

Conflict, Stake Asymmetry and Capture of Real Political Authority

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Abstract

Special interests groups compete for the acquisition and further transmission of information to an imperfectly informed government. For high enough levels of conflict between special interests groups, a group with a higher stake may decide not to get organized into a lobby because efforts made for producing information may turn out to be useless in order to capture political authority. For the low-stake group, a higher conflict or a higher stake asymmetry acts as a motivation device for capturing more political authority. Governments with high levels of independent information in their hands face less one-sided capture by the low-stake group.

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1 Introduction

Models relying on monetary transfers have been pervasive in recent developments of the political economy literature (Grossman and Helpman, 2001; Persson and Tabellini, 2000). In that regard, Grossman and Helpman's policy for sale model (1994) —where money donations help explain special interests groups' (SIGs) relative success of capture— has become the state of the art model. Two major qualifications must however be introduced; one can wonder whether or not money giving to politicians is the most plausible influence channel; and, as recently highlighted by Ansolobehere et al. (2002), financial contributions to politicians' electoral campaigns in the US are too small relative to the stakes, i.e. the rents lobbies extract. This is not consistent with models where monetary transfers to politicians are the main drivers of policy-making. Should it be so and SIGs would reap the benefits of very high rates of return of contributions by maximizing the amount of money transfers they are legally allowed to in the US. Observing SIGs' behavior in the US confirms this inconsistency. Most of them do not exhaust the legal monetary transfers constraints, thereby allowing Ansolobehere et al. (2002)

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to conclude that monetary contributions to politicians' electoral campaigns are to be seen as a form of consumption rather than as a rent-seeking activity.

The paper does not claim that SIGs cannot exert influence on policy makers but only that other possible influence channels must be studied (e.g. Grossman and Helpman, 2001) besides monetary transfers. Given the importance of the provision of information in the lobbying activity, it is surprising to notice that very little has been written on this plausible political influence channel so far. Therefore, in this paper, the competition for informational capture between SIGs and their interaction with imperfectly informed political authorities is modeled. The paper adopts a positive approach. It highlights two points; first that SIGs compete for political influence through the provision of information to politicians; second that this competition for capturing decision power through information can also determine their choice of getting organized into lobbies or not.

Informing policy makers is at the heart of the lobbying activity. The information provided by SIGs to politicians can have many features; information can be verifiable or not; it can be combined with corruption or legal campaign financing; it can target friends in office or opponents; it can be either costly to produce or not; and its transmission can eventually be selective, biased, or both. Yet the purpose of SIGs is to take advantage of imperfectly or incompletely informed politicians regardless of the nature of information.

The strategic use of information by SIGs has been modeled as a cheap talk game by Grossman and Helpman (2001). In their model, SIGs' production and transmission of information is costless but difficult to verify. They showed that opposing interests between SIGs reduces more the informational uncertainty faced by the politician since each group can serve as a credibility check on the other. When lobbying is costly, Grossman and Helpman (2001) showed that the willingness to pay can enhance the credibility of the information transmitted by SIGs, and thus improve the politician's decision making process. In Austen-Smith and Wright (1992, 1994), another signalling model is used: it concludes that informational lobbying is counteractive in the sense that a SIG would only lobby a politician with a priori favorable views towards the SIG's interests only if the opponent lobby started influencing this politician. This was contradicting the traditional view in political science, which argues that lobbying is more likely to be conducted on politicians who can a priori show a favorable hearing (Matthews, 1960; Bauer, Pool, and Dexter, 1963; Milbrath, 1963; Zeigler, 1964; Dexter, 1969; Hayes, 1981).

In terms of research, much remains to be done regarding SIG's strategic use of information. In particular, nothing has been written about what determines the level of information production by SIGs so far. Yet their decision of producing information in order to influ-

ence politicians is likely to be endogenous, and probably not independent of the information produced by other competing SIGs.

Therefore an information-production model à la Aghion and Tirole (1997) is applied herein so as to model informational lobbying. This approach suits particularly well to model SIGs' competition for capturing decision power. Decision rights —what Aghion and Tirole (1997) call formal authority— are in the hands of an incompletely informed government. Given the level of independent information that the government can access, SIGs try to capture decision power —what Aghion and Tirole (1997) call real authority— in an environment where their interests are conflicting, and their stakes unequal. In order to capture decision power, SIGs produce efforts in information production without excluding the possibility of producing no information, i.e. not setting up an organized lobby. The model provides a stylized representation of a situation where a high-stake producers group competes with a low-stake consumer groups whose interests are closer to society's and therefore to those of a benevolent government. A three stage-game is solved; at the first stage, two SIGs decide whether or not to get organized into lobbies; at the second stage, a SIG organized into a lobby produces information; at the third stage, a lobby transmits part of the information produced at stage two to the government who chooses a policy among several alternatives. The advantage of this approach is that it enables to include different levels of conflicting interests as well as different degrees of stake asymmetry, and to observe how variations in conflict and stake asymmetry can change SIGs' relative capture of political authority. Eventually, in a totally innovative way, it provides new foundations for explaining lobby formation pointing out the role that information production plays (as opposed to Mitra's model (1999) of endogenous lobby formation where politicians are perfectly informed).

The theoretical results of the model can be summarized as follows. SIGs' efforts in information production are neither strategic complements nor strategic substitutes. The low-stake group increases its information production in response to an increase in information production by the high-stake group, whereas the high-stake group decreases its information production in response to a higher effort in information production by the the low-stake group. Two counterintuitive results are derived. First, high levels of conflict reduce the competition for capture. Second, less competition means one-sided lobbying by the low-stake group rather than by the high-stake group, as one could have expected intuitively. This is because, provided that the level of conflict is high enough, the high-stake group is more likely to produce useless efforts to capture political authority since the government, who is politically closer to the low-stake group, is less likely to believe it. This in turn reduces the return to information production and dominates the effect of the higher stake. Therefore the high-stake group may

simply prefer not getting organized into a lobby at stage one, and by so doing let the low-stake group capture alone the real political authority. Interestingly, a higher level of conflict and of stake asymmetry acts as a motivation device for the low-stake group in order to produce higher efforts in information production, leading it to capture more political power. Finally, a better informed government acts a de-motivation device for the capture by the low-stake group, while this may be the opposite for the high-stake group.

2 The model

Consider a three-stage game between three players, two Special-Interest Groups (SIG) labeled one and two with conflicting interests and unequal stakes, and a government labeled G . SIGs compete for capturing real political authority, i.e. power regarding the government's choice between a number of possible policies.

In stage one, SIGs one and two simultaneously decide whether or not to organize themselves into lobbies. In stage two, those having chosen to do so (one, two or both) collect information about the consequences of a predetermined set of policies and strategically forward some of that information to the government in order to capture real political authority. In stage three, the government chooses a policy on the basis of available information.

The role of stage one is to make it possible for SIGs to voluntarily stay out of the lobbying game. The reason is as follows. In the equilibrium of stage two (information production), it is possible —although not necessary— that a SIG would be better off not capturing real political authority and thus producing no information at all rather than the equilibrium level. If the other SIG is organized, however, this may not be a time-consistent policy. Choosing, ex ante, not to get organized can then act as a credible (and beneficial) commitment not to waste resources on information production given the level of conflict and stake asymmetry between SIGs.

