TI 2012-134/VII
Tinbergen Institute Discussion Paper

# Do More Powerful Interest Groups have a Disproportionate Influence on Policy?

*Zara Sharif*
*Otto H. Swank*

*Erasmus School of Economics, Erasmus University Rotterdam, and Tinbergen Institute.*

Tinbergen Institute is the graduate school and research institute in economics of Erasmus University Rotterdam, the University of Amsterdam and VU University Amsterdam.

More TI discussion papers can be downloaded at http://www.tinbergen.nl

Tinbergen Institute has two locations:

Tinbergen Institute Amsterdam
Gustav Mahlerplein 117
1082 MS Amsterdam
The Netherlands
Tel.: +31(0)20 525 1600

Tinbergen Institute Rotterdam
Burg. Oudlaan 50
3062 PA Rotterdam
The Netherlands
Tel.: +31(0)10 408 8900
Fax: +31(0)10 408 9031

Duisenberg school of finance is a collaboration of the Dutch financial sector and universities, with the ambition to support innovative research and offer top quality academic education in core areas of finance.

DSF research papers can be downloaded at: http://www.dsf.nl/

Duisenberg school of finance
Gustav Mahlerplein 117
1082 MS Amsterdam
The Netherlands
Tel.: +31(0)20 525 8579

# Do More Powerful Interest Groups Have a Disproportionate Influence on Policy?

Zara Sharif & Otto H. Swank

Erasmus School of Economics and Tinbergen Institute

November 27, 2012

**Abstract**

Decisions-makers often rely on information supplied by interested parties. In practice, some parties have easier access to information than other parties. In this light, we examine whether more powerful parties have a disproportionate influence on decisions. We show that more powerful parties influence decisions with higher probability. However, in expected terms, decisions do not depend on the relative strength of interested parties. When parties have not provided information, decisions are biased towards the less powerful parties. Finally, we show that compelling parties to supply information destroys incentives to collect information.

**JEL codes**: D72, D78, D82, H39

**Keywords**: information collection, communcation, interest groups, decision-making.

Corresponding Address:

Otto H. Swank

Erasmus University Rotterdam

H8-13

P.O. Box 1738

3000 DR Rotterdam

The Netherlands

"Practical politicians and journalists have long understood that small 'special interest' groups, the 'vested interests', have disproportionate power...[a group] will sometimes attain its objective even if the vast majority of the population loses as a result."

— Mancur Olson, The Logic of Collective Action, p.127-128.

"There will be no economic or social questions that would not be political questions in the sense that their solution will depend exclusively on who wields the coercive power, on whose are the views that will prevail on all occasions."

— Friedrich A. Hayek, The Road to Serfdom, p.107.

"So that the population of these civilised countries now falls into two main classes: those who own wealth invested in large holdings and who thereby control the conditions of life for the rest; and those who do not own wealth in sufficiently large holdings, and whose conditions are therefore controlled by these others...It is a division between the vested interests and the common man."

— Thorstein Veblen, The Vested Interests and The Common Man, p.160-161.

"All privileged and powerful classes, as such, have used their power in the interest of their own selfishness..."

— John Stuart Mill, Principles of Political Economy, Book IV p.133.

# 1 Introduction

In a wide variety of situations, people make decisions on the basis of information supplied by other people. Often those who provide information have a "stake" in the final decision. A prominent example of such a situation is a civil lawsuit involving a dispute between two parties about a distributional issue. Each party supplies information in an attempt to influence the judge's decision in its own favor. Another well-known example is a politician who makes a decision that affects various interest groups. Again each group may provide information with an eye on influencing the politician's final decision to its own benefit. When decisions are made on the basis of information provided by interested parties, there are usually two (related) concerns. First, interested parties have incentives to reveal information that is favorable for them, but to conceal information that is unfavorable for them. As a result, the decision maker possibly does not hear all available information. Second, the means of interest groups vary widely. An implication is that decisions may be biased towards the interests of the more powerful interest groups.

The main objective of this paper is to shed light on these two concerns. To this end, we develop a game-theoretical model in which a neutral person has to resolve a distributional dispute between two parties; say, an amount of money is to be distributed. The socially optimal decision depends on the state of the world. The parties, however, have opposite interests that do not depend on the state of the world. As to learning the state, the decision maker has to rely on information provided by the parties. We assume that the parties do not observe the state of the world[1], but each party can exert effort to find verifiable information about it. The more effort a party puts in collecting information, the higher is the probability that a party receives verifiable information about the state. If information is found, a party has to determine whether to reveal or conceal it. An important feature of our model is that parties may differ in the (marginal) cost they attach to exerting effort. The implication is that there is a relatively advantaged party and a relatively disadvantaged party. In this way, we are able to address the concern regarding the influence of powerful interest groups on decisions. Another important feature of our model is that given the available information, the decision maker aims at making the socially optimal decision.

We derive four main results. The first one is neither novel nor surprising. Parties reveal information that promotes their interests, but conceal information that damages their interests.

Our second result is more subtle. The party that is relatively advantaged in terms of collecting information has stronger incentives to reveal it. The reason for this result is that when the advantaged party does not reveal information, the decision maker is inclined to believe that the party has something to hide. As a result, when neither party presents evidence, the decision is biased towards the interest of the disadvantaged party.

