Lobbying as Costly Persuasion with Legislative Subsidies

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Abstract

We develop a model of informational lobbying that combines costly persuasion with legislative subsidies. In contrast to other models of informational lobbying we focus on the implications of a policymaker’s and a lobby’s resource constraints for lobbying activities and the political process. Both a policymaker and a lobby can gather information, and each can either fund or subsidize a policy reform. We show that a lobby is more likely to persuade a policymaker to change her anticipated behavior of gathering information or choosing a policy, if the precision of the information signals received by the lobby is more asymmetric rather than better or if information costs are lower. We also show that a lobby is more likely to persuade critical to optimistic policymakers and more likely to support those financially. By varying resource endowments, we address whether costly persuasion and financial contributions as legislative subsidies are substitutes or complements in the lobbying process and derive the conditions for each. Additionally, we discuss the relationship between costly persuasion and financial information subsidies in the case of an entirely resource constrained policymaker. Our results point out additional difficulties to identify empirically the role of contributions as legislative subsidies which may appear as bribery and the shadow lobbying of interest groups.

Keywords: Lobbying, information collection, costly persuasion, legislative subsidies, resource constraints

JEL classification: D72, D78, D83.

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1 Introduction

Information gathering by policymakers, legislative staff members, and bureaucrats is one of the most important aspects of the political decision making process, and substantial resources are spent on such activities. Special interest groups also engage heavily in information gathering and share their findings with policymakers in the hope of influencing the policymaking process. Policymakers rely heavily on this source of information as a means of relaxing their own resource constraints. Consequently the lines between who searches for policy information and who financially supports policy changes has become fuzzy.

Economic models of special interest group influence fall into three categories. In one they offer campaign contributions and other resources that privately benefit a policymaker in exchange for policy favors. Many of these models follow the contest function or menu auction tradition and study how special interests optimally provide resources to decision-makers to obtain their desired policy outcomes — e.g., Tullock (1980), Bernheim and Whinston (1986), and Grossman and Helpman (1994). In a second category, special interest groups attempt to influence policymakers by offering a mix of private information and financial contributions, where the latter signal credibility or are used to gain a policymaker’s attention. Many of these models involve cheap talk games with partitioning equilibria, costly signaling, or access-conditional information provision — e.g., Crawford and Sobel (1982), Potters and van Winden (1992), Austen-Smith (1995, 1998), Lohmann

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1 For example, Congress has 535 members who employed in 2009 around 16,000 staff members, which implied on average 16 staffers per House member and 43 staffers per Senator (Petersen, Reynolds, and Wilhelm, 2010 and Nownes, 2013). The Congressional Budget Office (CBO) employs about 235 economic and other experts (CBO website). In addition, there are hundreds of experts in various government agencies who write reports or give testimonies.

2 For example, industry sponsorship of clinical trials by drug companies has been over $14 billion in 2003 with an increasing trend (Moses, Dorsey, Matheson, and Thier, 2005); there were more than 12,000 lobbyists registered under the Federal Lobbying Disclosure Act 1995 in 2012 who reported revenues of more than $3.3 billion excluding campaign contributions, which exceeded the $2 billion in campaign contributions during the presidential race (OpenSecrets.org, NYTimes.com). Baumgartner, Berry, Hojnacki, Kimball and Leech (2009) show that lobbyists are more likely to disseminate in-house research to policymakers rather external research.

3 For example, Lessig (2011) reports that Congress members spend up to 30 to 70 percent of their time for raising electoral campaign funds; though having substantial numbers of staffers there were 11,000 bills introduced in the 110th Congress and still more than 1,000 made it beyond their usual short shelf life (Nownes, 2013).

4 Common activities for both internal experts and special interest experts are legislative testimonies. A very common legislative subsidy is legislative drafting (Baumgartner, Berry, Hojnacki, Kimball and Leech, 2009 and Nownes, 2013) and refers to the practice of lobbyists to actually write the bill proposal that is distributed to other Congress members and submitted to the Congressional Record. For example, lobbyists employed by Genentech, a Roche subsidiary, and two law firms provided talking points to 42 House members, equally distributed across both parties, who submitted them with minor to no changes to the Congressional Record (Pear, 2009). Similarly, lobbyists of Citigroup proposed language for financial regulation to the House Financial Services Committee which turned into a bill of 85 lines with 70 lines and two crucial paragraphs provided by Citigroup. Though copying the two crucial paragraphs, lawmakers changed two words in them for proper grammar (Lipton and Protess, 2013).

(1995), and Bennedsen and Feldmann (2002). In a third, more recent category, policymakers are resource and time constraint to address all issues, and rely on lobbyists with whom they either share preferences, or who are not directly affected by policy choices but can be appropriately incented, to supply resources and information – e.g., Hall and Deardoff (2006) and Groll and Ellis (2014a,b). These models focus on strategic subsidies by lobbies that relax a policymaker’s resource constraint or on commercial lobbyists who act formally on behalf of citizen-clients but whose economic success depends on providing a mix of resources desired by a policymaker in exchange for political access and which is essentially sold to clients.

In this paper we merge the second and third of these approaches and develop an informational lobbying model that captures both the notions of costly persuasion by lobbies and legislative subsidies. We incorporate the observations that both policymakers and lobbies gather information and that both can be actively involved in the process of policy changes. We distinguish between resources expended for gathering policy relevant information and those expended for implementing policy reform. The former usually takes the forms of writing internal and external research reports, conducting constituency surveys, and obtaining public testimonies. The latter usually involves the costs of legislative drafting, gaining majorities, and following institutional protocols.

Our analysis focuses on costly persuasion by a lobby rather than costly signaling, and on leg-

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6Recent empirical work supports the notion of cooperative partnerships between lobbyists and policymakers. Blanes i Vidal, Draca and Fons-Rosen (2012) focus on the importance of personal relationships between lobbyists and policymakers by analyzing the “revolving door” phenomenon in which politicians and staff members become lobbyists during their careers. They emphasize connections through common work experience that also overlaps in their party membership. Bertrand, Bombardini, and Trebbi (2014) show that lobbyists, measured by campaign donations and reported policy issues, follow their political contacts and change their political work issues when those contacts change offices or committee assignments and political issues. Kerr, Lincoln, and Mishra (2013) focus on lobbying activities by corporations and show that there is a persistence in the set of corporations involved in lobbying on immigration. Empirical work by Krozner and Stratmann (1998) focus more on the first view that interest groups purchase favors but their argument rests on repeated coorperations as the committee system in Congress provides an environment that facilitates repeated interactions and reputation building between special interest groups and politicians. The committee structure and the repeated interactions enable the construction of informal agreements of legislative support in return for campaign contributions in the absence of legal contracts.

7Currently ongoing work by Cotton and Dellis (2014) attempts a similar task but focuses on the agenda distortions that may arise when two lobbies compete for a policymaker’s limited attention. In their model the policymaker’s resource constraint is binding and cannot be relaxed by a legislative subsidy.

8For example, Mello, Abiola, and Colgrove (2012) provide a case study of Merck’s role in the policymaking process of introducing and mandating papillomavirus vaccination. Merck promoted school-entry mandated legislation by providing information, lobbying policymakers, drafting legislation, mobilizing female legislators and physicians, conducting marketing campaigns, and filling gaps in vaccination provision. Though there was concern about Merck’s large involvement, policymakers relied mostly on Merck’s efforts.

9Another common kind of information gathering and legislative subsidy is the provision of internal or external staff by interest groups. It is not even uncommon that special interests or firms “loan” their own employees to public agencies who then participate with substantial access in daily affairs. The phenomenon is referred to “national experts” who are sent by member states and are either public servants or interest representatives in the European Union or “Leihbeamt“ (borrowed public servants) in Germany (Bank, 2008 and Gathmann and Weisensee, 2007). The latter practice has received severe public concern and agencies changed their practices of using external employees as de facto internal staffers.
islative subsidies rather than the exchange of money for policy. We have chosen this framework for two reasons: Firstly, it captures the actual institutional features of lobbying and the policymaking process, and secondly, it allows us to focus the role of resource constraints in determining whether the activities of lobbies and policymakers are substitutes or complements. It is widely observed that policymakers spend substantial amounts of their own resources on information gathering, which could involve generating new information or validating claims made by lobbies. Most claims that are presented by special interests can either be validated immediately by second opinions, or their veracity may be observed over time. Furthermore, lobbyists report that expertise combined with transparency are required to gain them the credibility needed to obtain access policymakers.10

We also focus on legislative subsidies, rather than campaign contributions as bribes, because the latter are only occasionally observed and are relatively small in magnitude. There is little empirical evidence that special interest groups have been able capture the political process via donations. Indeed, it has been pointed out that most contributions come from individual donors and specific demographics rather than organized special interest groups (Ansolabehere, de Figueiredo, and Snyder, 2003). What is more, as Tullock (1972) points out, the amounts spent to capture rents do not seem to come close to matching the potential gains. Assuming that a large amount of rents could be extracted via political influence, one may wonder why campaign contributions are relatively low. This may be because of a Bertrand competition amongst policymakers, policymakers who are imperfectly informed about potential rents, or policymakers who see contributions more as political support rather than a source of income.11,12

We do not claim that money does not play a distortionary role in the policy process but rather that it’s role is different from the simple cash for favors view. Most of observed resource expenditures are for information gathering, lobbying efforts, and policy changes rather than campaign contributions. Our objective is to focus on resource constraints and strategic legislative subsidies

10 Even information that is publicly available or costlessly verifiable can be of interest to policymakers as lobbyists “analyze, synthesize, and summarize - in a politically user-friendly form, information to promote the policy goals that their group and the legislator share” (Hall and Deardoff, 2006). McGrath (2006) reports interviews with 60 lobbyists active in Washington, Brussels, or London and points out that honesty is one of the key characteristics of a successful lobbyist. As one lobbyist describes it in an interview, “if you don’t tell the truth, you are finished, and will never be listened to or trusted again.” Or, more drastically by another lobbyist, “if you ever mislead an official – even once – you are basically out of business.”

11 The role of money in other democracies is even smaller because of publicly financed electoral competition, spending constraints, alternative party finances, or a larger role of the bureaucracy in political decisions. Though substantial lobbying efforts and resource expenditures by special interests are taking place in London, Paris, Berlin, and Brussels.

12 Note that increasing expenditures for electoral campaigns require more fund raising efforts, which reduce policymakers’ resources for other tasks. Hence, observed campaign contributions can be also seen as legislative support as they would relax the policymaker’s budget constraint and allow the policymaker to return her attention to politics.
in an environment of costly persuasion and independent information gathering. Our informational lobbying assumption is optimistic as we want to focus on the specific distortions arising from persuasion and legislative subsidies rather than other well-documented distortions arising from strategic information transmission and resources for policy favors. In our current analysis we address three main focus points: Firstly, we want to derive the conditions under which a lobby engages in costly persuasion and legislative subsidies and under which a policymaker relies partially or fully on the lobby’s efforts in her policy making process. Secondly, we want to focus on how various resource constraints and initial policy beliefs determine whether persuasion and legislative support are substitutes or complements in the lobbying process. Thirdly, we focus on conditions under which legislative subsidies may appear to the public or empiricist as resources for policy favors though the lobby’s role can be explained by shared efforts in gathering information and implementing a policy change.

We develop and analyze a model of informational lobbying that combines various features of observed lobbying activities and the political process. In our baseline model a policymaker with state-dependent preferences has a budget that can be used for gathering own information and implementing her desired policies. However, we also allow for costly persuasion and legislative subsidies by a lobby with state-independent preferences. We derive the conditions under which a lobby would engage in costly persuasion and legislative support, and then we focus on how the policymaker’s and lobby’s behavior changes as we consider various distributions of resource endowments. By constraining the policymaker’s and lobby’s endowments and abilities to engage in political activities, we identify the conditions under which financial contributions as legislative subsidies and costly persuasion are substitutes or complements. We show that a lobby attempts to persuade a policymaker who is either skeptical or negatively convinced and provides legislative subsidies to resource constrained policymakers who are ex ante, before any information gathering, are either negatively convinced, skeptical, or positively convinced that a lobby’s favored reform is beneficial. This is different to many other models in which special interests only lobby and provide legislative subsidies to their “friends”. A policymaker’s change in beliefs based on own or a lobby’s information, and potentially stated opinions, may appear as political capture or bribery by special interests if only legislative subsidies are observed.
1.1 Other Related Literature

Our paper is also related to the extensive literature on informational lobbying with and without financial contributions. One strand of information lobbying models focuses on either cheap talk or costly signaling, or a combination of both, where a lobby possesses private information that it may want to convey to a policymaker who has no access to own information – e.g., Crawford and Sobel (1982), Potters and van Winden (1992), Austen-Smith (1994). The features of our model differ as we allow the policymaker to gather own information, assume that the lobby’s gathered information is observable, and focus on the role of contributions as legislative subsidy rather than as costly signaling.