In stage two, policies are up for evaluation by SIGs and the government. A policy is characterized by a payoff triplet $\mathbf{u} = (u_1, u_2, u_G)$ whose elements are payoffs to SIG one, SIG two and the government, in that order. The set of feasible policies has five elements: the status quo with payoff $\mathbf{u}_0 = (0, 0, 0)$; the worst policy with payoff $\mathbf{u}_w = (-\infty, -\infty, -\infty)$; and three policies with nonzero but finite payoffs, each of which is one of the three players' preferred alternative.[†] Let α, β, α_1 and α_2 be four parameters; it will become apparent later on that α, α_1 and α_2 are congruence parameters —with α measuring the level of conflict between SIGs

[†]The set of policies can be extended to more than five policies without altering the results. What matters is that there exists a preferred policy for each player and that those are distinct.

— while β captures the intensity of SIG two’s preferences and, by so doing, will define stake asymmetry. SIG one’s preferred policy has payoff $\mathbf{u}_1 = (1, \alpha\beta, \alpha_1)$; SIG two’s preferred one, $\mathbf{u}_2 = (\alpha, \beta, \alpha_2)$; and the government’s, $\mathbf{u}_G = (\alpha_1, \alpha_2\beta, 1)$. This payoff structure, summarized in Table one, is common knowledge.

Table 1: policy payoffs

<i>Policies:</i>	<i>Payoffs to:</i>		
	SIG 1	SIG 2	Government
Status quo	0	0	0
Worst	$-\infty$	$-\infty$	$-\infty$
1’s preferred	1	$\alpha\beta$	α_1
2’s preferred	α	β	α_2
G’s preferred	α_1	$\alpha_2\beta$	1

Except for the status quo, the identity of policies is unknown to all players. In other words, no one knows at the start of the game which policy is preferred by SIG one, by SIG two, by the government, or by no one. The action in stage two is the production of information by SIGs having organized themselves in stage one (henceforth called “lobbies”).

The cost associated with producing a level of information E_i is $C(E_i) = E_i^2/2$, E_i being also—as is usual in information-production models—the probability that lobby i finds out policy payoffs. In this setting, the probability that lobby i finds policy payoffs is a function of its own effort only; in other words, there are no spillovers from information production *per se*, although the information produced can of course be subsequently shared. In the event that lobby i does find out, it learns about all payoffs in Table 1 and whatever information it decides to make available to the government is of the “hard” type (i.e. verifiable).

In stage three, the government possibly obtains independent information and acts on the basis of total information available, its own and that forwarded by lobbies with conflicting and unequal interests. The probability that it finds out policy payoffs independently of the lobbies’ efforts is a parameter e . When itself uninformed, the government bases its policy decision on the information provided by the lobbies, which implies that information confers influence—possibly decisive—over the decision-making process, what Aghion and Tirole (1997) called “real authority”. This possibility to capture decision power—the decision rights, or what Aghion and Tirole (1997) called “formal authority”, belonging to the government—is what provides the incentive for costly information production.

Assumptions about the game’s parameters are as follows:

A1 $e \in]0, 1[$;

A2 $\alpha_i \in]0, 1[$, $i = 1, 2$;

A3 $\alpha \in]-\infty, 0[$;

A4 $\alpha_2 < \alpha_1$;

A5 $\beta > 1$;

A6 $|(1 - e)^2 \alpha \beta| < 1$.

A1 implies that the government is neither completely informed nor completely uninformed. A2 implies that the government prefers policy G . A2 and A3 together mean that policy i is preferred by SIG i ; negative values of α imply that the interests of SIG one and two are opposed in the sense that policy one has a negative payoff for SIG two and *vice versa*; α can therefore be viewed as a measure of the level of conflict. A4 implies that SIG one's preferences are closest to the government's; A5 that SIG two has higher stakes than SIG one and β can thus be viewed as a measure of stake asymmetry. Eventually A6 ensures the equilibrium stability.

The set of assumptions A1 to A5 is the stylized representation of a situation in which a high-stake producer lobby (SIG two) competes for political influence with a low-stake consumer lobby (SIG one) whose preferences are closer to society's and therefore to those of a benevolent government.[‡]

3 Equilibrium

The game is solved backwards, starting with the government's policy decision in stage three. Before turning to the game's formal solution, consider the strategic information transmission problem faced by lobbies in stage two.

Suppose first that a single lobby manages to uncover policy payoffs. If it forwards its entire information to an uninformed government, the policy chosen will be the government's preferred, which is not what the lobby wants so as to capture political decision power. However if the lobby discloses only the identity of its own preferred policy, the government is then *de facto* choosing between that one and the status quo, because other policies, which are indistinguishable, include the worst one and therefore have a negative expected payoff. The

[‡]Whether the government is benevolent or pursues any other objective does not need to be specified in this framework.

payoff structure shown in Table one implies that, faced with this choice, the government chooses the lobby’s preferred policy rather than the status quo, which is what the lobby wants in order to capture real political authority. Information transmission is thus selective.

Suppose next that both lobbies find policy identities in their race for capturing political power. Each one discloses the identity of its preferred one, but irrespective of what lobby two declares, by A4 an uninformed government prefers adopting lobby one’s policy.

Finally, an *informed* government simply disregards the information conveyed by lobbies.

3.1 Stage three

The game’s five payoff-relevant states are shown in Table two. The first three columns indicate the game’s information state. A “*y*” indicates that player $i = G, 1, 2$ has found out which policy is which, an “*n*” that it has not. The fourth, fifth and sixth columns indicate respectively the state’s probability, the government’s equilibrium policy decision given the state, and the corresponding payoff vector. Equilibrium policies for the government are not derived formally but their logic is clear given Table one’s payoff structure.

Table 2: Stage-three information states and payoffs

Info. state			Probability	Policy	Payoffs
1	2	<i>G</i>		choice	(1, 2, <i>G</i>)
–	–	<i>y e</i>		<i>G</i>	($\alpha_1, \alpha_2\beta, 1$)
<i>y</i>	<i>y</i>	<i>n</i>	$(1 - e)E_1E_2$	1	(1, $\alpha\beta, \alpha_1$)
<i>y</i>	<i>n</i>	<i>n</i>	$(1 - e)E_1(1 - E_2)$	1	(1, $\alpha\beta, \alpha_1$)
<i>n</i>	<i>y</i>	<i>n</i>	$(1 - e)(1 - E_1)E_2$	2	(α, β, α_2)
<i>n</i>	<i>n</i>	<i>n</i>	$(1 - e)(1 - E_1)(1 - E_2)$	0	(0, 0, 0)

The probability π_i that SIG i captures decision power —real political authority— is

$$\pi_1 = (1 - e)E_1 \tag{1}$$

for SIG one. Provided that SIG one knows which policy is which while the government does not, lobbying enables the group to get back decision power. For SIG two, the probability of capturing decision power is

$$\pi_2 = (1 - e)(1 - E_1)E_2 = (1 - e - \pi_1)E_2. \tag{2}$$

Provided that SIG two knows which policy is which while both the government and SIG one do not, lobbying enables the group to get back real political power. Whereas π_1 is independent of E_2 , E_1 has an effect on π_2 .

