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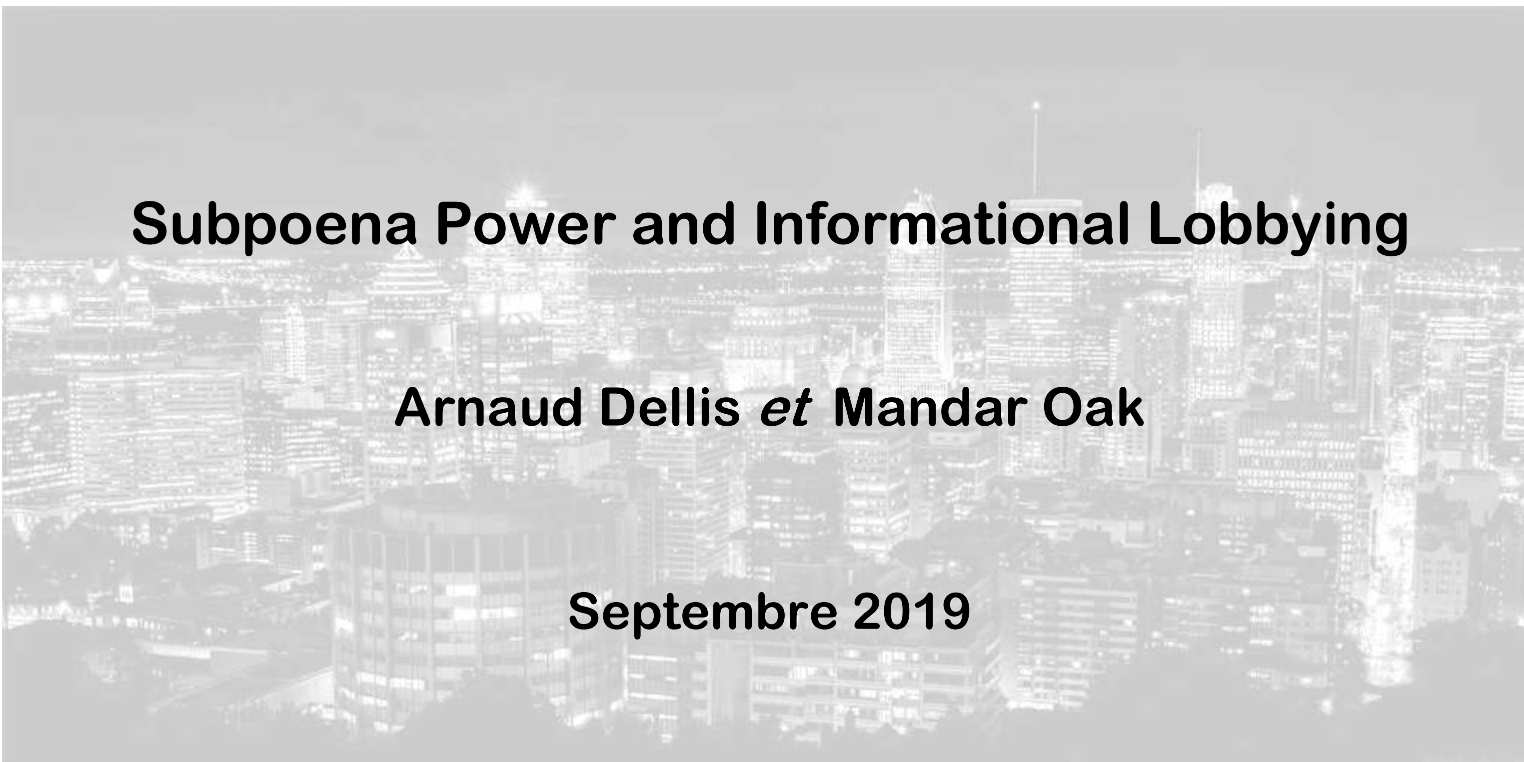

Subpoena Power and Informational Lobbying

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Septembre 2019

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This paper studies the role of subpoena power in enabling policymakers to make better informed decisions. In particular, we take into account the effect of subpoena power on the information voluntarily supplied by interest groups as well as the information obtained by the policymaker via the subpoena process. To this end, we develop a model of informational lobbying in which interest groups seek access to the policymaker in order to provide him verifiable evidence about the desirability of implementing reforms they care about. The policymaker is access-constrained, i.e., he lacks time/resources to scrutinize the evidence owned by all interest groups. The policymaker may also be agenda-constrained, i.e., he may lack time/resources to reform all issues. We find that if a policymaker is agenda-constrained, then he is *better off* by having subpoena power. On the other hand, if a policymaker is not agenda-constrained, he can be *worse off* by having subpoena power. The key insight behind these findings is that subpoena power, while it increases the policymaker's ability to acquire information from interest groups, it also alters the amount of information they voluntarily provide via lobbying, and that the net effect differs depending on whether or not the policymaker is agenda-constrained.

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Key Words: Lobbying; Interest groups; Information transmission; Subpoena; Access; Policy agenda.

Subject Classification: D72; D78; D83.

1. INTRODUCTION

In making policy decisions, policymakers often stand to benefit from obtaining information held by various interest groups.[1] These interest groups, while better informed than policymakers, need not share the objectives of policymakers and, as a result, may not always be forthcoming with their information. The extent to, and circumstances under, which information is transmitted from interest groups to policymakers is the subject of a literature on informational lobbying and, at a more general level, of a literature on strategic information transmission.[2] The focus of this literature is mostly on the *voluntary* provision of information by potentially biased sources.

Policymakers also have, to a varying degree, the ability to compel different parties to provide information. In the U.S., both houses of the Congress hold hearings to investigate topics of interest and invite experts as well as stakeholders to testify before them. The House of Representatives and the Senate also grant powers to their various committees to subpoena witnesses and documents. Subpoena power is defined as "[t]he authority granted to committees by the rules of their respective houses to issue legal orders requiring individuals to appear and testify, or to produce documents pertinent to the committee's functions, or both" (Kravitz, 2001; 250). Furthermore, subpoena power is enforced by the Congress's 'contempt powers' which impose penalties for noncompliance with the subpoena such as refusing to testify, withholding information, or misrepresenting information supplied to the Congress under oath.[3,4]

[1]For empirical evidence on the influential role of lobbying on policy choices, see, among others, Gawande, Maloney and Montes-Rojas (2009), Tovar (2011), Belloc (2015), and Kang (2016).

[2]Several key contributions in these literatures are: on signalling, Potters and van Winden (1992), Lohmann (1995), Rasmusen (1993); on cheap talk, Crawford and Sobel (1982), Austen-Smith (1993); on persuasion, Milgrom (1981), Milgrom and Roberts (1986), Kamenica and Gentzkow (2011).

[3]Similarly, various federal agencies such as the Department of Health and Human Services (HHS) or the Securities and Exchange Commission (SEC) are endowed with subpoena powers, though their powers are limited and are at the discretion of the courts.

[4]Subpoena power also arises in the context of Congressional power of oversight over its own bureaucrats and even the conduct of politicians. These cases (such as the Mueller investigation into the Trump campaign or the Starr inquiry into the Clinton-Lewinski scandal) get more attention and media coverage, but are not directly relevant to the context of lobbying which we study in this paper.

