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ORIGINAL ARTICLE

Understanding influence in informational lobbying

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Abstract

What can interest group scholars, practitioners, and policymakers learn about the concept of *influence* from formal theories of informational lobbying? This article has two objectives. The first is to help clarify the fundamental components of informational lobbying models and to show where they differ from other lobbying mechanisms. To illustrate informational lobbying and influence attempts, I provide examples from a sample of 91 emails sent by interest groups to the permanent Dutch representative in the European Union. The second objective is to list common determinants of interest groups influence in informational lobbying models and illustrate when and why they are especially salient. This paper summarizes how the nature of communication and preferences shape interest group influence.

Introduction

What is *influence* in formal models of informational lobbying? I provide an overview of a class of theoretical models in which interest groups provide information to persuade policymakers and influence policies. The main purpose is to present the fundamental components, mechanisms, and empirical implications of these models that stem from political science and economic theory. I focus on the nuts and bolts of formal models of informational lobbying to clarify how they can be useful for empirical work and our conceptual understanding of lobbying. In doing so, this paper (i) Eases the consumption of models of informational lobbying by clarifying their fundamental components, (ii) Creates a stronger link between formal theoretical and empirical research, and (iii) Lists common determinants of interest group influence in informational models. Consequently, this may illuminate how formal theories can help empirical interest group scholars to analyze data and interpret results.

To understand informational lobbying, I first set it apart from other lobbying mechanisms. Fundamentally, one way to classify theories of interest group influence

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with direct lobbying is into two categories: *incentives* and *persuasion* (Gentzkow and Kamenica 2011, p. 2610).[1] First, special interest groups may influence policy by providing incentives to politicians. Groups may change the marginal costs and benefits of taking certain actions. That is, an interest group may promise a reward if a legislator proposes a certain policy or votes a certain way. This is the mechanism studied in models of quid pro quo lobbying (Groseclose and Snyder 1996; Banks 2000; Battaglini and Patacchini 2018; Chen and Zapal 2022; Judd 2023). Interest groups may also provide resources (legislative subsidies) to politicians so that they have an easier time developing and implementing policies (Hall and Deardorff 2006; Ellis and Groll 2020). Subsidies differ from quid-pro-quo lobbying because interest groups provide money or resources without attaching strings. Borrowing from economics, subsidies differ because they affect legislators' *budgets* rather than the *costs* or *benefits* of policy choices. That is, legislative subsidies loosen legislators' budget constraints,[2] while quid-pro-quo deals affect the costs and benefits of different legislative actions.[3]

Second, interest groups may influence policy by affecting what policymakers learn about the preferences of interest groups, the electoral implications of policies, or policy implications in general. There are two ways in which policymakers can learn something from interest groups. One type for interest groups is to *behave* a certain way, which is conceptualized as *signaling* or *indirect communication*.[4] That is, if interest groups contribute to campaigns, this may signal to policymakers that they care a lot about a policy (Gordon and Hafer 2005). Similarly, if a lobbyist goes out of their way to arrange a meeting with a policymaker, they may make a similar inference that the lobbyist must have important information (Austen-Smith and Banks 2000). In these mechanisms, policymakers learn *indirectly* about an interest group's preferences through observable actions.

This differs, however, from the informational lobbying mechanism studied and reviewed in this article (Potters and Van Winden 1992; Ainsworth 1993). In informational lobbying, it matters what interest group representatives *say* or *write* using *direct* communication with speeches, phone calls, formal letters, emails, and so on. In these models, interest groups typically have an informational advantage—either initially or after acquiring information—and can strategically transmit this information. The interest group knows some facts about the world, e.g., whether a bill will positively or negatively impact economic growth or the environment, and can communicate information about these facts so that a policymaker learns something. Whatever the policymaker then learns can determine policy-making behavior. This differs from lobbying as legislative subsidy (Hall and Deardorff 2006), where even though information and expertise also play a role, communication is not a part of the

[1] Wright (1996) and Ainsworth (2002) provide overviews of informational lobbying.

[2] Bauer et al. (1963) show that lobbyists acted as 'service bureaus' for allied legislators, which can be a form of relaxing legislators' budget constraints.

[3] I thank Gleason Judd and a reviewer for this distinction. See also Blumenthal (2022) for a model in which interest groups provide subsidies to reduce the costs of policy-making.

[4] Stiglitz and Kosenko (2023a, 2023b) distinguishes between indirect and direct communication and reviews the theoretical literature.

legislative subsidy model. Although interest groups can provide information to legislators, there is no clear role for how information changes the *beliefs* of legislators. That is, an explanation of how legislators make inferences about the information of interest groups is absent in theories of lobbying as legislative subsidy (Hall and Deardorff 2006).