The best-response policy decisions in the fifth column of Table two can be used to fold back stage three and obtain expected-payoff expressions for the government and lobbies, as of the start of stage three. Let $v_i(E_1, E_2, e) = E(u_i)$ for $i = 1, 2, G$, the expectation being taken with respect to the distributions defined by E_1 , E_2 and e . The expected payoff of lobby one is

$$v_1(E_1, E_2, e) = e\alpha_1 + \pi_1 + \pi_2\alpha - \frac{E_1^2}{2}, \quad (3)$$

that of lobby two is

$$v_2(E_1, E_2, e) = \beta(e\alpha_2 + \pi_1\alpha + \pi_2) - \frac{E_2^2}{2}, \quad (4)$$

and the government's is

$$v_G(E_1, E_2, e) = e + \pi_1\alpha_1 + \pi_2\alpha_2. \quad (5)$$

These expected-utility functions are the maximands of stage two's information-acquisition problems. We state now a useful property of these functions:

Lemma 1 *Expected payoff functions v_1 and v_2 are globally strictly concave in SIGs' own strategies.*

Proof. Differentiating (3) and (4) twice gives $\partial^2 v_1 / \partial E_1^2 = \partial^2 v_2 / \partial E_2^2 = -1$. ■

3.2 Stage two

Several cases must be considered in stage two, depending on which SIG decided to get organized in stage one. In the first case, named case 1 below, SIG one and two decided to get organized at stage one. In the second case (case 2), only SIG one got organized into a lobby. In the third case (case 3), only SIG two constituted a lobby. Finally, the case with no SIG organized into a lobby is degenerate.[§]

[§]If none of the SIGs decide to organize (this could be thought of as Case 4), it can be seen from any of Tables 2-4 that $v_1^0 = e\alpha_1$ and $v_2^0 = e\alpha_2\beta$.

3.2.1 Case 1

Assume first that both SIGs are organized. The maximization problem of lobby i is

$$\max_{E_i} v_i \text{ s.t. } 0 \leq E_i \leq 1, \quad i = 1, 2. \quad (6)$$

Let λ_i and μ_i be two Lagrange multipliers. The Kuhn-Tucker conditions are

$$(1 - e)(1 - \alpha E_2) - E_1 - \lambda_1 E_1 - \mu_1 (1 - E_1) = 0, \quad (7)$$

$$\lambda_1 \geq 0, E_1 \geq 0, \lambda_1 E_1 = 0, \quad (8)$$

$$\mu_1 \geq 0, E_1 \leq 1, \mu_1 (1 - E_1) = 0 \quad (9)$$

for lobby one and

$$\beta(1 - e)(1 - E_1) - E_2 - \lambda_2 E_2 - \mu_2 (1 - E_2) = 0, \quad (10)$$

$$\lambda_2 \geq 0, E_2 \geq 0, \lambda_2 E_2 = 0, \quad (11)$$

$$\mu_2 \geq 0, E_2 \leq 1, \mu_2 (1 - E_2) = 0 \quad (12)$$

for lobby two.

If both SIGs are organized, positive information production can be assumed to be optimal, so non-negativity constraints are not binding. Moreover, it can be seen by inspection that $e < 1$ (assumption A3) rules out corner solutions at $E_i = 1$. Therefore none of the inequality constraints is binding and $\lambda_i = \mu_i = 0$. Accordingly assuming an interior solution, the first-order conditions (FOCs) are

$$(1 - e)(1 - \alpha E_2) - E_1 = 0 \quad (13)$$

for lobby one and

$$\beta(1 - e)(1 - E_1) - E_2 = 0 \quad (14)$$

for lobby two. Lemma one implies that the second-order conditions are verified.

Finally, the reaction functions in (E_1, E_2) space are

$$R_1(E_2, e) = (1 - e)(1 - E_2\alpha), \quad (15)$$

$$R_2(E_1, e) = \beta(1 - e)(1 - E_1). \quad (16)$$

As a matter of convenience to derive further results, let us also define

$$\delta = (1 - e)^2, \quad (17)$$

$$\gamma = \alpha\beta\delta - 1, \quad (18)$$

$$\lambda = \beta e(e - 1). \quad (19)$$

It is easily checked that $0 < \delta < 1$, $\gamma < 0$, $\lambda < 0$, and $\gamma + e \leq 0$.

Let “effort” be shorthand for “information production in stage two”.

Proposition 2 *The equilibrium pair of efforts (E_1^*, E_2^*) is unique and stable and is defined by*

$$E_1^* = \frac{\gamma + e}{\gamma}, \quad (20)$$

$$E_2^* = \frac{\lambda}{\gamma}. \quad (21)$$

Proof. Expressions (20) and (21) are obtained by algebraic manipulation of (15) and (16). Uniqueness follows directly from Lemma one. As for stability, one must check —following Moulin (1982)— if

$$\left| \frac{\partial^2 v_1}{\partial E_1 \partial E_2} \frac{\partial^2 v_2}{\partial E_1 \partial E_2} \right| < \left| \frac{\partial^2 v_1}{\partial E_1^2} \frac{\partial^2 v_2}{\partial E_2^2} \right|, \quad (22)$$

which is true only if

$$|(1 - e)^2 \alpha \beta| < 1. \quad (23)$$

■

Corollary 3 *For SIGs one and two, equilibrium probabilities of capturing decision power — real political authority— (π_1^*, π_2^*) are respectively*

$$\pi_1^* = (1 - e) \frac{\gamma + e}{\gamma}, \quad (24)$$

$$\pi_2^* = \frac{-(1 - e)e\lambda}{\gamma^2}. \quad (25)$$

Let $v_i^* \equiv v_i(E_1^*, E_2^*, e)$ be player i 's equilibrium payoff. After substitution of (20) and (21) into (3) and (4), the relevant expressions are

$$v_1^*(E_1^*, E_2^*, e) = e\alpha_1 + (1 - e) \left(\frac{\gamma + e}{\gamma} - \frac{e\lambda}{\gamma^2} \alpha \right) - \frac{1}{2} \left(\frac{\gamma + e}{\gamma} \right)^2 \quad (26)$$

for lobby one,

$$v_2^*(E_1^*, E_2^*, e) = \beta \left[e\alpha_2 + (1 - e) \left(\frac{\gamma + e}{\gamma} \alpha - \frac{e\lambda}{\gamma^2} \right) \right] - \frac{1}{2} \left(\frac{\lambda}{\gamma} \right)^2 \quad (27)$$

for lobby two, and

$$v_G^*(E_1^*, E_2^*, e) = e + (1 - e) \left(\frac{\gamma + e}{\gamma} \alpha_1 - \frac{e\lambda}{\gamma^2} \alpha_2 \right) \quad (28)$$

for the government.