The rationale as to why legislative bodies should have subpoena power has been articulated by various constitutional and legal scholars. For instance, writing for the unanimous opinion in *McGrain v. Daugherty*, 273 U.S. 135, Justice Van Devanter wrote:

> "The power of inquiry—with process to enforce it—is an essential and appropriate auxiliary to the legislative function. . . . A legislative body cannot legislate wisely or effectively in the absence of information respecting the conditions which the legislation is intended to affect or change; and where the legislative body does not itself possess the requisite information— which not infrequently is true—recourse must be had to others who possess it. Experience has taught that mere requests for such information often are unavailing, and also that information which is volunteered is not always accurate or complete; so some means of compulsion are essential to obtain what is needed."

The same informational rationale is stated in the Canadian House of Commons Procedure and Practice (2009):[5] "Standing committees often need the collaboration, expertise and knowledge of a variety of individuals to assist them in their studies and investigations. ... But situations may arise where an individual does not agree to appear and give evidence. If the committee considers that this evidence is essential to its study, it has the power to summon such a person to appear."

In this paper we approach the efficacy of endowing policymakers with subpoena power from the viewpoint of information transmission. Here we use the term 'subpoena power' in a broad sense that includes seeking of testimonies, depositions, hearings of expert opinions and other means of obtaining information that may not be voluntarily provided by different stakeholders. But it also includes independent research into a policy issue that a policymaker may commission or conduct themselves. In many countries, governments have non-partisan agencies or advisory bodies who, at the behest of policymakers, conduct research on various topics. The

[5] See http://www.ourcommons.ca/procedure-book-livre/document.aspx?sbdid=dc42fa65-adaa-426c-8763-c9b4f52a1277&sbpid=96cff41f-62c8-4467-9c98-08fb0af11a96

Productivity Commission in Australia, for instance, has as one of its core functions, conducting "public inquiries and research studies requested by the government".[6] Similarly, the Congressional Budget Office in the U.S., at the request of "the Chairman or Ranking Member of a committee or subcommittee or at the request of the leadership of either party in the House or Senate", produces reports that "cover every major area of federal policy, including spending programs, the tax code, and budgetary and economic challenges".[7] While it may appear obvious that endowing policymakers with greater means to acquire information would improve the quality of policymaking, one needs to carefully analyze the incentive effects such power would have on the behavior of informed interest groups. In particular, one needs to take into account how such power affects the extent of voluntary information provision via costly lobbying.

To analyze this question, we propose a game-theoretic model in which a policymaker (hereafter, PM) is responsible to making policy on two issues. On each issue, he must decide whether to implement a 'reform' or to keep the 'status quo'. The PM's optimal policy on each issue depends on the issue-specific state of the world, about which the PM is uninformed.

Each issue is advocated by a specific interest group (hereafter, an IG), which has *verifiable* evidence about the state of the world for its issue of concern, and can lobby the PM at a cost. We can think of the act of lobbying as taking different forms: IGs may hire professional lobbyists to obtain access to the PM and present their information; alternatively, IGs may commission a policy paper detailing the available information and send it to the PM; or, as yet another option, IGs may hold information sessions or run awareness campaigns wherein policy relevant information is disseminated.

Whichever form lobbying takes, in order for the PM to learn with certainty the state of the world, he must grant 'access' to the IG. Granting access means spending time or resources (e.g., of his staff or by hiring an independent expert) in scrutinizing or verifying the information presented by IGs. The specific activities

[6] See https://www.pc.gov.au/about/contribute
[7] See https://www.cbo.gov/about/products#5

may involve holding meetings with IGs, reading their reports, scrutinizing their claims by seeking further evidence, and so on. Similarly, when the PM is vested with subpoena power, he can compel IGs to hand over proprietary information and analyze that information to learn about the state of the world, force them to testify under oath during congressional hearings, or access the information from independent sources.

To study the effect of endowing the PM with subpoena power on the informational efficiency of policymaking, we compare two policymaking regimes: one with subpoena power, and another without. In the regime without subpoena power, the PM can grant access and scrutinize the information possessed by an IG only if the IG offers it by lobbying. To put it differently, in this regime the PM can open the door to an IG that comes knocking at his door or read a policy brief an IG has prepared for his perusal, but he cannot force an IG to come through his door or prepare a policy brief. By contrast, in the regime with subpoena power, the PM has the option to access the information possessed by an IG irrespective of whether it lobbies or not. Thus, subpoena power provides the PM the ability to compel IGs to disclose information which they would not have voluntarily provided via lobbying.

Both lobbying as well as answering subpoena can be costly to the IGs. This includes the costs of preparing and presenting information to the PM. Additionally, lobbying also involves the cost of hiring lobbyists paid to secure access to the PM. These costs can be substantial, by one account as high as $50,000 a month in retainer to a lobbying firm.[8] Also, as Groll and Ellis (2014; 2017) argue, lobbyists, who have their long term reputation to protect, act as 'certifiers' of the veracity of the information provided by IGs, a service that comes at a fee. Similarly, answering a subpoena can be costly as well. When an IG is issued a subpoena, there is a stipulated time-frame within which information must be provided, a specific time at which testimonies must be offered, etc. which are not controlled by the IG and hence can impose considerable inconvenience cost. Additionally, the often public nature of the hearings and accompanying media scrutiny could impose their own

[8] See https://www.nytimes.com/2017/08/30/magazine/how-to-get-rich-in-trumps-washington.html

costs in terms of public perception. In this paper we are agnostic as to whether lobbying or answering a subpoena is relatively more expensive to the IGs. Our analysis encompasses both cases, and our main conclusion holds in either case.

Subpoena power can have two opposite informational effects, a direct effect and an indirect one. The direct effect is that the PM's ability to issue subpoena grants him access to information that would otherwise not be available to him. This effect is in line with the above-cited quotes from Justice Van Devanter and from the Procedure and Practice of the Canadian House of Commons. The indirect effect comes from the change in the informational content of the IGs' lobbying behavior. When answering a subpoena is less costly relative to lobbying, the possibility that the PM can issue a subpoena can lead to less information being offered via lobbying. On the other hand, when the cost of answering a subpoena is relatively high, IGs may prefer to 'preemptively' offer information via lobbying, even if such information is unfavorable. This can reduce the overall informativeness of the act of lobbying, since the PM will only learn the information by scrutinizing it. The total effect – direct plus indirect – is determined in equilibrium.

A key feature of our model is that the PM is faced with limited time and resources, which restricts his ability to issue subpoena or grant access to the IGs. We call this constraint, the *access constraint*. Additionally, the PM may also face time and resource constraints which may restrict his ability to implement reform on all issues. We call this constraint, the *agenda constraint*. The existence of time and resource constraints, and the fact that such constraints force policymakers to prioritize issues and limit the extent to which information regarding them can be verified is documented extensively in the literature. Jones and Baumgartner, in their influential study titled 'The politics of attention: How government prioritizes problems,' write (2005; viii-ix):

> "[P]olicymakers are constantly bombarded with information of varying uncertainty and bias, not on a single matter, but on a multitude of potential policy topics. The process by which information is prioritized for action, and attention allocated to some problems rather than others

> is ... a process by which a political system processes diverse incoming information streams. Somehow these diverse streams must be attended to, interpreted, and prioritized."