Third, in expected terms, the final decision does not depend on the relative strength of the parties. This neutrality result sheds light on the role of powerful interest groups in politics. Our model predicts that indeed relatively powerful interest

[1]In section 8 we show that our main results also hold when parties observe the state of the world but must exert effort to communicate information.

groups frequently provide information that shapes policy. However, our model also predicts that if powerful interest groups do not provide information, decisions are made against their interests. In expected terms, these effects cancel out because of the Martingale property.

Our final result is that a policy that compels parties to reveal information destroys their incentives to collect information.

Together our results indicate that the concern that interested parties have incentives to conceal information is justified. However, compelling parties to supply information does not help. It would only weaken incentives to collect information. The concern for biased decisions because some parties have easier access to information than others is less justified. Rational decision makers take the relative strength of parties into account in such a way that differences in the power of parties do not lead to biases in decisions.

It is important to point out from the outset that we obtain our results from a model of informational lobbying, in which the decision maker is unbiased. Of course, once the decision maker is biased or can be bribed our result that in expected terms the relative power of parties is irrelevant does not hold any more.

## 2 Literature

Our paper is related to two broad strands of economic literature. First is the literature on law and economics; researchers have investigated attorneys' incentives to collect and convey information in adversarial systems. An early paper is by Milgrom and Roberts (1986) who show that communication between interested parties with opposed interests leads to full-information decisions. Crucial assumptions for this result are (1) that information can be credibly transmitted, and (2) that parties are fully informed. When parties are not always fully informed, full revelation disappears (Austen-Smith, 1994, Shin, 1994, and Swank, 2011). Dewatripont and Tirole (1999) show that parties with opposing preference have also strong incentives to collect information (see also Dur and Swank, 2005, and Kim, 2010). In the literature on adversarial systems, our paper is closest to Sobel (1985), who examines parties' incentives to report information in case of a dispute over an indivisible asset. As in our paper, in Sobel one party might be more advantageous in reporting information than the other party. Sobel examines how different rules of proof of evidence affect parties' incentives. Our paper deviates from Sobel in that we focus on a dispute over a divisible asset. Moreover, we explicitly distinguish between incentives to collect information and incentives to transfer information.

Second, our paper is related to the voluminous literature on interest groups (for surveys, see Mitchell and Munger, 1991, Mueller, 2003, and Austen-Smith, 1997). Olson (1965) argues that smaller groups face lower costs to organize themselves, and consequently may have a disproportionate influence on policy. In Tullock (1980) and Becker (1985) interest groups decide how many resources to spend on lobbying. The amount of resources affects the probability of influencing the decision. It is this type of literature that predicts that an interest group with more resources has a bigger say in policy decisions. The early literature on lobbying posits the existence of an influence function describing how lobbying efforts affect policy. Potters and Van Winden (1992) provide a micro-foundation for these influence functions. A key assumption of their model is that an interest group possesses information that is relevant for a legislator. By paying a cost an interest group can credibly transmit information to the legislator. Potters and Van Winden show that the more the preferences of the interest group and the legislator are aligned, the wider is the scope for information transmission[2]. The paper on lobbying that is most closely related to ours is by Austen-Smith and Wright (1992) who, like us, model two groups that try to influence the decision of a legislator. Each group decides whether or not to become informed. This decision is observed by the legislator. Next, the two groups send messages to the legislator who makes the final decision. Our model deviates from Austen-Smith and Wright in three main respects. First, in our model, the decision and states are continuous rather than binary. Second, in our model, the decision-maker does not observe whether or not parties are informed. Finally, one of the main questions we address is whether more powerful interest groups have a bigger say in decisions, whereas the model by Austen-Smith and Wright is very suitable for understanding groups decisions on whether to lobby or not. Grossman and Helpman (2001) develop a cheap-talk model where interest groups are fully informed, but information is not verifiable[3]. Their model too is more suitable to

[2]See also Grossman and Helpman (2001).

[3]See also Krishna and Morgan (2001) and Swank and Visser (2011).

understand group decisions on whether to lobby or not. Moreover, their focus lies on the requirements for credibility when talk is cheap. They show that credibility improves with the amount of resources a group spends and thus provide a rationale for why interest groups spend more than is necessary to communicate messages.

# 3 The Model

Our model describes a situation where a decision has to be made with important distributional consequences. One can think, for example, of the allocation of a tax. We assume that it is common knowledge that there is a socially optimal decision in the sense that reasons may exist why one party should be favored to the determint of another party. To learn these reasons, the decision maker relies on the information supplied by the interested parties. We consider a setting in which each party wants to make a case for itself.

A decision maker has to make a decision on $x$. One can think of the decision maker as a politician, a CEO, or a judge. The problem is that the proper decision is uncertain. This uncertainty is reflected by the stochastic term $\mu$, the state of the world, which is uniformly distributed on the interval $[l, h]$. The decision maker chooses $x$ so as to minimize the expected deviation of $x$ from $\mu$, given the information $I$ it possesses: $\min_x : E\left(|x-\mu|\,|I\right)$.