Strategic interaction between levels of effort is described by the following proposition (and is illustrated in figure 1):

Proposition 4 *Lobby one's effort is increasing in lobby two's whereas lobby two's effort is decreasing in lobby one's.*

Proof. This statement can be verified by inspection of the partial derivatives of (15) and (16), which are respectively

$$\frac{\partial R_1}{\partial E_2} = -(1 - e)\alpha > 0, \quad (29)$$

$$\frac{\partial R_2}{\partial E_1} = -\beta(1 - e) < 0. \quad (30)$$

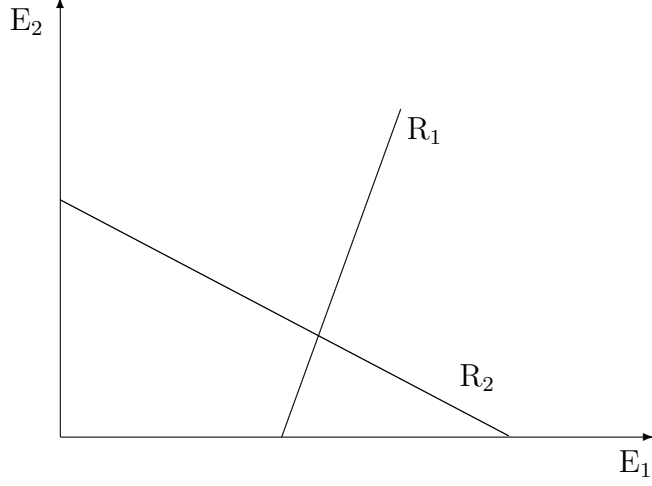
■

Information is rival in the sense that its transmission by SIG one to the government reduces the capture of decision power —real political authority— by SIG two while it increases SIG one's one. The converse is not true because the transmission of information by SIG two does not impact negatively the capture of decision power by SIG one. Recalling that SIG one is a stylized representation of a low-stake consumer group while SIG two is a stylized representation of a high-stake producer group, the analysis of the strategic interaction between both groups shows that low-stake consumers can capture decision power over high-stake producers. Yet this result depends crucially on A4 ($\alpha_1 > \alpha_2$), which implies that the government is not biased towards the high-stake producers. If $\alpha_2 > \alpha_1$, (this case is discussed in the appendix), a higher effort by high-stake producers will reduce low-stake consumers' real political authority.

3.2.2 Case 2

Suppose now that only SIG one is organized as a lobby. Then $E_2 = 0$ and thus $\pi_2 = 0$; stage two of the game degenerates into a single-player decision problem for lobby one. Payoff-

Figure 1: Reaction functions



relevant states are listed in Table three:

Table 3: Stage-three information states

Info. state		Probability	Policy	Payoffs	
1	2	G	choice	$(1, 2, G)$	
–	–	y	e	G	$(\alpha_1, \alpha_2\beta, 1)$
y	n	n	$(1 - e)E_1$	1	$(1, \alpha\beta, \alpha_1)$
n	n	n	$(1 - e)(1 - E_1)$	0	$(0, 0, 0)$

As in case 1, the probability that lobby one captures real political authority is

$$\pi_1 = (1 - e)E_1. \quad (31)$$

Lobby one's expected payoff reduces to

$$v_1(E_1, 0, e) = e\alpha_1 + \pi_1 - \frac{E_1^2}{2} \quad (32)$$

and the equilibrium effort is

$$E_1^{**} = (1 - e). \quad (33)$$

The equilibrium probability of capturing real authority follows:

$$\pi_1^{**} = (1 - e)^2. \quad (34)$$

Equilibrium expected payoffs are respectively

$$\begin{aligned} v_1^{**} &= v_1(E_1^{**}, 0, e) = e\alpha_1 + \pi_1^{**} - \frac{E_1^{**2}}{2} \\ &= e\alpha_1 + \frac{1}{2}(1 - e)^2 \end{aligned} \quad (35)$$

for SIG one,

$$\begin{aligned} v_2^{**} &= v_2(E_1^{**}, 0, e) = \beta(e\alpha_2 + \pi_1^{**}\alpha) \\ &= \beta[e\alpha_2 + (1 - e)^2\alpha] \end{aligned} \quad (36)$$

for SIG two and

$$\begin{aligned} v_G^{**} &= v_G(E_1^{**}, 0, e) = e + \pi_1^{**}\alpha_1 \\ &= e + (1 - e)^2\alpha_1 \end{aligned} \quad (37)$$

for the government.

3.2.3 Case 3

Consider finally the case where only SIG two is organized as a lobby. Then $E_1 = 0$ and thus $\pi_1 = 0$. Payoff-relevant states are shown in Table 4.

Table 4: Stage-three information states

Info. state				Probability	Policy	Payoffs
1	2	G			choice	$(1, 2, G)$
–	–	y	e		G	$(\alpha_1, \alpha_2\beta, 1)$
n	y	n	$(1 - e)E_2$		2	$(\alpha, \beta, \alpha_2)$
n	n	n	$(1 - e)(1 - E_2)$		0	$(0, 0, 0)$

The probability that lobby two captures real political authority is simply

$$\pi_2 = (1 - e)E_2. \quad (38)$$

Lobby two's expected payoff reduces to

$$v_2(0, E_2, e) = \beta [e\alpha_2 + \pi_2] - \frac{E_2^2}{2} \quad (39)$$

and equilibrium effort is

$$E_2^{***} = \beta(1 - e). \quad (40)$$

The equilibrium probability of capturing real authority follows:

$$\pi_2^{***} = \beta(1 - e)^2. \quad (41)$$

Equilibrium expected payoffs are respectively

$$\begin{aligned} v_1^{***} &= v_1(E_1^{***}, 0, e) = e\alpha_1 + \pi_2^{***}\alpha \\ &= e\alpha_1 + \alpha\beta(1 - e)^2 \end{aligned} \quad (42)$$

for SIG one,

$$\begin{aligned} v_2^{***} &= v_2(0, E_2^{**}, e) = \beta(e\alpha_2 + \pi_2^{***}) - \frac{E_2^{**2}}{2} \\ &= \beta e\alpha_2 + \frac{1}{2}\beta^2(1 - e)^2 \end{aligned} \quad (43)$$

for SIG two, and

$$\begin{aligned} v_G^{***} &= v_G(0, E_2^{***}, e) = e + \pi_2^{***}\alpha_2. \\ &= e + \alpha_2\beta(1 - e)^2. \end{aligned} \quad (44)$$

for the government.

Stage two's equilibrium payoffs can now be used to fold back the game once more and solve stage one.

3.3 Stage one

I show in the following proposition that, for given levels of asymmetry in the stakes (β) and of independent information in the hands of the government (e), one of the two SIGs —SIG two, the one with the highest stake— may be better off not producing information at stage two for sufficiently high levels of conflict (α); it may thus prefer giving up a chance to capture

decision power.

Proposition 5 *Given β and e , there exists a unique cut-off $\tilde{\alpha}(\beta, e)$ of α such that $v_2^*(E_1^*, E_2^*, e) - v_2(E_1(0), 0, e) < 0$ whenever $\alpha < \tilde{\alpha}(\beta, e)$.*

Proof. Let us define

$$\begin{aligned}\Delta v_2 &= v_2^*(E_1^*, E_2^*, e) - v_2(E_1(0), 0, e) \\ &= \beta \left[(1-e) \left(\left(\frac{\gamma+e}{\gamma} - (1-e) \right) \alpha - \frac{e\lambda}{\gamma^2} \right) \right] - \frac{1}{2} \left(\frac{\lambda}{\gamma} \right)^2.\end{aligned}\tag{45}$$

It suffices to show that a case such that

$$\Delta v_2 < 0 \Leftrightarrow v_2^*(E_1^*, E_2^*, e) < v_2(E_1(0), 0, e)\tag{46}$$

exists, and that Δv_2 is a monotonic function with respect to α .