Similarly, according to Bauer, Dexter and De Sola Pool (1963; 405) "[t]he decisions most constantly on [a Congressman's] mind are not how to vote, but what to do with his time, how to allocate his resources, and where to put his energy." Hall (1996; 24) reports a legislative assistant saying: "He [the Congressman] had a conflict, but the point is that members always have conflicts. They have to be in two places at once, so they have to choose: Which issue is more important to me?" In absence of adequate time/resources to verify information, the PM must sometimes 'legislate in the dark', i.e., "rely on cues, readily available sources, and their own predispositions to make decisions efficiently" (Curry, 2015; 76). One source of such cues is the act of lobbying by IGs. To quote Curry, "[t]he positions interest groups take on a bill can provide useful information." (Curry 2015; 27).

In particular, our model assumes that the PM has time/resources to issue a subpoena or grant access to only one IG. Furthermore, we consider two cases: one with agenda constraint, where the PM cannot reform more than one issue; and another without agenda constraint, where the PM can choose to reform both issues. The presence of access and agenda constraints affects an IG's incentives to lobby and the PM's policy choice. Moreover, the extent to which these constraints are operative plays a key role in determining how subpoena power affects the informational efficiency of policymaking.

Thus, we compare the equilibrium policy outcomes of four different games that vary along two dimensions: the availability of subpoena power and the size of the agenda. The following table summarizes our classification of the four games.

	Subpoena power	**No subpoena power**
Agenda constraint	Subpoena game with agenda constraint	No-subpoena game with agenda constraint
No agenda constraint	Subpoena game without agenda constraint	No-subpoena game without agenda constraint

First, we study the case without agenda constraint. In this case, if the PM does not have subpoena power, then in equilibrium, depending on parameters values, either both IGs lobby truthfully (a separating lobbying equilibrium) or IGs overlobby (a semi-separating lobbying equilibrium). We say that an IG lobbies truthfully when it lobbies if and only if it has favorable information. We say that an IG overlobbies when it lobbies if it has favorable information, and randomizes between lobbying and not lobbying if it has unfavorable information. When an IG overlobbies, it does so anticipating that the PM will interpret the act of lobbying to mean it has favorable information while hoping that its 'bluff' will not be called because of the PM being busy accessing information on the other issue (binding access constraint).

We then show that in the absence of the agenda constraint, subpoena power can be detrimental to the informational quality of policymaking. This happens despite the PM having the ability to obtain information not voluntarily provided by the IGs. The reason for this result is that subpoena power alters the IGs' lobbying behavior and can lead to a reduction in the total information available to the PM. We find that the way subpoena power alters the voluntarily provided information depends on the relative costs of answering subpoena vs. lobbying. When lobbying is relatively more costly, subpoena power of the PM leads the IGs to wait to be issued a subpoena, thereby being able to reveal their information without having to lobby the PM and bear the associated cost of lobbying. This reduces the information offered via lobbying. On the other hand, when answering a subpoena is relatively more costly, an IG may lobby 'preemptively' so to avoid bearing the cost of answering a subpoena. This reduces the informational content of the act of lobbying as the IGs lobby irrespective of their information.

Second, we consider the case with agenda constraint, i.e., the case in which the PM can reform at most one issue. We show that, irrespective of whether or not the PM is endowed with subpoena power, depending on parameters values, either equilibrium lobbying is truthful for both IGs or one of the two IGs abstains from lobbying. Importantly, for all parameters values the equilibrium lobbying behavior of the IG advocating the issue that the PM considers the most important is perfectly informative. In contrast to the case without agenda constraint, this is possible because the agenda constraint implies that when the PM knows that it is desirable to reform the more important issue, the information on the other issue no longer has any value for him (since he will reform the more important issue and, given the agenda constraint, will then be unable to reform the other issue). This allows the PM to follow a strategy that deters the IG advocating the more important issue from deviating from this perfectly informative lobbying. That strategy is as follows: grant access to the IG advocating the more important issue and reform this issue if and only if the IG advocating this issue lobbies and, when granted access, provides favorable information. Since the lobbying behavior of this IG is perfectly informative, the PM always makes an informed policy choice on that issue. Moreover, when the PM chooses to keep the status quo on this issue, he can use his subpoena power, if he has one, to get the other IG's information, and make an informed policy choice on the other issue. It follows that with subpoena power, the PM always makes the same equilibrium policy choice as the one he would make if he were fully informed. This is not true however in the absence of subpoena power since, in that case, the PM cannot get or infer the information owned by the IG that abstains from lobbying.

To sum up, we show that endowing the PM with subpoena power *improves* the informational quality of policymaking in the case with agenda constraint, a result which is consistent with the standard rationale as to why lawmakers should have subpoena power. However, contrary to this rationale, we also show that subpoena power can be *detrimental* to the informational quality of policymaking in the case without agenda constraint. This occurs when the information the PM can get access to by issuing subpoenas is more than compensated by a loss in the informational content of the IGs' lobbying decisions triggered by the PM's subpoena power.

The remainder of the paper is organized as follows: in Section 2 we review the related literature; in Section 3 we develop a simple model of informational lobbying; Section 4 provides the analysis of the model; Section 5 concludes. All proofs are contained in the Appendix.

2. RELATED LITERATURE

The novelty of our paper is to study how endowing the PM with subpoena power alters the IGs' lobbying behavior and, in turn, the informational quality of policymaking. In this section we discuss how our paper relates to some of the most relevant existing papers.

Our paper contributes to the literature on informational lobbying. Seminal contributions to this literature are Austen-Smith and Wright (1992), Potters and van Winden (1992) and Rasmusen (1993). Within this literature, a set of papers looks at lobbying and the payment of monetary contributions by the IGs as a way of securing access and providing information to the PM.[9] Seminal contributions to this literature are Austen-Smith (1995; 1998), Lohmann (1995) and Cotton (2009; 2012). An important difference between these papers and our analysis is that they consider a PM choosing a single policy, which precludes them from studying the effect of a constraint on the agenda. Dellis and Oak (2019) considers a model of IG access with a multi-dimensional policy space, and studies how a constraint on the agenda affects information transmission by the IGs. Our contribution to this literature, and therefore the key difference between our analysis and all these papers, is to study the implications of subpoena power on informational lobbying.

[9]Langbein (1986), Wright (1990) and Ansolabehere, Snyder and Tripathi (2002) provide evidence consistent with monetary contributions by the IGs serving to secure access to lawmakers, with the purpose of presenting them with their information. Kalla and Broockman (2016) provides field experimental evidence that monetary contributions facilitate access to lawmakers. Brown and Huang (2017) provides evidence suggesting that gaining access is valuable to corporations.

Our paper is also related to the literature on the effect of disclosure laws.[10] Lewis and Poitevin (1997) shows that mandatory disclosure can lead to less-informed choices by eliminating the signalling value of voluntary information disclosure. This paper differs from ours in several important ways. In particular, by considering a single binary choice with a single sender, Lewis and Poitevin cannot capture the access constraint that plays a key role in our analysis. Instead, Lewis and Poitevin obtain their result by assuming that the receiver is imperfectly able to understand the disclosed evidence, a feature not present in our analysis. Matthews and Postlewaite (1985), Dahm, González and Porteiro (2009), Polinsky and Shavell (2012) and Schweizer (2017) study the effect of mandatory disclosure on a firm's incentive to test for product quality. These papers show that, by preventing the firm from keeping silent when it gets unfavorable information, mandatory disclosure laws weaken the firm's incentives to test for product quality, which could reduce consumers' welfare compared to a situation where disclosure is voluntary. Our analysis differs from these papers in two important ways. First, they focus on the detrimental incentive of mandatory disclosure on the *production* of information. We, on the other hand, show that even when information is readily available, but costly to transmit, subpoena power can result in less information being transmitted.[11] Second, these papers focus on the decision of a single sender (the firm) and its impact on the welfare of the receiver (the consumers). We, on the other hand, consider multiple senders whose decisions are interrelated through the receiver's access constraint.