In sum, political influence differs in models of persuasion (signaling or direct communication) and models of incentives (vote-buying or legislative subsidies). In the latter, a policymaker *directly* obtains a different payoff from choosing some action through a promised amount of money or a legislative subsidy. In the former, a policymaker *indirectly* obtains a different *expected* payoff from choosing some action based on how information was communicated and the inferences a policymaker makes. That is, the action always gives some *true* payoff that depends on the "state of the world"—and potentially the actions of other policymakers—but the only thing that the interest group can do is to strategically present information.

This distinction is vital. In vote buying models, if an interest group has an unlimited budget to lobby policymakers, the group can perfectly achieve what it wants. By offering extremely large sums of money, it is difficult to imagine that interest groups do not fully influence legislative behavior.[5] Instead, in models of informational lobbying, interest groups cannot use information to fully "deceive" or "manipulate" policymakers. This means that interest groups face a constraint in using information to persuade policymakers. Even if interest groups are omniscient actors, they are constrained by policymakers' beliefs about what is true in the first place.[6]

Naturally, lobbying is not only *always* informational and interest groups may influence policymakers via money and legislative subsidies. Also, interest groups may combine different lobbying tools, and examples of information provision may exhibit characteristics jointly stemming from models of informational lobbying and legislative subsidies. This paper's goal is to explain how conditional on lobbying being informational, interest groups influence policies according to informational lobbying models.

To that end, this article is structured as follows. Section 2 provides examples of informational lobbying. Section 3 then describes the key building blocks of models of informational lobbying from political science and economic theory, and sets it apart from other lobbying mechanisms.[7] Section 4 lists a set of factors that determine the amount of interest group influence. Section 5 provides a final discussion and concludes.

[5] Alternatively, with legislative subsidies, interest groups with unlimited budgets can completely relax a legislator's budget constraints so that they face no constraints in developing and implementing policies (Hall and Deardorff 2006).

[6] Interest groups are also constrained by their incentives to misrepresent. They face a commitment problem in revealing information. Such commitment problems may, however, also exist in models with quid-pro-quo lobbying, where interest groups may renege on their promises in rewarding certain proposals or votes.

[7] Schnakenberg and Turner (2023) provide more detail on the differences among formal theories of lobbying.

Example: general data protection regulation

To clarify the role of information and persuasion in lobbying, I briefly discuss an example of how interested parties attempted to influence a policymaker. The goal is to show how informational lobbying works in practice and how it is distinct from influence mechanisms in other lobbying theories.

In the European Union (EU), many organizations tried to influence the General Data Protection Regulation (GDPR). This policy regulates the use and transfer of EU citizens' online data and was finally adopted in 2016.[8] A *Freedom of Information Request* uncovered emails sent by various organizations addressed to Geran Kaai, who was the Dutch representative to the EU and negotiates on behalf of the Dutch government. At least 91 emails were sent between October 2012 and February 2015, and were disclosed to the Dutch advocacy group *Bits of Freedom* in April 2015. These emails are available on the website of Bits of Freedom.[9] The emails clarify that interest groups had several objectives and strategies in communicating with the Dutch representative. These include emails to request access, provide information, give instructions on how to write amendments, and learn about a policymaker's position and perspective. In what follows, I refer to the emails by their ID—from 1 to 91—which are available in the aforementioned footnote.

Requesting meetings. One goal of interest groups in emails is to simply request a meeting. The goal is more to seek access than to lobby directly (Hansen 1991). In an email to the Dutch representative, an Amazon representative writes:

> "I am writing on behalf of [blank] Senior Manager EU Public Policy at Amazon EU, who would be interested in meeting with you regarding the proposed data protection regulation" (Bits of Freedom: 44).

This quote does not necessarily illustrate that lobbying is informational, but it is a first step in attempting to influence a policymaker. Hence, although Amazon EU could have provided its views and information in the email itself, they preferred to do so in a meeting.

Information provision. In other instances, interest groups simply provide information regarding the policy in the email. The following quote illustrates how an interest group provided information about its position regarding the Data Protection Regulation. The main claim was that its information was new and not yet taken into account.

> "Also, please find attached the Thomson Reuters position on the draft data protection regulation. (...) However, the debate on the data protection review has not so *far taken into account the obligations companies have in this regard*, and the role of tools like World-Check to comply with these obligations. Therefore, *a meeting with Thomson Reuters would offer a different take on the*

[8] https://www.consilium.europa.eu/en/policies/data-protection/data-protection-regulation/ (accessed on February 14th, 2023).

[9] https://www.bitsoffreedom.nl/lobby-tomie-documenten/.