To learn $\mu$, the decision maker has to rely on information provided by two interested parties, $i \in \{a, b\}$. One can think of a party as an interest group, a manager of a division, or an attorney. Neither party knows $\mu$ initially. However, each party may collect information to learn $\mu$ and receive a signal $s_i \in \{\phi, \mu\}$ . Collecting information is costly. Specifically, we assume that each party $i$ chooses effort $\pi_i \in [0, 1)$, where $\pi_i$ denotes the probability with which party $i$ finds verifiable information about $\mu$, $s_i = \mu$. With probability $1 - \pi_i$ party $i$ does not find information, $s_i = \varnothing$. For simplicity, we assume that the cost of information collection is quadratic: $\frac{1}{2}\lambda_i \pi_i^2$, with $\lambda_i > \frac{1}{2}(h - l)$.[4] An important feature of our model is that $\lambda_a$ may differ from

[4] In the appendix we show that if $\lambda_i \leq \frac{1}{2}(h - l)$, an equilibrium exists in which party $i$ chooses $\pi_i = 1$ and always reveals information to the decision maker. As a result, party $-i$ is redundant. By assuming $\lambda_i > \frac{1}{2}(h - l)$, we ensure that the model focuses on environments where both parties have incentives to collect information. This is the most relevant environment to investigate how the relative strength of parties affects decisions.

$\lambda_b$. If $\lambda_a < \lambda_b$, we say that party $a$ is the more powerful party. The parameter $\lambda_i$ may capture a few things. First, $\lambda_i$ may depend on the resources party $i$ possesses to collect information. Second, the efficiency with which a party collects information may affect $\lambda_i$. Third, $\lambda_i$ may depend on party $i$'s position in the economy. For instance, information about the impact of a deregulation in an industry often lies in the hands of that industry. In this paper, we take a broad view of the various factors that may determine $\lambda_i$.

We assume that the two parties have opposing preferences. Party $a$ wants the decision maker to choose a high value of $x$, whereas party $b$ wants the decision maker to choose a low value of $x$. The payoffs to party $a$ and $b$ are given by:

$$U_a(x) = x - \frac{1}{2}\lambda_a \pi_a^2 \tag{1}$$

and

$$U_b(x) = -x - \frac{1}{2}\lambda_b \pi_b^2 \tag{2}$$

respectively.

After the parties have collected information, the communication stage starts. In this stage, the two parties simultaneously send a message, $m_i$, to the decision maker. A party conditions its message on the information it received, $m_i(s_i)$. We assume that information cannot be forged but can be concealed. Thus, if party $i$ did not find information in the collection stage, it cannot supply information, $m_i(\varnothing) = \varnothing$. If, by contrast, party $i$ found information, say $s_i = \mu'$, it either sends $m_i(\mu') = \mu'$ (reveals) or $m_i(\mu') = \varnothing$ (conceals). After the parties have sent their messages, the decision maker chooses $x$.

We assume that the structure of the game and the distribution of $\mu$ is common knowledge. Our model is a dynamic game with imperfect information. We solve it by backward induction and identify Perfect Bayesian Equilibria (PBE). The decision maker chooses $x$ so as to minimize $E(|x-\mu|\,|m_a, m_b)$. Parties anticipate the decision maker's decision rule.

# 4 The Communication Stage

Each party enters the communication stage either with the possibility to present evidence to the decision maker or without this possibility. This depends on whether or not a party was successful in the information collection stage. We call a party that is able to reveal information "informed", and a party that is not able "uninformed". By assumption, an uninformed party sends $m_i(\varnothing) = \varnothing$. The question remains for which values of $\mu$ an informed party sends $m_i(\mu) = \varnothing$ and for which values of $\mu$ it sends $m_i(\mu) = \mu$. Proposition 1 presents the equilibrium communication strategy of an informed party.

**Proposition 1** *In a PBE, parties' communication strategies can be characterized by a single threshold, $\mu^T$. An informed party $a$ chooses $m_a(\mu) = \mu$ if and only if $\mu \geq \mu^T = E(\mu | m_a = m_b = \varnothing)$. An informed party $b$ chooses $m_b(\mu) = \mu$ if and only if $\mu \leq \mu^T$.*

Proposition 1 is an implication of our assumption that the parties have opposing preferences. Information that is favorable for party $a$ is unfavorable for party $b$, and vice versa. At $\mu = \mu^T$, both parties are indifferent between revealing information ($m_i(\mu) = \mu$) and concealing it ($m_i(\mu) = \varnothing$). The decision of a party whether or not to reveal information is only relevant in case the other party does not reveal information. As the decision maker chooses $x = \mu$ if either party reveals information, $m_i(s_i)$ is not relevant if $m_{-i}(\mu) = \mu$. So, to determine party $a$'s decision whether or not to report information, suppose $m_b(s_b) = \varnothing$ and $s_a = \mu' \in \{l, h\}$. Clearly, $m_a(\mu') = \varnothing$ induces the decision maker to choose $x = E(\mu | m_a = m_b = \varnothing)$, while $m_a(\mu') = \mu'$ induces the decision maker to choose $x = \mu'$. Hence, party $a$ is indifferent between $m_a(\mu') = \mu'$ and $m_a(\mu') = \varnothing$ if

$$\mu' = \mu^T = E(\mu | m_a = m_b = \varnothing) \tag{3}$$

For party $b$, the same equation can be derived.

A direct implication of Proposition 1 is that in case both parties are able to provide evidence, the decision maker makes the full-information decision. This result is similar to the result derived by Milgrom and Roberts (1986) that competition between informed parties whose preferences are opposed leads to full-information decisions. Proposition 1 also implies that parties never provide evidence that conflicts with their own interests.

