low costs of activism, each agent's incentive to lobby would be too strong, causing him to deviate to $x = 1$. Thus one must have

$$x_{3,2}(\rho) \leq x^*(\rho) \leq x_{3,3}(\rho) \tag{10}$$

for all ρ, leaving only three cases to consider.

First, it may be that $x^*(\rho) = x_{3,2}(\rho)$, meaning that $\mu_{3,2}(x,\rho) = \overline{\rho} < \mu_{3,3}(x,\rho)$. The pivotal event is then $\mathcal{I}_{3,2}$, to which the policy maker responds by randomizing between d and a (thus $0 < y_2 < y_3 = 1$): even if one lobbyist is not active, lobbying by the other two is potentially effective and triggers, with some probability, a policy change. Since $x_{3,2}(\rho) < x_1(\rho)$, we see that the presence of the other informed agents exerts in this case a disciplinary effect, helping to screen the pressure groups. We shall refer to this outcome as the *mutual discipline,* or *high-trust,* equilibrium.

Conversely, one may have $x^*(\rho) = x_{3,3}(\rho)$, meaning that $\mu_{3,3}(x,\rho) = \overline{\rho} > \mu_{3,2}(x,\rho)$. The pivotal event is then $\mathcal{I}_{3,3}$, and it takes all three lobbyists' efforts to bring the decision maker to the point of indifference between her two policy options (thus $0 = y_2 < y_3 < 1$). In this situation each activist knows that he will be pivotal in the policy decision only if all the others also turn out to lobby in its favor. By implicitly confirming his own lobbying in the pivotal event, they allow him to engage in more misrepresentation: $x_{3,3}(\rho) > x_1(\rho)$. We refer to this outcome as the *bandwagon,* or *low-trust,* equilibrium.

Finally, it may be that $x_{3,2}(\rho) < x^*(\rho) < x_{3,3}(\rho)$, meaning that $\mu_{3,2}(x,\rho) < \overline{\rho} < \mu_{3,3}(x,\rho)$. The pivotal even is again $\mathcal{I}_{3,3}$, requiring all three agents to bring about a policy change. The difference with the previous case is that, following this event, the decision maker now strictly prefers to depart from the status quo ($y_2 = 0$, $y_3 = 1$). This type of equilibrium can bee seen as a "mixture" of the other two, and indeed we shall see that it only arises when the high and low-trust equilibria coexist.

The more general point of the above analysis is that, depending on which is the pivotal event (that which makes the policy maker willing to choose a), *the nature of the externality created for each lobbyist at the interim stage by the presence of other informed agents can*

be either positive or negative, generating a more disciplined or a more collusive outcome. We shall now determine which effect (or equilibrium) actually prevails, for given priors.

2. The incentive constraint. Since the policy maker always chooses the status quo when no lobbyist or a single one is active, we only need to characterize the strategies y_2 and y_3 that describe her reaction when, respectively, two or three are active. These must be such that an agent with $s = l$ is willing to play some $x^* \in (0, x_{3,3}]$, and therefore indifferent between activism and abstention. Denoting by $u_l(y_2, y_3; x, \rho)$ the *net* expected utility of choosing to lobby (rather than remaining inactive) for an agent with such a signal, we must therefore have:

$$u_l(y_2, y_3; x, \rho) \equiv \sum_{\theta = H, L} \Pr(\theta | s = l) b_\theta [y_2 \pi_1(x, \rho | \theta) + y_3 \pi_2(x, \rho | \theta)]$$

$$- \sum_{\theta = H, L} \Pr(\theta | s = l) b_\theta [y_2 \pi_2(x, \rho | \theta)] = c, \tag{11}$$

where $\pi_j(x, \rho | \theta)$ $j = 1, 2$ denotes the probability that j *other* lobbyists are active in state θ. The first sum is the gross expected benefit of lobbying, while $c + \sum_{\theta = H, L} \Pr(\theta | s = l) b_\theta$ $[y_2 \pi_2(x, \rho | \theta)]$ is the opportunity cost. The latter reflects, in addition to the direct cost c, a *free-rider* effect: when $y_2 > 0$ the agent knows that even if he is not active, the desired policy may still be chosen if both of the others turn out to lobby.

Condition (11) is the equivalent of (6) in the single-agent case. The main difference is that it now involves not only the decision maker's strategy (y_2, y_3), but also that of the other informed agents, x, which determines the probability distribution of the events $\mathcal{I}_{3,i}$, $i \in \{0, 1, 2, 3\}$. This last dependence is really the crucial one, because (11) can in fact be reexpressed in terms of a simple locus that is independent of the policy maker's behavior. We shall define this *incentive constraint* $x_I(\rho)$ as the unique solution to the equation:

$$u_l(0, 1; x_I(\rho), \rho) = c, \tag{12}$$

for all $\rho \in [\underline{\rho}, \overline{\rho}]$.[22] As shown on Figure 3, $x_I(\rho)$ describes a decreasing locus in the (x, ρ) space, intersecting the two informativeness constraints at points ρ_1 and ρ_2 respectively. Along this locus the agent is indifferent between lobbying and remaining silent, *if* he expects the policy a to be chosen with probability 1 when all three agents turn out to lobby, and with probability zero otherwise. Conversely, since $x_{3,2}(\rho) < x_I(\rho) < x_{3,3}(\rho)$ the decision maker's posterior is strictly above $\overline{\rho}$ following the event $\mathcal{I}_{3,3}$, and strictly below following $\mathcal{I}_{3,2}$; thus the pure strategy $(y_2, y_3) = (0, 1)$ is indeed optimal for her.

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[22]In any equilibrium, either $y_2 = 0$ or $y_3 = 1$. Since $u_l(y_2, y_3; x, \rho)$ is increasing in y_2 and y_3, there exists a $y_3 \in (0, 1)$ such that $u_l(0, y_3; x, \rho) = c$ if and only if $u_l(0, 1; x, \rho) > c$. Similarly, there exists a $y_2 \in (0, 1)$ such that $u_l(y_2, 1; x, \rho) = c$ if and only if $u_l(0, 1; x, \rho) < c$. See the proof of Proposition 3 in the appendix.

17

3. The equilibria. The set of equilibria is illustrated by the bold lines on Figure 3. When $\rho > \rho_1$ there is a unique equilibrium, $x^*(\rho) = x_{3,3}(\rho)$, which is of the *"bandwagon"* type discussed earlier. Each lobbyist is very uninformative (or untrustworthy), so it is only when all of them actively advocate a policy change that the decision maker will pay attention, and possibly abandon the status quo. When $\rho \leq \rho_1$, on the contrary, there is a unique equilibrium, $x^*(\rho) = x_{3,2}(\rho)$, which is of the *"mutual discipline"* type. In that case each lobbyist's behavior is sufficiently reliable for the policy maker to pay attention when only two of them show up, in spite of the negative informational externality exerted by the inaction of the third one.