Table 1 Sample of oracle detailed comments on data protection regulation

Provision	Issue	Solution
Article 4(5) data controller—alone or jointly with others determined the purposes, conditions and means of processing of personal data	Could be some confusion that determining "means of processing" creates a controller—often part of the role of the processor is help optimize the processing based on the instructions of the controller	Could add "directly or through services of third party processors" or could add to processor definition that may determine means and conditions on behalf of processor. Alternatively could strike means and conditions
Article 4(8) Consent—freely given specific, informed and explicit by statement or clear affirmative action	Questions arise with employees as to whether consent is "freely" given if there might be negative consequences to withholding consent. Broadening of "explicit" consent requirement	Solutions should be introduced not in definition but in applicable sections on employee consent and data subject consent. Perhaps introducing a balancing test to see if consent is freely given?

Source: Bits of Freedom (45)

> *challenges that were brought to your attention so far*" (Bits of Freedom: 88, emphasis author's).

This is a key component of informational lobbying models. Interested parties claim that they have some information that could lead to different insights, changed beliefs, and potentially changed policies. A quote from another e-mail emphasizes this point:

> "During our review of the proposed text we have identified areas of concern where the current iteration of the proposed Regulations *could give rise to unintended consequences for the Life Sciences Industry*, potentially to the ultimate detriment of medical research advancement and public health" (Bits of Freedom: 86, emphasis author's).

The e-mail's author—a representative from Quintiles—emphasizes that there are *unintended* consequences, referring to the fact that policymakers may propose something without having all available information. After Quintiles provides its information, any consequences will then be completely *intended* given EU policymakers' beliefs about its veracity.

Instructions for amendments. Another strategy that interest groups used was to provide precise information and justifications for the proposal of amendments. This is the clearest example of direct informational lobbying and information transmission. Table 1 is an example of such an instruction, which consists of three parts.

The first part states the current proposed bill's contents. The second part claims that there is a problem with some of its parts. The third part proposes a solution, which could include a suggestion for an amendment to the text of the bill (Bits of Freedom: 45). Similarly, in other examples, interest groups mention (i) The proposed text, (ii) The proposed amendment from the group, and (iii) The justification (Bits of Freedom: 78 and 86). Both examples illustrate how interest groups *strategically* aim to persuade the policy-maker. Besides only stating what they want,

interest groups also provide information in the form of arguments for or against a certain amendment. Information is not just used to communicate an interest group's preferences to policymakers, but also to inform them about the justification for these preferences. The ultimate goal of information provision is to persuade and change beliefs about the policy implications of the GDPR.[10]

Learning about policy-maker's position. Another strategy that becomes apparent is that interest groups often want to learn what the policy-maker prefers. One example comes from the European Federation of Pharmaceutical Industries and Associations (EFPIA). In the e-mail they (i) State their preference, (ii) Provide detailed information, (iii) And mention their wish to learn the policy-maker's (and their colleagues') perspective:

> "EFPIA has been following the development of this file with great interest and welcome the Commission's efforts to further harmonise data protection requirements in the EU. (...) We would be delighted to meet with you in the next couple of weeks *to learn your perspective on this and how you see the Council approach develop.* We would also like to *share some concerns that we have* regarding requirements to key-coded data, the definition of "genetic data" and the prospects of delegated acts. (...) For your information and background, *I attach our position paper.* I will follow-up with a phone call tomorrow to see if we can arrange a meeting" (Bits of Freedom 49, emphasis author's).

Again, the example illustrates that the chances of successful lobbying are contingent on what interest groups know about a policymaker's preferences and views. Another example emphasizes the same concern. A now defunct organization called BRAIN in the Netherlands dealt with the processing of archived content. They requested a meeting with the following concern:

> "In the archival sector there are great concerns about the potential consequences of this bill for the build up, approachability, and use of archival collections. I would like to speak with you *in what way our worries are justified and how the continuation of the process on the final determination of the bill looks like*" (Bits of Freedom 43, emphasis and translation author's).

As informational lobbying models emphasize, a sender of information (in this case, BRAIN) may have some expertise that is based on its experience in the archival sector. At the same time, their ability to persuade (and its necessity) are contingent on what BRAIN's representatives know about the Dutch representative's preferences.

[10] An alternative interpretation is that it was also a legislative subsidy. Documents are not solely provided to persuade the Dutch representative but also to make their life easier by providing texts in a clearly presented way. Thus, insofar as the information was meant to be directly copy-and-pasted, models of legislative subsidy are more applicable. If the goal was to change beliefs, informational lobbying models can help us more in understanding strategic behavior in how information is provided.

Building blocks of informational lobbying models

How can the aforementioned examples be seen in light of formal models of informational lobbying? To answer this question, I clarify that these formal models have several fundamental building blocks. As in any game theoretic model, these blocks are simplifications and there are numerous ways to model these blocks.[11] I start by describing these concepts; starting from how bills are modeled; who the players are; what information is; and how the players' preferences are determined. After clarifying these concepts, I discuss how interest groups can strategically use information to lobby and influence policymakers.