## 5 Information Collection

We now turn to a party's decision on how much effort to put in collecting verifiable information. Consider party $a$. When choosing $\pi_a$ party $a$ anticipates that it will only reveal information in the communication stage if $\mu \geq \mu^T$. Moreover, it anticipates that if party $b$ finds information, it will reveal it if and only if $\mu \leq \mu^T$. Finally, it knows that revealing $\mu$ leads to $x = \mu$. The expected payoff to party $a$ when choosing $\pi_a$ equals

$$\begin{aligned} &\Pr\left(\mu \geq \mu^T\right)\left[\pi_a \frac{1}{2}\left(h + \mu^T\right) + \left(1 - \pi_a\right)\mu^T\right] + \\ &\Pr\left(\mu \leq \mu^T\right)\left[\pi_b \frac{1}{2}\left(\mu^T + l\right) + \left(1 - \pi_b\right)\mu^T\right] - \frac{1}{2}\lambda_a \pi_a^2 \end{aligned} \tag{4}$$

The first (second) term of (4) pertains to the range of $\mu$ for which party $a$ ($b$) reveals information if it is found. The third term gives the cost of effort.

Differentiating (4) with respect to $\pi_a$, and using $\Pr\left(\mu \geq \mu^T\right) = \frac{h-\mu^T}{h-l}$ and $\Pr\left(\mu \leq \mu^T\right) = \frac{\mu^T - l}{h-l}$, we attain[5]

$$\pi_a = \frac{\left(h - \mu^T\right)^2}{2\lambda_a \left(h - l\right)} \tag{5}$$

Equation (5) shows that the higher is the deviation of $\mu^T$ from $h$, the more effort party $a$ puts in collecting information. Of course, the reason for this result is that the deviation of $\mu^T$ from $h$ is directly related to the probability that party $a$ will utilize its information. To put it somewhat differently, party $a$ has stronger incentives to collect information when it anticipates that the information is likely to be favorable to its cause. Obviously, it also has stronger incentives when the cost of collecting information is small.

[5] Because of our assumption $\lambda_i > \frac{1}{2}\left(h - l\right)$, $\pi_a < 1$.

In a similar way, one can derive the amount of effort party $b$ exerts:

$$\pi_b = \frac{\left(\mu^T - l\right)^2}{2\lambda_b \left(h - l\right)} \tag{6}$$

Note that party $b$'s effort strategy is the converse of party $a$'s strategy. When party $b$ anticipates that it is likely to find information that is favorable to its cause, it has strong incentives to collect information.

# 6 The threshold $\mu^T$

In Section 4, we have identified the communication strategies of the two parties. In these strategies, the threshold $\mu^T$ plays an important role. Party $a$ reveals information if and only if it has found that $\mu \geq \mu^T$, while the opposite holds for party $b$. In the previous section, we have examined the incentives of parties to collect information. Again the threshold $\mu^T$ turned out to be important. In the present section, we use parties' strategies to determine the threshold $\mu^T$.

In Section 4, we have shown that the threshold $\mu^T$ equals the expected value of $x$, conditional on $m_a = \varnothing$ and $m_b = \varnothing$. The decision maker knows that if both parties had found information, one of them would have revealed it. He can therefore infer from $m_a = \varnothing$ and $m_b = \varnothing$ that at most one party found information. As a consequence, parties not revealing information can be a result of three events. First, party $a$ found information, but decided not to reveal it. Then, $\mu < \mu^T$. Second, party $b$ found information, but decided not to reveal it, so that $\mu > \mu^T$. Third, neither party found information. As $\pi_a$ and $\pi_b$ are independent of $\mu$, in the third event the expected value of $\mu$ equals $\frac{1}{2}\left(l + h\right)$. Together these events imply the following expression for $\mu^T$

$$\mu^T = \frac{\pi_a \left(1 - \pi_b\right) \left(\frac{\mu^T - l}{h - l}\right) \frac{l + \mu^T}{2} + \pi_b \left(1 - \pi_a\right) \left(\frac{h - \mu^T}{h - l}\right) \frac{\mu^T + h}{2} + \left(1 - \pi_a\right)\left(1 - \pi_b\right) \frac{l + h}{2}}{\pi_a \left(1 - \pi_b\right) \left(\frac{\mu^T - l}{h - l}\right) + \pi_b \left(1 - \pi_a\right) \left(\frac{h - \mu^T}{h - l}\right) + \left(1 - \pi_a\right)\left(1 - \pi_b\right)} \tag{7}$$

which can be rewritten as,

$$\left(\mu^T\right)^2 \left(\pi_a - \pi_b\right) + 2\mu^T \left[h\left(1 - \pi_a\right) - l\left(1 - \pi_b\right)\right] - h^2\left(1 - \pi_a\right) + l^2\left(1 - \pi_b\right) = 0 \tag{8}$$

To better understand how $\mu^T$ depends on $\pi_a$ and $\pi_b$, first suppose that $\pi_a = \pi_b$. Then, (8) reduces to $\mu^T = \frac{1}{2}(l+h)$. This implies that in the absence of information, the decision maker chooses a neutral decision when parties exert the same amount of effort. Now suppose $\pi_a \neq \pi_b$. Straightforward, but tedious, algebra shows that $\mu^T$ is increasing in $\pi_b$ and decreasing in $\pi_a$. A direct implication is that for $\pi_a > \pi_b$, in the absence of information, a decision is made that is biased against party $a$. The intuition is straightforward. If $\pi_a > \pi_b$, the decision maker attributes a relatively high probability to the event that party $a$ possesses information. Consequently, in case neither party provides information in the communication stage, the decision maker is especially suspicious that party $a$ wants to hide information. Likewise for $\pi_b > \pi_a$ and $m_a = \varnothing$ and $m_b = \varnothing$, a decision is made that is biased against party $b$.