Finally, when $\rho \in [\rho_1, \rho_2]$ both equilibria coexist, plus a third one in which the policy maker uses a pure strategy: choosing a if three lobbyists are active, and the status quo otherwise. In this last equilibrium activists are again indifferent following a low signal, and conversely their lobbying strategy $x_I(\rho)$ makes the policy rule $(y_2, y_3) = (0, 1)$ strictly optimal.

The following proposition also shows that the different levels of informativeness and lobbying activity of these equilibria have very distinct welfare implications.

Proposition 3 *The symmetric equilibria of the lobbying game are characterized by two thresholds ρ_1 and ρ_2, with $\underline{\rho} \leq \rho_1 < \rho_2 \leq \overline{\rho}$, such that:*

1. *For $\rho > \rho_2$ there is a unique "bandwagon" equilibrium, in which $x^*(\rho) = x_{3,3}(\rho) > x_1^*(\rho)$. In this equilibrium, social welfare is lower than with a single lobbyist, and a fortiori lower than when there is no lobbying.*

2. *For $\rho < \rho_1$ there is a unique "mutual discipline" equilibrium, in which $x^* = x_{3,2}(\rho) < x_1^*(\rho)$. In this equilibrium, social welfare is higher than when there is no lobbying, and a fortiori higher than with a single-lobbyist, provided λ is no too large.*

3. *For $\rho \in [\rho_1, \rho_2]$ both equilibria coexist. Moreover, there is a third equilibrium in which $x^*(\rho) = x_I(\rho) \in (x_{3,2}(\rho), x_{3,3}(\rho))$.*[23]

Several interesting lessons emerge from this proposition. A first one is potential multiplicity, which we discuss below. A second is that political activism can in fact be *welfare improving,* but *only* when the conflict of interest between the decision maker and the informed agents is *large enough.* If it is too small (ρ is close to $\bar{\rho}$, meaning that the policy

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[23]The level of welfare of this "intermediate" equilibrium varies with ρ : for instance, when ρ is close to ρ_2, so that $x_I(\rho) \approx x_{3,2}(\rho)$, the equilibrium is (by continuity) more efficient that the no-lobbying or single-lobbyist benchmarks. Conversely, it is less efficient when ρ is close to ρ_1, so that $x_I(\rho) \approx x_{3,3}(\rho)$; see Figure 3. More generally, the $x_I(\rho)$ equilibrium represents a kind of mixture of the other two, so we shall devote somewhat less attention to it.

maker needs relatively little persuasion from the lobbyists to act), the bandwagon effect dominates, and society is worse off than in the single agent case.[24] Finally, the potential welfare benefit of activism in high-conflict settings is essentially linked to the *coordination* problem among activists, which the policy maker can exploit to extract information more effectively. Indeed, we saw in Proposition 2 that when there is only one lobbyist, or several who can weakly coordinate, welfare is never improved by lobbying.

To understand how the lack of coordination among the agents can lead to the planner's being either better off (in the high-trust equilibrium) or worse off (in the low-trust case), one can think of the signals independently provided by the other $n-1$ agents as helping the policy maker to screen between a lobbyist (say, the n-th) with a high signal, and one with a low signal. The lobbyist knows that his desired policy will be chosen only if enough agents like him actively lobby. He is more pessimistic about the number of others who will show up when he has received $s = l$ than after receiving $s = h$, since his information and theirs are positively correlated. This difference in conditional expectations is used to screen the lobbyists, as it makes those with a truly high signal more willing to invest the lobbying cost c. The critical point, moreover, is that this *"screening technology"* is *endogenous*, since it depends on the strategy used by the other activists. When their actions are not very informative, meaning that they almost always behave as if they have received a high signal, the screening technology is not efficient, because the conditional expectations of how many other agents will show up is not very different across the two states $s \in \{h, l\}$. Conversely, when the others act more discriminately, a lobbyist with a low signal is much more pessimistic about whether the "quorum" required to convince the planner will be met, than one with a high signal. His incentive to lobby is correspondingly lower, and in equilibrium this translates into a lower probability of misrepresentation.

B   Regime shifts

Proposition 3 may also be useful to explain regime shifts in activism, such as those described in the introduction. For instance, an interesting feature of the growth of lobbying is the US is that it occurred in waves; Wilson [1973] notes at least three major, lasting waves in the rise of lobbying between 1800 and 1940 (see also Hrebenar and Scott [1990]). More recently, the Reagan presidency saw a sharp and persistent increase in the intensity of lobbying; see Figure 4. This change was sustained not only under the Bush administration, but also the Clinton one. Such a sudden and "irreversible" shift is consistent

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[24]Clearly there is always a λ large enough that the social cost of activism makes lobbying inefficient: but if this externality is not too large, one would expect the informational benefits of lobbying to compensate it. The bad news in Proposition 3 is that the costs necessarily predominate if the expected conflict between the informed agents and the policy maker, as measured by $\overline{\rho} - \rho$, is relatively small.
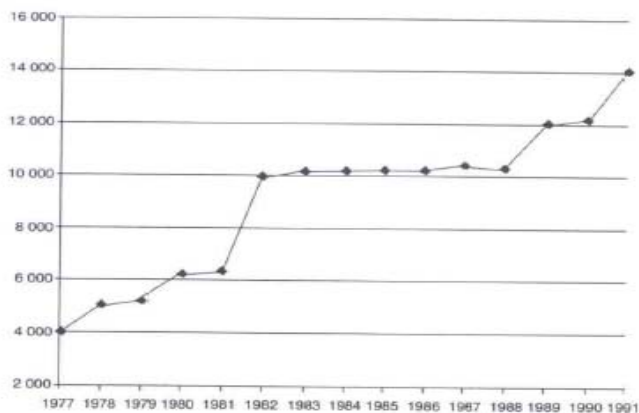
Figure 4: Washington representatives of special interests. Source: Petracca [1992].

with Figure 3, which shows that a temporary reduction in the ideological or "expected conflict' gap $\overline{\rho} - \rho$ (such as occurs when an administration more friendly to the interests of corporate lobbyists comes to power) can indeed trigger a permanent shift to a regime of more intensive, and socially more costly, lobbying.

Another example is provided by Figure 5, which illustrates the large and persistent wave of public protests experienced by West Germany starting in 1980. Commentators agree that this regime shift was generated by a reduction in the ideological distance between the institutional left parties and "the street." As Koopmans [1993] reports,

> "Both [in the 60s and 80s], waves of [New Social Movements] protests
> originated in the political opportunity structures confronting these movements,
> particularly changes in the position of the West German Social Democrats."