What is a bill? The main object of interest in theories of lobbying is ultimately some bill, regulation, or policy. Interest groups can focus on lobbying at the agenda-setting stage or the voting stage (Austen-Smith, 1993). A bill may contain new rules or regulations that affect voters, policy-makers, and special interest groups, potentially with different distributional implications. Fundamentally, the bill can be conceived as a whole unit without worrying about its individual components. Alternatively, one can consider multiple individual components of the bill and richness in this sense. As such, a bill can be chosen to distribute different benefits to different voters or districts, which can have implications for legislators. The EU Data Protection Regulation bill illustrates how it is a simplification to model it as a binary object. Interest groups often provide arguments about small parts of the bill rather than the bill as a whole. For example, a representative of the European Federation of Pharmaceutical Industries and Associations (EFPIA) mentions that:

> "As regards to the European Parliament's draft report, our main concerns are the following: *AM 334, 335, 336, 337 and 342*. Health research is already highly regulated. The rapporteur's proposal adds an additional and unnecessary layer of regulation that will result in inconsistent requirements across member states, impeding research and development of important new treatments and contrary to the Regulation's goal of harmonisation" (Bits of Freedom: 62, emphasis author's).

Even if a bill is complex, however, it may still be appropriate to consider it as a binary object, as the goal of models is not to maximize realism. Hence, it can suffice to illustrate a mechanism with a binary bill. Also, even if interest groups provide information about a bill's details, they may still care about the implementation of the bill as a whole.

Who are the relevant players? In models of informational lobbying, there are two sets of players. The key aspect is that some players make collective decisions while outside actors try to influence these decisions. There are interest groups which attempt to influence policy.[12] These can also be NGOs, experts, and other types of

[11] For extensive reviews of game theoretic models of signaling and communication, see Banks (2013), Sobel (2013), and Gibbons et al. (2013).

[12] Although most informational lobbying models do not open the black box of the interest group-lobbyist interaction, some focus more on this aspect. For example, see Ellis and Groll (2022); Hirsch et al. (2023) and Hübert et al. (2023).

organizations. In most circumstances, these players have no bargaining power, but can only indirectly influence decisions by providing information. There are also policymakers who are responsible for collective decisions. Depending on the institutional arrangement, the agreement of some group of policymakers is vital to ensure passage of a bill. These could be members of Parliament, committee members, presidents, and member states.

What is information? To design or pass a bill, policymakers may use *information* to make correct decisions. That is, policymakers have some belief about the world and may hear or read something which changes their belief. This learning process occurs by observing information via direct communication. This information could mean different things depending on the context in which interest groups and policymakers interact. It could be information about the preferences of firms and their willingness to locate their headquarters in a specific country. It could be about the implications of different policies in solving financial, health, or environmental crises. It could also be about voters' preferences for different policies. This information is summarized by a "state of the world." A state of the world can take on different values and interest groups and policymakers may be uncertain about this value. Policymakers may be incompletely informed about the willingness of firms to pay taxes in one country over another; they may lack the expertise to know whether a lockdown is optimal during a pandemic; or may not know well which policies different communities within a country prefer. In models of informational lobbying, the interest group's role is to affect what information these policymakers have. Thus, depending on the state of the world a certain bill may fit the situation better than another bill from a legislator's perspective. As in the EU GDPR example, various organizations claimed to have information about how the policy would impact their respective sectors. This is useful information for EU policymakers because they may lack the expertise about the complex implications of policies for all sectors of the economy, such as the life science and technology sector, archival sector, and various other sectors.

What are preferences? The payoffs of interest groups and policymakers are a combination of the "state of the world" and the bill that is implemented. These payoffs may measure how much a policymaker or interest group likes a certain outcome. In some state of the world, a legislator may prefer one version of a bill (denoted x) passes, while in another state of the world, a legislator may prefer another version of the bill (denoted x'). Moreover, interest groups and legislators could have more complex preferences that speak toward the specific detailed contents of a bill. The important thing is that information affects legislators' preferences over bills by affecting their beliefs about the state of the world. Depending on what information is transmitted, a legislator may be able to draft or vote for a different type of bill. The key aspect is that policymakers have clear *ex ante* (before lobbying occurs) preferences that depend on the bill and the state of the world, and that interest groups can influence the policymakers' beliefs about the state of the world.

What is lobbying and influence? In models of informational lobbying, political influence is derived from an interest group's informational advantage over policy-makers. There are four main steps through which influence can take place. In the first step, interest groups provide information to policymakers. In the second,

policymakers update their beliefs about the state of the world. Afterward, policymakers may change their behavior in terms of agenda-setting or votes (Austen-Smith 1993). Fourth and finally, when policy-making behavior is changed so that actual policies are changed, then the interest group is influential. As long as all steps are successful, interest groups are influential according to models of informational lobbying.