The following two limits imply that for a given β and e , there exists a cut-off value $\tilde{\alpha}$ below which $v_2^*(E_1^*, E_2^*, e) < v_2(E_1(0), 0, e)$:

$$\lim_{\alpha \rightarrow -\infty} \Delta v_2 = -\infty,\tag{47}$$

$$\lim_{\alpha \rightarrow 0} \Delta v_2 = \frac{1}{2} \lambda^2 > 0.\tag{48}$$

The cut-off is also unique since Δv_2 is a monotonic function with respect to α , as the sign of the total derivative below does not change:

$$\frac{d\Delta v_2}{d\alpha} = \frac{\partial \Delta v_2}{\partial \alpha} + \frac{\partial \Delta v_2}{\partial \gamma} \frac{d\gamma}{d\alpha} > 0,\tag{49}$$

where $\frac{\partial \Delta v_2}{\partial \alpha} > 0$, $\frac{\partial \Delta v_2}{\partial \gamma} > 0$ and $\frac{d\gamma}{d\alpha} > 0$. ■

This result is counterintuitive. First, it shows that a higher level of conflict between SIGs triggers less competition for lobbying rather than more. Second, for high levels of conflict, one-sided lobbying is not conducted by the high-stake group but by the low-stake group instead. The explanation is as follows: when conflict is high, the risk of producing useless efforts in producing information becomes too large. This risk is particularly important for the high-stake group since an increase in its information production efforts also increases the low-stake group's efforts, and by so doing the probability, when both groups are informed about policies' payoffs, that the government does not believe SIG two and chooses instead SIG one's preferred

policy at stage one. This reduces the return to information production and dominates the effect of the higher stake. Yet no information production is not an equilibrium strategy in stage 2 due to a possible time-inconsistency problem; so a commitment mechanism is needed. This is what the political organization stage (stage 1) does, as a an efficient lobby cannot be set up overnight. Let stage-one move $m_i \in \{0, 1\}$ be SIG i 's decision to organize ($m_i = 1$) or not. Tables 5 and 6 show folded-back payoffs as functions of stage-one moves.

Table 5: Stage one's payoff matrix

(m_1, m_2)	0	1
0	(v_1^0, v_2^0)	(v_1^{***}, v_2^{***})
1	(v_1^{**}, v_2^{**})	(v_1^*, v_2^*)

Substituting the relevant expressions, Table 5 can be rewritten in full as

Table 6: Stage one's full payoff matrix

(m_1, m_2)	0	1
0	$\begin{pmatrix} e\alpha_1, \\ e\alpha_2\beta \end{pmatrix}$	$\begin{pmatrix} e\alpha_1 + \alpha\beta(1-e)^2, \\ \beta[e\alpha_2 + \frac{1}{2}\beta(1-e)^2] \end{pmatrix}$
1	$\begin{pmatrix} e\alpha_1 + \frac{1}{2}(1-e)^2, \\ \beta[e\alpha_2 + (1-e)^2\alpha] \end{pmatrix}$	$\begin{pmatrix} e\alpha_1 + (1-e)\left(\frac{\gamma+e}{\gamma} - \frac{e\lambda}{\gamma^2}\alpha\right) - \frac{1}{2}\left(\frac{\gamma+e}{\gamma}\right)^2, \\ \beta\left[e\alpha_2 + (1-e)\left(\frac{\gamma+e}{\gamma}\alpha - \frac{e\lambda}{\gamma^2}\right)\right] - \frac{1}{2}\left(\frac{\lambda}{\gamma}\right)^2 \end{pmatrix}$

Let us define

$$\Delta_1 = v_1^* - v_1^{***} = (1-e) \left[\frac{\gamma+e}{\gamma} - \alpha\left(\frac{e\lambda}{\gamma^2} + \beta(1-e)\right) \right] - \frac{1}{2} \left(\frac{\gamma+e}{\gamma} \right)^2, \quad (50)$$

and

$$\Delta_2 = v_2^* - v_2^{**} = \beta \left[(1-e) \left(\left(\frac{\gamma+e}{\gamma} - (1-e) \right) \alpha - \frac{e\lambda}{\gamma^2} \right) \right] - \frac{1}{2} \left(\frac{\lambda}{\gamma} \right)^2. \quad (51)$$

The equilibrium of stage 1 is characterized in the following proposition:

Proposition 6 *If $\alpha < \tilde{\alpha}(\beta, e)$, the unique equilibrium of stage 1 is $(m_1, m_2) = (1, 0)$, i.e. only SIG 1 is organized. If $\alpha \geq \tilde{\alpha}(\beta, e)$, it is $(m_1, m_2) = (1, 1)$, i.e. both SIGs are organized.*

Proof. Suppose that $\alpha < \tilde{\alpha}(\beta, e)$. Then we need to show that $v_1^{**} > v_1^0$ and that $\Delta_2 = v_2^* - v_2^{**} < 0$, so that $m_1 = 1$ and $m_2 = 0$ form a pair of mutual best responses. That $\Delta_2 < 0$

was already established in Proposition 5. $v_1^{**} > v_1^0$ is straightforward. Now suppose that $\alpha \geq \tilde{\alpha}(\beta, e)$. Then we need to show that $\Delta_1 = v_1^* - v_1^{***} > 0$ and that $\Delta_2 = v_2^* - v_2^{**} > 0$, so that $m_1 = 1$ and $m_2 = 1$ form a pair of mutual best responses. That $\Delta_2 > 0$ was already established in Proposition 5. In order to establish that $\Delta_1 > 0$, observe that

$$\frac{d\Delta_1}{d\alpha} = \frac{\partial\Delta_1}{\partial\alpha} + \frac{\partial\Delta_1}{\partial\gamma} \frac{d\gamma}{d\alpha} \quad (52)$$

with $\frac{\partial\Delta_1}{\partial\alpha} < 0$, $\frac{\partial\Delta_1}{\partial\gamma} < 0$ and $\frac{d\gamma}{d\alpha} > 0$, so $d\Delta_1/d\alpha < 0$ and Δ_1 is a monotone decreasing function of α . As $\Delta_1(0) > 0$, it follows that $\Delta_1 > 0 \forall \alpha$. ■

Provided that the government is unbiased (i.e. $\alpha_1 > \alpha_2$), high levels of conflict ($\alpha \rightarrow -\infty$) lead to one-sided lobbying by the low-stake group SIG one, and thus tends to reinforce its capture of real political authority. However it is worth noticing that with a biased government, i.e. $\alpha_2 > \alpha_1$ (see the setting in the appendix), one-sided lobbying when $\alpha \rightarrow -\infty$ would be undertaken by the high-stake lobby SIG two instead of the low-stake SIG one.