The effect of $\pi_a \neq \pi_b$ on the decision on $x$ influences parties' incentives to collect information. Recall that party $a$'s effort equals $\pi_a = \frac{\left(h-\mu^T\right)^2}{2\lambda_a(h-l)}$. Clearly, the lower is $\mu^T$, the higher is $\pi_a$. Again, this effect has a clear intuition. Party $a$ anticipates that in case the decision maker does not receive information about $\mu$, he will make a decision that is biased against its interest. This gives a stronger incentive for party $a$ to collect information.

**Proposition 2** *In equilibrium, $\mu^T$ is implicitly determined by (8). If $\lambda_i < \lambda_{-i}$ and $m_a = m_b = \varnothing$, a decision is made that is biased against party $i$. This further strengthens party $i$'s incentives to put effort in collecting information.*

**Proof.** See appendix. ■

Figure 1 depicts the relation between $\mu^T$ and both cost parameters, $\lambda_a$ and $\lambda_b$. Here we assume $\mu \in [-1, 1]$. Figure 1 (left) shows that for a given $\lambda_a$ ($\lambda_b$), the threshold decreases (increases) with $\lambda_b$ ($\lambda_a$). The gray wired surface depicts the plane where $\mu^T = 0$. Figure 1 (right) is the same plot viewed from above. The region above the diagonal (wired) represents $\mu^T < \frac{l+h}{2} = 0$ and the region below the diagonal represents $\mu^T > 0$. It is evident that if $\lambda_a < \lambda_b$, then $\mu^T < 0$; the decision is biased against party $a$.

Proposition 2 sheds a new light on the claim that powerful interest groups are able to put a stamp on policy. Our model predicts that indeed powerful interest groups frequently provide evidence that heavily influences policy. In this sense, it is true that powerful interest groups have a disproportionate influence on policy.

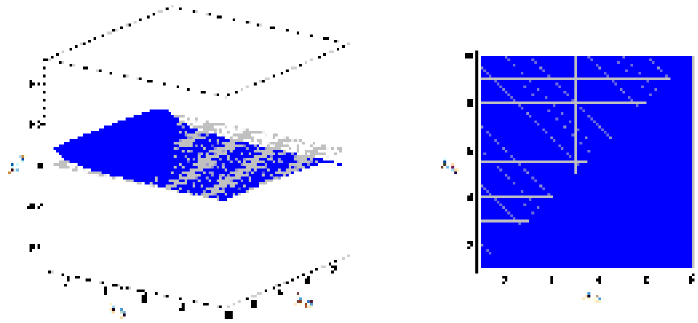

Figure 1: Threshold $\mu^T$ as a function of cost parameters, $\lambda_a$ and $\lambda_b$.

However, we have also shown that in case a powerful interest group does not provide information, the decision is biased against its interest.

The next proposition shows that the relative strength of interest groups does not affect the expected decision on $x$.

**Proposition 3** *In expected terms, the value of $\lambda_i$ relative to $\lambda_{-i}$ does not affect the decision on $x$.*

**Proof.** See appendix. ■

Proposition 3 is a direct implication of the Martingale property and we interpret it as a neutrality result. Of course, when one of the assumptions of our model is relaxed the neutrality result may break down. For example, we have asssumed that the decision maker knows the relative strength of parties. If the decision maker were to have a wrong perception of $\lambda_i$, the neutrality result would no longer hold. Underestimation of the relative strength of a party induces the decision maker, in expected terms, to choose a policy that is favorable for that party. It is also important to emphasize that the neutrality result only holds for informative lobbying. Evidently, allowing for bribes may alter our results.

# 7 Forcing parties to reveal their information

In the previous sections we have analyzed incentives of parties to collect and supply information. We have shown that a party only reveals information that benefits its cause. In the current section we examine the implications of a policy that forces each party to reveal its information, whether that information is favorable for it or not. Such a policy in our model is akin to the assumption that information cannot be concealed. Consequently, the communication strategy of party $i$ becomes: $m_i(s_i) = \mu$ for $s_i \in [l, h]$, and $m_i(\varnothing) = \varnothing$. Note that in this setting the expected value of $\mu$ when the decision maker does not receive information equals $E(\mu | m_a = \varnothing, m_b = \varnothing) = \frac{1}{2}(l + h)$.

The resulting model revolves around information collection. When choosing the amount of effort to exert, parties anticipate that any information they find will be revealed, leading to $x = \mu$. Thus, the expected payoff to party $a$ when choosing $\pi_a$ is

$$(1 - \pi_a)(1 - \pi_b)\left(\frac{h + l}{2}\right) + [1 - (1 - \pi_a)(1 - \pi_b)]\left(\frac{h + l}{2}\right) - \frac{1}{2}\lambda_a \pi_a^2$$

The first term is the expected payoff in case neither party finds information. The second term is the expected payoff in case either of the two (or both) parties find information. The last term is the cost of effort. The first-order condition with respect to $\pi_a$ implies that the amount of effort party $a$ exerts is $\pi_a = 0$. Similarly, one can show that party $b$ has no incentive to collect information. Hence, compelling parties to reveal their information completely eliminates their incentives to become informed. This brings us to Proposition 4.

**Proposition 4** *A policy that compels parties to reveal their information eliminates their incentives to collect information.*

Proposition 4 casts doubts on the efficiency of rules in legal systems that compel prosecutors to disclose exculpatory evidence to the defendant.