In this case the relevant decision maker was not the government, but instead the Socialist Party. There is evidence that, starting in 1980, it became more sympathetic to public protests, and more likely to translate them into legislative action. In the seventies it was suspicious of such unorganized protests, because it did not want to be confused with violent organizations connected to terrorism (Kriesi at al. [1992]) In the eighties, however, the challenge of the Green Party and the increasing strength of the youth movement made the Socialist Party more attuned to the demands of activists (von Oppeln [1989]). It is believed that it was the reduction in the average degree of conflict (which we interpret as a reduction in $\overline{\rho} - \rho$) that led to the wave of demonstrations.[25]

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[25]These changes do not seem to have been triggered by a change in the direct costs of protesting, since these costs, as measured by the fraction of protests that were repressed, remained fairly constant from 1975 to 1989 (around 20%).
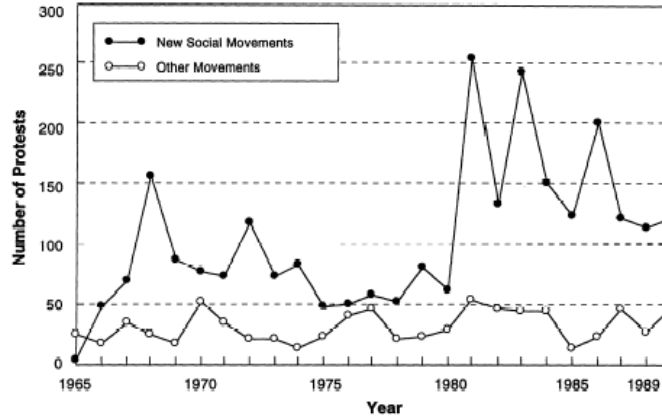
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Figure 5: political protests in West Germany. Source: Koopmans (1993).

There are also examples of negative waves, characterized by a sharp collapse of activism. For instance, Ronald Reagan's accession to the presidency in 1980, which marked a substantial change in the "ideology" of the government, was immediately followed by a sharp drop in union activity, as measured by elections for new representations; see Figure 6. As Farber and Western [2001] report,

> "*We find that the sharp decline in election activity follows the inauguration of president Reagan but precedes the air-traffic controllers' strike and new appointments to the Labor Board,*"

which are the anti-union measures subsequently taken by the administration. Furthermore, this downward shift (clearly distinguishable from the preexisting negative trend) extended well behind the Reagan tenure, and into years of Democratic administration. This case could thus be seen as corresponding to a large increase in ideological distance, reducing ρ to a level below ρ_2 and making the old regime unsustainable; even if ρ later increases back to its earlier level, the system remains in the low-activity equilibrium.

V Welfare and the organization of influence groups

We showed that being in a mutual-discipline equilibrium is a necessary condition for activism to increase welfare. In all other cases, the value of the information revealed falls short of the resources dissipated in lobbying costs. An immediate implication is that when λ is relatively small and the high-trust equilibrium prevails (e.g., when $\rho < \rho_1$), the policy maker has a clear preference against coordination among informed agents. In the other cases we know that activism is welfare reducing, but whether it is worse when agents are
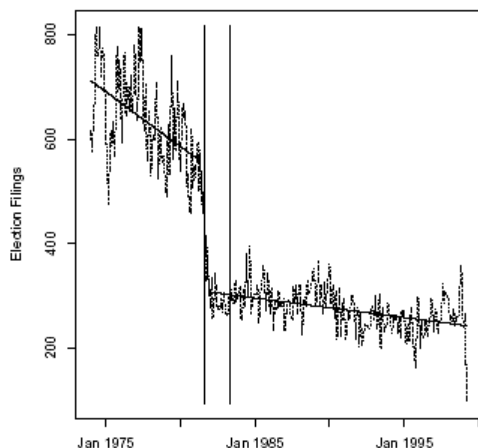
Figure 6: election filings for new union representations. Source: Farber and Western [2001].

coordinated or uncoordinated remains to be assessed. One would also like to know the lobbyists' own preferences over their degree of coordination.

We shall study these issues for the case where the precision of private signals is high, although still not perfect. This assumption is made to simplify the analysis, but $\xi = 1$ is also the limiting case on which the previous literature has focussed. We shall see, perhaps surprisingly, that there are circumstances where policy maker actually prefers lobbyists to coordinate their activity; and even situations where the lobbyists would like to commit not to coordinate.

The first result characterizes the policy maker's preferences over the organization of lobbies, when their signals are very informative:

Proposition 4 *There is a threshold $\xi^* < 1$ on the precision of private signals such that, when $\xi > \xi^*$, and for any λ :*
1) the policy maker prefers activists to be divided if the resulting equilibrium is of the mutual-discipline type (e.g., when $\rho < \rho_1$);
2) if lack of coordination will lead to a bandwagon equilibrium (e.g., when $\rho > \rho_2$), on the other hand, she prefers to face a coordinated group of activists.

The intuition is simple. For ξ high enough the agents' signals are highly correlated, and in both the bandwagon and cooperative equilibria the policy a is implemented only when all n of them actively lobby. Moreover, the decision maker's posterior in this event is the same across both equilibria, namely $\bar{\rho}$. When agents act independently, however, this event is better news (for a given mixing probability x) than when they coordinate, because

22

it is based on three independent signals.[26] Lobbyists can thus afford to be less truthful in a bandwagon equilibrium, which means that the average probability of lobbying is higher. Therefore so are total lobbying costs, even though the policy maker is, on average, no better informed than under coordination.

We now turn to the preferences of the lobbyists:

Proposition 5 *There is a threshold $\xi^{**} < 1$ on the precision of private signals such that, when $\xi > \xi^{**}$, non-coordination is preferred by the lobbyists, independently of what equilibrium it leads to.*

To understand this result recall that, in all cases, an agent's expected surplus from lobbying when he receives a negative signal is zero. One can thus focus the comparison on the case of a positive signal. Given a high precision this signal is most likely correct, and the other lobbyists will have received the same information. The issue is therefore how responsive the planner will be when everyone lobbies. She is the most responsive in the mutual-discipline equilibrium $(y_3 = 1)$, since that is when agents are the most credible. The latter would thus rather be in this equilibrium, where they gain credibility by submitting themselves to a greater risk of contradiction by others, than in the coordinated equilibrium where they are expected to collude against the planner. In the bandwagon equilibrium, on the other hand, agents use an even more uninformative strategy than under coordination, but the planners' responsiveness is nonetheless greater $(y_3^B > y_3^C)$, because she must compensate them for the risk that others may not show up to help them press their case. This, in turns, generates a greater surplus for the high types than under coordination.

Propositions 4 and 5 together characterize the preferences of all the players in the two main equilibria. This allows us to spell out when there will be agreement or disagreement between the policy maker and the interest groups over what organizational form is most desirable.

Proposition 6 *There is a $\widetilde{\xi} < 1$ such that for, $\xi > \widetilde{\xi}$, there are two thresholds ρ_3 and ρ_4 with $\rho_3 < \rho_4$, such that:*
1) when $\rho < \rho_3$, non-coordination of interest groups is unanimously preferred, whether it leads to a bandwagon or a collusive equilibrium;
2) when $\rho > \rho_4$, coordination is unanimously preferred if non-coordinated action will lead to a bandwagon equilibrium $(e.g., if \rho_2 < \rho_4)$.

---

[26]For ξ close to 1, the probability that all three agents will independently lobby even though the state is $\theta = L$ is close to x_B^3, where x_B is the individual mixing probability. Under coordination, by contrast, it is close to x_C, where x_C is the joint randomization probability when three low signals have been observed. To achieve the same posterior, it must be that $x_C \approx x_B^3$, hence $x_C < x_B$.