Other papers in this literature look at the disclosure of private verifiable information. Jovanovic (1982) considers a setting in which a large number of sellers can each decide to disclose at a cost a private signal about their product quality. Jovanovic shows that in equilibrium, there is too much voluntary disclosure compared to the social optimum. Fishman and Hagerty (1990) investigates how much discretion should be granted to a sender in his choice of which pieces of information

[10] See Dranove and Jin (2010) for a detailed survey of this literature.

[11] As in our paper, several contributions in this literature consider the case where the information is readily available, and show that mandatory disclosure can lead to higher social welfare if: 1) sellers are duopolists and do not voluntarily disclose their information because it would intensify price competition (Board 2009); or 2) some consumers are not fully rational (Fishman and Hagerty 2003; Saak 2016). Neither of these two mechanisms are present in our analysis.

to disclose. Fishman and Hagerty show that under certain conditions, limiting discretion leads to better informed decisions. These papers differ from ours in many ways. First, the access constraint, which plays a key role in our analysis, is absent from these papers. Second, our setting accounts for multiple information providers interacting strategically, which those papers do not account for. Finally, contrary to our analysis where the receiver (the PM) is limited in the number of senders (the IGs) whose evidence he can scrutinize, in Fishman and Hagerty (1990) this is the sender who is limited in the number of pieces of information he can disclose.

Interpreted in a broad sense, subpoena power can be seen as the PM's ability to access independent information sources (e.g., government agencies, direct information acquisition by the PM). Rasmusen (1993), Cotton and Dellis (2016) and Argenziano, Severinov and Squintani (2016) consider models in which the PM chooses either to acquire information directly or to rely on information provided by an IG. These papers differ from ours in several ways. First, Rasmusen (1993) and Cotton and Dellis (2016) look at how the presence of informational lobbying distorts the PM's information acquisition choice, which is absent from our analysis where the focus is instead on the effect on the signalling content of lobbying. Second, Argenziano et al. (2016) proposes a cheap-talk game with costly information acquisition by the IG, not a game with costly transmission of verifiable information. Third, Rasmusen (1993) and Argenziano et al. (2016) consider a single issue, which prevents them from analyzing the effect of agenda and access constraints. Gailmard and Patty (2013) is another related paper that studies the effect of stovepiping on information transmission, where stovepiping is a process by which the PM obtains direct access to unfiltered information. This paper differs from ours in at least two important ways. First, stovepiping results in lower-quality information being transmitted, while subpoena power gives access to information of the same quality. Second, Gailmard and Patty consider a unidimensional policy space, while we consider a multi-dimensional policy space with the possibility of a constraint on the agenda. Dewatripont and Tirole (1999), Krishna and Morgan (2001), and Kartik, Lee and Suen (2017), among others, investigate whether a decisionmaker benefits from consulting multiple experts. These papers differ from ours in many ways, notably in their assumption of there being a single issue.

3. MODEL

We develop our argument using a simple model of IG access.

A PM must choose policy on two issues, indexed by $i = 1, 2$. We denote a policy by $p = (p_1, p_2)$. For each issue i, the PM can either undertake a reform or discrete public investment project ($p_i = 1$) or, alternatively, keep the status quo or not undertake the public investment project ($p_i = 0$).

For each issue i, there are two possible states of the world: $\theta_i \in \{0, 1\}$. For each issue i, $\theta_i = 1$ with probability $\pi \in (0, 1/2)$. The distribution of θ_i is common knowledge, but its realization is unknown to the PM. The PM's utility from policy $p = (p_1, p_2) \in \{0, 1\}^2$ in state $\theta = (\theta_1, \theta_2) \in \{0, 1\}^2$ is given by $U(p, \theta) = \sum_{i=1}^{2} \alpha_i \cdot u_i(p, \theta)$, where $u_i(p, \theta) = 1$ (resp. 0) if $p_i = \theta_i$ (resp. $p_i \neq \theta_i$), $\alpha_1 = \alpha > 1$ and $\alpha_2 = 1$.

Each issue i is advocated by an interest group (IG_i). IG_i's utility from policy $p = (p_1, p_2)$ is given by $v_i(p) = p_i$, i.e., IG_i wants $p_i = 1$ independently of θ. IG_i has private verifiable evidence on θ_i, and decides whether to lobby the PM at a utility cost $f \in (0, 1)$. If an IG chooses to not lobby, it will bear a utility cost $c \in [0, 1)$ in the event it is issued a subpoena.

Upon observing the IGs' lobbying decisions, the PM decides whether to grant access or issue a subpoena to an IG in order to scrutinize its evidence. Upon being granted access or issued a subpoena, IG_i must reveal its evidence on θ_i. the PM faces a time constraint that prevents him from granting access and issuing subpoenas to both IGs. In other words, the PM does not have enough time to scrutinize the evidence of both IGs.

We are interested in comparing the implications of two regimes: a Subpoena regime and a No-subpoena regime. In the Subpoena regime, the PM can grant access to a lobbying IG or issue a subpoena to a non-lobbying IG. In the No-subpoena regime, the PM can grant access to a lobbying IG, but cannot issue a subpoena to a non-lobbying IG.

We are furthermore interested in studying how the implications of these two regimes depend on the size of the agenda. We denote by $N \in \{1, 2\}$ the maximum number of projects the PM can undertake. When $N = 2$, the PM can choose to reform both issues. When $N = 1$, the PM can choose to reform at most one issue. In the latter case, we say the PM faces a constraint on his agenda.

The policymaking process has four stages. At stage 0, Nature chooses θ_i for each issue i, and reveals it to IG_i. States are independent across issues. The realized state θ_i is private information to IG_i. At stage 1, the IGs decide simultaneously and independently whether to lobby the PM. The PM observes the IGs' lobbying decisions and then updates his beliefs about θ. At stage 2, the PM decides whether and to which IG to grant access or issue a subpoena to, observes the evidence owned by that IG and then updates his beliefs about the realized state for this issue. Finally, at stage 3, the PM chooses policy. We now describe the structure of each stage, working backwards.

3.1. Stage 3: Policy Choice

By the time the PM chooses policy, he has observed: 1) the IGs' lobbying decisions; and 2) the realized state for the issue advocated by the IG to which he has granted access or issued a subpoena. We denote IG_i's lobbying decision by $\ell_i \in \{0, 1\}$, where $\ell_i = 1$ if IG_i lobbies and $\ell_i = 0$ otherwise. We denote the PM's decision to grant access or issue a subpoena to IG_i by $a_i \in \{\emptyset, \theta_i\}$, where $a_i = \theta_i$ if the PM grants access or issues a subpoena to IG_i (and thus observes θ_i) and $a_i = \emptyset$ otherwise. For a given lobbying profile $\ell = (\ell_1, \ell_2)$ and access profile $a = (a_1, a_2)$, the PM forms belief $\beta_i(\ell_i, a_i)$ that $\theta_i = 1$, using Bayes' rule whenever possible. To lighten notation, we shall write β_i in place of $\beta_i(\ell_i, a_i)$ when this does not create confusion.

A policy strategy, $\rho = (\rho_1, \rho_2)$, specifies for each issue i the probability $\rho_i(\ell; a) \in [0, 1]$ that the PM chooses $p_i = 1$ given lobbying profile $\ell = (\ell_1, \ell_2)$ and access profile $a = (a_1, a_2)$.