# 8 Costly Communication

So far, we have focused on a situation where parties have to exert effort to find information. An alternative situation is that parties have information but have to make effort to convey it to the decision maker.[6] To analyze the latter case, we assume that when choosing their strategies on effort, parties know $\mu$. In the new

[6]Empirical research suggests that interest groups expend resources to convey their messages to policy makers. For a review of empirical models of interest group influence see Potters and Sloof (1996) and Stratmann (2005).

model, $\pi_i$ denotes the probability that party $i$ is able to provide verifiable evidence to the decision maker, and $\lambda_i$ can be interpreted as a measure of party $i$'s accessbility to the decision maker. Specifically, in the alternative game we have that (1) nature chooses $\mu$ and reveals it to the parties, but not to the decision maker; (2) each party chooses effort on the basis of $\mu$, $\pi_i(\mu)$; (3) if party $i$ is able to reveal information, it reveals it or conceals it; (4) the decision maker chooses $x$.

The assumption about the observability of $\mu$ does not have consequences for the strategies followed in the communication stage. The communication strategies can again be characterized by a single threshold, $\mu^T$. Each party only reveals information when it perceives that it will lead to a more favorable decision.

Incentives to exert effort, however, are different in the present model. Because each party observes the state, effort is conditional on the state. The more favorable is the state to party $i$, the stronger are its incentives to exert effort.[7] Moreover, if $\mu \leq \mu^T$, party $a$ does not exert effort, and if $\mu \geq \mu^T$ party $b$ does not exert effort. Thus, either party $a$ or party $b$ tries to convey information.

The assumption about the observability of $\mu$ does not affect our main result that in expected terms, the relative power of parties does not influence the decision on $x$. Of course, the reason is that also in the present model the Martingale property implies that the expected value of $x$ equals $\frac{1}{2}(l+h)$.

# 9 Conclusion

Do more powerful interest groups have a disproportionate influence on policy? We have shown in this paper that in an environment where interest groups try to influence decisions by concealing or revealing information, the answer to this question is in the negative. By often providing information, more powerful interest groups do frequently influence policies. However, when they abstain from providing information, decisions are biased against their interests. In expected terms, these effects cancel out.

We regard our neutrality result as a benchmark. Interest groups may systematically affect policies in case the assumptions underlying our model are violated. For

[7] Specifically, $\pi_a(\mu) = \frac{\mu-\mu^T}{\lambda_a}$ for $\mu > \mu^T$ and $\pi_a(\mu) = 0$ for $\mu \leq \mu^T$, and $\pi_b(\mu) = \frac{\mu^T-\mu}{\lambda_b}$ for $\mu < \mu^T$ and $\pi_b(\mu) = 0$ for $\mu \geq \mu^T$.

instance, we have assumed that the decision maker forms expectations in a rational way. In practice, this means that the decision maker should distinguish between cases where more powerful interest groups do not provide information and cases where less powerful interest groups do not provide information. Moreover, our neutrality result requires that the decision maker correctly assess the abilities of interest groups to collect information. Finally, we have ignored the possibilities that interest groups bribe decision makers and that decision makers may already have ideological preferences over policies.

# 10 Appendix

As mentioned in Section 3, we assume $\lambda_i > \frac{1}{2}(h-l)$ to ensure that both parties have an incentive to acquire information. If $\lambda_i \leq \frac{h-l}{2}$, then $\pi_i = 1$ and the decision maker relies entirely on party $i$. To see this, suppose $\lambda_i \leq \frac{1}{2}(h-l)$. Suppose that if $m_a = \phi$, $\mu^T = l$. Then, party $a$ chooses $\pi_a$ so as to maximize,

$$\pi_a \frac{1}{2}(h+l) + (1-\pi_a) l - \frac{1}{2}\lambda_a (\pi_a)^2$$

yielding

$$\frac{1}{2}(h-l) = \lambda_a \pi_a$$

Then, $\pi_a = 1$ for $\lambda_a \leq \frac{1}{2}(h-l)$.

## 10.1 Proof of Proposition 2

First we show $\mu^T$ is decreasing in $\pi_a$ and increasing in $\pi_b$. (8) solves for,

$$\mu^T = \left\{ \begin{array}{cc} \frac{1}{\pi_b - \pi_a}\left(h(1-\pi_a -) - l(1-\pi_b) - (h-l)\sqrt{(1-\pi_a)(1-\pi_b)}\right) & \text{if } \pi_a \neq \pi_b \\ \frac{1}{2}(h+l) & \text{if } \pi_a = \pi_b \end{array} \right\} \tag{9}$$

This implies,

$$\frac{\partial \mu^T}{\partial \pi_a} = \underbrace{\frac{1}{(\pi_b - \pi_a)^2} \frac{\sqrt{(1-\pi_a)(1-\pi_b)}}{1-\pi_a}}_{>0} \left(\pi_a + \pi_b + 2\sqrt{(1-\pi_a)(1-\pi_b)} - 2\right)$$

We need to show that $\pi_a + \pi_b + 2\sqrt{(1-\pi_a)(1-\pi_b)} - 2 < 0$:

$$\begin{aligned}
\pi_a + \pi_b + 2\sqrt{(1-\pi_a)(1-\pi_b)} - 2 &< 0 \\
4(\pi_a - 1)(\pi_b - 1) &< (2 - \pi_a - \pi_b)^2 \\
4(\pi_a - 1)(\pi_b - 1) - (2 - \pi_a - \pi_b)^2 &< 0 \\
-(\pi_a - \pi_b)^2 &< 0
\end{aligned}$$

Therefore, $\frac{\partial(\mu^T)}{\partial \pi_a} < 0$. Symmetry implies, $\frac{\partial(\mu^T)}{\partial \pi_b} > 0$.