This result has interesting implications for the organizational structure of lobbies, protest and activist groups. When the ideological distance between the policy maker and the interest groups is large (ρ is relatively low), one is likely to see her taking measures (e.g., changing the legislative or institutional framework) that make it more difficult for interest groups to coalesce and act in unison. Notably, the interest groups themselves might (ex ante) support such measures, because they improve their credibility. While we are not aware of any empirical work on this issue, this credibility-through-decentralization motive may be another reason (apart from private benefits of control) behind Wilson's [1973] observation that political organizations with similar constituencies and objectives are nonetheless very attached to their independence. Conversely, when the expect conflict is small, the government will try to foster coordinated action, for example by initiating or requiring centralized bargaining. An example may be the policy of "concertazione" through which left wing governments in Italy tried, in the early nineties, to institute direct negotiations over labor policies with the major unions.

VI   Concluding comments

There are several directions in which our simple model of multiple activists could be usefully extended. First, the activists may have only imperfectly aligned, or even opposing interests, with respect to the setting of policy. While we have shown that pressure groups may be hurt even by the presence of like-minded activists, and even when they can coordinate their actions, divergent preferences would be another important determinant of the policy maker's ability to extract their information. A second force that might hinder coordination was hinted at in the excerpt from Wilson [1973] quoted earlier: political organizations such as unions, parties and the like may value their own autonomy –being independent entities with meaningful control rights– due to an agency problem between themselves (leadership, "apparatchiks") and the larger constituencies they represent. More generally, the "industrial organization" of political and social activism remains a promising avenue of research.

Appendix

A. Proof of Proposition 1

We first show that when lobbyists can weakly coordinate, they will behave (in any symmetric equilibrium) like a single agent. Note that, since agents with $s = l$ always mix with positive probability (a property formally proved in Lemma 3 below), this result does not follow from the fact that strategies are symmetric.

Lemma 1 *If lobbyists are able to weakly coordinate, their actions in any symmetric equilibrium will be perfectly correlated. Thus, only two outcomes may occur: either all informed agents are active, or none.*

Proof. With information sharing, a lobbyist's strategy is a function $x(m)$ mapping the total number $m \in \{0, ...n\}$ of "positive" ($s = h$) signals into a decision to be active or not. If, in some state m, one lobbyist strictly prefers a given course of action, then all others will also strictly prefer it, and all their actions will thus perfectly correlated. Assume now (by contradiction) that there is some state $\hat{m}$ in which some agents are choosing uncorrelated, or imperfectly correlated, mixed strategies. Agents must then be indifferent, and this implies that there can be at most one such state. Indeed, for any other $m > \hat{m}$ agents put a strictly higher probability on the state being H, and will therefore strictly prefer to lobby (recall that they can coordinate on a joint deviation). Given such a unique indifference threshold $\hat{m}$, the policy maker's posterior after observing i active lobbyists must the equal to $\Pr(H \,|\, m \leq \hat{m})$ when $i = 0$, to $\Pr(H \,|\, m \geq \hat{m})$ when $i = n$, and to $\Pr(H \,|\, m = \hat{m})$ otherwise. This weak monotonicity of $\Pr(H \,|\, i)$ implies that her optimal reaction y_i must be non decreasing in i. Moreover, there must exist two realizations i and i' with $i < i'$ and $y_i < y_{i'}$, otherwise agents would have no incentive to lobby. Such a reaction function for the policy maker, finally, implies that each agent's expected benefit from lobbyingis increasing in the strategy x used by the others (supermodularity). Thus if all except agent k increase their strategies to $x(\hat{m}) = 1$, k will strictly prefer to set $x = 1$ as well. A collective deviation to a strategy $x'(\hat{m}) = 1$ therefore yields a Pareto improvement for the lobbyists, which contradicts the definition of weak coordination. Therefore, their strategies must always be perfectly correlated, implying that, in any state m, either $i = 0$ or $i = n$. ∎

As usual, there always exists an equilibrium with no lobbying, in which the status quo is always chosen. Consider now an equilibrium with lobbying. Since it can not be that $\mu_{n,0}(\tilde{x}, \rho) \geq \overline{\rho}$, the policy a will only be chosen when all lobbyists are active. The policy maker must then respond with a mixed strategy, otherwise there would always be lobbying,

25

and it would be uninformative. For her to be indifferent, it must be that $\mu_{n,n}(x,\rho) = \bar{\rho}$. This requires that there be a state $1 \leq m \leq n$ in which the lobbyists themselves (jointly) randomize. This, in turn, is made possible by the policy maker's randomizing with probability $y_n^* = (1/c)\sum_{\theta=H,L} \Pr(\theta\,|m\,)b_\theta$, where $\Pr(\theta\,|m\,)$ is the probability that the state is θ given m favorable signals. ∎

B. Proof of Proposition 2

Let us denote the expected level of social welfare in the absence of lobbying as W_0. In a symmetric equilibrium with lobbying, we know from Lemma 1 that the number of informed agents who actively lobby is a random variable ν that takes only two values: either all are active ($\nu = 0$) or all of them are ($\nu = n$). Denoting as $\eta^*(\nu)$ an optimal action for the policy maker in each of these events, social welfare is simply:

$$W_1 = \sum_{i \in \{0,n\}} \Pr(\nu = i)\left\{ E_\theta\left[w\left(\eta^*(i),\theta\right)|\nu = i\right] - \lambda i c\right\},$$

where w is the payoff function defined in Figure 1.a. We know that $\eta^*(0) = d$, and that if there is lobbying the policy maker in state $\nu = n$ is indifferent between d and a. Thus:

$$
\begin{aligned}
W_1 &= \sum_{i \in \{0,n\}} \Pr(\nu = i) \cdot \left\{ E_\theta\left[w(d,\theta)|\nu = i\right] - \lambda i c\right\}, \\
&= E_\theta\left[w(d,\theta)\right] - \lambda c \sum_{i \in \{0,n\}} \Pr(s = i) \cdot i = W_0 - \lambda c \sum_{i \in \{0,n\}} \Pr(s = i) \cdot i, \quad \text{(B.1)}
\end{aligned}
$$

hence $W_1 < W_0$ since $\lambda c \sum_{i \in \{0,n\}} \Pr(s = i) \cdot i > 0$. Therefore, although the lobbyists do provide information, their net contribution to social welfare is negative. It is also obvious from (B.1) that an increase in the cost of lobbying (within the range of interest, $c < b_L$) is always socially detrimental. ∎

C. Proof of Proposition 3

We start with two lemmata establishing the general claims made in at the end of Section II about equilibria with activism, that is, where $x(l) > 0$ and $x(h)$ is above some arbitrarily small but fixed $\varepsilon > 0$. The first one shows that agents with a high signal actually lobby with probability one, provided b_H/b_L is above a threshold β^*. The second one shows that, for c below some threshold c^*, the policy maker responds less to lobbying than if she believed that activists never lied: unless all three of them actively lobby, she will not choose their preferred policy a with probability one (thus, $y_2 < 1$).