When $N = 2$, the PM chooses $\rho = (\rho_1, \rho_2)$ such that

$$\rho_i(\ell; a) \begin{cases} = 1 & \text{if } \beta_i > 1/2 \\ \in [0,1] & \text{if } \beta_i = 1/2 \\ = 0 & \text{if } \beta_i < 1/2 \end{cases}$$

for each i. In words, the PM reforms issue i when he believes $\theta_i = 1$ more likely than $\theta_i = 0$.

When $N = 1$, the PM chooses $\rho = (\rho_1, \rho_2)$ such that

$$\rho_i(\ell; a) \begin{cases} = 1 & \text{if } \beta_i > 1/2 \text{ and } (\beta_i - 1/2) \cdot \alpha_i > \left(\beta_{-i} - 1/2\right) \cdot \alpha_{-i} \\ \in [0,1] & \text{if } \beta_i \geq 1/2 \text{ and } (\beta_i - 1/2) \cdot \alpha_i \geq \left(\beta_{-i} - 1/2\right) \cdot \alpha_{-i} \\ = 0 & \text{otherwise} \end{cases}$$

for each i, with the restriction that $p_1 + p_2 \leq 1$. In words, the PM reforms issue i when 1) he believes $\theta_i = 1$ more likely than $\theta_i = 0$, and 2) he anticipates a greater expected utility gain from reforming issue i than from reforming the other issue.

3.2. Stage 2: Access

By the time the PM chooses which IG to grant access or issue a subpoena to, he has observed the IGs' lobbying decisions. Given lobbying profile $\ell = (\ell_1, \ell_2)$, the PM forms belief $\beta_i^{Acc}(\ell_i)$ that $\theta_i = 1$, using Bayes' rule whenever possible.[12]

An access strategy, γ, specifies the probability $\gamma(a; \ell) \in [0,1]$ that the PM chooses access profile $a = (a_1, a_2) \in \{\emptyset, \theta_1\} \times \{\emptyset, \theta_2\}$ given lobbying profile $\ell = (\ell_1, \ell_2) \in \{0,1\}^2$. Since the PM can grant access or issue a subpoena to at most one IG, we have $a \in \{(\theta_1, \emptyset), (\emptyset, \theta_2), (\emptyset, \emptyset)\}$. To lighten notation, we shall write $\gamma_1(\ell)$ (resp. $\gamma_2(\ell)$) as a shorthand for $\gamma((\theta_1, \emptyset); \ell)$ (resp. $\gamma((\emptyset, \theta_2); \ell)$), the probability the PM grants access or issues a subpoena to IG_1 (resp. IG_2). Throughout the analysis we maintain the tie-breaking assumption that when indifferent whether to grant access or issue a subpoena, the PM chooses in favor of it. This tie-breaking assumption implies $\gamma_1(\ell) + \gamma_2(\ell) = 1$ for all ℓ, except in the No-subpoena regime

[12] The superscript *Acc* refers to the access stage.

where $\gamma((\emptyset, \emptyset); (0,0)) = 1$ since the PM cannot issue subpoenas to non-lobbying IGs. We shall sometimes write $\gamma_i(\ell_i; \ell_{-i})$ as the probability the PM grants access or issues a subpoena to IG_i given lobbying decisions ℓ_i and ℓ_{-i} by IG_i and IG_{-i}, respectively.

the PM chooses access strategy γ that maximizes

$$EU(\gamma \mid \rho) = \sum_{i=1}^{2} [\gamma_i(\ell) \cdot W_i(\ell) + (1 - \gamma_i(\ell)) \cdot Z_i(\ell)] \cdot \alpha_i,$$

with the additional restriction that $\gamma_i(0; \ell_{-i}) = 0$ in the No-subpoena regime. $W_i(\ell)$ (resp. $Z_i(\ell)$) stands for the probability the PM chooses $p_i = \theta_i$ if he does (resp. does not) grant access or issue a subpoena to IG_i given lobbying decisions $\ell = (\ell_1, \ell_2)$. We define $X_i(\ell) \equiv W_i(\ell) - Z_i(\ell)$ as the increase in the probability the PM chooses $p_i = \theta_i$ by granting access or issuing a subpoena to IG_i.[13]

When the PM has subpoena power or when both IGs lobby, the PM chooses $\gamma = (\gamma_1, \gamma_2)$ such that

$$\gamma_i(\ell) \begin{cases} = 1 & \text{if } X_i(\ell) \cdot \alpha_i > X_{-i}(\ell) \cdot \alpha_{-i} \\ \in [0,1] & \text{if } X_i(\ell) \cdot \alpha_i = X_{-i}(\ell) \cdot \alpha_{-i} \\ = 0 & \text{if } X_i(\ell) \cdot \alpha_i < X_{-i}(\ell) \cdot \alpha_{-i} \end{cases}$$

for each i. In words, the PM grants access or issues a subpoena to the IG from which he anticipates to get the most valuable information.

3.3. Stage 1: Lobbying

IG_i's lobbying strategy, λ_i, specifies the probability $\lambda_i(\theta_i) \in [0,1]$ that IG_i lobbies in state θ_i. For given $\theta_i \in \{0,1\}$ IG_i chooses $\lambda_i(\theta_i)$ that maximizes

$$Ep_i(\lambda_i(\theta_i), \lambda_{-i}, \gamma, \rho) - \lambda_i(\theta_i) \cdot f - (1 - \lambda_i(\theta_i)) \cdot \Gamma_i^0(\lambda_{-i}, \gamma) \cdot c,$$

[13]See Appendix A for the derivation of the expression for $X_i(\ell)$.

where $Ep_i(\lambda_i(\theta_i), \lambda_{-i}, \gamma, \rho)$ is the probability the PM chooses $p_i = 1$, and $\Gamma_i^0(\lambda_{-i}, \gamma)$ is the probability the PM issues a subpoena to IG_i when it does not lobby.[14]

We shall say that IG_i *lobbies truthfully* if $\lambda_i(\theta_i) = \theta_i$ for all θ_i, i.e., IG_i lobbies when it has favorable information ($\theta_i = 1$) and abstains from lobbying when it has unfavorable information ($\theta_i = 0$).

3.4. Equilibrium

The solution concept is Perfect Bayesian equilibrium. Roughly speaking, an equilibrium consists of strategies $\{\lambda(\cdot), \gamma(\cdot), \rho(\cdot)\}$ and beliefs $\left\{\beta^{Acc}(\cdot), \beta(\cdot)\right\}$ such that 1) strategies are sequentially rational given the beliefs, and 2) the beliefs are obtained from the strategies using Bayes' rule whenever possible. Throughout the analysis, we shall restrict attention to equilibria where $\lambda_i(1) \geq \lambda_i(0)$ for each i, i.e., IG_i is weakly more likely to lobby the PM when $\theta_i = 1$ than when $\theta_i = 0$. This restriction is without loss of generality for our qualitative results.

An equilibrium always exists. In case of equilibrium multiplicity we shall restrict attention to most-informative equilibria, as is standard in the literature.

3.5. Discussion

We have made a series of assumptions in order to present our argument in as simple a way as possible.

First, we have assumed that the prior π, the lobbying cost f and the cost c of answering a subpoena are the same for both issues and both IGs. This assumption is made to ease exposition. Our results generalize to situations where these variables differ across issues and IGs, i.e., $\pi_1 \neq \pi_2$, $f_1 \neq f_2$ and $c_1 \neq c_2$.