The combined first and second step are unique to models of informational lobbying. That is, information transmission takes place, and policymakers indirectly make inferences about the relative value of certain policy choices by learning about the state of the world. This differs from influence in models of quid-pro-quo, where the first and second step comprise making monetary offers or other types of exchanges. It also differs from influence in models of legislative subsidy, where even though the subsidy may take the form of information, there is no active role for policymakers to make inferences and update their beliefs.

Communication and making inferences. How can information be transmitted from interest groups to policymakers? There could be a simple e-mail or phone call; a formal meeting in the legislator's office; or an informal dinner meeting. After observing a message in models of informational lobbying, a policy-maker asks: "Conditional on the interest group's strategy, what do I believe about this message?" A key element is Bayesian thinking, where players assign probabilities to different states of the world under uncertainty.

Maximizing influence. Interest groups want to maximize their influence over policy but they cannot always get what they want. They face two major constraints. One constraint is informational and is related to how policymakers use information. That is, policymakers use Bayes' rule to update their beliefs about the state of the world. This means that interest groups can provide information to influence beliefs but these beliefs are generated in a way that satisfies the laws of probability. If policymakers anticipate that an interest group acquires and provides a report with information, policymakers know the likelihood of different reports before receiving it. The second constraint is related to incentives. It means that the interest group must want to stick to its intended strategy of information transmission. For example, if policymakers anticipate report A in state of the world a and report B in state of the world b, then interest groups must actually want to match the correct report with the state. This ensures that, for example, the emails that were sent to the Dutch representative are informative about the state of the world. If no matter the circumstances, interest groups send the same email, then policymakers do not learn anything and are better off ignoring the e-mails. In models of informational lobbying, interest groups try to influence policies as much as they can subject to constraints, which include constraints related to Bayesian updating and incentives to misrepresent information.

Determinants of interest group influence

What are some key determinants of interest group influence? Models of informational lobbying provide several answers that can be useful for further empirical investigation. Formal models speak to this question by examining a game's

equilibria and the mechanisms that are involved. An interest group is *influential* if its informational activities change a legislature's final policies. The more these policies are geared toward the interest group's preferences, the more influential the interest group is.

In formal models of informational lobbying, influence is typically seen as the difference between two extreme quantities, making a *binary* comparison. That is, a policy x can take on two values, $x = 0$ or $x = 1$, where the interest group is either influential or not. On the one hand, the interest group's baseline influence is equal to the situation in which the group would not have existed at all. That is, the interest group has no influence if none of its information ever change the policies that policymakers implement. On the other hand, there are the policies that are implemented in equilibrium. The interest group's level of influence can be seen as its expected payoff from information provision relative to the baseline. The difference between these two quantities highlights the effect of the interest group's presence and impact on policies.

Another way to conceptualize an interest group's influence is by comparing its expected impact on policy via information provision, making a more *continuous* comparison. A policy x can take on any value on the interval [0, 1], where $x = 0$ could mean no influence, $x = \frac{1}{2}$ could refer to partial influence, and $x = 1$ to full influence. In one world, the interest group is uninformed and provides no information. In another world, the interest group is either partially or fully informed, and uses its information so that it pushes legislative outcomes in its favor. If the interest group is expected to observe certain pieces of information—where each of which leads to some policy outcome—it becomes possible to compute the expected policy outcome. This makes it possible to compute the interest group's expected payoff. This could mean different things. That is, some firms may always simply prefer no regulation regardless of what information they observe, while, e.g., think tanks want policymakers to make policies that are more tailored to the population's needs.

The translation from influence in formal models to influence in data is not straightforward. The key issue is that payoffs are not observed. Scholars can make assumptions about interest group preferences and what policy outcomes they prefer. However, we can never know the cardinal preferences of interest groups, only the ordinal ranking of different policy outcomes. Even more, this requires that interest groups are truthful about what they prefer before they provide information. Especially when interest group preferences depend on the state of the world, this requires that scholars know what the state of the world was and know the group's preferences in each state of the world.

I focus on five categories that may determine interest group influence according to models of informational lobbying. First, the method of communication and its relation to an interest group's credibility. In turn, credibility issues determine whether interest groups want to exert effort to provide information. Second, the amount of preference alignment among an interest group and policymakers (*external congruence*). The third category studies the amount of preference alignment among policymakers (*internal congruence*). The fourth covers the role of private meetings and how these can increase the interest group's influence. The fifth discusses how the relationship among multiple interest groups affects each group's potential influence

on policy. Although these categories are discussed separately, there may be interaction effects among them as well. The purpose of the discussion is to further our understanding of these concepts in isolation.