Lemma 2 *Fix any $\varepsilon > 0$. There exists a β^* such that, if $b_H/b_L > \beta^*$, then in any equilibrium with activism, $x(h)$ must equal 1.*

Proof. We can write the expected benefit of lobbying for an agent who has observed a signal $s = h, l$ as:

$$u_s(y_2, y_3; \tilde{x}, \rho) \equiv \sum_{\theta = H, L} \Pr(\theta \mid s) b_\theta [y_2 \pi_1(\tilde{x}, \rho \mid \theta) + (y_3 - y_2) \pi_2(\tilde{x}, \rho \mid \theta)]. \qquad \text{(C.2)}$$

In any equilibrium with $x(l) > 0$, it must be that $u_l(y_2, y_3; \tilde{x}, \rho) \geq c$. We will show that, under the stated conditions, $(u_h - u_l)(y_2, y_3; \tilde{x}, \rho) > 0$, hence the desired result. The difference in incentives to lobby across the two types is

$$
\begin{aligned}
u_h - u_l &\equiv \sum_{\theta = H, L} [\Pr(\theta \mid h) - \Pr(\theta \mid l)] b_\theta [y_2 \pi_1(\tilde{x}, \rho \mid \theta) + (y_3 - y_2) \pi_2(\tilde{x}, \rho \mid \theta)] \\
&= [\Pr(H \mid h) - \Pr(H \mid l)] \times \{b_H [y_2 \pi_1(\tilde{x}, \rho \mid H) + (y_3 - y_2) \pi_2(\tilde{x}, \rho \mid H)] \\
&\quad - b_L [y_2 \pi_1(\tilde{x}, \rho \mid L) + (y_3 - y_2) \pi_2(\tilde{x}, \rho \mid L)]\},
\end{aligned}
$$

so $u_h - u_l > 0$ if and only if

$$\frac{b_H}{b_L} > \frac{y_2 \pi_1(\tilde{x}, \rho \mid L) + (y_3 - y_2) \pi_2(\tilde{x}, \rho \mid L)}{y_2 \pi_1(\tilde{x}, \rho \mid H) + (y_3 - y_2) \pi_2(\tilde{x}, \rho \mid H)}. \qquad \text{(C.3)}$$

It is easily verified that $\pi_2(\tilde{x}, \rho \mid L) < \pi_2(\tilde{x}, \rho \mid H)$. Therefore if $\pi_1(\tilde{x}, \rho \mid L) \leq \pi_1(\tilde{x}, \rho \mid H)$, this inequality is always verified, since $b_H > b_L$. Assume now that $\pi_1(\tilde{x}, \rho \mid L) > \pi_1(\tilde{x}, \rho \mid H)$. There are two cases to consider, depending on whether the planner is willing to act when two lobbyists are active, or requires all three.

Case 1: $y_2 = 0$. (C.3) then becomes $b_H / b_L > \pi_2(\tilde{x}, \rho \mid L) / \pi_2(\tilde{x}, \rho \mid H)$ and is thus always verified.

Case 2: $y_2 > 0$, so $y_3 = 1$. The fraction on the right-hand side of (C.3) is increasing in y_2, since its determinant is

$$
\begin{aligned}
& \pi_1(\tilde{x}, \rho \mid L) \pi_2(\tilde{x}, \rho \mid H) - \pi_1(\tilde{x}, \rho \mid H) \pi_2(\tilde{x}, \rho \mid L) \\
> \; & \pi_1(\tilde{x}, \rho \mid L) \pi_2(\tilde{x}, \rho \mid L) - \pi_1(\tilde{x}, \rho \mid H) \pi_2(\tilde{x}, \rho \mid L) \\
= \; & \pi_2(\tilde{x}, \rho \mid L) [\pi_1(\tilde{x}, \rho \mid L) - \pi_1(\tilde{x}, \rho \mid H)] > 0.
\end{aligned}
$$

We therefore need to verify (C.3) only at $y_2 = 1$ (and with $y_3 = 1$), which means

$$\frac{b_H}{b_L} > \frac{\pi_1(\tilde{x}, \rho \mid L)}{\pi_1(\tilde{x}, \rho \mid H)}. \qquad \text{(C.4)}$$

Consider therefore:

$$
\begin{aligned}
\pi_1(\tilde{x} \mid H) &= [\xi x(h) + (1 - \xi) x(l)][\xi(1 - x(h)) + (1 - \xi)(1 - x(l))], & \text{(C.5)} \\
\pi_1(\tilde{x} \mid L) &= [\xi x(l) + (1 - \xi) x(h)][\xi(1 - x(l)) + (1 - \xi)(1 - x(h))]. & \text{(C.6)}
\end{aligned}
$$

In any equilibrium with activism, $x(h) \geq \varepsilon$; moreover, it must be that $x(l) < x_{3,2}(\rho)$, or else $\mu_{3,2}(\tilde{x}, \rho) < \bar{\rho}$, so the decision maker would choose $y_2 = 0$, a contradiction. Thus $\pi_1(\tilde{x}, \rho | H)$, as a function of $(x(l), x(h))$, is strictly positive and bounded away from zero on the compact set $[0, x_{3,2}(\rho)] \times [\underline{x}, 1]$. Since $\pi_1(\tilde{x}, \rho | L) \leq 1$, it follows that

$$\beta^* \equiv \max \left\{ \frac{\pi_1(\tilde{x}, \rho | L)}{\pi_1(\tilde{x}, \rho | H)} \;\middle|\; (x(l), x(h)) \in [0, x_{3,2}(\rho)] \times [\underline{x}, 1] \right\}$$

is well-defined and finite. (Note, for use in Lemma 3, that while β^* depends on ε, it is independent of c). If $b_H / b_L > \beta^*$, therefore, then (C.3) holds, hence $u_h - u_l > 0$. ∎

Lemma 3 *There is a $c^* > 0$ such that, for $c < c^*$, there is no equilibrium with activism in which $y_2 = 1$, that is, where the policy maker is as responsive as if lobbyists were always truthful (always chose $x(l) = 0$).*

Proof. If the policy maker believes that lobbyists act truthfully, her strategy will be $y_0 = y_1 = 0$ and $y_2 = y_3 = 1$. Indeed, she will be never be convinced to act (choose a) when only one lobbyist is active: given that agents have the same quality of information ξ, the activism of one is just offset by the inactivity of another, and the inactivity of the third therefore reduces the decision maker's posterior below her prior. Conversely, if two out of three agents are active, the decision maker's posterior will rise above $\bar{\rho}$ (by (2)), and she will act with probability $y_2 = y_3 = 1$. For such equilibria to exist, an activist's net incentive to lobby, given by (11), must be such that:

$$u_l(1, 1; x, \rho) \leq c.$$

where x now simply denotes $x(l)$, since $x(h) = 1$ by Lemma 2. Note that $u_l(1, 1; 0, \rho)$ and $u_l(1, 1; x_{3,2}(\rho), \rho)$ are strictly positive for any $\rho \in [\underline{\rho}, \overline{\rho}]$. Since the function $u_l(1, 1; x, \rho)$ is concave in x, this implies that

$$c^* \equiv \min_{(x,\rho) \in [0, x_{3,2}(\rho)] \times [\underline{\rho}, \overline{\rho}]} \{u_l(1, 1; x, \rho)\} \tag{C.7}$$

is uniquely defined, and strictly positive.[27] For $c < c^*$, $u_l(1, 1, x, \rho) \leq c$ requires that $x > x_{3,2}(\rho)$, which in turn implies $\mu_{2,3}(x, \rho) < \bar{\rho}$ and hence $y_2 = 0$, a contradiction. There can thus be no equilibrium in which $y_2 = y_3 = 1$. ∎

The next two lemmata establish certain key properties of the loci $x_{3,2}(\rho)$, $x_{3,3}(\rho)$ and $x_I(\rho)$ that were discussed and used in Section IV.