Second, we have assumed that IG_i must reveal its evidence on θ_i when granted access or issued a subpoena. Ruling out the possibility that IGs hide their evidence is, in our setting, without loss of generality. Our results generalize to situations where IGs could decide whether or not to costlessly reveal their evidence once granted access or issued a subpoena. Indeed, Grossman's (1981) and Milgrom's

[14]In the No-subpoena regime, $\Gamma_i^0(\lambda_{-i}, \gamma) = 0$.

(1981) unraveling result implies that in equilibrium IG_i would choose to reveal its evidence when $\theta_i = 1$, meaning the PM would be able to infer $\theta_i = 0$ when IG_i chooses to not reveal its evidence.

Ruling out the possibility that IGs dissemble is consistent with empirical observations that lobbyists rarely lie to lawmakers.[15] This behavior has been rationalized by the need for lobbyists to develop a reputation for reliability in order to preserve their access to lawmakers.

Third, we have assumed that when indifferent whether or not to grant access or issue a subpoena to an IG, the PM chooses in favor of it. Formally, we have assumed that $\sum_i \gamma_i (\ell_i; \ell_{-i}) = 1$ for every lobbying profile ℓ, except when $\ell = (0, 0)$ in the No-subpoena game (where $\gamma_i (0; 0) = 0$ for each i). Our result that endowing the PM with subpoena power can be detrimental to the informational quality of policymaking when $N = 2$ would not be robust to relaxing this assumption. However, the detrimental effect of subpoena power would then be replaced with a neutral effect, which would preserve our main conclusion that subpoena power need not improve the informational quality of policymaking. Furthermore, equilibria in which $\sum_i \gamma_i (\ell_i; \ell_{-i}) < 1$ for some lobbying profile ℓ would not be robust to allowing for the IGs' 'trembling hands'.

4. ANALYSIS

This section analyzes how endowing the PM with subpoena power affects the informational quality of policymaking. We measure the informational quality of policymaking by the ex ante probability the PM chooses the fully-informed policy, i.e., the policy he would choose if he were to observe directly the realized state of the world, $\theta = (\theta_1, \theta_2)$.[16] We denote the fully-informed policy by p^{FI}.

[15] See, among others, Hansen (1991), Berry (1997) and Ainsworth (2002).

[16] Alternative measures of the informational quality of policymaking (such as the PM's ex ante expected utility, the probability the PM is perfectly informed about θ, the probability the PM chooses $p_i = \theta_i$ for each issue i, the gap between the PM's prior and posterior beliefs about θ_i) would lead to the same conclusions as the ones we reach in the analysis below.

4.1. An illustrative example

Before presenting a general analysis of the model developed above, we provide the flavor of our results using some specific parameters values. For this purpose, we assume the probability the state of the world for an issue is pro-reform, π, is 0.3, and the cost of answering a subpoena, c, is 0.5. We shall consider two cases: one where the cost of lobbying, f, is relatively high, specifically $f = 0.85$; and the other where it is relatively low, i.e., $f = 0.25$.

4.1.1. Policymaking with No agenda constraint ($N = 2$)

We start by considering a game where the PM can choose to reform both issues.

- *Case 1*: $f = 0.85$. We first look at the case where the PM does not have subpoena power. We claim that, for the parameters values given above, an equilibrium exists in which each IG lobbies truthfully. To verify our claim, consider the following access and policy strategies by the PM: when both IGs lobby, the PM grants each IG access with probability 0.5 ($\gamma_i(1;1) = 0.5$); if IG_i does not lobby, the PM maintains the status quo on issue i ($\rho_i(0;\emptyset) = 0$, writing $\rho_i(\ell_i; a_i)$ as a shorthand for $\rho_i(\ell; a)$); if IG_i lobbies but is not granted access, the PM reforms issue i ($\rho_i(1;\emptyset) = 1$); and if IG_i lobbies and is granted access, the PM chooses the optimal policy for state θ_i ($\rho_i(1;\theta_i) = \theta_i$). The PM's interim beliefs are $\beta_i^{Acc}(\ell_i) = \ell_i$; in words, the PM believes $\theta_i = 1$ if IG_i lobbies, and $\theta_i = 0$ otherwise.

  To verify that these strategies and beliefs are part of an equilibrium, note that the PM's access-stage beliefs are consistent with the lobbying strategies, and that the PM's policy choice is optimal given his beliefs. Since the gain from reform, which is equal to the gain from lobbying when $\theta_i = 1$, is greater than the cost of lobbying ($1 - 0.85 > 0$), it is optimal for each IG to lobby when it has favorable information. Would IG_i want to deviate and choose to lobby when $\theta_i = 0$? Such deviation would lead to issue i being reformed only if IG_i is *not* granted access. The probability of this event is $(0.3)\cdot(0.5) = 0.15$, i.e., it is the probability that the other IG lobbies and is granted access. Hence, when $\theta_i = 0$ the expected gain from deviating to lobby is $0.15 - 0.85 < 0$, implying the deviation is not profitable. This establishes that in the No-subpoena game without agenda constraint, an equilibrium with truthful lobbying exists. Note that this equilibrium leads the PM to adopt the fully-informed policy, p^{FI}.

We now consider the case where the PM has subpoena power, which gives him the ability to scrutinize an IG's information even when that IG does not lobby. Would there be an equilibrium with truthful lobbying in this case? Were such an equilibrium to exist, it would have both IGs lobbying truthfully, the PM holding beliefs consistent with such strategies and choosing access and policy optimally. Under these strategies, when $\theta_i = 1$, IG$_i$ lobbies and gets $p_i = 1$, which yields a net payoff of $1 - 0.85 = 0.15$. If it deviates to not lobby, then with probability 0.7 the other IG does not lobby either, in which case the PM issues IG$_i$ a subpoena with probability $\gamma_i(0;0)$. With probability 0.3, the other IG lobbies, in which case IG$_i$ is issued a subpoena with probability $\gamma_i(0;1)$. In either case it results in a payoff, net of the cost of answering subpoena, of $1-0.5$, i.e., 0.5. Hence, IG$_i$'s expected payoff from not lobbying when $\theta_i = 1$ is

$$[(0.7) \cdot \gamma_i(0;0) + (0.3) \cdot \gamma_i(0;1)] \cdot (0.5).$$

Similarly, IG$_{-i}$'s expected payoff from not lobbying when $\theta_{-i} = 1$ is

$$[(0.7) \cdot (1 - \gamma_i(0;0)) + (0.3) \cdot (1 - \gamma_i(1;0))] \cdot (0.5).$$

For each IG to want to lobby when it has favorable information, its expected payoff from lobbying, 0.15, must be greater than each of the expected payoffs described above. A necessary condition for this to happen is that each of the two expressions above is smaller than 0.15 when $\gamma_i(1;0) = 1$, $\gamma_i(0;1) = 0$ and $\gamma_i(0;0) = 0.5$. That is, if

$$0.15 \geq (0.7)(0.5)(0.5),$$

which is not true.

Thus, when the lobbying cost, f, is relatively high, subpoena power destroys the IGs' incentives to lobby truthfully since they are better off abstaining from lobbying and waiting for the PM to issue them a subpoena, in this way revealing their information without having to bear the upfront cost of lobbying to request access to the PM.

We now look at the case where lobbying costs are relatively low compared to the cost of answering subpoena.