Our analysis is also related to the lobbying literature on the joint provision of information and financial resources. In one strand, special interests use contributions to gain access to a policymaker that allows them to present either unverifiable or verifiable information – e.g., Lohmann (1995), Austen-Smith (1995, 1998), and Cotton (2009, 2012) – and both instruments are complements in the lobbying process. In another stream, special interests possess access, but realize that verifiable information may harm their cause and contributions serve as substitute – e.g., Bennedsen and Feldmann (2006) and Dahm and Porteiro (2008a, b). In our analysis, lobbyists have access to a policymaker but we derive the nature of contributions as a substitute or complement based on the distribution of beliefs and resources.

Our analysis also captures the observed notion that policymakers are time and resource constrained and cannot address all political issues. Hall and Deardoff (2006) focus on interest groups’ incentives to provide legislative subsidies to ideologically aligned policymakers. Their approach is centered on preferences, whereas our analysis is resource centered. Alliances between policymakers and lobbies arise endogenously and follow informational beliefs about the state of the world. We show that lobbies do not necessarily lobby and support policymakers who are sympathetic to their cause but target especially skeptical policymakers with their persuasion and provide legislative subsidies to a variety of policymakers.

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13In Krishna and Morgan (2001) the behavior of a single and multiple biased experts with private information who advise in imperfectly informed decision-maker is analyzed. Latter show that the decision-maker facing such a set-up would want to consult multiple competing biased interests to gain a finer information partition equilibrium.

14Our information assumption of persuasion with publicly observable information is similar to Kamenica and Gentzkow (2011) and Gentzkow and Kamenica (2014) except that here the policymaker can search for own information, and we also incorporate legislative subsidies for policy changes. Milgrom and Roberts (1986) focus on interest groups that can gather verifiable information and enable the policymaker to observe their search effort. Interest groups find it in their best interest to disseminate any favorable information as a policymaker would infer that an interest group not reporting any information is withholding unfavorable information.

15How policymakers’ time constraints affect the incentives of lobbyists acting as intermediaries providing informa-
1.2 Outline

The rest of this paper is organized as follows. Section 2 presents the model of informational lobbying with one lobby. Section 3 provides the characterization of equilibria with various resource constraints. Section 4 discusses the preliminary results and concludes. The details of all derivations and proofs may be found in the Appendix.

2 Model

In this section we set up a simple model of informational lobbying that provides the basis for our analysis of the strategic interactions between a policymaker and lobbies, which arise as a consequence of the initial distribution of resources for lobbies and a policymaker. To be specific, consider a policymaker, $p$, and for now one lobbyist, $l$. The lobby advocates on own behalf for a policy matter, and the policymaker has to decide whether to keep the matter’s status quo, $s$, or implement a reform, $r$, which is simply $\pi \in \{\pi^s, \pi^r\}$. The policymaker’s payoff depends on the action she chooses and an unknown state of the world, $\theta$, which either calls for the status quo or a reform – i.e., $\theta \in \{\theta^s, \theta^r\}$. Her state-dependent payoff is described by 1 if her action corresponds to the state of the world and 0 otherwise. The policymaker attaches some weight to the policy matter, $\alpha$, which is simply the policy salience of that matter. The lobby’s payoff is state-independent and depends exclusively on the policymaker’s action – i.e., the lobby receives a payoff of 1 if the policymaker implements a reform and 0 otherwise.

Before making a policy action, the policymaker can use own resources, $y^p$, to gather information about the policy matter at a fixed cost of $e^p > 0$ and to implement a reform at a fixed cost of $c > 0$. Keeping the status quo is costless. We assume $\alpha > c$ and $\alpha > e^p$ as to be the interesting cases. The lobby has an endowment, $y^l$, too, that can be used for gathering information at a fixed cost of $e^l > 0$ and for making a variable contribution to the policymaker, $\tau \geq 0$, which may then relax the policymaker’s budget constraint. These elements capture costly information collection by both the lobby and the policymaker and costly policy changes and legislative subsidies.

Employing the payoffs and budget constraints above, the policymaker maximizes information and contributions is analyzed in Groll and Ellis (2014a,b). They argue that scarce political access shifts the incentives and rewards from lobbyist’s clients to political access. It contrasts Dewatripont and Tirole (1999) who focus on advocates of special interests who are incented by the decision-based rewards from clients.

We will use the words lobby and lobbyist interchangeably.
\[ E[U^p(\pi, \theta)] + y^p + \tau - e^p - c, \]  

(2.1)

and the lobbyist maximizes

\[ E[U^l(\pi, \theta)] + y^l - e^l - \tau. \]  

(2.2)

The policymaker’s and lobby’s expected payoffs depend on their prior beliefs about the state of the world and the information signals they receive from their information searches. The prior common belief is the likelihood that a reform, given the state of world, is desirable, which we express as \( \lambda = Pr[\theta = \theta^r] \) and assume \( 0 \leq \lambda \leq 0 \). The complimentary likelihood that the status quo is desirable is \( 1 - \lambda = Pr[\theta = \theta^s] \).

The policymaker and lobby can conduct independent information searches that generate signal \( z \) and \( x \), respectively. Each signal is binary and correlated with the state of the world and signals whether a reform might be desirable or not – i.e., \( x \in \{x^r, x^s\} \) and \( z \in \{z^r, z^s\} \). The conditional beliefs, based on the common prior belief and any publicly observed signals, are then \( \lambda(x, z) = Pr[\theta = \theta^r|x, z] \). The information signals are noisy but informative, meaning that the policymaker’s and lobby’s information searches are improving policy relevant information and that correct signals are more likely than wrong signals. We denote the signal functions as \( Pr[x = x^r|\theta^r] = \epsilon^l \), \( Pr[z = z^r|\theta^r] = \epsilon^p \), \( Pr[x = x^s|\theta^s] = \eta^l \), and \( Pr[z = z^s|\theta^s] = \eta^p \) with \( \epsilon^k, \eta^k \in (\frac{1}{2}, 1) \) with \( k = l, p \). The corresponding expected signals for the lobby can be then written as

\[
x^r(\lambda) = \epsilon^l \lambda + (1 - \eta^l)(1 - \lambda)
\]

(2.3)

\[
and x^s(\lambda) = \eta^p(1 - \lambda^l) + (1 - \epsilon^p)\lambda^l
\]

(2.4)

and similarly for the policymaker as

\[
z^r(\lambda^l) = \epsilon^p \lambda^l + (1 - \eta^p)(1 - \lambda^l)
\]

(2.5)

\[
and z^s(\lambda^l) = \eta^p(1 - \lambda^l) + (1 - \epsilon^p)\lambda^l,
\]

(2.6)

where \( \lambda^l \) reflects the policymaker’s prior and lobby’s posterior belief and reflects the sequence of play in which policymakers would update after a potential update by the lobby. This structure characterizes costly persuasion and the policymaker’s ability to search for independent information.
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<td>lobby chooses ( {0,el} )</td>
<td>policymaker observes ( x ), updates prior</td>
<td>policymaker chooses ( {0, e^p} )</td>
<td>lobby observes ( z ), policymaker updates prior, chooses ( \tau )</td>
<td>policymaker updates prior, chooses ( \pi )</td>
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Figure 1: Sequence of Play.

The sequence of play, which is illustrated in figure 1, is the following.\(^{17}\) The lobbyist chooses whether to generate a costly signal \( x \). The policymaker observes the lobby’s signal and makes an appropriate inference. The policymaker then chooses whether to gather costly information and generate a publicly observable signal \( z \). The lobby observes the signal, forms an appropriate inference, and chooses a contribution amount. Finally, the policymaker updates her prior beliefs with any information signals and chooses her policy action \( \pi \). The game is solved backwards for the *Perfect Bayesian Equilibrium*.

### 3 Equilibrium

In this section we describe the policymaker’s policy choice, the lobby’s contribution, as well as the policymaker’s and lobby’s information gathering. We incorporate in our analysis of these choices various cases of resource constraints. We focus on cases in which the policymaker may or may not be resource constrained and the lobby may or may not be resource constrained. We start with the situation in which neither policymaker nor lobby are resource constrained and can choose their updating, contribution, and implementation choices freely. We then gradually relax this assumption.

#### 3.1 Resource Constraints Do Not Bind

Here we consider the play between a lobby and a policymaker when only information transmission occurs as financial transfers are not needed to relax the policymaker’s budget constraint. The focus is on the lobbyist’s potential persuasion to increase the likelihood of a policy reform. Mathematically, we describe the policymaker’s and lobby’s resource constraint as \( y^p \geq e^p + c \) and \( y^l \geq e^l + c \).\(^{18}\) Figures 8 and 9 in the appendix illustrate the game of interest.

\(^{17}\)Figures 8 and 9 in the appendix provide an extensive form illustration.

\(^{18}\)For this case and its equilibrium outcomes it would make no difference to constrain the lobby’s resource constraint to \( e^l \leq y^l < e^l + c \).
### 3.1.1 Policy Choice and Contributions

The policymaker may choose either to keep the status quo or to implement a reform, and the decision follows from the policymaker’s expected payoffs. The policymaker implements a reform if the expected payoff from a reform exceeds the expected payoff from keeping the status quo. A reform is therefore implemented if

$$y^p + \lambda^p(.)\alpha + \tau - e^p - c \geq y^p + (1 - \lambda^p(.))\alpha + \tau - e^p$$ (3.1)

where $\lambda^p(.)$ is the policymaker’s posterior belief after any potential information signals, which could be either the common prior belief or a conditional belief based on observed information signals. Because of sunk costs the choice reduces to

$$\lambda^p(.) \geq \frac{1}{2} + \frac{c}{2\alpha} \equiv \lambda^*$$ (3.2)

and defines the threshold belief for which the policymaker chooses reform. The policymaker’s decision is determined by her prior or conditional belief, a reform’s implementation cost, which makes a reform less likely, and the policymaker’s policy salience, which increases the likelihood of reform.

Given that the policymaker has sufficient resources for both an information update and an implementation, we can skip the contribution stage that would otherwise relax the policymaker’s binding budget constraint. In other words, the lobby does not contribute and therefore $\tau^* = 0$.

### 3.1.2 Policymaker’s Updating Choice

The policymaker’s prior belief is the lobbyist’s posterior belief at this stage. The prior is therefore either $\lambda^i(x, \lambda) = Pr[\theta = \theta^i|x, \lambda]$ if the lobbyist generated an information signal or $\lambda^i(0, \lambda) = \lambda$ if the lobby did not update. The policymaker’s expected signals for an information update, $x^r(\lambda^i)$ and $x^s(\lambda^i)$, have been defined in (2.5) and (2.6). The updated probabilities given the information signals using Bayes’ rule are

$$\lambda^p(z^r) = \frac{e^p\lambda^i}{e^p\lambda^i + (1 - e^p)(1 - \lambda^i)}$$ (3.3)

and

$$\lambda^p(z^s) = \frac{\eta^p(1 - \lambda^i)}{\eta^p(1 - \lambda^i) + (1 - e^p)\lambda^i}.$$ (3.4)
Given the policymaker’s prior belief and her information search opportunity, a policymaker may never update and reform, may never update but reform, or may update and make the decision dependent on the observed policymaker’s signal. Note first that a policymaker would never choose update and reform if \( \lambda(z^r, \lambda^l) < \lambda^* \), which would imply that even a positive information signal would not convince her, and would never update and always reform if \( \lambda(z^s, \lambda^l) > \lambda^* \), which would imply that even a negative information signal would not change her policy action. We refer to these cases as _negatively convinced_ and _positively convinced_, respectively. So we are only interested in the cases where updating matters. The two interesting cases are when i) a policymaker would keep the status quo if there were no positive information signal, \( \lambda(z^r, \lambda^l) \geq \lambda^* \geq \lambda^l \geq \lambda(z^s, \lambda^l) \), and ii) she would reform in the absence of an information signal, \( \lambda(z^s, \lambda^l) \geq \lambda^l \geq \lambda^* \geq \lambda(z^s, \lambda^l) \). We refer to these two cases as _skeptical_ and _optimistic_ priors, respectively. We illustrate the four cases and the respective thresholds in figure 2. Now suppose the lobby did not update and therefore \( \lambda^l = \lambda \); we also write \( \lambda(z^j, \lambda^l) = \lambda(z^j) \) for \( j = r, s \) to save notation.