Next, we can show that $\pi_a > \pi_b \Leftrightarrow \mu^T < \frac{1}{2}(l+h)$ :

$\Longrightarrow$ : Assume $\pi_a > \pi_b$. Let $\mu^T = \frac{1}{2}(l+h) + e$, so $e < 0$ implies $\mu^T < \frac{1}{2}(l+h)$. Substituting in (9) implies,

$$\begin{aligned}
\frac{1}{\pi_b - \pi_a}\left(h(1-\pi_a) - l(1-\pi_b) - (h-l)\sqrt{(1-\pi_a)(1-\pi_b)}\right) &= \frac{l+h}{2} + e \\
\underbrace{\frac{1}{\pi_a - \pi_b}}_{>0}\left(\underbrace{\pi_a + \pi_b + 2\sqrt{(\pi_a - 1)(\pi_b - 1)} - 2}_{<0}\right) &= e
\end{aligned}$$

Thus, if $\pi_a > \pi_b$, then $e < 0$ which implies $\mu^T < \frac{1}{2}(l+h)$.
$\Leftarrow$: Assume $\mu^T < \frac{1}{2}(l+h)$. Then (9) reduces to,

$$\begin{aligned}
\frac{1}{\pi_b - \pi_a}\left(h(1-\pi_a) - l(1-\pi_b) - (h-l)\sqrt{(1-\pi_a)(1-\pi_b)}\right) &< \frac{1}{2}(l+h) \\
\frac{1}{\pi_a - \pi_b}\left(\underbrace{\pi_a + \pi_b + 2\sqrt{(\pi_a - 1)(\pi_b - 1)} - 2}_{<0}\right) &< 0
\end{aligned}$$

Thus, we must have $\pi_a > \pi_b$.
Lastly, we can show that $\lambda_a < \lambda_b \Leftrightarrow \mu^T < \frac{1}{2}(l+h)$.

$\Leftarrow$: Assume $\mu^T < \frac{1}{2}(l+h)$. This implies $\pi_a > \pi_b$,

$$\begin{aligned}
\pi_a - \pi_b &> 0 \\
\frac{\left(h-\mu^T\right)^2}{2\lambda_a (h-l)} - \frac{\left(\mu^T - l\right)^2}{2\lambda_b (h-l)} &> 0 \\
\frac{\left(h-\mu^T\right)^2}{\lambda_a} - \frac{\left(\mu^T - l\right)^2}{\lambda_b} &> 0 \\
\lambda_b \left(h-\mu^T\right)^2 - \lambda_a \left(\mu^T - l\right)^2 &> 0 \\
\lambda_b \left(h - \left(\frac{l+h}{2} + e\right)\right)^2 - \lambda_a \left(\left(\frac{l+h}{2} + e\right) - l\right)^2 &> 0 \\
\lambda_b \left(\frac{h-l+2e}{2}\right)^2 - \lambda_a \left(\frac{h-l+2e}{2}\right)^2 &> 0 \\
(\lambda_b - \lambda_a) \left(\frac{h-l+2e}{2}\right)^2 &> 0 \\
&\implies \lambda_b > \lambda_a
\end{aligned}$$

Substituting $\mu^T = \frac{1}{2}(l+h) + e$ and assuming, without loss of generality, that $h = -l$ we obtain,

$$\begin{aligned}
\lambda_b \left(h - \left(\frac{l+h}{2} + e\right)\right)^2 - \lambda_a \left(\left(\frac{l+h}{2} + e\right) - l\right)^2 &> 0 \\
\lambda_b (-e)^2 - \lambda_a (e)^2 &> 0 \\
(\lambda_b - \lambda_a)(e)^2 &> 0 \\
&\implies \lambda_b > \lambda_a
\end{aligned}$$

$\implies$ : Assume $\lambda_a < \lambda_b$. Similar to the last derivation, we obtain,

$$\begin{aligned}
\pi_a - \pi_b &= \frac{\left(h-\mu^T\right)^2}{2\lambda_a (h-l)} - \frac{\left(\mu^T - l\right)^2}{2\lambda_b (h-l)} \\
&= \frac{1}{2(h-l)\lambda_a \lambda_b} \left(\lambda_b \left(h-\mu^T\right)^2 - \lambda_a \left(\mu^T - l\right)^2\right) \\
&= \frac{1}{2(h-l)\lambda_a \lambda_b} (e)^2 (\lambda_b - \lambda_a) > 0
\end{aligned}$$

Thus, if $\lambda_a < \lambda_b$, then $\pi_a > \pi_b$, which implies $\mu^T < \frac{1}{2}(l+h)$.