Communication and credibility

Formal models of informational lobbying make different assumptions about the method of communication. There are three prevalent ways of modeling information transmission in models of informational lobbying.[13] The implications for lobbying depend on the assumptions of what type of information interest groups transmit to policymakers. First, in models of cheap talk, information is not verifiable, and legislators update their beliefs based on their expectations about the interest group's strategy in sending messages (Farrell and Gibbons 1989; Farrell and Rabin 1996; Crawford and Sobel 1982; Green and Stokey 2007; Lipnowski and Ravid 2020). With cheap talk, interest groups face the strongest incentive constraints because lying is both easy and free. The second type of information is verifiable (Grossman and Hart 1980; Grossman 1981; Seidmann and Winter 1997; Hagenbach et al. 2014). In this type of model, the interest group can send a report containing information but cannot lie about it. In these models, the interest groups observes (a signal about) the state of the world, which could be in the set [0, 1] for example. Then a report can provide that the state of the world is in a subset of [0, 1], i.e., they do not need to be perfectly precise and provide a point estimate of the state but they do need to be truthful. Once policymakers observes the report, they know it contains the true state of the world. Third, in models of Bayesian persuasion (Gentzkow and Kamenica 2011), the interest group can use cheap talk without commitment problems. That is, the interest group faces no incentive constraints in terms of truth-telling. An interpretation is that interest groups run experiments about the state of the world and the signals are automatically sent to policymakers. The interest group can only design the experiment, but not manipulate the signals after they are realized.[14]

Consequently, the way information is transmitted affects the interest group's credibility and influence on policy. The issue of credibility exists because of an interest group's willingness to lie to policymakers. Ideally, interest groups would like to promise that they provide information in a certain way. However, when groups do not have information that could persuade policymakers, these groups have incentives to misrepresent information. The absence of commitment problems implies that interest groups can achieve the maximum level of informational influence. For empirical researchers, this implies that the presence of commitment problems in information provision may force interest groups to not use information to lobby policymakers but switch to legislative subsidies or quid pro quo deals. It may also force interest groups to provide more sources for their claims. In other cases, commitment

[13] Gibbons et al. (2013) review other models of informational influence.

[14] Although most study the canonical setting in which the sender is uninformed (Gentzkow and Kamenica 2011), others allow the sender to hold private information before designing experiments (Hedlund 2017).

problems are less salient. For example, if there is a repeated interaction, then policymakers can punish interest groups if they lie. This may increase the scope for communication in a way that is more preferred by interest groups (Ellis and Groll 2022).

Different models may have varying levels of applicability to empirical contexts. One distinction is between different types of information. In some cases, policymaker can easily verify the interest group's claims, for example on issues that have been debated for a significant amount of time. This is also the case when interest groups provide sources for their claims.[15] Otherwise, if information is harder to verify, for example when it is related to artificial intelligence, then the policymaker has to base its inferences on the interest group's communication strategy and messages, which in turn can be determined by the group's preferences.

External congruence

External congruence refers to the level of agreement among the interest group and policymakers. Higher alignment among an interest group and policymaker means that they are more likely to draw the same conclusions about which policies are optimal when given the same information. Several models have diverse implications as to how external congruence matters for lobbying. Overall, however, external congruence makes communication easier and should facilitate more informational influence.[16]

In canonical models of cheap talk, political actors make policy in a one-dimensional setting (Crawford and Sobel 1982). This means that interest groups and policymakers agree that in higher states of the world, higher policies are better. Political actors may, however, still disagree about what exact policy is optimal based on information. Put differently, states of the world can be ordered so that everyone agrees about how the state of the world affects the "direction" of their preferences, for example in favor of more or less regulation. Interest groups can be credible due to their different preferences in different states of the world. The interest group has incentives to exaggerate due to its bias compared to a legislator but does not want to exaggerate too much because preferences are partially aligned. A key result of this type of model is that interest groups can transmit more information the more aligned they are with a certain legislator. Hence, if an interest group is too biased relative to a policy-maker, communication breaks down and the policy-maker cannot learn any new information.

In a similar vein, external congruence can help the interest group because the policymaker is more likely to approve a bill that the group prefers. More recent models assume that the interest group's preferences do not depend on the state of the world. In the language of Crawford and Sobel (1982), this would mean that the interest group is highly biased. The interest group may still be influential, even if

[15] Austen-Smith and Wright (1994) allow for different costs of 'auditing' information and low costs imply that claims are easily verifiable.

[16] Sobel (2013), however, notes that not *every* formal model of communication exhibits the result that alignment makes communication easier.

they communicate via cheap talk (Lipnowski and Ravid 2020). The impact of external congruence is clearly illustrated in models of Bayesian persuasion. In this setting, interest groups face no commitment problems and can design an experiment which reveals information in a way that is optimal for the interest group (Gentzkow and Kamenica 2011; Alonso and Câmara 2016). The more aligned the decision-maker is, the less informative the interest group's signal needs to be for the group to be influential. In turn, interest groups can save on costs by acquiring less precise reports. Hence, interest groups benefit from external congruence in realizing policy influence.