For the first case a policymaker would only reform if there is a positive signal for her information search. The choice for updating depends on the expected pay-off from a costly search with uncertain outcome and an uncertain reform and the costless status quo as certain alternative. The decision for an update follows therefore from

\[
z^r(\lambda) \left[ y^{p} - e^{p} - c + \lambda(z^r)\alpha \right] + z^s(\lambda) \left[ y^{p} - e^{p}(1 - \lambda(z^s))\alpha \right] \geq y^{p} + (1 - \lambda)\alpha.
\]

Applying the probabilities for each information signal described in (2.5) and (2.6), the updating choice reduces to

\[
\lambda \geq \frac{\alpha + e^{p} + c(1 - \eta^{p})}{2\alpha + c(1 - \eta^{p} - e^{p})} \equiv \lambda 
\]

and defines the lower bound for the policymaker’s belief for an update.

The upper bound for the policymaker’s updating choice follows from the case in which the policymaker would implement a reform in the absence of an information search. The updating
Figure 3: Policymaker’s Updating Choice and Policy Action.

choice follows here from the expected payoff with an update and uncertain reform outcome and a certain reform with no costly updating. The updating decision follows then from

\[
    z^r(\lambda) [y^p - \epsilon^p - c + \lambda(z^r)\alpha] + z^s(\lambda) [y^p - \epsilon^p + (1 - \lambda(z^s))\alpha] \geq y^p - c + \lambda\alpha. \tag{3.7}
\]

Again, applying the defined signal probabilities, the updating choice reduces to

\[
    \lambda < \left( \frac{1}{\eta^p + \epsilon^p - 1} \right) \left( \eta^p - \frac{\epsilon^p}{c} \right) \equiv \bar{\lambda} \tag{3.8}
\]

and defines the upper updating bound. Note that the policymaker never chooses to update if \( \epsilon^p \geq c\eta^p \) since the right hand side of the updating condition would then be negative, which follows from our earlier assumptions of \( \epsilon^p > \frac{1}{2} \) and \( \eta^p > \frac{1}{2} \).

**Lemma 1.** A policymaker’s updating choice requires that \( \underline{\lambda} \leq \bar{\lambda} \), which implies \((\alpha + c)(\epsilon^p + \eta^p - 1) \leq 2\alpha (\eta^p - \frac{\epsilon^p}{c})\).

A policymaker is more likely to gather independent information if the policy salience compared the reform cost is high, greater \( \alpha/c \), the policymaker’s information cost is relatively low to the reform cost, smaller \( \epsilon^p/c \), and the policymaker’s information signals are relatively noisy, intermediate \( \epsilon^p \) and \( \eta^p \).

We can illustrate the policymaker’s updating choice with figure 3. We can characterize the policymaker’s updating choice by the following.

**Proposition 1.** A policymaker is more likely to update if her cost of information gathering is low, her policy salience is high, and her reform signal is noisier and less informative. The cost of reform

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\( ^{19} \)For existence, consider \( \epsilon^p = 0.1, c = 0.25, \alpha = 0.7, \epsilon^p = 0.65, \) and \( \eta^p \) which result in \( \underline{\lambda} \approx 0.657, \lambda^* = 0.679, \) and \( \bar{\lambda} \approx 0.833. \) For other cases, see the supplemental .nb file online.
and the noise of her status quo signal have ambiguous effects on the thresholds. Mathematically, we have

$$\lambda = \lambda \left( \begin{array}{ccccc} e^p & + & c & + & \alpha^p & + \\ + & + & + & + & \eta^p & + \\ \end{array} \right) \quad \text{and} \quad \bar{\lambda} = \lambda \left( \begin{array}{ccccc} e^p & - & c & + & \alpha^p & + \\ - & + & + & + & \eta^p & + \\ \end{array} \right). \quad (3.9)$$

The signs under the variables indicate the direction of the comparative statics effects for the two updating thresholds. If the cost of information gathering, $e^p$, increases, then a policymaker hesitates to costly update and will be more likely to make her policy decision based on her prior beliefs without an update. This implies that a skeptical policymaker with a prior belief marginal to the threshold $\lambda$ does not find an update beneficial anymore and becomes negatively convinced. On the other hand, an optimistic policymaker with a prior belief marginal to $\bar{\lambda}$ does not gain sufficiently from an update and becomes positively convinced that an immediate reform without an update is best. The same holds for an informative but noisy reform signal. If the reform signal is less noisy and more informative, a greater $e^p$, then the policymaker’s range of beliefs for information gathering shrinks.

A greater policymaker’s policy salience, $\alpha$, makes a negatively convinced policymaker marginal to $\lambda$ more likely to gather information as the policy becomes more important to her. More interesting is that neither an optimistic nor a positively convinced policymaker respond to a change in the policy salience. First intuition may say that a positively convinced policymaker should be more careful with an immediate reform if policy stakes are rising. However, the policymaker with a belief marginal to $\bar{\lambda}$ would be still optimistic enough to reform even without an update. Hence, there is no additional gain for her from an update as policy salience rises.

The effects of the cost of reform affect the thresholds ambiguously. A greater reform cost, $c$, makes a skeptical policymaker marginal to $\bar{\lambda}$ more likely to become negatively convinced that an update is not beneficial. An update, and a potential positive signal which would imply a reform, would not convince a policymaker sufficiently ex ante to undertake an update and bear a costlier reform in expected terms. On the other hand, a positively convinced policymaker re-evaluates her immediate reform choice and starts to gather information because of a costlier reform. Overall, the updating range shrinks at $\lambda$ but expands at $\bar{\lambda}$, which overall implies that the policymaker is becoming more conservative in her updating and reform choices.

The effects of the noise and informativeness of the status quo signal depend on $e^p + ce^p \geq \alpha$. 

13
for $\Lambda$ and $e^p \geq \epsilon(1 - e^p)$ for $\bar{\lambda}$.\(^{20}\) For the lower updating bound a less noisy and more informative status quo signal, a greater $\eta^p$, makes the signal less valuable if the information cost and a costly reform following a precise reform signal exceed the policymaker’s salience. As a result, a skeptical policymaker with a prior marginal to $\Lambda$ becomes pessimistic as a more precise status quo signal – and therefore less noise and chance – supports her skeptical prior belief. On the other hand, if the policymaker’s salience exceeds the information cost and potential reform cost, then a more precise status quo signal becomes more valuable, and a negatively convinced policymaker with a prior marginal to $\bar{\lambda}$ starts to gather information.

For the upper bound a less noisy and more informative status quo signal, a greater $\eta^p$, makes an update more valuable to a positively convinced policymaker as a status quo signal would challenge her prior belief much more. This holds if the cost of information exceeds the cost of reform following a noisier reform signal. On the other hand, a more precise status quo signal is less valuable to an optimistic policymaker if the cost of reform following a noisier reform signal exceeds the information cost. This implies that an optimistic policymaker marginal to $\bar{\lambda}$ becomes positively convinced that an update is not necessary and an immediate reform desirable.

In the next step we discuss the lobby’s updating choice that affects the previously discussed prior beliefs, updating choices, and policy actions of a policymaker.

### 3.1.3 Lobby’s Updating Choice

Given the policymaker’s potential choices described above we focus now on the conditions under which the lobbyist would spend resources to persuade the policymaker to change her, by the lobbyist ex ante anticipated, actions.

In the current setting with not binding resource constraints we focus on the lobby’s costly persuasion with information transfers. For the conditions of costly persuasion we need to compute the lobbyist’s expected payoffs when they create a publicly observable information signal and when the lobby does not. If the lobby updates, then the probabilities of signals $x^r$ and $x^s$ are the ones defined in (2.3) and (2.4). The updated probabilities given the signals are

\[
\lambda^l(x^r) = \frac{\epsilon^l \lambda}{\epsilon^l \lambda + (1 - \eta^l)(1 - \lambda)},
\]

and

\[
\lambda^l(x^s) = \frac{\eta^l(1 - \lambda)}{\eta^l(1 - \lambda) + (1 - \eta^l)\lambda},
\]

\(^{20}\)For the derivation see (A.7).
which are structurally similar to (3.3) and (3.4). Note that these updated probabilities are potentially the policymaker’s priors used in the previous section. Using the notation \( \lambda(x^j, z^m) \) with \( j, m = r, s \) to indicate beliefs given the history of observable signals, we can describe the policymaker’s posteriors given all information signals as

\[
\lambda(x^j, z^r) = \frac{e^p \lambda^l(x^j)}{e^p \lambda^l(x^j) + (1 - \eta^p)(1 - \lambda^l(x^j))} \quad (3.12)
\]

\[
\lambda(x^j, z^s) = \frac{\eta^p (1 - \lambda^l(x^j))}{\eta^p(1 - \lambda^l(x^j)) + (1 - e^p)\lambda^l(x^j)} \quad \text{for } j = r, s. \quad (3.13)
\]

The corresponding policymaker’s expected signals conditional on the lobby’s observed information signal are

\[
z^r(\lambda(x^j)) = e^p \lambda^l(x^j) + (1 - \eta^p)(1 - \lambda^l(x^j)) \quad (3.14)
\]

\[
z^s(\lambda(x^j)) = \eta^p(1 - \lambda^l(x^j)) + (1 - e^p)\lambda^l(x^j) \quad \text{for } j = r, s. \quad (3.15)
\]

**No Updating**  We already know that if \( \lambda(x^j, z^r) \) and \( \lambda(x^j, z^s) \) are the policymaker’s posteriors, then the policymaker will either choose i) never update or reform, ii) never update but reform, or iii) update and choose based on her information signal. Focusing on the lobbyist’s updating choice and the policymaker’s prior belief, the policymaker will never choose update or reform if \( \lambda^* > \lambda(x^r, z^r) \). Even the most optimistic information signals will not convince a policymaker to implement a reform. Using (3.2) and (3.12), this is the case if

\[
\frac{(1 - \eta^p)(1 - \eta^l)(1 - \lambda)}{e^p \lambda^l} > \frac{\alpha - c}{\alpha + c}. \quad (3.16)
\]

Hence, neither the lobbyist nor the policymaker will choose to update and there is no possibility of a reform. In the second case neither the lobbyist nor the policymaker will choose update and the policymaker will always choose reform if \( \lambda^* \leq \lambda(x^s, z^s) \), which implies using (3.2) and (3.13)

\[
\frac{\alpha - c}{\alpha + c} \geq \frac{(1 - e^p)\eta^l(1 - \lambda)}{\eta^p(1 - e^l)\lambda}. \quad (3.17)
\]

In other words, there will always be a reform because even the most pessimistic information signals cannot push the likelihood of the state being reform low enough to keep the status quo and convince the policymaker of keeping the status quo.

We now consider the interesting cases in which the lobby faces following questions. Can the
lobby induce the policymaker to change her updating and implementation choices, and does the lobby want to given the cost? In the following we discuss the conditions under which a lobbyist can induce a change in the policymaker’s expected behavior with positive probability. The lobbyist only updates if a reform signal can either change the reform likelihood from zero to some positive probability or change it from some positive probability to a greater probability.

**Status Quo without Policymaker Updating** We have seen before that the policymaker has two alternatives to updating and choosing a policy action conditional on the information signal. She either keeps the status quo without an information search or implements a reform without further information. We identify the conditions under which a lobbyist induces such a trade-off by purchasing an information signal $x$. If the policymaker’s updating alternative is status quo with certainty, then there are three cases of interest. We can have either that the policymaker only updates, $\lambda(0, z^r) \geq \lambda^* \geq \lambda \geq \lambda(0, z^s)$, the policymaker updates only after observing a status quo signal from the lobby’s search, $\lambda(x^s, z^r) \geq \lambda^* \geq \lambda^l(x^s) \geq \lambda(x^r, z^s)$, or the policymaker only updates after observing a reform signal from the lobby’s investigation, $\lambda(x^s, z^r) \geq \lambda^* \geq \lambda^l(x^r) \geq \lambda(x^r, z^s)$. We can summarize the three cases by $\lambda(x^j, z^r) \geq \lambda^* \geq \lambda^l(x^j) \geq \lambda(x^j, z^s)$ with $x^j \in \{0, x^r, x^s\}$.

**Reform without Policymaker Updating** In contrast a policymaker may choose between an investigation and a policy action based on the information signal or an immediate reform. The question is whether a lobbyist induces such a trade-off by purchasing an information signal. Again, we can have either that the policymaker only updates, $\lambda(0, z^r) \geq \lambda^* \geq \lambda \geq \lambda(0, z^s)$, the policymaker updates only after observing a status quo signal from the lobby’s search, $\lambda(x^s, z^r) \geq \lambda^* \geq \lambda^l(x^s) \geq \lambda(x^r, z^s)$, or the policymaker only updates after observing a reform signal from the lobby’s investigation, $\lambda(x^s, z^r) \geq \lambda^* \geq \lambda^l(x^r) \geq \lambda(x^r, z^s)$. We can summarize the three cases by $\lambda(x^j, z^r) \geq \lambda^* \geq \lambda^l(x^r) \geq \lambda(x^j, z^s)$ with $x^j \in \{0, x^r, x^s\}$.