To sum up,

Corollary 7 *When $\alpha \geq \tilde{\alpha}(\beta, e)$, both SIGs are organized, equilibrium levels of efforts are $E_1^* = (\gamma + e)/\gamma$ and $E_2^* = \lambda/\gamma$, and probabilities of decision-power capture are $\pi_1^* = (1 - e)(\gamma + e)/\gamma$ for SIG 1 and $\pi_2^* = -(1 - e)e\lambda/\gamma^2$ for SIG 2. When $\alpha < \tilde{\alpha}(\beta, e)$, only SIG 1 is organized, equilibrium efforts are $E_1^{**} = 1 - e$ and $E_2^{**} = 0$, and the probability of decision-power capture by SIG 1 is $\pi_1^{**} = (1 - e)^2$.*

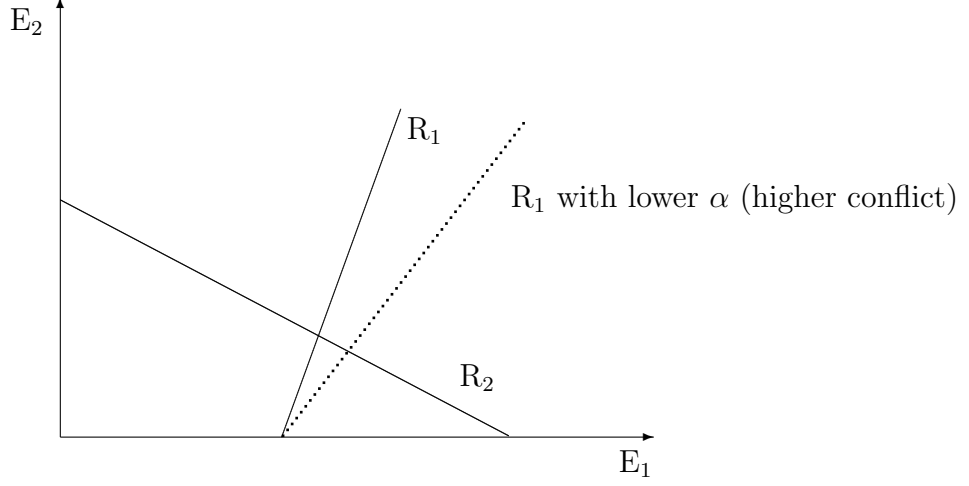
4 Comparative statics

We now turn to three comparative-statics exercises. The first takes the two-sided lobbying equilibrium (E_1^*, E_2^*) and examines how a change in the parameters α , β , and e does affect equilibrium information production. The second goes a step further and examines how those changes affects the probability that the government is captured by the low-stake or the high-stake group, i.e. loses real political authority. Finally, the third comparative statics exercise takes a close look at the cut-off separating one-sided from two-sided lobbying and shows how the cut-off changes with the game's parameters.

4.1 Comparative statics of the production of information

At equilibrium (E_1^*, E_2^*) , the production of information E_i^* by SIG i is a function of the level of conflict between the two groups, i.e. α ; of the level of stake asymmetry between the two

Figure 2: Comparative statics of a change in α



groups, i.e. β ; and of the amount of independent information in the hands of the government, i.e. e . The changes in E_i^* in response to exogenous variations of α , β , and e are studied below.

Proposition 8 *At equilibrium (E_1^*, E_2^*) , an increase in the level of conflict $|\alpha|$ increases the amount of information produced by SIG one —the low-stake group—, while it decreases the amount of information produced by SIG two —the high-stake group—.*

Proof. It follows from the signs of the total derivatives

$$\frac{dE_1^*}{d\alpha} = \frac{\partial E_1}{\partial \gamma} \frac{d\gamma}{d\alpha} = \frac{-e\beta\delta}{\gamma^2} < 0, \quad (53)$$

and

$$\frac{dE_2^*}{d\alpha} = \frac{\partial E_2}{\partial \gamma} \frac{d\gamma}{d\alpha} = \frac{-\lambda\beta\delta}{\gamma^2} > 0. \quad (54)$$

■

Figure 2 illustrates proposition 8. It shows that SIG one's reaction curve moves downwards following an increase in the level of conflict (i.e. the value of α decreases) while SIG two's reaction curve does not move.

Proposition 9 *At equilibrium (E_1^*, E_2^*) , an increase in the level of stake asymmetry β increases the amount of information produced by SIG one —the low-stake group— as well as the amount of information produced by SIG two —the high-stake group—.*

Figure 3: Comparative statics of a change in β

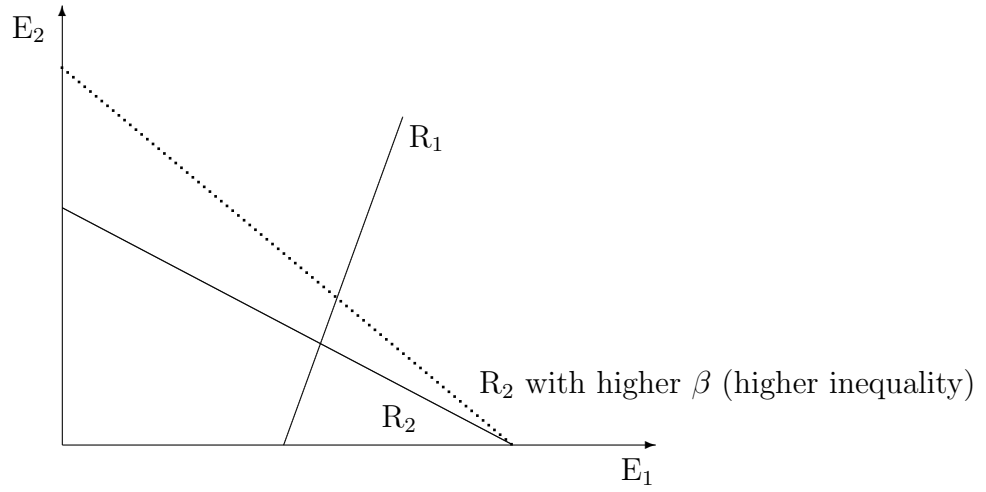
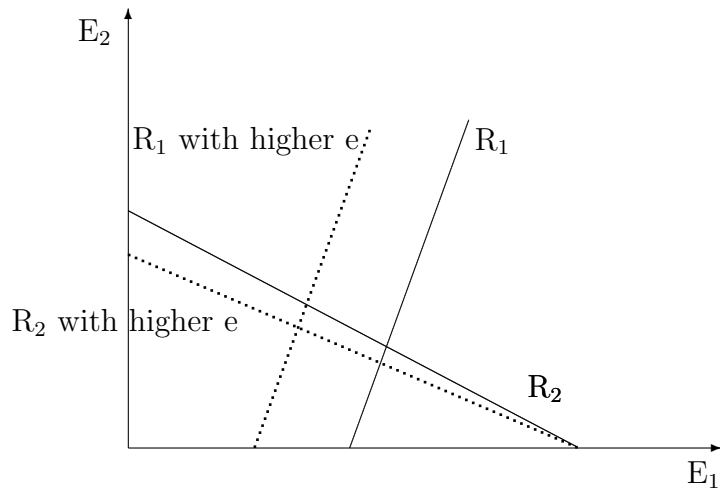


Figure 4: Comparative statics of a change in e (with $e < \frac{1}{2}$)



Proof. It follows from the signs of the total derivatives

$$\frac{dE_1^*}{d\beta} = \frac{\partial E_1}{\partial \gamma} \frac{d\gamma}{d\beta} = \frac{-e\alpha\delta}{\gamma^2} > 0, \quad (55)$$

and

$$\frac{dE_2^*}{d\beta} = \frac{\partial E_2}{\partial \gamma} \frac{d\gamma}{d\beta} + \frac{\partial E_2}{\partial \lambda} \frac{d\lambda}{d\beta} = \frac{e(1-e)}{\gamma^2} > 0. \quad (56)$$

■

Figure 3 illustrates proposition 9. It shows that SIG two's reaction curve moves upwards following an increase in stake asymmetry (i.e. the value of β increases), whereas SIG one's reaction curve does not move.