The relative value of these models, especially on the dimension of state-independence or state-dependence of preferences, is important for empirical scholars. If groups are highly biased one way or the other, then models of state-independent preferences can be applicable to evaluate if and how they can still be influential. This is more likely to be true for environmental groups for example. On the other hand, if interest groups are more aligned to policymakers, then models with state-dependent preferences (such as Crawford and Sobel (1982)) are more valuable. Independent experts and think tank representatives are more likely to fit this framework.

Internal congruence

Internal congruence refers to the level of preference alignment among policymakers. Naturally, if there is only a single policymaker, then this concept is irrelevant. The presence of multiple policymakers may have significant effects on political influence (Alonso and Câmara 2016; Schnakenberg 2017). In some settings, the presence of multiple policymakers is still irrelevant when information provision occurs in public. In particular, if multiple legislators with various biases make policy using majority rule in the model of Crawford and Sobel (1982), it suffices to examine the pivotal legislator's decision-making. It is, however, not always true that the decision of the legislature can be reduced to the decision of a pivotal policymaker (Duggan 2014). Hence, interest groups may use different strategies in legislatures when compared to an interaction with a single policymaker.

In another lobbying mechanism, interest groups can privately provide information to some legislators which can then be used to persuade their peers. Even if there is a single dimension, the presence of multiple legislators can be useful. In this setting, the interest group can only successfully use an intermediary if that intermediary's approval is sufficiently informative for a majority of their peers (Caillaud and Tirole 2007; Awad 2020). Hence, internal congruence has a more nuanced effect. For example, if there are only two legislators, more internal congruence allows intermediaries who are more aligned to the interest group help the group influence policies. But less internal congruence gives the interest group more freedom in targeting legislators, making it easier to target friendly legislators. Thus, there is an interaction effect between internal and external congruence.

An important component that drives interest group influence is the *dimensionality* of the state of the world. Put simply, can the issue be simplified by only looking at one dimension of a political issue, or do multiple separate issues exist? For

example, do legislators only care about the financial implications of a bill or do they also care about its environmental implications? If they care about both, and value these dimensions differently, then multi-dimensional models of informational lobbying are applicable. The possibility of influence improves drastically if interest groups have the possibility to "trade off" different dimensions (Chakraborty and Harbaugh 2007, 2010). The presence of multiple dimensions can also give the interest group more flexibility in persuading policy-makers. The idea is that the interest group can exploit different minimal winning coalitions depending on its information (Alonso and Câmara 2016; Schnakenberg 2015, 2017).[17] Because there is no "median" legislator, the interest group can exploit the fact that different pieces of information can be convincing for different coalitions of legislators. Even if the interest group is highly biased and has state-independent preferences, the presence of multiple dimensions can mute credibility issues. This illustrates how less internal congruence can have a positive effect on interest group influence, if there are multiple dimensions that are heterogeneously valued among policymakers.

Even though the main emails that were analyzed focused on a single policymaker, many organizations emphasized the importance of other policy-making institutions. For example, a representative of the Dutch Association of Insurers mentions that they spoke with a certain Member of European Parliament and brought the same points to their attention (Bits of Freedom: 71). Another group invites Geran Kaai to a lunchtime debate in the European Parliament where multiple MEPs are present (Bits of Freedom: 42). An email from Quintiles emphasizes that conversations with multiple legislators is important: “We have had the opportunity to meet and discuss our concerns with certain of your colleagues but unfortunately not with yourself” (Bits of Freedom: 86). Hence, if possible, it is useful for empirical scholars to assess how different legislators agree or disagree with each other about policy. The distribution of preferences in legislatures affects the amount of influence of interest groups.

Private meetings

How and when do interest groups benefit from speaking with policymakers in private? Models of informational lobbying give two main answers. First, interest groups may benefit because it allows them to use certain policymakers as intermediaries (Awad 2020; Awad and Minaudier 2022). Second, talking in private gives the interest groups more freedom in influencing the policymakers’ beliefs, and subsequently, policy outcomes (Bardhi and Guo 2018; Chan et al. 2019).[18] These models are not

[17] This logic requires that the legislature does not make decisions using unanimity rule and that legislators disagree sufficiently. That is, there must be sufficient heterogeneity among legislators.

[18] If communication occurs in public, then every policymaker necessarily has the same information and beliefs. But if communication is private, then they may have different beliefs about the state. The interest group can benefit from this by exploiting the fact that policymakers are uncertain about whether they are pivotal. That is, they do not know which ‘minimal winning coalition’ they are part of, and whether they are pivotal.

exhaustive, and there may be other reasons for interest groups to meet in private, such as reputation concerns or the willingness to withhold information from competitors. These models illustrate that privacy in meetings is a valuable asset which can increase policy influence. If public communication is at most partially influential, the option of private conversations can ensure that interest groups increase their influence. Hence, an immediate empirical implication is that interest groups may be willing to pay a substantial amount to talk in private rather than in public (Awad and Minaudier 2023).