**Solutions with Lobbyist Updating** Considering the two cases above, we can focus on $\lambda(x^j, z^r) \geq \{\lambda^*, \lambda^l\} \geq \lambda(x^j, z^s)$ with $x^j \in \{0, x^r, x^s\}$ and a policymaker’s update if $\lambda < \lambda^l(.) < \lambda^*$. A lobbyist will only update if it would change the policymaker’s behavior with some probability and if it would be beneficial given the cost of the information signal. We focus now on two major cases and their subcases. First, we derive the conditions under which a lobbyist would update to induce an inactive policymaker who would neither update nor reform to undertake an update or reform. In
other words, a lobby’s reform signal would induce the policymaker to become politically engaged – either by updating or reforming. Second, we focus on the case in which a lobbyist can induce a policymaker, who is expected to update, to implement a reform without an own search. All four cases are illustrated in Figure 4.

Suppose a policymaker is sufficiently pessimistic that a reform is undesirable and would not even update. A lobby may find it worthwhile to purchase an information signal to persuade the policymaker to undertake a search – i.e., \( \lambda \leq \lambda \leq \lambda(x^r) \leq \bar{\lambda} \) – or to induce an immediate reform – i.e., \( \lambda \leq \lambda \leq \bar{\lambda} \leq \lambda(x^r) \). For the first case the lobby’s trade-off is between no update and status quo with certainty and an update and a reform with some positive likelihood. A reform would only take place if the lobby receives a reform signal inducing the policymaker to update and the policymaker would receive a reform signal as well. The lobbyist finds it beneficial to update if

\[
x^r(\lambda)z^r(\lambda(x^r)) \geq e^l,
\]

which implies, using (2.3) and (3.14), that

\[
e^p e^l \lambda + (1 - \eta^p)(1 - \eta^l)(1 - \lambda) \geq e^l.
\]

Hence, a lobbyist is more likely to update with a chance the policymaker updating her own beliefs i) the less noisy and more informative both the lobby’s and policymaker’s reform signals, ii) the noisier and less informative both the lobby’s and policymaker’s status quo signals, iii) the less costly the lobby’s information signal, and iv) the less pessimistic the initial common prior, which implies that beliefs of interest are close to \( \lambda \). In other words, the lobby is more likely to persuade if both information technologies are asymmetrically precise favoring reform, which implies that both technologies would be similar.

For the other case a lobby’s reform signal could induce a politically inactive policymaker to become engaged by implementing an immediate reform. The lobbyist finds it beneficial to provide
an information signal if
\[ x_r(\lambda) \geq e', \]  
which implies, using (2.3), that
\[ 1 - \eta' - \lambda(1 - e' - \eta') \geq e'. \]  

Here a lobbyist is more likely to update for the chance of an immediate reform i) the less noisy and more informative the lobby’s reform signal, ii) the noisier and less informative the lobby’s status quo signal, iii) the less costly the lobby’s information signal, and iv) the less pessimistic the initial common prior, which again implies a range of beliefs close to \( \lambda \). Here the lobby’s choice is independent of the policymaker’s information technology as it would not be employed either way.

Now suppose a policymaker is either skeptical or optimistic, which implies he would update her beliefs with a search, but a lobby’s reform signal could induce an immediate reform – i.e., \( \lambda \leq x \leq \bar{\lambda} \leq x_r \). A lobby’s reform signal may induce an immediate reform without an update by the policymaker but a status quo signal may either induce the policymaker to update or to keep the status quo. We distinguish for these two alternatives the lobby’s updating decision.

For the first case, \( \lambda \leq x \leq \bar{\lambda} \leq x_r \), the lobby updates with a chance for either an immediate reform or a policymaker’s update with a chance of reform or does not update and depend on the policymaker’s information signal. The lobby updates if
\[ x_r(\lambda) + x^*(\lambda)z_r(\lambda) - e' \geq z_r(\lambda), \]  
which implies, using (2.3), (2.4), and (3.15), that
\[ (e' - e^p)\lambda + (\eta^p - \eta')\lambda(1 - \lambda) + e^p\eta'(1 - \lambda) + (1 - \eta^p)(1 - e')\lambda \geq e'. \]  

Here a lobbyist is more likely to update for the chance of an immediate reform by the policymaker i) the less noisy and more informative the lobby’s reform signal, ii) the noisier and less informative the lobby’s status quo signal, and iii) the less costly the lobby’s information signal. The effects of the noise of the policymaker’s information signals depend on \( \eta' - \lambda \geq \eta^p \lambda \) and \( 1 \geq (2 - e')\lambda \), respectively. The reason for the ambiguity is that a lobby receiving a positive signal could induce a reform without an update, which would be more likely if the lobby’s reform signal is more precise than the policymaker’s reform signal. However, if the lobby receives a status quo signal, then it has
to rely on the policymaker’s precision of her reform signal. In other words, an update is more likely if the lobby’s information technology is asymmetrically precise but the policymaker’s reform signal would be sufficiently convincing. Similarly, the effects of the initial common prior are ambiguous and depend on $1 + \eta^l \geq \epsilon^p (1 + \eta^l) - \eta^p (2 - \epsilon^l)$, which implies that the beliefs of interest are in the intermediate range and not close to the thresholds.

For the other case, $\lambda(x^s) \leq \lambda \leq \tilde{\lambda} \leq \lambda(x^r)$, the lobby can update and gamble on either immediate reform or immediate status quo depending on the information signal or depend on the policymaker’s information signal. The lobby updates in such a situation if

$$x^r(\lambda) - \epsilon^l \geq z^r(\lambda),$$

which implies using (2.3) and (2.5)

$$(\epsilon^l - \epsilon^p)\lambda + (1 - \lambda)(\eta^p - \eta^l) \geq \epsilon^l.$$ 

(3.25)

Here a lobbyist is more likely to gamble on an immediate policy action without a policymaker’s update i) the less noisy and more informative the lobby’s reform signal and policymaker’s status quo signal, ii) the noisier and less informative both the lobby’s status quo signal and the policymaker’s reform signal, and iii) the less costly the lobby’s information signal. The effect of the initial common prior depends on $\epsilon^l - \epsilon^p + \eta^l - \eta^p \geq 0$, which again implies that the beliefs of interest are not close to the thresholds. In other words, the lobby is more likely to persuade if her information technology is more asymmetrically precise favoring reform, which implies that both technologies would be very different.

Table 1 summarizes the comparative statics of the lobby’s updating choice for all three cases and we can summarize them to the following.

**Proposition 2.** The lobby is more likely to update if the lobby’s information technology is asymmetrically precise signal towards reform, the lobby’s information is low, and the lobby’s status quo signal is noisy. The policymaker’s information technology and the initial common prior have ambiguous effects.

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21 For detailed statements for the lobby’s updating comparative statics for lobby’ updating choices please see the Mathematica code and output files provided online.
Lobby updates to potentially induce...

| Policymaker update | Case 1 | $\lambda < \underline{\lambda} \leq \lambda(x^r) < \bar{\lambda}$ | (+) | (+) | (−) | (−) | (−) | (+) |
| Immediate reform   | Case 2 | $\lambda < \underline{\lambda} < \bar{\lambda} \leq \lambda(x^r)$ | (+) | (0) | (−) | (−) | (0) | (+) |
|                    | Case 3 | $\underline{\lambda} \leq \lambda(x^s) \leq \lambda \leq \bar{\lambda} \leq \lambda(x^r)$ | (+) | (1) | (−) | (−) | (2) | (3) |
|                    | Case 4 | $\lambda(x^s) \leq \underline{\lambda} \leq \lambda \leq \bar{\lambda} \leq \lambda(x^r)$ | (+) | (−) | (−) | (−) | (4) | (4) |

(1) $\eta^l - \lambda \gtrless \eta^l \lambda$
(2) $1 \gtrless (2 - \epsilon^l) \lambda$
(3) $1 + \eta^l \gtrless \epsilon^p (1 + \eta^l) - \eta^p (2 - \epsilon^l)$
(4) $\epsilon^l - \epsilon^p + \eta^l - \eta^p \gtrless 0$

Table 1: Comparative Statics for Lobby’s Updating.

### 3.1.4 Summary

A resource unconstrained policymaker gathers own information if her prior is neither too pessimistic nor too optimistic. For an intermediate range of beliefs the policymaker is more likely to search for information if her information costs are relatively low, her policy salience is greater, and her reform signal is informative but relatively noisy. A rather pessimistic policymaker may also search if the lobby sent an informative reform signal, but a skeptical policymaker may abstain from a search because of a lobby’s informative reform signal.

The lobby only gathers information if it can potentially persuade the policymaker to change her anticipated behavior of updating or implementing a reform. A lobby’s persuasion is generally more likely if its information search is relatively inexpensive, its reform signal very informative and convincing but its status quo signal very noisy and less convincing. The lobby’s persuasion to induce the policymaker to update is more likely if the policymaker’s reform signal is more informative but her status quo signal noisy because the lobby relies on the policymaker’s information technology in its hopes for a potential reform.

Our results also imply that a lobby is more likely to persuade policymakers with an intermediary range of prior beliefs but not policymakers with highly supportive beliefs or highly opposing beliefs. This addresses the question whether lobbies are more likely to approach their friends or enemies. In our analysis of costly persuasion lobbies approach policymakers who are in doubt or positively optimistic but possess an inferior information technology.

A non-binding resource constraint of the policymaker implies no contributions from the lobby to the policymaker, and there is nothing to say whether costly persuasion and legislative subsidies are
substitutes or complements. This is a focus is in the next section when we consider a policymaker’s resource constraint to be binding.

3.2 Policymaker’s Resource Constraint Binds

Here we consider the play between a lobby and a policymaker when information transmission potentially occurs and a lobby may gain a strategic advantage because of a policymaker’s binding resource constraint. The focus is now on the lobbyist’s potential persuasion and strategic transfers to increase the likelihood of a policy reform. In other words, we focus on strategic monetary and informational subsidies by a lobby, and to be more precise, suppose that the resource constraints are

\[
\max\{c, e^p\} \leq y^p < c + e^p \\
\text{and } y^l \geq e^l + c.
\]

This implies that the policymaker cannot afford to both investigate a policy proposal and implement a reform. Now the lobby has potential incentives to both make financial transfers and engage in costly information gathering and can afford to do so. We analyze the game that is illustrated in figure 8 and 10 in the appendix and emphasize the following assumption regarding the lobby’s financial transfers.

Assumption 1 (No Bribery). The lobby may make transfers contingent on the policymaker’s signals but not on her policy choices.

Solving the game backwards for the Perfect Bayesian Equilibrium, we get a solution for the policy choice subgame, the contribution subgame, the policymaker’s updating subgame, and the lobby’s updating choice. Here we want to also focus especially on the strategic characteristics of both lobbying instruments as either complements or substitutes.

3.2.1 Policymaker’s Policy Choice

Here again the policymaker may either choose the status quo of the policy matter or implement a reform. Comparing the expected payoffs from the status quo and the reform, the policymaker will choose reform if

\[
y^p + \lambda^p(.)\alpha + \tau - e^p - c \geq y^p + (1 - \lambda^p(.))\alpha + \tau - e^p
\]
and the choice reduces to
\[ \lambda_p(.) \geq \frac{1}{2} + \frac{c}{2\alpha} = \lambda^*. \] (3.29)

If the policymaker has updated, then this is \( \lambda(z^j, \lambda^i) \geq \lambda^* \); if the policymaker has not updated, then this is \( \lambda^i \geq \lambda^* \). Hence, it does not differ to the policymaker’s earlier policy rule described in (3.2).

### 3.2.2 Lobby’s Contributions

The lobby, anticipating the policymaker’s desired policy action and observing her resource constraint, chooses a transfer of

\[ \tau(j) = \begin{cases} 
  e^p + c - y^p & \text{iff } z^r \text{ and } 1 \geq e^p + c - y^p \\
  0 & \text{otherwise}
\end{cases} \] (3.30)

for \( j = r, s \).

If the policymaker has not updated or the policymaker does not want to reform, then this becomes \( \tau = 0 \). In other words, the lobby only contributes the missing amount that would allow the resource constrained policymaker to implement a reform if she would want to implement a reform, and the lobby considers such support valuable. The support for a reform willing policymaker is more likely for low reform costs, low policymaker’s information cost, and greater initial policymaker resources.