- *Case 2:* $f = 0.25$. As with the previous case, when the PM has no subpoena power, an equilibrium with truthful lobbying exists. The lobbying, access and policy choice strategies are the same as in the previous case. That truthful lobbying is indeed part of an equilibrium can be seen by observing that when $\theta_i = 1$ the expected payoff from lobbying is positive $(1 - 0.25 > 0)$, and when $\theta_i = 0$ it is negative $(0.15 - 0.25 < 0)$.

  Now consider the case where the PM has subpoena power. We claim that in this case an equilibrium with truthful lobbying does not exist. Were such equilibrium to exist, then in it each IG would lobby with probability π, i.e., when the state of the world is favorable. The expected payoff for IG_i from lobbying when $\theta_i = 0$ would then be given by

$$[\pi \cdot (1 - \gamma_i(1;1)) + (1 - \pi) \cdot (1 - \gamma_i(1;0))] - f.$$

  The first term of the above expression comes from the fact that if IG_i lobbies it will get $p_i = 1$ if and only if it were *not* given access by the PM. This happens with probability $1 - \gamma_i(1;1)$ if the other IG lobbies, and with probability $1 - \gamma_i(1;0)$ if the other IG does not lobby.

  The expected payoff of IG_i from not lobbying when $\theta_i = 0$ is

$$[\pi \cdot \gamma_i(0;1) + (1 - \pi) \cdot \gamma_i(0;0)] \cdot (-c).$$

The term in brackets in the above expression is the probability that IG_i will be issued a subpoena by the PM. This happens with probability $\gamma_i(0;1)$ when the other IG lobbies, and with probability $\gamma_i(0;0)$ when the other IG does not lobby.

If an equilibrium with truthful lobbying were to exist then, when $\theta_i = 0$, IG_i must be better off not lobbying rather than lobbying, i.e.,

$$[\pi\cdot(1-\gamma_i(1;1))+(1-\pi)\cdot(1-\gamma_i(1;0))]-f \leq [\pi\cdot\gamma_i(0;1)+(1-\pi)\cdot\gamma_i(0;0)]\cdot(-c)$$

and a similar inequality must hold for IG_{-i}. A necessary conditions for these inequalities to hold is that they must hold for each i when $\gamma_i(0;0) = \gamma_i(1;1) = 0.5$, $\gamma_i(1;0) = 1$ and $\gamma_i(0;1) = 0$. Putting these conditions together, the necessary condition for an equilibrium with truthful lobbying is

$$\frac{\pi}{2} - f + \frac{1-\pi}{2}c \leq 0$$

which in our numerical example reduces to $0.325 - 0.25 \leq 0$, which is not true. It therefore implies that an equilibrium with truthful lobbying does not exist.

The reason for the non-existence of such equilibrium is the relatively high cost of subpoena relative to that of lobbying. Given that the PM might issue a subpoena to an IG, which imposes on it a cost 0.5, the option to voluntarily offer information, even when information is unfavorable, is relatively cheap, costing only 0.25.

To sum up, for the parameters values considered in this example, when there is no agenda constraint and when the PM does not possess subpoena power, there exists an equilibrium with truthful lobbying, leading the PM to implement the fully-informed policy, p^{FI}. On the other hand, when the PM possesses subpoena power, the equilibrium cannot sustain truthful lobbying.

However, could it be the case that, in such equilibrium, while lobbying does not provide full information, the additional subpoena power might make up for this lack, leading to the PM obtaining full information? As shown formally in Claims 2.4 and 2.5 in Appendix C, this cannot be the case. To get an intuition for this result, observe that since the PM can subpoena/access the information provided by only one IG, for an equilibrium to lead to full information, we must have at least one IG lobbying truthfully. As we saw, there is no equilibrium in which both IGs lobby truthfully, so the only other possibility is that there exists an equilibrium in which one IG, say IG_i, lobbies truthfully. If that were the case then the PM would have nothing to gain from granting access to IG_i, while getting some valuable information from granting access/issuing a subpoena to IG_{-i} for at least some of its lobbying decisions, ℓ_{-i}. Therefore, the PM's optimal strategy involves granting access/issuing a subpoena to IG_{-i} with a sufficiently high probability, and consequently granting access/issuing a subpoena to IG_1 with a low probability. But then it would be profitable for IG_1 to deviate from truthful lobbying when $\theta_1 = 0$. Thus, such an equilibrium cannot exist.

It then follows that in the game without agenda constraint, for the parameters values considered in this example, when the PM is endowed with subpoena power, there is no equilibrium in which he chooses the fully-informed policy. Endowing the PM with subpoena power is then detrimental to the informational quality of policymaking.

4.1.2. Policymaking with an agenda constraint ($N = 1$)

We now consider a game where the PM can adopt at most one reform project.

- *Case 1:* $f = 0.85$. We start again with the case where the PM has no subpoena power. As shown formally in Appendix B, in equilibrium we have that: IG_1 lobbies truthfully and IG_2 abstains from lobbying; the PM's access-stage beliefs are $\beta_1^{Acc}(\ell_1) = \ell_1$ and $\beta_2^{Acc}(0) = \pi = 0.3$; and the PM's access strategy is $\gamma_1(1, \ell_2) = 1$ and $\gamma_2(0, 1) = 1$. In words, the PM *prioritizes* issue 1, i.e., he grants access to IG_1 whenever it lobbies, and reforms this issue if and only if $\theta_1 = 1$. IG_2 is granted access if it lobbies and IG_1 does not. In this case, issue 2 is reformed if and only if $\theta_2 = 1$. This access strategy can be part of an equilibrium when $N = 1$, even though it could not when $N = 2$, since, once the PM infers from IG_1's lobbying decision that $\theta_1 = 1$, he no longer values information on θ_2 given that he anticipates he will reform issue 1 and, due to the agenda constraint, will be unable to reform issue 2 whatever θ_2 is. Under this strategy, it is easy to verify that IG_1 will lobby truthfully, and that IG_2 will not lobby when $\theta_2 = 0$. It remains to verify that not lobbying is IG_2's best-response even when $\theta_2 = 1$. Under this strategy IG_2's payoff is 0. If it were to deviate and lobby, it would be granted access with probability 0.7 (i.e., when IG_1 does not lobby) and its expected payoff would be equal to $(0.7) \cdot (1) - 0.85 = -0.15$, which is lower than its payoff if it does not lobby. This confirms that the strategies described above are part of an equilibrium. Note that in this equilibrium, since he has no other information about θ_2 than the prior π, the PM cannot always implement the fully-informed policy.

Turning to the case where the PM is endowed with subpoena power, we show in Claim 1.7 in Appendix B that there exists an equilibrium involving the same strategies as in the game without subpoena power, but with one addition: when neither IG lobbies, the PM now issues a subpoena to IG_2, i.e., $\gamma_2(0,0) = 1$. Under these strategies, the PM gets perfectly informed about θ_1. Moreover, when $\theta_1 = 0$, in which case the PM considers reforming issue 2, he learns θ_2 by issuing a subpoena to IG_2. Since IG_2 is granted access or issued a subpoena only when IG_1 does not lobby, IG_2's expected payoff from lobbying in state θ_2 is

$$(1 - \pi) \cdot \theta_2 - f,$$

and its expected payoff from not lobbying is

$$(1 - \pi) \cdot (\theta_2 - c).$$

Comparing the two we have $(0.7) \cdot \theta_2 - 0.85 < (0.7) \cdot \theta_2 - (0.7) \cdot (0.5)$, which means, IG_2 prefers to not lobby in either state of the world.