The aforementioned example of lobbying the Dutch representative illustrate as well that lobbying happened in private. Some documents are also referred to as "strictly private and confidential" (Bits of Freedom: 86), likely not meant to be shared with other legislators or the public. In the EU, however, there are many avenues to provide information in public, i.e., in public consultations organized by the European Commission, or based on invitation in the European Parliament. Still, lobbyists may make a conscious decision to provide information in private, and formal models can help explain when, why, and how this is the case.

A main issue of lobbying data is that private meetings are not observable. Empirical researchers may not know whether these meetings took place. Even if they did know that meetings took place, they are unable to verify what was said in the meeting. By knowing the conditions under which lobbying happens in private and how influence takes place, empirical interest group scholars can say things with more certainty. That is, if formal models predict that the difference between public and private modes of persuasion is not significant, then a pure focus on public communication is warranted. Otherwise, interest group scholars may incorrectly assess how influential interest groups are as we do not know if, for example, competing groups provided information in private and limited another group's influence. Alternatively, scholars may over-estimate the effects of lobbying in public if private meetings were most influential.

Interest group competition and cooperation

In almost all empirical situations, interest groups do not act in a vacuum. The strategic interaction among multiple interest groups is another factor that may determine the amount of influence each group has on policy. Most of the focus of the informational lobbying literature is on two competing groups (Battaglini 2002). Typically, each interest group is better off if it is the only active group compared to situations in which they compete (Gentzkow and Kamenica 2017; Li et al. 2016). Some find that the conditions under which an interest group can be influential is reduced (Schnakenberg 2017), or that groups are forced to fully disclose their information (Awad 2020). Models with a single interest group are more applicable when one side is dominant in terms of resources and/or information. In other settings with more balance among groups, models with multiple competing groups are more applicable. The presence of competition may, for example, affect which legislators are targeted by interest groups (Awad and Minaudier 2022).

Although most focus is on competing groups, interest groups may also cooperate. There is not as much literature that focuses on this interaction. There are some cases where multiple groups join forces in information provision. For example, going back to the aforementioned EU example, an email clarifies this incentive. The support from multiple interest groups seems to be important in persuasion attempts. The attachment to an email contains policy-relevant information, and the email is signed by a Managing Director of AmCham EU, the Director-General of DIGITALEUROPE, the Interim President & CEO of the European-American Business Council, the President of the Software & Information Industry Association, and the President & CEO of the United States Council for International Business (Bits of Freedom 50). It emphasizes it reaches a high-level consensus among business associations. Here is an example of where formal work is seemingly lacking and can help better understand why interest groups may want to join forces

Discussion and conclusion

This paper aims to help empirical scholars understand how interest groups can influence policymakers via information provision. Consequently, this can help with generating ideas for data collection and their use, and to sharpen predictions and hypotheses. Also, it may help them to interpret their empirical results in light of a large literature on lobbying (Canen and Ramsay 2023). That being said, not every model of informational lobbying is automatically applicable, nor is there an informational lobbying model available for every empirical question. If interest group scholars want to make use of informational lobbying models, the first question they should answer is whether the main mechanism of influence is informational. That is, are policymakers initially uncertain about some aspect of a policy, and are interest groups actively trying to provide information? Do policymakers need to make inferences based on how information was transmitted? This review develops conceptual clarity if the underlying mechanism of influence is informational.

There are, generally, two ways to do so. One, scholars can look at an empirical setting of lobbying and determine which class of models is most relevant due to the assumptions that are made. Can legislators easily verify information? Do interest groups face credibility issues? Is there one legislator or are there multiple ones? Can a policy issue be reduced to a single dimensions or do policymakers disagree about the relative importance of different aspects of a bill? These are all relevant questions and can guide scholars in specific directions.

Two, scholars can study a specific empirical question and use models that tackles this if there are any. For example, some study the "whom to lobby" question, and some papers focus explicitly on that aspect in their model (Caillaud and Tirole 2007; Schnakenberg 2017; Awad 2020; Dellis 2023). Others study the ‘when to lobby’-question, where some theoretical work focuses on the importance of time in lobbying and different stages of policymaking (Austen-Smith 1993; Crombez 2002; Awad and Minaudier 2022).

Whatever the approach that scholars wish to take, this review identifies several factors that can determine interest group influence over policies. Ultimately,

theoretical and empirical interest group scholars have a joint interest in understanding and studying whether and how interest groups influence policies. A deeper cooperation between theoretical and empirical approaches can ultimately help both types of approaches to study interest groups and their influence.

Declarations

Conflicts of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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