### 3.2.3 Policymaker’s Updating Choice

The policymaker’s prior belief is the lobby’s posterior belief and is either a conditional belief based on the lobby’s information signal or the initial common prior if the lobby has not updated. Given the policymaker’s prior belief she may never update and never reform, never update and always reform, or update and make her policy choice conditional on her observed information signal. Again we are interested on the two thresholds for the policymaker’s prior that separate her three choices. The two thresholds follow again from the policymaker’s choice of status quo if no update and reform if no update. First we consider the policymaker’s updating choice if the alternative would be status quo – i.e., \( \lambda(z^s, \lambda^i) \leq \lambda^i \leq \lambda^* \leq \lambda(z^r, \lambda^i) \). The policymaker chooses only reform if she has updated and observed a reform signal. It follows that the conditional contributions are

\[ \tau(z^s) = 0 \text{ and } \tau(z^r) = e^p + c - y^p. \] (3.31)
The policymaker thus updates, and anticipates the lobby’s signal conditional contribution, if the expected payoff of updating exceeds the expected payoff of the status quo, which is with the assumption that the lobby has not updated

\[
\begin{align*}
z^r(\lambda) [y^p - e^p + \tau(z^r) + \alpha \lambda(z^r) - c] + z^s(\lambda) [y^p - e^p + \alpha(1 - \lambda(z^s))] \\
= z^r(\lambda)\alpha \lambda(z^r) + z^s(\lambda) [y^p - e^p + \alpha(1 - \lambda(z^s))] \\
\geq y^p + \alpha(1 - \lambda).
\end{align*}
\] (3.32)

Applying the defined signal probabilities (2.5) and (2.6), the updating choice reduces to

\[
\lambda \geq \frac{(1 - \eta^p)y^p + \eta^pe^p + \alpha}{2\alpha + (1 - e^p - \eta^p)(y^p - e^p)} \equiv \lambda'
\] (3.33)

Alternatively, a policymaker may choose reform without an update, which provides the upper bound for the policymaker’s prior belief and updating choice – i.e., \(\lambda(z^s, \lambda') \leq \lambda^* \leq \lambda(z^r, \lambda')\). The policymaker reforms unless she received a status quo signal form an update, and therefore the lobby’s contributions are \(\tau(z^s) = 0\) or \(\tau(z^r) = e^p + c - y^p\). Her updating choice follows then

\[
\begin{align*}
z^r(\lambda) [y^p - e^p + \tau(z^r) + \alpha \lambda(z^r) - c] + z^s(\lambda) [y^p - e^p + \alpha(1 - \lambda(z^s))] \\
= z^r(\lambda)\alpha \lambda(z^r) + z^s(\lambda) [y^p - e^p + \alpha(1 - \lambda(z^s))] \\
\geq y^p + \alpha \lambda - c,
\end{align*}
\] (3.34)

which reduces with the defined signal probabilities to

\[
\lambda \leq \frac{y^p - c + \eta^p(e^p - y^p)}{(1 - e^p - \eta^p)(e^p - y^p)} \equiv \lambda'
\] (3.35)

For this case to be meaningful we require \(\lambda' < \lambda'\). We can describe the updating choice by a resource constrained policymaker by the following.

**Proposition 3.** The intensive updating margins are similar for a resource constrained policymaker except for the policymaker’s information cost, \(e^p\), and reform cost, \(c\), at the lower bound, \(\lambda'\). Mathematically, we have

\[
\begin{align*}
\lambda' = \lambda \left( \begin{array}{c}
e^p \ \ \ \ (-) \\
\ +/\ - \ \ \ (0) \\
\ +/\ (-) \ \ \ (+) \\
\eta^p \ \ \ (+/\ -) \end{array} \right) \quad \text{and} \quad \lambda' = \lambda \left( \begin{array}{c}
e^p \ \ \ (-) \\
\ +/\ (-) \ \ \ (0) \\
\ +/\ (+) \ \ \ (+) \\
\eta^p \ \ \ (+/\ -) \end{array} \right).
\end{align*}
\] (3.36)
At the lower bound the policymaker compares the policy actions of no update and no reform with an update and a potential reform. However, as the policymaker does not have sufficient resources for an update and a reform, and has to rely on the lobby’s later contribution, the actual cost of a reform has no effect on the policymaker’s intensive updating margin because the policymaker’s resources are exhausted in case of a reform independent of the actual reform cost. For the information cost, and its condition \( \alpha(1 - e^p + \eta^p) \geq y^p(e^p + \eta^p - 1) \) from (A.8), the resource constrained policymaker is more likely to update, \( \partial \lambda' / \partial e^p < 0 \), if the policymaker’s resources outweigh the policy salience sufficiently, and vice versa. The intensive margins at the upper updating bound are the same as before.

Comparing the resource constrained policymaker’s updating thresholds from (3.6) and (3.8) with the unconstrained thresholds from (3.33) and (3.35), we can state the following.

**Proposition 4.** A resource constrained policymaker updates for a wider or smaller range of prior beliefs. Mathematically, we have

\[
\lambda \geq \lambda' \quad \text{if} \quad y^p(e^p + \eta^p - 1) \leq 2\alpha + e^p(e^p + \eta^p - 1) \quad (3.37)
\]

and

\[
\bar{\lambda} \geq \bar{\lambda}' \quad \text{if} \quad e^p \geq c. \quad (3.38)
\]

For the comparison of the lower bounds the policymaker’s relative updating range depends on the policymaker’s resources in comparison to the policymaker’s policy salience and information cost. If the resource constraint is too binding, the policymaker’s resources do not outweigh the policy salience and information cost, then the policymaker becomes more conservative and updates for a smaller range, \( \lambda < \lambda' \). However, if the severity of the policymaker’s actions, as expressed by making a correct choice and spending on information, is greater than the policymaker’s budget, then the policymaker’s updating choice becomes less conservative and she updates for a wider range, \( \lambda > \lambda' \). The reason is that the policymaker can ignore the costs of reform as they are borne by the lobby.

At the upper bound the policymaker’s consideration of her out-of-pocket expenditures, \( e^p \), relative to her subsidized expenditures, \( c \), is driving whether a resource constrained policymaker is updating for a smaller or wider range of beliefs. If her out-of-pocket expenditures are greater than the subsidized reform cost, then the resource constrained policymaker is updating for a smaller range of beliefs (\( \bar{\lambda}' < \bar{\lambda} \)). However, if the subsidized reform cost are larger than the policymaker is bearing a relatively lower burden and is updating for a wider range of beliefs (\( \bar{\lambda}' > \bar{\lambda} \)).
3.2.4 Lobby’s Updating Choice

Here again we focus on the lobby’s incentives to provide an information signal that would change the expected policymaker’s subsequent updating and policy choices. The lobby generates a costly information signal if the policymaker is either inactive and would neither update nor reform or the policymaker would update but the lobby considers it beneficial to induce potentially an immediate reform without a policymaker’s update. The lobby would not update if a lobby’s reform signal would not change the policymaker’s behavior, or if it would be too costly. We consider again the following two major cases and their subcases, which are illustrated in Figure 5. However, there are two major differences in the lobby’s updating choice. Firstly, the lobby’s extensive margins for updating change as the policymaker applies different thresholds for her own updating choice (Proposition 4). Secondly, the policymaker’s reduced own resources imply potential financial transfers from the lobby to the policymaker and therefore the lobby internalizes now the policymaker’s resources and costs. Hence, we focus specifically how the changed extensive margins and the internalization of the policymaker’s resources and costs affect the lobby’s intensive margins for each of the four cases, and we highlight whether the lobby’s instruments are complements or substitutes.

For the lobby’s consideration to engage a politically inactive policymaker we have that a reform signal induces a policymaker to update or to implement an immediate reform – i.e., $\lambda < \lambda' \leq \lambda(x^r) < \bar{\lambda}$ and $\lambda < \lambda' < \bar{\lambda} \leq \lambda(x^r)$. For the first case a lobbyist compares the expected payoff from an update and a potential policymaker update with no reform with certainty. Mathematically, we have

$$x^r(\lambda)z^r(\lambda)\left[1 - e^p - c + y^p\right] \geq e^l$$

$$\left[e^p e^l \lambda + (1 - \eta^p)(1 - \eta^l)(1 - \lambda)\right]\left[1 - e^p - c + y^p\right] \geq e^l.$$  \hspace{1cm} (3.39)

This differs to (3.19) because the lobby has to finance its own information signal and a potential reform as the policymaker is resource constrained. In other words, lobbying is now more expensive.
for the lobby as it is subsidizing the policymaker with both information and contributions, which
implies that both lobbying means are complements. Comparing the intensive margins from Table
1 with the intensive margins for this case, and reported in Table 2, we can see that the intensive
margins for the lobby’s information cost, both the policymaker’s and lobby’s information signals,
and the initial common prior do not change. However, the lobby now internalizes the policymaker’s
resources and costs because of the potential contribution necessary for a reform. Hence, a lobby is
more likely to update if the legislative subsidy is not too expensive.

For the other case a lobbyist compares the expected payoff from an update and a potential
immediate reform with no reform with certainty. The decision follows

\[
x^r(\lambda) \geq e^l
\]

\[
1 - \eta^l - \lambda(1 - \epsilon^l - \eta^l) \geq e^l,
\]

which is the same as (3.21) as the policymaker finances the implementation of the reform. Hence,
the lobby’s intensive margins for the updating choice are unaffected and both lobbying instruments
are independent.

For the other case, in which a lobby is considering to potentially convince a politically active
policymaker, a lobby’s reform signal would induce an immediate reform and a status quo signal
would either not affect the policymaker’s choice or result in an immediate rejection of the reform
proposal – i.e., \( \lambda' \leq \lambda(x^s) \leq \lambda \leq \lambda'(x^r) \) and \( \lambda(x^s) \leq \lambda' \leq \lambda \leq \lambda'(x^r) \). For the first subcase
the lobby compares the expected payoff from an update and a potential immediate reform with the
expected payoff when only the policymaker updates. This can be written as

\[
x^r(\lambda) + x^s(\lambda)z^r(\lambda(x^s))(1 - e^p - c + y^p) - e^l \geq z^r(\lambda)(1 - e^p - c + y^p)
\]

\[
\left[\epsilon^l \eta^l(1 - \lambda_i) + (1 - \eta^p)(1 - \epsilon^l)\lambda_i \right] [1 - c - e^p + y^p] + \epsilon^l \lambda + (1 - \eta^l)(1 - \lambda) - e^l
\]

\[
\geq \left[\epsilon^l \lambda + (1 - \eta^l)(1 - \lambda) \right] [1 - c - e^p + y^p]
\]

Here again, comparing the intensive margins from Table 1 with the intensive margins for this case,
we can note that the intensive margins for the lobby’s information cost and both the policymaker’s
and lobby’s information signals do not change. The intensive margins for the prior common belief
suggest again that the range of beliefs is not too close to the updating bounds. The lobby’s
instruments are either a substitute or a complement depending on the lobby’s received information
signal. If the lobby receives a positive reform signal, then it would not contribute a subsidy. However, if the information signal in unfavorable, then the policymaker searches and the lobby has to potentially provide a legislative subsidy. The subsidy would then serve as “damage control” but in contrast to Bennedsen and Feldmann (2006) Dahm and Porteiro (2008a,b) not to purchase a policy favor but to enable the policymaker to receive a second signal, or opinion.

For the other subcase the lobby compares the expected payoff of an update with the risk of immediate rejection and the expected payoff from a policymaker’s update only. We have

\[
x^r(\lambda) - e^l \geq z^r(\lambda)(1 - e^p - c + y^p)
\]

\[
e^l\lambda + (1 - \eta^l)(1 - \lambda) - e^l \geq (e^l\lambda + (1 - \eta^l)(1 - \lambda))(1 - c - e^p + y^p).
\] (3.42)

Here the lobby’s instruments are substitutes; the lobby either provides information or makes a contribution but does not do both. Finally, comparing the earlier comparative statics with the intensive margins here, we can see that the intensive margins for the lobby’s information cos and both the policymaker’s and lobby’s information technologies do not change. The effects of the initial common prior are ambiguous but depend on other conditions. The lobby internalizes the policymaker’s resources and costs but the intensive margins are opposite to the first case. Here the lobby is less likely to update the greater the policymaker’s resources and the lower the policy costs. The reason is that the lobby’s means are substitutes and the lower the contribution costs the greater the opportunity cost of updating.

We can summarize our analysis with the following.

**Proposition 5.** The lobby’s intensive updating margins of the lobby’s information cost and the
lobby’s and policymaker’s expected information signals are unaffected if the policymaker is resource constrained. However, the lobby internalizes the policymaker’s resources and costs and responds to it at the intensive and extensive margin.