## 10.2 Proof of Proposition 3

For simplicity, assume $h = -l$. This does not alter our results. If $h = -l$, then we need to show $E(x) = E(\mu) = \frac{h+l}{2} = 0$.

$$\begin{aligned}
E(x) &= \underbrace{\pi_a \pi_b E(\mu)}_{\text{both find info}} + \pi_a (1-\pi_b) \left[ \underbrace{E\left(\mu | \mu > \mu^T\right)}_{a \text{ reveals}} + \underbrace{\mu^T \frac{\mu^T - l}{h-l}}_{a \text{ conceals}} \right] + ... \\
&\quad + (1-\pi_a) \pi_b \left[ \underbrace{E\left(\mu | \mu < \mu^T\right)}_{b \text{ reveals}} + \underbrace{\mu^T \frac{h-\mu^T}{h-l}}_{b \text{ conceals}} \right] + \underbrace{(1-\pi_a)(1-\pi_b)\mu^T}_{\text{neither find info}} \\
&= \pi_a \pi_b \underbrace{\left(\frac{h+l}{2}\right)}_{=0} + (\pi_a - \pi_a \pi_b) \left[ \frac{\mu^T - l}{h-l} \mu^T + \frac{h-\mu^T}{h-l} . \frac{\mu^T + h}{2} \right] + ... \\
&\quad + (1-\pi_a)(1-\pi_b)\mu^T + (\pi_b - \pi_a \pi_b) \left[ \frac{\mu^T - l}{h-l} . \frac{l + \mu^T}{2} + \frac{h-\mu^T}{h-l} \mu^T \right] \\
&= \pi_a \left( \underbrace{-\mu^T + \frac{\mu^T + h}{2h} \mu^T + \frac{h^2 - \left(\mu^T\right)^2}{4h}}_{=\frac{\left(h-\mu^T\right)^2}{4h}} \right) - \pi_b \left( \underbrace{\mu^T + \frac{h^2 - \left(\mu^T\right)^2}{4h} - \frac{h-\mu^T}{2h} \mu^T}_{=\frac{\left(h+\mu^T\right)^2}{4h}} \right) \\
&\quad + \mu^T + \pi_a \pi_b \underbrace{\left( \mu^T - \frac{\mu^T + h}{2h} \mu^T - \frac{h^2 - \left(\mu^T\right)^2}{4h} + \frac{h^2 - \left(\mu^T\right)^2}{4h} - \frac{h-\mu^T}{2h} \mu^T \right)}_{=0} \\
&= \frac{\left(\mu^T\right)^2 (\pi_a - \pi_b) + 2\mu^T h (2 - \pi_a - \pi_b) + h^2 (\pi_a - \pi_b)}{4h}
\end{aligned}$$

If $h = -l$, equation (7) reduces to,

$$\left(\mu^T\right)^2 (\pi_a - \pi_b) + 2\mu^T h (2 - \pi_a - \pi_b) + h^2 (\pi_a - \pi_b) = 0$$

Using this, we have $E(x) = 0$.

## 10.3 Proof Proposition 4

See main text.

# References


[1] Austin-Smith, David. 1994. "Strategic Transmission of Costly Information," Econometrica 62:955-963.

[2] Austen-Smith, David. 1996. "Interest Groups: Money, Information and Influence," In Perspectives on Public Choice, edited by Mueller, Dennis C., Cambridge UK: Cambridge University Press.

[3] Austen-Smith, David, and John R. Wright. 1992. "Competitive Lobbying for a Legislator's Vote," Social Choice and Welfare 9:229-57.

[4] Becker, Gary S. 1983. "A Theory of Competition among Pressure Groups for Political Influence." Quarterly Journal of Economics 98:371-400.

[5] Dewatripont, Mathias, and Jean Tirole. 1999. "Advocates," Journal of Political Economy 107:1-39.

[6] Dur, Robert A.J., and Otto H. Swank. 2005. "Producing and Manipulating Information", Economic Journal 115:185-199.

[7] Grossman, Gene M., and Elhanan Helpman. 2001. "Special Interest Politics," Cambridge MA and London UK: The MIT Press.

[8] Kim, Chulyoung. 2010. "The Value of Information in Legal Systems," Working Paper.

[9] Krishna, Vijay & John Morgan. 2001. "A Model Of Expertise," Quarterly Journal of Economics 116:747-775.

[10] Milgrom, Paul, and John Roberts. 1986. "Relying on Information of Interested Parties," RAND Journal of Economics 17:18-32.

[11] Mitchell, William C., and Michael C. Munger. 1991. "Economic Models of Interest Groups: An Introductory Survey," Americal Journal of Political Science 35:512-546.

[12] Mueller, Dennis C., 2003. "Public Choice III," Cambridge Books, Cambridge University Press.

[13] Olson, Mancur, Jr. 1965. "The Logic of Collective Action: Public Goods and the Theory of Groups," Cambridge, Mass.: Harvard University Press.

[14] Potters, Jan, and Frans van Winden. 1992. "Lobbying and Asymmetric Information," Public Choice 74:269-92.

[15] Potters, Jan, and Randolph Sloof. 1996. "Interest Groups: A Survey of Empirical Models That Try To Assess Their Influence," European Journal of Political Economy 12:403-442.

[16] Shin, Hyun Song. 1994. "The Burden of Proof in a Game of Persuasion," Journal of Economic Theory 25:253-263.

[17] Sobel, Joel. 1985. "Disclosure of evidence and resolution of disputes: Who should bear the burden of proof?," Ch 16 in Alvin E. Roth, ed., Game Theoretic Models of Bargaining Cambridge, Cambridge University Press.

[18] Stratmann, Thomas. 2005. "Some Talk: Money in Politics. A (partial) review of the literature," Public Choice 124:135-156.

[19] Swank, Otto H., 2011, "Why Do Defendants Ever Plead Guilty?" Working Paper.

[20] Tullock, Gordan. 1980. "Efficient Rent-Seeking," in J.M. Buchanan, R.D. Tollison and G. Tullock, eds., Towards a Theory of Rent-seeking Society. College Station, TX: A&M University Press.