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[27] To verify concavity, note that $\partial^2 u(1, 1, x, \rho) / \partial x^2$ is a convex combination of $\partial^2 \pi_1(x | H) / \partial x^2 = -4(1 - \xi)^2$ and $\partial^2 \pi_1(x | L) / \partial x^2 = -4\xi^2$. Note also that the right-hand side of (C.7) is not an equilibrium variable, and is therefore independent of c.

Lemma 4 *The loci $x_{3,2}(\rho)$ and $x_{3,3}(\rho)$ are increasing in ρ, with:*

$$0 \leq x_{3,2}(\rho) < x_1(\rho) < x_{3,3}(\rho) \leq 1, \qquad \text{for all } \rho \in [\underline{\rho}, \overline{\rho}].$$

Moreover, if only one agent is active, the decision maker's posterior is below $\overline{\rho}$, for any $x \in [0,1]$.

Proof. Consider the function $\Psi(x, \rho) \equiv \left(1 + \frac{1-\rho}{\rho} x\right)^{-1}$, which is clearly decreasing in x. Since $\xi > 1/2$, we have:

$$\left(\frac{\xi}{1-\xi}\right)\left(\frac{1 - \xi + \xi x}{\xi + (1-\xi)x}\right) > 1, \tag{C.8}$$

and therefore:

$$
\begin{aligned}
\mu_{3,2}(x, \rho; \xi) &\equiv \Pr(H \,|\mathcal{I}_{3,2}) = \Psi\left[\left(\frac{\xi}{1-\xi}\right)\left(\frac{1-\xi+\xi x}{\xi+(1-\xi)x}\right)^2, \rho\right] \\
&< \Psi\left[\frac{1-\xi+\xi x}{\xi+(1-\xi)x}, \rho\right] = \Pr(H\,|\mathcal{I}_1) \equiv \mu_1(x,\rho;\xi).
\end{aligned}
$$

Similarly, (C.8) implies that

$$
\begin{aligned}
\mu_{3,1}(x, \rho; \xi) &\equiv \Pr(H\,|\mathcal{I}_{3,1}) = \Psi\left[\left(\frac{\xi}{1-\xi}\right)^2\left(\frac{1-\xi+\xi x}{\xi+(1-\xi)x}\right), \rho\right] < \Psi\left(\frac{\xi}{1-\xi}, \rho\right) \\
&< \Psi(1, \rho) = \overline{\rho}.
\end{aligned}
$$

The claimed results follow from the definitions of $x_{3,2}(\rho)$ and $x_{3,3}(\rho)$, and the monotonicity of Ψ. ∎

Lemma 5 *The locus $x_I(\rho)$ is decreasing in ρ. Moreover, for all x and ρ, $u_l(0, 1; x, \rho) \geq c$ if and only if $x \geq x_I(\rho)$.*

Proof. By (12), $x_I(\rho)$ solves the implicit equation in x:

$$u_l(0, 1; x, \rho) = \sum_{\theta = H, L} b_\theta \Pr(\theta\,|s = l)\,\pi_2(x\,|\theta) = c. \tag{C.9}$$

Differentiating yields $dx_I/d\rho = -\Phi_2/\Phi_1$, where

$$
\begin{aligned}
\Phi_1 &= \sum_{\theta = H, L} b_\theta \Pr(\theta\,|s = l)\left(\frac{\partial \pi_2(x\,|\theta)}{\partial x}\right) > 0, \quad \text{and} \\
\Phi_2 &= \sum_{\theta = H, L} b_\theta \pi_2(x\,|\theta)\frac{\partial}{\partial \rho}\left(\Pr(\theta\,|s = l)\right) \\
&> \min_\theta\{b_\theta \pi_2(x\,|\theta)\} \cdot \frac{\partial}{\partial \rho}\left[\sum_{\theta=H,L} \Pr(\theta\,|s = l)\right] = 0,
\end{aligned}
$$

29

where the second inequality follows from

$$b_L \pi_2(x \,|L) = b_L \left[1 - \xi\,(1-x)\right]^2 < b_H \left[1 - (1-\xi)\,(1-x)\right]^2 = b_H \pi_2(x\,|H)$$

and the fact that $\partial \Pr\,(H\,|s = l)\,/\partial\rho > 0$. $\blacksquare$

We are now ready to prove Proposition 3 itself. Recall that $x_I(\rho)$ is decreasing in ρ while $x_{3,3}(\rho)$ and $x_{3,2}(\rho)$ are weakly increasing, with $x_{3,3}(\rho) \geq x_{3,2}(\rho)$ for all ρ. Moreover, $x_{3,3}(\bar{\rho}) = 1 > x_I(1)$ and $x_{3,2}(\underline{\rho}) = 0 < x_I(\underline{\rho})$. Therefore, the following thresholds are uniquely defined, with $\rho_1 < \rho_2$:

$$
\begin{aligned}
\rho_1 &\equiv \min\left\{\rho \in \left[\underline{\rho},\overline{\rho}\right]\ |\ x_{3,3}(\rho) \geq x_I(\rho)\right\},\\
\rho_2 &\equiv \max\left\{\rho \in \left[\underline{\rho},\overline{\rho}\right]\ |\ x_{3,2}(\rho) \leq x_I(\rho)\right\}.,
\end{aligned}
$$

Next, note that the incentive constraint (11) is linear in (y_2, y_3), so it can be rewritten as:

$$y_2 u_l\,(1,1;x,\rho) + (y_3 - y_2)\,u_l\,(0,1;x,\rho) = c. \tag{C.10}$$

We now consider the three types of equilibria in turn.

1. Bandwagon equilibrium. In this equilibrium $y_2 = 0$, so (C.10) becomes $y_3 \cdot u_l\,(0,1;x,\rho) = c$. For $\rho \geq \rho_1$ we have $x_{3,3}(\rho) \geq x_I(\rho)$, so $u_l\,(0,1;x_{3,3}(\rho),\rho) \geq c > 0 = u_l\,(0,0,x_{3,3}(\rho);\rho)$, by Lemma 5. Therefore, there is always a unique $y_3 \in [0,1]$ such that the incentive constraint (C.10) is satisfied by $x = x_{3,3}(\rho)$. Clearly $x_{3,3}(\rho)$ and y_3 then define an equilibrium, since these values respectively make the low-type agent and the policy maker indifferent. For $\rho < \rho_1$, on the other hand, $u_l\,(0,1;x_{3,3}(\rho);\rho) < 0$, so one cannot have a bandwagon equilibrium.