Though the extensive margins for the lobby’s updating choice differ because of different policymaker updating thresholds the intensive margins for the lobby’s and policymaker’s information signals and the lobby’s information costs are unaffected. The effects of the lobby internalizing the policymaker’s resources are ambiguous and either do not affect the lobby’s intensive margins, make an updating more likely or less likely. The effects of the common prior belief are unaffected for the cases in which the policymaker would not update without a lobby’s reform signal but the conditions for the other two cases change.

3.2.5 Summary

A resource constrained policymaker may lack the resources for a reform implementation but knows that the lobby is supportive of a reform and would provide the necessary contribution supporting the reform. Hence, the policymaker can update and knows that a reform is feasible if desired. Though the policymaker internalizes the lobby’s potential contribution, her updating thresholds change and can be either more lenient or more strict. If the policy salience and policymaker’s information costs are relatively small to her resource endowment – a less constrained policymaker – and her (subsidized) reform costs are greater than her information costs, then the policymaker is more strict by immediately rejecting proposals without an update for a wider range of pessimistic priors, a higher \( \lambda \), and updating for a wider range of optimistic priors, higher \( \bar{\lambda} \). If the information costs are of greater concern and the policymaker’s resource constraint is more binding, then the policymaker becomes more lenient by reforming without an update for optimistic priors and updating for a wider range of pessimistic priors. Though the extensive margins vary, the intensive updating margins are the same except for the policymaker’s information and reform cost at the lower updating threshold because of the expected contribution by the lobby.

A lobby who interacts with a resource constrained policymaker internalizes the policymaker’s resource endowment, information cost and reform cost as well as the more or less lenient updating standards by the policymaker. The lobby’s intensive updating margins for the four cases do not change but extend to the policymaker’s resource and cost variables. Those additional updating margins characterize whether the lobby’s instruments, costly persuasion and contributions, are
substitutes or complements. If the lobby would want to induce an inactive policymaker to update and potentially reform or if the lobby’s status quo signal would induce the policymaker to update, then the two means are complements. However, if the lobby persuades the policymaker to reform without an independent update, then the two means are substitutes and are more likely if the lobby’s reform signal is more convincing relative to the policymaker’s signal and its information cost relatively to potential contributions is lower.

3.2.6 Special Cases: Very Constrained Policymaker and Contributions in Stages

Obviously, we can constrain the policymaker’s resource constraint further and assume that the policymaker can neither afford an update nor a policy change with own resources. We consider two cases: The lobby may only contribute at the second-last stage, the order described as in Figure 1, and the lobby may contribute before and after a policymaker’s update, which implies that a contribution could be a subsidized information search or a subsidized policy change.

**Entirely Constrained Policymaker**  
Suppose that

\[ y^p < \min\{c, e^p\} \quad \text{(3.43)} \]

and

\[ y^l \geq e^l + c - y^p. \quad \text{(3.44)} \]

Solving the game backward, we can see that the policymaker’s policy choice would be unaffected and described by \( \lambda^p(.) \geq \frac{1}{2} + \frac{c^u}{2a} \equiv \lambda^* \). The lobby’s contribution would be \( \tau(\lambda^p(.)) = c - y^p \) if \( \lambda^p(.) \geq \lambda^* \) and \( c - y^p \leq 1 \) and zero otherwise. The policymaker would not be able to afford an update and we can skip this stage. Considering the lobby’s updating choice, we can consider three cases. If \( \lambda > \lambda^* \), then the policymaker would implement a reform without further information and the lobby would refrain from an update. Hence, the lobby’s instruments are independent. Similarly, if \( \lambda < \lambda(x^r) < \lambda^* \), then even a lobby’s reform signal would not change the policymaker’s behavior and the lobby will refrain from searching information. However, if \( \lambda < \lambda^* < \lambda(x^r) \), then a reform signal could induce a reform. Hence, the lobby’s only persuasion motive would be to achieve a policy change and described by

\[
\begin{align*}
x^r(\lambda) (1 - c + y^p) & \geq e^l \\
\left(1 - \eta^l - \lambda(1 - e^l - \eta^l)\right) (1 - c + y^p) & \geq e^l, \quad \text{(3.45)}
\end{align*}
\]
where \( \bar{y}^p \) would be the policymaker’s remaining resources after any update. Clearly, costly persuasion and legislative subsidy would be complements. The qualitative comparative statics are similar to Case 2 and Case 2’ in Table 1 and 2 except that the lobby internalizes the policymaker’s resources and costs with qualitative comparative statics similar to Case 1’ in Table 2 excluding \( e^p \).

We have

\[
    x_s = x \begin{pmatrix}
        e^l & e^p & e^l & e^l \quad \eta^l & \eta^p & \lambda & y^p & e^p & c
    \end{pmatrix}.
\]

(3.46)

If the policymaker cannot gather her own information, then the lobby has to provide less evidence supporting its cause and achieving a reform. One may conclude that the lobby is better off if the policymaker cannot update. However, in the next step we show that a lobby may benefit from the flexibility of subsidizing both a policymaker’s search and policy choice.

**Contributions in Stages** Suppose that

\[
    \bar{y}^p < \min\{c, e^p\} \quad (3.47)
\]

and

\[
    y' \geq e^l + e^p + c - y^p \quad (3.48)
\]

and that the lobby can contribute before and after a policymaker’s update, all else equal. The policymaker’s policy choice and the lobby’s legislative subsidy choice are unaffected – i.e., \( \lambda^p(.) \geq \lambda^* \) and \( \tau(\lambda^p(.)) = c - \bar{y}^p \) if \( \lambda^p(.) \geq \lambda^* \) and \( c - \bar{y}^p \leq 1 \) and zero otherwise, where \( \bar{y}^p \) would be the policymaker’s remaining resources after any update. If the policymaker received no information subsidy, then the policymaker cannot update. However, the lobby contributes \( \tau(\lambda^l(.)) = e^p - y^p \) to the policymaker’s search, then the policymaker’s updating choice, anticipating a potential legislative subsidy later, would follow the updating thresholds \( \lambda^{l'} \) and \( \lambda' \). The lobby would only contribute to a policymaker’s search if the update would be beneficial. If \( \lambda^* < \lambda^l(.) \) or \( \lambda^l(.) \lambda^{l'} \), then the lobby would not contribute. The lobby would contribute \( \tau(\lambda^l(.)) = e^p - y^p \) if \( \lambda^{l'} < \lambda^l(.) < \lambda^* \leq \lambda^l(z^r) \) and \( z^r(\lambda^l)[1 - c] \geq e^p - y^p \).
The lobby’s persuasion motives and updating choices are very similar to the ones when facing a resource constrained policymaker who can afford one of the two actions. However, the lobby updates for a smaller range of initial priors as the policymaker cannot update without help and the immediate implementation threshold is \( \lambda^* \leq \lambda'(.) \) rather than \( \bar{\lambda}' < \lambda'(.) \). Hence, a lobby would not update if \( \lambda^* \leq \lambda \) or \( \lambda(x^r) < \lambda' \). The lobby would either update to persuade the policymaker to undertake a subsidized information search or to reform immediately with a legislative subsidy. The lobby’s choices follow the same pattern as before except that a lobby would not longer update for \( \lambda^* < \lambda < \bar{\lambda}' \). We can summarize the results with the following.\(^{22}\)

**Lemma 2.** If the policymaker is entirely resource constrained and a lobby can subsidize a policymaker’s update, then the information subsidy is either independent, a complement, or a subsidy to costly persuasion and follows a similar pattern as the legislative subsidy for a resource constrained policymaker. However, a legislative subsidy is either independent or a complement to costly persuasion.

The lobby benefits from an information subsidy if the policymaker is initially negatively convinced, \( \lambda < \lambda' \), and the lobby’s reform signal would not be sufficient to make the policymaker at least optimistic, \( \lambda' < \lambda(x^r) < \lambda^* \). Intuitively, if the lobby’s information technology is informative but noisy, then it could benefit from a second, subsidized information signal gathered by the policymaker and the lobby gains from the increased flexibility. In that case both kind of subsidies and costly persuasion would be complements.

### 3.3 Both Resource Constraints Bind

Finally, we constrain both the policymaker’s and the lobby’s resource constraints. We assume that a policymaker has sufficient funds for an update or a reform but not for both, and that the lobby has only sufficient funds for either an update or a contribution. The policymaker’s and lobby’s resource constraints are then

\[
\max\{c, e^p\} \leq y^p < c + e^p \tag{3.49}
\]

and

\[
\max\{e^l, e^p + c - y^p\} \leq y^l < e^l + c + e^p - y^p \tag{3.50}
\]

This introduces new possibilities for our analysis: The lobby may update so as to be unable to make a transfer and thus discourage the policymaker from updating. Alternatively, the lobby may

\(^{22}\)The proof for Lemma 2 illustrates the results.
choose to not update but to contribute because the policymaker will not choose reform unless the policymaker updates.

We again work through the possibilities systematically. First note that it can never be the case that both the lobby and the policymaker update as this would preclude the policymaker engaging in reform because of missing funds. Hence, there would be no incentive for either to update. Again, solving the game backwards for the Perfect Bayesian Equilibrium, we get a solution for the policy choice subgame, the contribution subgame, the policymaker’s updating subgame, and the lobby’s updating choice. Because of the lobby’s binding resource constraint the lobby’s instruments are substitutes.

3.3.1 Policymaker’s Policy Choice

As before the policymaker may either choose the status quo or implement a reform. Comparing the expected payoffs from the status quo and the reform, the policymaker will choose reform if

\[ \lambda^p(.) \geq \frac{1}{2} + \frac{c}{2\alpha} \equiv \lambda^*, \]  

where \( \lambda^p(.) \) can only be one of three possibilities. If neither the policymaker nor the lobby has updated, then this is \( \lambda \geq \lambda^* \); if the lobby has updated, then the policymaker would not update and this is \( \lambda(x^j) \geq \lambda^* \) with \( j = r, s \). If the lobby has not updated but the policymaker, then this is \( \lambda(z^j) \geq \lambda^* \) with \( j = r, s \). This is different to the policymakers earlier rule described in (3.2) as \( \lambda(x^j, z^j) \) is no longer feasible.

3.3.2 Lobby’s Contributions

The lobby can either update or make a contribution but not both. If the lobby has updated, then it cannot make a contribution; if the lobby has not updated but the policymaker has updated, then the lobby may make a contribution. The lobby makes a contribution to support the policymaker’s choice to implement a reform of

\[
\tau(x^j, z^j) = \begin{cases} 
e^p + c - y^p & \text{iff } \{0, z^r\} \text{ and } 1 \geq \ne^p + c - y^p \\ 0 & \text{otherwise} \end{cases} \quad \text{for } j = r, s. \]  

If the policymaker has not updated or would not want to implement a reform, then this becomes \( \tau = 0 \). Similarly, if the lobby updated, this becomes \( \tau = 0 \). Hence, the lobby only makes a
contribution if the lobby has not updated but the policymaker updated and wanted to reform.

3.3.3 Policymaker’s Updating Choice

If the lobby has updated, then the policymaker has no incentive to update as the transfer necessary to finance a reform is infeasible. We immediately have that the policymaker will choose immediate reform if \( \lambda^i(x^j, \lambda) \geq \lambda^* \) and status quo if \( \lambda^i(x^j, \lambda) < \lambda^* \).

On the other hand, if the lobby has not updated, then the policymaker decides whether or not to update and whether or not to reform. The policymaker may choose reform without an update if \( \lambda \geq \bar{\lambda} \) and status quo without an update if \( \lambda < \bar{\lambda} \), where \( \bar{\lambda} \equiv \bar{\lambda}' \) and \( \bar{\lambda} \equiv \bar{\lambda}' \) are defined as before and described in (3.33) and (3.35). We can state the following.

**Lemma 3.** A resource constrained policymaker updates for the same range of beliefs independent of whether the lobby is resource constrained.

We derived the policymaker’s updating thresholds by considering that the lobby has not updated and the policymaker updates after the lobby’s updating choice. Hence, the policymaker’s trade-off is unaffected at this point. The resource constrained policymaker updates if \( \bar{\lambda}' < \lambda < \bar{\lambda}' \) and chooses reform if \( z^r \) and status quo if \( z^s \). Observing the policymaker’s signal, the lobby contributes \( \tau = e^p + c - y^p \) if \( z^r \) and \( \tau = 0 \) if \( z^s \).