Proposition 10 *At equilibrium (E_1^*, E_2^*) , an increase in the level of independent information e in the hands of the government decreases the amount of information produced by SIG one—the low-stake group—, while it increases the amount of information produced by SIG two—the high-stake group— when $e < \frac{1}{2}$.*

Proof. It follows from the signs of the total derivatives

$$\frac{dE_1^*}{de} = \frac{\partial E_1}{\partial e} + \frac{\partial E_1}{\partial \gamma} \frac{d\gamma}{d\delta} \frac{d\delta}{de} = \frac{\gamma + 2e(1-e)\alpha\beta}{\gamma^2} < 0, \quad (57)$$

and

$$\frac{dE_2^*}{de} = \frac{\partial E_2}{\partial \gamma} \frac{d\gamma}{d\delta} \frac{d\delta}{de} + \frac{\partial E_2}{\partial \lambda} \frac{d\lambda}{de} = \frac{2\lambda(1-e)\alpha\beta}{\gamma^2} + \frac{\beta(2e-1)}{\gamma} > 0 \text{ with } e < \frac{1}{2}. \quad (58)$$

■

Figure 4 illustrates proposition 10. For $e < \frac{1}{2}$, it shows that while SIG one's reaction curve moves upwards following an increase in the level of independent information in the hands of the government (i.e. the value of e increases), SIG two's reaction curve moves downwards.

4.2 Comparative statics of the capture of real political authority

At equilibrium (E_1^*, E_2^*) , the capture π_i^* of real political authority by SIG i is a function of the level of conflict between the two groups, i.e. α ; of the level of stake asymmetry between the two groups, i.e. β ; and of the amount of independent information that the government can access, i.e. e . The changes in π_i^* in response to exogenous variations of α , β , and e are studied below.

Proposition 11 *For an equilibrium (E_1^*, E_2^*) , the probability π_1^* that SIG 1 —the low-stake group— captures the real political authority over the choice of policies unambiguously increases with conflict, i.e. $|\alpha|$; it unambiguously increases with stake asymmetry, i.e. β ; and it unambiguously decreases with the government’s own information, i.e. e .*

Proof. It follows from the sign of the total derivatives below:

$$\frac{d\pi_1^*}{d\alpha} = \frac{\partial\pi_1^*}{\partial\gamma} \frac{d\gamma}{d\alpha} < 0, \quad (59)$$

$$\frac{d\pi_1^*}{d\beta} = \frac{\partial\pi_1^*}{\partial\gamma} \frac{d\gamma}{d\beta} > 0, \quad (60)$$

$$\frac{d\pi_1^*}{de} = \frac{\partial\pi_1^*}{\partial e} + \frac{\partial\pi_1^*}{\partial\gamma} \frac{d\gamma}{d\delta} \frac{d\delta}{de} < 0. \quad (61)$$

■

This means that for SIG 1 —the low-stake group— more consensus (i.e. a lower level of conflict), less stake asymmetry and a better informed government act as ‘de-motivation’ devices for capturing real political authority.

Proposition 12 *For an equilibrium (E_1^*, E_2^*) , the probability π_2^* that SIG 2 —the high-stake group— captures the real authority over the choice of policies unambiguously decreases with conflict, i.e. $|\alpha|$; it decreases with stake asymmetry, i.e. β , when $\alpha \rightarrow -\infty$ (extreme conflict) and it increases with stake asymmetry when $\alpha \rightarrow 0$ (extreme consensus); and it increases with the government’s own information, i.e. e , when $\alpha \rightarrow \infty$ (extreme conflict).*

Proof. It follows from the sign of the total derivatives below:

$$\frac{d\pi_2^*}{d\alpha} = \frac{\partial\pi_2^*}{\partial\gamma} \frac{d\gamma}{d\alpha} > 0, \quad (62)$$

$$\frac{d\pi_2^*}{d\beta} = \frac{\partial\pi_2^*}{\partial\gamma} \frac{d\gamma}{d\beta} + \frac{\partial\pi_2^*}{\partial\lambda} \frac{d\lambda}{d\beta} \leq 0, \quad \lim_{\alpha \rightarrow -\infty} \frac{d\pi_2^*}{d\beta} < 0 \quad \text{and} \quad \lim_{\alpha \rightarrow 0} \frac{d\pi_2^*}{d\beta} > 0, \quad (63)$$

$$\frac{d\pi_2^*}{de} = \frac{\partial\pi_2^*}{\partial e} + \frac{\partial\pi_2^*}{\partial\gamma} \frac{d\gamma}{d\delta} \frac{d\delta}{de} + \frac{\partial\pi_2^*}{\partial\lambda} \frac{d\lambda}{de} \leq 0, \quad \lim_{\alpha \rightarrow -\infty} \frac{d\pi_2^*}{de} > 0. \quad (64)$$

■

Tables 7 and 8 provides a conflict/stake asymmetry matrix, and summarizes the effects for SIG one and SIG two of various degrees of conflict and stake asymmetry on their capture

of real authority. Three unambiguous results are worth to be underlined: weak conflict and stake asymmetry de-motivates SIG one —the low-stake group— in its information production efforts and the capture of real authority is therefore low; strong conflict and stake asymmetry increases SIG one’s motivation for producing information and leads to a high capture of real authority; strong conflict and stake asymmetry de-motivates SIG two —the high-stake group— in its information production efforts and the capture of real authority is therefore low.

Table 7: SIG one capture of real authority

(conflict, stake asymmetry)	weak	strong
weak	low real authority	ambiguous
strong	ambiguous	high real authority

Table 8: SIG two capture of real authority

(conflict, stake asymmetry)	weak	strong
weak	ambiguous	ambiguous
strong	ambiguous	low real authority

If one combines tables 7 and 8, it appears that the capture of real political authority by SIG one —the low-stake group— is the strongest when both the levels of conflict and stake asymmetry are high. This is provided that the government is unbiased (see the setting of the opposite case in the appendix). It thus shows the benefits of unbiased governance in countries where conflict and stake asymmetry are high, as this is the case in many developing countries.[¶] It makes also understand why in such countries there is an incentive for high-stake groups to bias governments so as to avoid a strong capture of real political authority by the low-stake groups.

4.3 Comparative statics of the lobby formation

Proposition 6 above implies the existence of a threshold value of α , labeled $\tilde{\alpha}(\beta, e)$, that separates one-sided lobbying equilibria from two-sided ones. This cut-off value is implicitly determined by the expression $\Delta_2 = 0$; it is expressed using $\tilde{\alpha}$ as a function of β and e . However it could be equally expressed using $\tilde{\beta}$ as a function of e and α , or \tilde{e} as a function of α and β .