2. Mutual-discipline equilibrium. In this case $y_3 = 1$, so (C.10) becomes

$$y_2 \cdot u_l\,(1,1;x,\rho) + (1 - y_2) \cdot u_l\,(0,1;x,\rho) = c. \tag{C.11}$$

By the definition of c^* in Lemma 3, when $c < c^*$ we have $u_l\,(1,1;x,\rho) > c$ for all $x \leq x_{3,2}\,(\rho)$. Therefore (C.11) is satisfied at $x = x_{3,2}(\rho)$ for some $y_2 \in [0,1]$ if and only if $u_l\,(0,1;x_{3,2}(\rho),\rho) \leq c$, that is, if and only if $x_{3,2}(\rho) \leq x_I(\rho)$. This, in turn, means that $\rho \leq \rho_2$.

3. Intermediate equilibrium. To see that for $\rho_1 \leq \rho \leq \rho_2$ there also exists an equilibrium with $x^* = x_I(\rho)$, note that in this range $x_I(\rho) \in [x_{3,2}(\rho), x_{3,3}(\rho)]$, so $y_2 = 0$ and $y_3 = 1$. The incentive constraint thus takes the form $u_l\,(0,1;x_I(\rho),\rho) = c$, which is satisfied by definition of $x_I(\rho)$. Conversely, it is easy to see that $x_I(\rho)$ is admissible as an equilibrium only when it lies between the two informativeness constraints $x_{3,2}(\rho)$ and $x_{3,3}(\rho)$, which means that ρ must lie in $[\rho_1, \rho_2]$.

Since, by Lemma 3, there can be no equilibrium with $y_2 = y_3 = 1$, this concludes the proof of existence and the complete characterization of, the equilibrium set.

We now turn to the comparison of social welfare in the two main types of equilibria with the no-activism and single-activist benchmarks (the third type of equilibrium, $x_I(\rho)$, represents a less interesting "hybrid"; see footnote 23). Let $W_B(\lambda)$ and $W_D(\lambda)$ respectively denote expected social welfare in these two equilibria, where λ is the deadweight loss per dollar of lobbying costs. As earlier, the number of active lobbyists is a random variable denoted ν, with values that now range from $i = 0$ to $i = 3$.

In a bandwagon equilibrium the decision maker's strategy is $y_i = 0$ for $i \leq 2$ and $y_3 \in (0, 1)$, the latter requiring indifference between choosing d or a. Therefore:

$$W_B(\lambda) = \sum_{i=0}^{3} \Pr(\nu = i) \cdot \{E_\theta [w(d, \theta) | \nu = i] - \lambda i c\} = W_0 - \lambda c \sum_{i=0}^{3} \Pr(s = i) \cdot i < W_0.$$

Furthermore, since there are now several activists who each lobby with a probability $x_{3,3}(\rho) > x_1(\rho)$, the total (expected) cost of lobbying $\lambda c \sum_{i=0}^{3} \Pr(s = i) \cdot i$ is also higher than with a single-agent, while the policy decision is equivalent (indifference between a and d). Therefore, $W_B(\lambda)$ is also below the level of social welfare in the single-agent case.

In a mutual-discipline equilibrium, by contrast, $y_0 = y_1 = 0$, $y_2 \in (0, 1)$ and $y_3 = 1$. Therefore:

$$
\begin{aligned}
W_D(\lambda) &= \sum_{i=0}^{3} \Pr(\nu = i) \cdot \{E_\theta [w(d, \theta) | \nu = i] - \lambda i c\} \\
&+ \Pr(\nu = 3) \cdot \{E_\theta [a, \theta | \nu = 3] - E_\theta [d, \theta | \nu = 3]\} \\
&> W_0 - \lambda c \sum_{i=0}^{3} \Pr(s = i) \cdot i,
\end{aligned}
$$

since $E_\theta [w(a, \theta) | \nu = 3] > E_\theta [w(d, \theta) | \nu = 3]$ because the posterior after seeing three active lobbyists is larger than $\bar{\rho}$ (given that they play $x_{3,2}(\rho)$). By continuity, it follows that for all λ below some threshold λ^*, $W_D(\lambda) > W_0$. ∎

D. Proof of Proposition 4

Lemma 6 *There exists a ξ_1' such that, for $\xi > \xi_1'$, in any equilibrium with coordination the informed agents are active with positive probability even when none of them observes a high signal.*

Proof. Let us denote by x the probability that (all) agents are active even when none of them has received a positive signal ($m = 0$). The policy maker's posterior when she

observes that all the lobbyists are active ($\nu = n$) is:

$$\mu_C(x, \xi) \equiv \Psi\left(\frac{\xi^3 x + 1 - \xi^3}{(1-\xi)^3 x + 1 - (1-\xi)^3}\right). \tag{D.12}$$

In equilibrium, we have $\mu_C(x_C^*(\xi), \xi) = \bar{\rho}$. Since, as ξ tends to 1, $\mu_C(\cdot, \xi)$ converges to $\Psi(\cdot)$, which is a continuous function with $\Psi(1) > \bar{\rho} > \Psi(0)$, it must be that $x_C^*(\xi) > 0$ for ξ large enough. This result also implies that for ξ high enough, agents will strictly prefer to lobby whenever one of them or more has received a high signal. $\blacksquare$

We now compare social welfare between the (informative) equilibrium of the game with weak coordination and those of the uncoordinated game. Recall that social welfare has two key aspects: the efficiency of the decision maker's action, and the total costs dissipated on lobbying. Since the number of agents remains fixed at $n = 3$ (only their degree of coordination may vary), these costs are, in expectation, simply proportional to the average probability of activism.

1. Mutual-discipline equilibrium vs. coordination. By Proposition 3, the policy implemented in the mutual-discipline equilibrium is always superior to that of the collusive equilibrium: in the latter case, the decision maker does no better than by always choosing the status quo, whereas in the former case she obtains a positive surplus by choosing her strictly preferred action ($y_3 = 1$) after observing three active lobbyists. Let us now show that, for ξ above a certain threshold $\xi_1 > \xi_1'$, coordination by the informed agents has the added disadvantage that it always raises expected lobbying costs.