3.3.4 Lobby’s Updating Choice

In the previous cases a lobby updates to either induce the policymaker with a reform signal to update or to reform immediately. This is different here as a lobby cannot longer induce the policymaker to update because the lobby could not make the necessary contribution to financially support a reform and overall resources are not sufficient for two updates and an implementation. Hence, a lobby only updates if an information signal can induce the policymaker to reform immediately or prevent a policymaker’s update, and the analysis reduces to the following three cases. We consider again the implications of the changed policymaker’s updating thresholds and reduced resources as well as the lower lobby’s resources on the lobby’s intensive margins of its updating choice. We can immediately note that the lobby’s reduced resources imply that two of the earlier cases – updating to induce a policymaker update and a policymaker’s update after a lobby’s status quo signal – are not longer feasible. However, another interesting case arises in which the lobby prevents an
A lobby may anticipate that the policymaker would not update and choose status quo because of a low initial common prior – i.e., $\lambda < \bar{\lambda}$. The lobby may choose to update if a reform signal can induce the policymaker to reform. Here, and different to the previous cases, a lobby can induce an immediate reform for lower beliefs with $\lambda^* < \lambda^r$ rather than $\lambda^* < \bar{\lambda}^r < \lambda^r$. In other words, a lobby may choose to update and receive the benefit of the doubt as the policymaker is unable to update herself. Hence, a lobby may choose to update for $\lambda < \lambda' < \lambda^* < \{\lambda^r, \bar{\lambda}^r\}$ if

$$x^r(\lambda) \left(1 + y^l - e^l\right) + x^s(\lambda) \left(y^l - e^l\right) \geq y^l,$$

which reduces to

$$e^l \lambda + (1 - \mu^l)(1 - \lambda) \geq e^l,$$

which is the same as (3.21) as the policymaker finances the implementation of the reform. Hence, the lobby’s intensive margins for the updating choice are unaffected. However, the extensive margins are different and it implies that the lobby chooses to update to induce an immediate reform for a wider range of updated beliefs as the threshold for an immediate reform is lower.

For the other case a lobby may choose to update if the lobby does not want to rely on the policymaker’s update or even prevent the policymaker’s update and achieve a reform with certainty. For the form the lobby updates and receives potentially the benefit of the doubt – i.e., $\lambda' < \lambda < \lambda^* < \{\lambda^r, \bar{\lambda}^r\}$. If the lobby chooses to update, then there is no second chance of a policymaker’s update and a lobby’s status quo signal will result in no reform with certainty. Hence, a lobby relies on either her own reform signal or the policymaker’s reform signal and chooses to update if

$$x^r(\lambda) \left(1 + y^l - e^l\right) + x^s(\lambda) \left(y^l - e^l\right) \geq z^r(\lambda) \left(1 + y^l - c - e^p + y^p\right) + z^s(\lambda) \left(y^l\right),$$
Lobby updates for...

| Case 2" | \( \lambda < \lambda' \leq \lambda^* < \lambda(x^r) \) | \( (+) \) | \( (0) \) | \( (-) \) | \( (0) \) | \( (+) \) | \( (0) \) | \( (0) \) | \( (0) \) |
| Case 4" | \( \lambda' \leq \{ \lambda, \lambda^* \} < \{ \lambda(x^r), \lambda(x) \} \) | \( (0) \) | \( (-) \) | \( (0) \) | \( (+) \) | \( (-) \) | \( (0) \) | \( (A) \) |
| \( \Delta \) | \( \lambda(z^s) < \lambda^* < \lambda(x^s) < \lambda < \{ \lambda, \lambda(x^r) \} \) | \( (0) \) | \( (-) \) | \( (0) \) | \( (+) \) | \( (-) \) | \( (0) \) | \( (A) \) |

\[(A) \quad 1 + \epsilon^l + \eta^l \geq (1 - c - e^p + y^p)(1 + \epsilon^l + \eta^p)\]

Table 3: Comparative Statics for Lobby’s Updating – Both Constrained.

which reduces to

\[\epsilon^l \lambda + (1 - \eta^l)(1 - \lambda) - \epsilon^l \geq (e^p \lambda + (1 - \eta^p)(1 - \lambda))(1 - e^p - c + y^p)\]. \hspace{1cm} (3.56)

The underlying question here is who is more effective to provide the necessary information and resources for a potential reform adoption from the lobby’s perspective. For example, if the lobby’s and policymaker’s expertise do not differ, then the lobby is only cost concerned and the decision follows from whoever has a less expensive information technology and how much the lobby would have to bear out of pocket. Comparing the earlier comparative statics with the intensive margins here, we can see that the intensive margins for the lobby’s information cost and both the policymaker’s and lobby’s information technologies do not change. The effects of the initial common prior are ambiguous but depend on other conditions. The lobby’s means are substitutes and the lower the contribution costs the greater the opportunity cost of updating.

To summarize the results and compare them to the updating choices of a resource-unconstrained lobby, we can state the following.

**Lemma 4.** A resource constrained lobby updates in fewer cases. However, the lobby’s intensive updating margins are the same.

For the last case, and which is novel, a lobby may actually choose to update and diminish own resources to prevent a policymaker’s update and realize a reform with certainty – i.e., \( \lambda^r < \lambda(z^s) < \lambda^* < \lambda(x^s) < \lambda < \{ \lambda(z^r), \lambda(x^r) \} \). The lobby takes advantage in this very special case of both a resource constrained policymaker and herself resource constrained if

\[1 + y^l - \epsilon^l \geq z^r(\lambda) \left( 1 + y^l - c - e^p + y^p \right) + z^s(\lambda) \left( y^l \right), \hspace{1cm} (3.57)\]
which reduces to

\[ 1 - e^l \geq (\epsilon^p \lambda + (1 - \eta^p)(1 - \lambda))(1 - e^p - c). \quad (3.58) \]

Here again information provision and contributions are substitutes. The lobby’s choice to prevent a policymaker update and realize a reform with certainty is independent of the lobby’s information technology. The only motivation for the update is not to persuade the policymaker but rather to diminish own resources and to tie the policymaker’s hands, which results in a reform implementation with certainty. The resource destruction is especially interesting if the lobby’s update would not have affected the policymaker’s behavior if sufficient resources were left – i.e., for \( \lambda^* < \lambda(x^s) < \lambda < \lambda(x^r) < \bar{\lambda} \). The policymaker’s prior’s do not change sufficiently but she lacks the resources for an own update and reforms in doubt.

This wasteful persuasion is more likely the noisier the policymaker’s reform signal and more precise the policymaker’s status quo signal. The lobby’s information cost, which diminish own resources, and the initial common prior make a lobby’s update and inefficient information signal less likely. Hence, a lobby wants to diminish own resources but not excessively and only to the degree to be unable of making a supporting contribution. The lobby’s means are here substitutes and the lower the contribution costs the greater the opportunity cost of updating, which implies that lower policymaker resources but greater policymaker information and reform costs make an inefficient update more likely.

Summarizing the previous results that are illustrated in Table 3, we have the following.

**Proposition 6.** A resource constrained lobby updates more likely if the lobby’s information costs are low, its reform signal is precise but its status quo signal noisy. Further, it is more likely to attempt no update by the policymaker if the policymaker’s reform signal is noisy but the status quo signal is precise and potential contributions would be greater.

Finally, taking a look at the last case of prior beliefs and potential updates, \( \lambda^* < \lambda(x^s) < \lambda < \lambda(x^r) < \bar{\lambda} \), we can answer the question whether a poor lobby in this case would be better or worse off. If the lobby were wealthy, \( y^l \geq e^l + c \), the policymaker would, resource constrained or not, update and the reform would not follow a lobby’s update with certainty. Similarly, if the lobby were poor but the policymaker not, then the policymaker would update. Hence, a resource constrained policymaker would be more lenient to a poor lobby, and a poor lobby would only benefit from a policymaker’s doubt because of resource constraints and besides any prior sympathy. Nevertheless, a poor lobby does not have the ability to induce a resource-constrained policymaker to update and
gain the support of a more skeptical policymaker.

3.3.5 Summary

A resource constrained policymaker who faces a resource constrained lobby updates for a smaller number of cases as the lobby would not try to persuade the policymaker anymore to gather independent information. For the cases for which the policymaker updates, the extensive updating margins are the same to the case of a resource constrained policymaker who interacts with a resource unconstrained policymaker. Under specific conditions, a lobby updates to diminish own resources and to tie a policymaker’s hands. Though it is informational lobbying, the policymaker does not learn sufficiently but cannot update and gives the benefit of the doubt. This is more likely if the policymaker has an optimistic prior but the lobby’s information signals are very informative. In general for this case the lobby’s means of persuasion and contributions are a substitute and contributions may appear to be in exchange for “policy favors” if one ignores the policymaker’s information gathering or as an absent lobby.

3.4 Discussion

Our results address the empirical challenge to distinguish between financial contributions as i) legislative subsidy, costly information signal, or money for policies and ii) between supporting “friendly” or “opposing” policymakers. In our model we assume the absence of bribery but we predict a behavior that may appear empirically as corruption though it is a legislative subsidy to a skeptical policymaker.

To illustrate this, suppose a policymaker expresses publicly her opposition or doubts about a policy reform. Later we observe a financial contribution and the policymaker implements a policy change. The empirical evidence based on financial contribution data and public statements would suggest that the contribution served as a bribe for purchasing policy changes. However, we may not be able to identify empirically that the policymaker changed her mind because of an

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23Recent empirical research by Facchini, Mayda, and Mishra (2011) and Igan and Mishra (2014) comes to the conclusion that it is difficult to distinguish whether lobbying and campaign expenditures are information revealing, a negotiated compromise, or resources for policy favors. Our analysis highlights that financial contributions as legislative subsidy are difficult to identify if the independent research effort by a skeptical policymaker is omitted.

24For example, before Hillary Clinton became Senator of New York she expressed opinions supporting a stronger regulation of the financial sector. However, when she was in office she changed her mind and drew criticism that her change in positions was caused by campaign contributions from financial intermediaries. However, she may had changed her mind because of New York’s benefits from less regulation.

25Financial campaign contributions are in most democracies public information and policymakers regularly expresses their opinions in parliamentary records or the media.
information search with positive evidence, which was made possible by the anticipated financial contribution by the lobby though it may not have presented own information.\textsuperscript{26} Even in an environment in which contributions do not have the potential of costly information signals one has a difficulty to identify whether contributions are a form of bribery or enable policymakers to gather desirable information. Further, if the policymaker found no positive information, then the lobby were inactive, the policymaker would not change behavior, and we would not observe the lobby’s shadow role in the political process.

4 Conclusion

We developed and analyzed a model of informational lobbying that combines various features of observed lobbying activities and the political process. Focusing on the policymaker’s decision to gather own information, the lobby’s incentive to persuade and influence a policymaker’s belief, and we show that a lobby attempts to persuade a policymaker who is either skeptical or negatively convinced and provides legislative subsidies to resource constrained policymakers who are ex ante, before any information gathering, are either negatively convinced, skeptical, or positively convinced that a lobby’s favored reform is beneficial. This is different to many other models in which special interests only lobby their “friends” and provide legislative subsidies to those policymakers. A policymaker’s change in beliefs based on own or a lobby’s information, and potentially stated opinions, may appear as political capture or bribery by special interests if only legislative subsidies are observed.

5 References


\textsuperscript{26}Presenting information can be seen as lobbying effort that can be publicly observed in the United States, Australia, and Canada.


A Appendix

A.1 Figures

Figure 8: Lobby’s Choices.

Figure 9: Policymaker’s Subgames – Policymaker’s Constraint Not Binding.

Figure 10: Policymaker’s Subgames – Policymaker’s Constraint Binding.
A.2 Proofs and Derivations

A.2.1 Proof of Lemma 1

The statement follows from the requirement that $\underline{\lambda} \leq \lambda \leq \overline{\lambda}$. Using (3.6) and (3.8), we can write

$$\frac{\alpha + e^p + c(1 - \eta^p)}{2\alpha + c(1 - \eta^p - e^p)} \leq \left(\frac{1}{\eta^p + e^p - 1}\right) \left(\eta^p - \frac{e^p}{c}\right),$$

which can be reduced to

$$(\alpha + c) (e^p + \eta^p - 1) \leq 2\alpha \left(\eta^p - \frac{e^p}{c}\right)$$

and concludes the statement.