[¶]One can assume that a higher recovery of political authority by the the low-stake group triggers a better overall economic performance for the country. Then a possible empirical investigation of this issue could consist in carrying out an econometric test in order to check, within a group of countries with high levels of conflict (e.g. ethnicity) and of stake asymmetry (e.g. inequality), whether or not the economic performance of a country (e.g. growth) is higher for countries with lower levels of bias (e.g. corruption) in governance.

The effects of a change in the parameter α on the threshold levels of stake asymmetry $\tilde{\beta}(\alpha, e)$ and of independent information in hands of the government $\tilde{e}(\alpha, \beta)$, such that $\Delta_2 = 0$, will be studied thereafter.

Applying the implicit function theorem, those effects are determined by

$$\frac{d\tilde{\beta}}{d\alpha} = -\frac{\frac{d\Delta_2}{d\alpha}}{\frac{d\Delta_2}{d\beta}}, \quad (65)$$

and

$$\frac{d\tilde{e}}{d\alpha} = -\frac{\frac{d\Delta_2}{d\alpha}}{\frac{d\Delta_2}{de}}. \quad (66)$$

Proposition 13 *Ceteris paribus, an increase in the level of conflict $|\alpha|$ decreases the threshold level of stake asymmetry $\tilde{\beta}(\alpha, e)$ above which low-stake one-sided lobbying arises when the level of conflict is high ($\alpha \rightarrow -\infty$), while it increases the threshold level of stake asymmetry above which low-stake one-sided lobbying arises when the level of conflict is low ($\alpha \rightarrow 0$).*

Proof. It follows from:

$$\lim_{\alpha \rightarrow -\infty} \frac{d\tilde{\beta}}{d\alpha} = \lim_{\alpha \rightarrow -\infty} -\frac{\frac{d\Delta_2}{d\alpha}}{\frac{d\Delta_2}{d\beta}} = \lim_{\alpha \rightarrow -\infty} -\frac{\frac{\partial\Delta_2}{\partial\alpha} + \frac{\partial\Delta_2}{\partial\gamma} \frac{d\gamma}{d\alpha}}{\frac{\partial\Delta_2}{\partial\beta} + \frac{\partial\Delta_2}{\partial\gamma} \frac{d\gamma}{d\beta} + \frac{\partial\Delta_2}{\partial\lambda} \frac{d\lambda}{d\beta}} > 0, \quad (67)$$

and

$$\lim_{\alpha \rightarrow 0} \frac{d\tilde{\beta}}{d\alpha} = \lim_{\alpha \rightarrow 0} -\frac{\frac{d\Delta_2}{d\alpha}}{\frac{d\Delta_2}{d\beta}} = \lim_{\alpha \rightarrow 0} -\frac{\frac{\partial\Delta_2}{\partial\alpha} + \frac{\partial\Delta_2}{\partial\gamma} \frac{d\gamma}{d\alpha}}{\frac{\partial\Delta_2}{\partial\beta} + \frac{\partial\Delta_2}{\partial\gamma} \frac{d\gamma}{d\beta} + \frac{\partial\Delta_2}{\partial\lambda} \frac{d\lambda}{d\beta}} < 0. \quad (68)$$

■

Proposition 14 *Ceteris paribus, an increase in the level of conflict $|\alpha|$ increases the threshold level of the government's own information $\tilde{e}(\alpha, \beta)$ above which low-stake one-sided lobbying arises when the conflict is high ($\alpha \rightarrow -\infty$).*

Proof. It follows from:

$$\lim_{\alpha \rightarrow -\infty} \frac{d\tilde{e}}{d\alpha} = \lim_{\alpha \rightarrow -\infty} -\frac{\frac{d\Delta_2}{d\alpha}}{\frac{d\Delta_2}{de}} = \lim_{\alpha \rightarrow -\infty} -\frac{\frac{\partial\Delta_2}{\partial\alpha} + \frac{\partial\Delta_2}{\partial\gamma} \frac{d\gamma}{d\alpha}}{\frac{\partial\Delta_2}{\partial e} + \frac{\partial\Delta_2}{\partial\gamma} \frac{d\gamma}{d\delta} \frac{d\delta}{de} + \frac{\partial\Delta_2}{\partial\lambda} \frac{d\lambda}{de}} < 0. \quad (69)$$

■

Provided that the level of conflict between SIGs is high enough, these results underline that the stronger capture of real political authority by the low-stake SIG due to one-sided lobbying can be further reinforced by an increased stake asymmetry or ignorance of the government.

5 Conclusion

The issue of informational capture of real political authority has been tackled using a model à la Aghion and Tirole where SIGs with conflicting interests and unequal stakes compete in information production. Efforts in information production are neither strategic substitutes nor strategic complements. While an increase in the high-stake group's efforts triggers an increase in the low-stake group's efforts, an increase in the low-stake group's efforts leads to a decrease in the high-stake group's efforts. For a sufficiently high level of conflicting interests between the two groups, the efforts of the high-stake group to capture political authority become useless due to the higher probability that the low-stake group gets a favorable hearing from the government. This has the consequence of reducing the return to information production, which dominates the effect of the higher stake. So the high-stake group prefers not to get organized into a lobby instead of producing useless efforts. The model also highlights that higher stake asymmetry or higher conflict act as a motivation device for the low-stake group, provided that the government is not biased towards the high-stake group. Finally, governments with high levels of independent information in their hands face less one-sided capture by the low-stake group.

In this framework, the transmission of verifiable information by SIGs to an imperfectly informed government is selective. The transmission of non-verifiable or biased information has not been examined so far, and is left to further research. However a first intuition can be provided on the way it can alter the results of the model developed above. One can imagine a model where part of the information transmitted to the government is verifiable and unbiased while another part is not verifiable or biased. Resources have to be spent in transmitting non-verifiable or biased information in addition to what is strictly needed to produce a certain amount of verifiable information. As a consequence, the high-stake group may face a less intensive competition from the low-stake group; and the level of conflict needed to trigger one-sided lobbying by the low-stake group is likely to become larger than in the case of pure verifiable and unbiased information.

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6 Appendix

6.1 New setting of the game for $\alpha_2 > \alpha_1$

One could be interested in modifying assumption 4 and have $\alpha_2 > \alpha_1$, i.e a government who is supposed to be biased towards the high-stake SIG 2. The stage-three information states and payoffs are thus as indicated in table 9.

Table 9: Stage-three information states and payoffs with $\alpha_2 > \alpha_1$

Info. state				Probability	Policy	Payoffs
1	2	G			choice	$(1, 2, G)$
–	–	y	e		G	$(\alpha_1, \alpha_2\beta, 1)$
y	y	n		$(1 - e)E_1E_2$	2	$(\alpha, \beta, \alpha_2)$
y	n	n		$(1 - e)E_1(1 - E_2)$	1	$(1, \alpha\beta, \alpha_1)$
n	y	n		$(1 - e)(1 - E_1)E_2$	2	$(\alpha, \beta, \alpha_2)$
n	n	n		$(1 - e)(1 - E_1)(1 - E_2)$	0	$(0, 0, 0)$

Using this new payoff structure, the game can be easily solved following the same steps as above.