In a mutual-discipline equilibrium, the strategy $x_D^*(\xi)$ of the low type is defined by:

$$\mu_D(x, \xi) = \Psi\left(\frac{\xi}{1-\xi}\left[\frac{\xi x + 1 - \xi}{(1-\xi)x + \xi}\right]^2\right) = \bar{\rho}, \tag{D.13}$$

so $\lim_{\xi \to 1}(x_D^*(\xi)) = 0$. Since agents randomize independently, the average probability of activism in this equilibrium is

$$\begin{aligned} C_D(\xi) &= \rho[(1-\xi)x_D^* + \xi] + (1-\rho)[\xi x_D^* + 1 - \xi] \\ &= \rho + (1-\rho)x_D^* + (1 - x_D^*)(1-\xi)(1-2\rho). \end{aligned}$$

Therefore, $\lim_{\xi \to 1}(C_D(\xi)) = \rho$. Consider now the average probability that a lobbyist is active under coordination:

$$C_C(\xi) = \rho\left[(1-\xi)^3 x_C^* + 1 - (1-\xi)^3\right] + (1-\rho)\left[\xi^3 x_C^* + 1 - \xi^3\right], \tag{D.14}$$

Hence:

$$\lim_{\xi \to 1}[C_C(\xi) - C_D(\xi)] = (1-\rho)x_C^*(1) > 0. \tag{D.15}$$

2. Bandwagon equilibrium vs. coordination. By Proposition 3, in a bandwagon equilibrium the decision maker does no better, allocatively speaking, than by always choosing the status quo. From the point of view of informational efficiency, this equilibrium is thus equivalent to that with coordination. We will show, however, that the bandwagon equilibrium always involves higher expected lobbying costs. Indeed, the condition defining informed agents' equilibrium strategy $x_B^*(\xi)$ is then

$$\mu_B(x,\xi) = \Psi\left(\left[\frac{\xi x + 1 - \xi}{(1-\xi)x + \xi}\right]^3\right) = \overline{\rho}, \tag{D.16}$$

which is the informativeness constraint when all agents are active. Comparing (D.16) with (D.12) shows that $x_C^*(1) = x_B^*(1)^3 > 0$. Moreover, the average lobbying probability in this equilibrium is

$$C_B(\xi) = \rho + (1-\rho)x_B^* + (1 - x_B^*)(1-\xi)(1-2\rho), \tag{D.17}$$

so with (D.14) this implies:

$$\lim_{\xi \to 1}[C_C(\xi) - C_D(\xi)] = (1-\rho)(x_B^*(1) - x_C^*(1)) > 0,$$

hence the result. ∎

E.   Proof of Proposition 5

In what follows we shall denote as $x_B(\xi)$ and $U_B(\xi)$ the strategy and unconditional expected utility, in a bandwagon equilibrium, of an agent who received the signal $s = l$; and by $y_B(\xi)$ the decision maker's strategy when observing three active lobbyists. The same variables will be denoted with "C" subscripts in the equilibrium of the game with coordination, and with "D" subscripts in a mutual-discipline equilibrium –except that $y_D(1)$ will now refer to the decision maker's mixing probability when *two* lobbyists are active (she chooses $y_3 = 1$ when three of them are).

Note first that, as ξ tends to 1, the agents' signals become almost perfectly correlated with the actual state, and with each other. Thus $\Pr(L \mid s = l), \Pr(s = l \mid L), \Pr(L \mid m = 0)$ and $\Pr(m = 0 \mid L)$ all tend to 1 (recall that $m \in \{0, ...3\}$ is the total number of high signals received by the three agents); and similarly for $\Pr(H \mid s = h), .., \Pr(m = 3 \mid L)$, etc.

1. Bandwagon equilibrium. Since each agent either strictly prefers to lobby (when $s = h$), or is indifferent (when $s = l$), we have:

$$\lim_{\xi \to 1}(U_B(\xi)) = p(H)[y_B(1)b_H - c] + p(L)[x_B^2(1)y_B(1)b_L - c] = p(H)[y_B(1)b_H - c],$$

33

since the term in the second set of brackets equals zero, by the incentive constraint. With coordination, the corresponding expression is:

$$\lim_{\xi \to 1} \left(U_C(\xi) \right) = p(H) \left[y_C(1)b_H - c \right] + p(L) \left[y_C(1)b_L - c \right] = p(H) \left[y_C(1)b_H - c \right],$$

since the term in the second set of brackets is again equal to zero, making the agents indifferent between lobbying together or not at all. It follows that:

$$\lim_{\xi \to 1} \left(U_B(\xi) - U_C(\xi) \right) = p(H) \left(y_B(1) - y_C(1) \right) b_H = p(H) \left(\frac{c/b_L}{x_B^2(1)} - \frac{c/b_L}{1} \right) b_H > 0,$$

where we have substituted in the values of $y_B(1)$ and $y_C(1)$ from the two incentive constraints.

2. Mutual-discipline equilibrium. Proceeding along the same lines, we have $\lim_{\xi \to 1} \left(U_D(\xi) \right) = p(H) \left[b_H - c \right] + p(L) \cdot 0$, due again to the incentive constraint when $s = l$ and the fact that, as ξ becomes close to 1, this event becomes perfectly correlated with $\theta = L$. Thus

$$\lim_{\xi \to 1} \left(U_D(\xi) - U_C(\xi) \right) = p(H) \left(1 - y_C(1) \right) b_H > 0,$$

hence the result. ∎

F. Proof of Proposition 6

We showed that, for any given ρ, if ξ is large enough the bandwagon equilibrium (when it exists) it is such that $U_B - U_C > 0$. This is true in particular at $\rho = \underline{\rho}$, for ξ above some threshold $\tilde{\xi}$. From here on we shall *keep ξ fixed* above $\tilde{\xi}$, and *vary ρ*. By continuity, there exists a threshold $\rho_3 > \underline{\rho}$ such that $U_B - U_C > 0$ for all $\rho \in [\underline{\rho}, \rho_3]$. Since, by Proposition 4, the decision maker also prefers the mutual-discipline equilibrium to the coordinated outcome when ξ is above a given threshold, the first part of the proposition follows.

Consider now what happens when ρ converges to $\bar{\rho}$ (again, for fixed ξ). It is easy to see that both x_B and x_C increase to $\lim_{\rho \to \bar{\rho}}(x_B) = \lim_{\rho \to \bar{\rho}}(x_C) = 1$. Therefore, in any state of the world, and in either equilibrium, all three agents will lobby with probability close to 1. This implies that:

$$\lim_{\rho \to \bar{\rho}} \left(U_B(\rho) - U_C(\rho) \right) = \left[y_B(\bar{\rho})b_H - c \right] - \left[y_C(\bar{\rho})b_H - c \right] = \left[y_B(1) - y_C(1) \right] b_H,$$

where the argument of the relevant functions that we make explicit in the notation is now ρ rather than ξ. The two incentive constraints now imply that

$$y_B(\bar{\rho}) = \frac{c}{\sum_{\theta=H,L} \Pr\left(\theta \,|l \right) b_\theta} < \frac{c}{\sum_{\theta=H,L} \Pr\left(\theta \,|m=0 \right) b_\theta} = y_C(\bar{\rho}),$$

since $\Pr\left(H \,|l \right) > \Pr\left(H \,|m=0 \right)$ for all $\rho \in [0, \bar{\rho}]$. Therefore $\lim_{\rho \to \bar{\rho}} \left(y_B - y_C \right) < 0$, and hence $\left(U_B - U_C \right)(\rho) < 0$ for all ρ above some threshold $\rho_4 < \bar{\rho}$. ∎

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