A.2.2 Proof of Proposition 1

The statement follows from the first-order derivatives of $\underline{\lambda}$ and $\overline{\lambda}$.

$$\frac{\partial \underline{\lambda}}{\partial e^p} = \frac{1}{2\alpha + c(1 - e^p - \eta^p)} > 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}}{\partial e^p} = \frac{1}{c(1 - e^p - \eta^p)} < 0; \quad (A.3)$$

$$\frac{\partial \underline{\lambda}}{\partial c} = -\frac{2(1 + e^p - \eta^p) - e^p(1 - e^p - \eta^p)}{(-2\alpha - c(1 - e^p - \eta^p))^2} > 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}}{\partial c} = -\frac{e^p}{c^2(1 - e^p - \eta^p)^2} > 0; \quad (A.4)$$

$$\frac{\partial \underline{\lambda}}{\partial \alpha} = -\frac{2e^p - c(1 + e^p - \eta^p)}{(-2\alpha - c(1 - e^p - \eta^p))^2} < 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}}{\partial \alpha} = 0; \quad (A.5)$$

$$\frac{\partial \underline{\lambda}}{\partial e^p} = \frac{c(e^p + \alpha + c(1 - \eta^p))}{(-2\alpha - c(1 - e^p - \eta^p))^2} > 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}}{\partial e^p} = \frac{e^p - c\eta^p}{c(-1 + e^p + \eta^p)^2} < 0; \quad (A.6)$$

$$\frac{\partial \underline{\lambda}}{\partial \eta^p} = -\frac{c(\alpha - e^p - e^p c)}{(2\alpha - c(1 - e^p - \eta^p))} \geq 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}}{\partial \eta^p} = \frac{e^p - c(1 - e^p)}{c(e^p + \eta^p - 1)^2} \geq 0. \quad (A.7)$$

These comparative statics describe how the lower and upper bound vary and whether the range of beliefs describing the policymaker’s updating choice is widening, $\frac{\partial \underline{\lambda}}{\partial e^p} \geq 0$ and $\frac{\partial \overline{\lambda}}{\partial e^p} \leq 0$, shrinking, $\frac{\partial \underline{\lambda}}{\partial e^p} \geq 0$ and $\frac{\partial \overline{\lambda}}{\partial e^p} \leq 0$, or ambiguous.

A.2.3 Proof of Proposition 2

The statement follows Table 1. See the supplemental .nb file online for derivations.

A.2.4 Proof of Proposition 3

$$\frac{\partial \underline{\lambda}'}{\partial e^p} = \frac{\alpha(1 - e^p + \eta^p) + y^p(1 - e^p - \eta^p)}{(2\alpha + (y^p - e^p)(1 - e^p - \eta^p))^2} \leq 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}'}{\partial e^p} = \frac{(c - y^p)}{(e^p - y^p)^2(-1 + e^p + \eta^p)} < 0; \quad (A.8)$$

$$\frac{\partial \underline{\lambda}'}{\partial c} = 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}'}{\partial c} = \frac{1}{(y^p - e^p)(-1 + e^p + \eta^p)} > 0; \quad (A.9)$$

$$\frac{\partial \underline{\lambda}'}{\partial \alpha} = \frac{-e^p(1 - e^p + \eta^p) - y^p(1 + e^p - \eta^p)}{(2\alpha + (y^p - e^p)(1 - e^p - \eta^p))^2} < 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}'}{\partial \alpha} = 0; \quad (A.10)$$

$$\frac{\partial \underline{\lambda}'}{\partial e^p} = \frac{(y^p - e^p)(y^p + \alpha + e^p \eta^p - e^p \eta^p)}{(2\alpha + (y^p - e^p)(1 - e^p - \eta^p))^2} > 0 \quad \text{and} \quad \frac{\partial \overline{\lambda}'}{\partial e^p} = \frac{c - y^p(1 - \eta^p) - e^p \eta^p}{(e^p - y^p)(-1 + e^p + \eta^p)^2} < 0; \quad (A.11)$$
\[ \frac{\partial \lambda'}{\partial \eta^p} = \frac{-(y^p - e^p)(\alpha - e^p(1 - e^p) + y^p e^p)}{(2\alpha + (y^p - e^p)(1 - e^p - \eta^p))^2} \geq 0 \] and \[ \frac{\partial \lambda'}{\partial \eta^p} = \frac{c - e^p(1 - e^p) + y^p e^p}{(e^p - y^p)(-1 + e^p + \eta^p)^2} \geq 0. \] (A.12)

**A.2.5 Proof of Proposition 4**

The first mathematical follows from \( \lambda \gtrless \lambda' \). Using (3.6) and (3.33) statement, we have

\[ \frac{\alpha + e^p + c(1 - \eta^p)}{2\alpha + c(1 - \eta^p - e^p)} \geq \frac{(1 - \eta^p)y^p + \eta^p e^p + \alpha}{2\alpha + (1 - e^p - \eta^p)(y^p - e^p)}, \] (A.13)

which can be reduced to

\[ y^p(e^p + \eta^p - 1) \leq 2\alpha + e^p(e^p + \eta^p - 1). \] (A.14)

For the second, mathematical follows from \( \lambda \gtrless \lambda' \). Using (3.8) and (3.35) statement, we have

\[ \left( \frac{1}{\eta^p + e^p - 1} \right) \left( \eta^p - \frac{e^p}{c} \right) \geq \frac{y^p - c + \eta^p(e^p - y^p)}{(1 - e^p - \eta^p)(e^p - y^p)}, \] (A.15)

which can be reduced to

\[ e^p \geq c. \] (A.16)

**A.2.6 Proof of Proposition 5**

The statement follows Table 2. See the supplemental .nb file online for the quantitative comparative statics.

**A.2.7 Proof of Lemma 2**

Solving the game backward, the policymaker’s policy choice follows from the expected payoffs from keeping the status quo or implementing a reform. We have

\[ y^p + \lambda^p(\eta^p) \eta^p + \alpha - e^p - c \geq \frac{1}{2} + \frac{c}{2\alpha}. \] (A.17)

The lobby’s legislative subsidy can be described by

\[ \tau(\lambda^p(.)) = \begin{cases} c - \bar{y}^p & \text{if } \lambda^p(.) \geq \lambda^* \text{ and } 1 > c - \bar{y}^p \\ 0 & \text{otherwise.} \end{cases} \] (A.18)

The policymaker cannot update if the lobby did not provide an information subsidy. If the lobby provided an information subsidy, then the policymaker can either choose no update and status quo, no update and reform, or update and \( \pi \) based on \( z^j \) with \( j = r, s \). The updating thresholds, for which a policymaker would anticipate a legislative subsidy later, follow the derivation of \( \lambda' \) and \( \lambda' \) described in (3.33) and (3.35). Hence, the policymaker updates for

\[ \lambda' \equiv \frac{(1 - \eta^p)y^p + \eta^p e^p + \alpha}{2\alpha + (1 - e^p - \eta^p)(y^p - e^p)} \leq \lambda'(.) \leq \frac{y^p - c + \eta^p(e^p - y^p)}{(1 - e^p - \eta^p)(e^p - y^p)} \equiv \bar{\lambda}' \equiv \lambda'. \] (A.19)
The lobby’s information subsidy follows the rationale that a policymaker’s update would benefit the lobby in expected terms. If \( \lambda^* < \lambda'(.) \), then a policymaker, who could not update, would implement a reform with probability one and the lobby would not gain from a policymaker updating. If \( \lambda^* < \lambda' \), then the policymaker would not use an information subsidy for an update and the lobby has no rationale to make a contribution. Hence, the lobby would only consider an information subsidy if \( \lambda' < \lambda'(.) < \lambda^* \). The lobby’s information subsidy can be described by

\[
\tau(\lambda'(.) = \begin{cases} 
  c - e^p & \text{if } \lambda' < \lambda'(.) < \lambda^* \text{ and } z^r(\lambda'(.)[1-c] \geq e^p - y^p \\
  0 & \text{otherwise.} 
\end{cases}
\] (A.20)

The lobby’s updating choice follows from the rationale that an information signal could induce the policymaker to undertake a subsidized search or could induce the policymaker to reform. Because of the lobby’s ability to constrain the policymaker’s information search, the lobby will not update if \( \lambda' < \lambda^* \). The four cases of interest are then i) \( \lambda < \lambda' \leq \lambda(\epsilon_x) < \lambda^* \), ii) \( \lambda < \lambda' < \lambda^* \leq \lambda(\epsilon_x) \), iii) \( \lambda' \leq \lambda(\epsilon_x) \leq \lambda \leq \lambda^* \leq \lambda(\epsilon_x) \), and iv) \( \lambda(\epsilon_x) \leq \lambda' \leq \lambda \leq \lambda^* \leq \lambda(\epsilon_x) \), all of which are illustrated in Figure 11.

For \( \lambda < \lambda' \leq \lambda(\epsilon_x) \) the lobby compares the expected payoff from an update and a potential, subsidized policymaker update with the certain payoff from the status quo. The lobby updates if

\[
x^r(\lambda) z^r(\lambda(\epsilon_x))(1-c) - x^r(\lambda)(e^p - y^p) \geq e^l \left(e^p e^l \lambda + (1-\eta^p)(1-\eta^l)(1-\lambda)\right) (1-c) - \left(1-\eta^l - \lambda(1-e^l - \eta^l) \right) (e^p - y^p) \geq e^l. \] (A.21)

For \( \lambda < \lambda' < \lambda^* \leq \lambda(\epsilon_x) \) the lobby compares the expected payoff from an update and no policymaker update with the certain payoff from the status quo. The lobby updates if

\[
x^r(\lambda)(1-c - y^p) \geq e^l \left(1-\eta^l - \lambda(1-e^l - \eta^l) \right) (1-c - y^p) \geq e^l. \] (A.22)

For \( \lambda' \leq \lambda(\epsilon_x) \leq \lambda \leq \lambda^* \leq \lambda(\epsilon_x) \) the lobby has to choose whether it would subsidize a policymaker’s update and whether it would subsidize a second update. Suppose \( z^r(\lambda(\epsilon_x))(1-c) \geq e^p - y^p \), which implies \( z^r(\lambda)(1-c) \geq e^p - y^p \), then the lobby would subsidize both kinds of updates. The lobby compares the expected payoff from an update and either a reform or a subsidized policymaker update with the expected payoff from a subsidized policymaker update. The lobby updates if

Figure 11: Lobby’s Updating Cases – Very Constrained Policymaker and Contributions in Stages.
Then the comparison would be the one of (A.22).

Finally suppose

Table 4: Comparative Statics for Lobby’s Updating – Contributions in Stages.

\[
x^r(\lambda)(1 - c + y^p) - x^s(\lambda)(e^p - y^p) + x^s(\lambda)z^r(\lambda)(1 - c) - e^l \geq z^r(\lambda)(1 - c) - e^p + y^p \\
\left(e^l + (1 - \eta^l)(1 - \lambda)\right)(1 - c + y^p) + \left(\eta^p(1 - \lambda^l) + (1 - e^p)\lambda^l\right) (e^p - y^p) \\
+ \left(e^l_\eta(1 - \lambda_i) + (1 - \eta^p)(1 - e^l)\lambda_i\right)(1 - c) - e^l \geq \left(e^l + (1 - \eta^l)(1 - \lambda)\right)(1 - c) - e^p + y^p (A.23)
\]

Also suppose \(z^r(\lambda)(1 - c) < e^p - y^p\) but \(z^r(\lambda)(1 - c) \geq e^p - y^p\), then the lobby would subsidize a policymaker update but not a second update. The lobby compares the expected payoff from an update and either a reform or status quo with the expected payoff from a subsidized policymaker update. The lobby updates if

\[
x^r(\lambda)(1 - c + y^p) - e^l \geq z^r(\lambda)(1 - c) - e^p + y^p \\
\left(e^l + (1 - \eta^l)(1 - \lambda)\right)(1 - c + y^p) - e^l \geq \left(e^l + (1 - \eta^l)(1 - \lambda)\right)(1 - c) - e^p + y^p (A.24)
\]

Finally suppose \(z^r(\lambda)(1 - c) < e^p - y^p\) and the lobby would not subsidize any policymaker update, then the comparison would be the one of (A.22).

For \(\lambda(x^s) \leq \lambda' \leq \lambda \leq \lambda^* \leq \lambda(x^r)\) the lobby has to choose whether it would subsidize a policymaker’s update. Suppose \(z^r(\lambda)(1 - c) \geq e^p - y^p\). The lobby then compares the expected payoff from an update and either reform or status quo with the expected payoff from a policymaker update. then the comparison would be the one of (A.24). Finally suppose the lobby would not subsidize a policymaker’s update, \(z^r(\lambda)(1 - c) < e^p - y^p\), then the comparison would be the one of (A.22).
Table 4 illustrates the qualitative comparative statics and relationships between costly persuasion and information subsidy and costly persuasion and legislative subsidy. See the supplemental .nb file for the quantitative comparative statics.

A.2.8 Proof of Lemma 3
The statement summarizes the analysis in the text before. An additional proof is redundant.

A.2.9 Proof of Lemma 4
The statement summarizes the analysis in the text before. An additional proof is redundant.

A.2.10 Proof of Proposition 6
The statement follows Table 3. See the supplemental .nb file online for the quantitative comparative statics.