Thus, with subpoena power, IG_1's equilibrium lobbying behavior still makes the PM informed about θ_1 and, at the same time, gives him the option to acquire information about θ_2 when he values it (i.e., when $\theta_1 = 0$). This enables the PM to reform issue 1 whenever $\theta_1 = 1$ and reform issue 2 when $\theta_1 = 0$ and $\theta_2 = 1$. That is, in the case where there is an agenda constraint and the PM has subpoena power, he chooses the fully-informed policy, p^{FI}. In this case, endowing the PM with subpoena power improves the informational quality of policymaking.

- *Case 2:* $f = 0.25$. In this case, when the PM has no subpoena power, there exists an equilibrium with truthful lobbying: both IGs lobby truthfully; and the PM grants access to IG_1 whenever it lobbies and to IG_2 when it lobbies and IG_1 does not. Under these strategies, IG_1 will lobby only when $\theta_1 = 1$ - since it gets $p_1 = 1$ if and only if it lobbies. Similarly, it is easy to see that IG_2 will not lobby when $\theta_2 = 0$. Will IG_2 lobby when $\theta_2 = 1$? If it lobbies, it incurs the lobbying cost $f = 0.25$; it is granted access with probability 0.7 (i.e., when IG_1 has not lobbied) in which case it gets $p_2 = 1$. Its net expected payoff from lobbying, therefore, is 0.7 - 0.25 > 0, which exceeds the zero payoff of not lobbying. Thus, in this case an equilibrium with truthful lobbying exists, enabling the PM to implement the fully-informed policy.

  Now let us look at the case where the PM has subpoena power. As we show in Claim 1.8 in Appendix B, an equilibrium exists where IG_1 lobbies truthfully and IG_2 always lobbies, irrespective of whether $\theta_2 = 1$. As in the previous case, the PM prioritizes issue 1, i.e., he grants access to IG_1 whenever it lobbies and chooses $p_1 = \theta_1$; if IG_1 does not lobby, the PM believes $\theta_1 = 0$ and then grants access or issues a subpoena to IG_2. The incentives for IG_1 to lobby truthfully are exactly as in the case without subpoena power. To verify that IG_2 indeed finds it optimal to always lobby, observe that its expected payoff from lobbying is $(1 - \pi) \cdot \theta_2 - f$, while its expected payoff from not lobbying would be $(1-\pi)\cdot(\theta_2 - c)$. Comparing the two we have $(0.7)\cdot\theta_2 - 0.25 > (0.7)\cdot\theta_2 - (0.7)\cdot(0.5)$, which means that IG_2 prefers to lobby in either state of the world.

Thus, in the case where the cost of lobbying is low relative to the cost of answering a subpoena, IG_2 always lobbies, i.e., voluntarily offers information, even if it is unfavorable. The PM accesses this information only when it has learnt that the issue he prioritizes, i.e., issue 1, is not worth reforming. Thus, in this case, the PM implements the fully-informed policy, whether or not he is endowed with subpoena power.

To sum up, the example illustrates that in the presence of an agenda constraint, subpoena power is either neutral to or improves the informational quality of policymaking. In the next part of Section 4, our general analysis shows this result to hold over the entire space of parameters values.

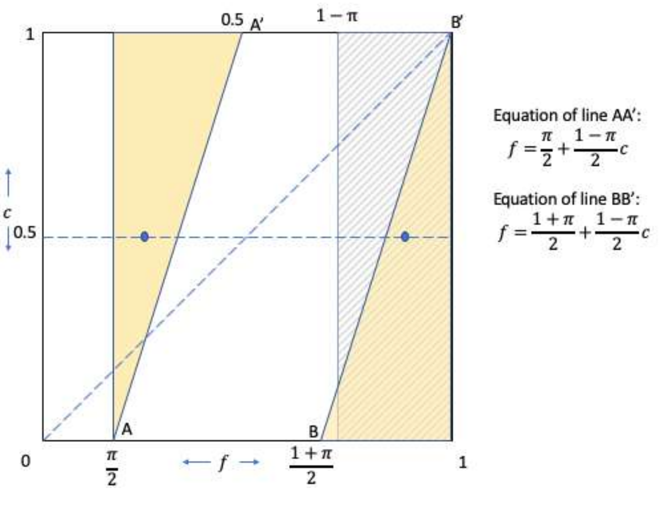

FIG. 1 Equilibria with and without subpoena power

Figure 1 shows the more general range of parameters over which the results of the example apply. For values of $f \in [\pi/2, (1+\pi)/2]$, equilibria with truthful lobbying exist for games without agenda constraint and with no subpoena power. The two shaded triangular areas show the (f, c) combinations for which in games without agenda constraint, endowing the PM with subpoena power leads to policy choice that does not correspond to the fully-informed policy. Thus, in the range denoted by those two triangular areas, subpoena power is detrimental to the informational quality of policymaking. The specific values we used in our example can be seen as represented by the two points along the $c = 0.5$ line.

On the other hand, in the game with agenda constraint, subpoena power improves the informational quality of policymaking if the parameters are in the striped rectangular area at the right side of the parameters space, i.e., $f > 1 - \pi$. In that region, in games with agenda constraint but without subpoena power there is no equilibrium that implements the fully-informed policy, but with subpoena power the fully-informed policy is implemented. In the other range, i.e., $f \leq 1 - \pi$, subpoena power is neutral to the informational quality of policymaking since the PM implements the fully-informed policy with or without subpoena power.

4.2. Policymaking with an Agenda Constraint (N=1)

We now proceed with the general analysis of the model developed in Section 3, starting with the case where the PM cannot adopt more than one reform project.

When $N = 1$, the fully-informed policy is given by

$$p^{FI} = \begin{cases} (1, 0) & \text{if } \theta_1 = 1 \\ (0, \theta_2) & \text{if } \theta_1 = 0. \end{cases}$$

We shall denote by p^S the equilibrium policy when the PM is endowed with subpoena power, and by $p^{\sim S}$ the equilibrium policy when he is not endowed with subpoena power. We shall further write $\Pr\left(p = p^{FI}\right)$ as the ex ante probability the PM chooses the fully-informed policy, p^{FI}.

Proposition 1. *Suppose $N = 1$. We have:*

1. $\Pr\left(p^{\sim S} = p^{FI}\right) = 1 = \Pr\left(p^S = p^{FI}\right)$ *if* $f \leq 1 - \pi$.

2. $\Pr\left(p^{\sim S} = p^{FI}\right) < 1 = \Pr\left(p^S = p^{FI}\right)$ *if* $f > 1 - \pi$.

Thus, we can partition the space of lobbying costs into two intervals. For low values of the lobbying cost ($f \leq 1 - \pi$), the PM chooses the fully-informed policy p^{FI} with probability one, whether he is endowed with subpoena power or not. For high values of the lobbying cost ($f > 1 - \pi$), endowing the PM with subpoena power increases the probability he chooses p^{FI}. Thus, when $N = 1$, endowing the PM with subpoena power is never detrimental to the informational quality of policymaking and can sometimes improve it by allowing the PM to get information which is not voluntarily provided via lobbying.

We now explain the intuition underlying this result. We start with the situation where the PM is not endowed with subpoena power (No-subpoena game).

For low values of the lobbying cost (i.e., $f \leq 1 - \pi$), an equilibrium exists in which every IG lobbies truthfully, i.e., $\lambda_i(\theta_i) = \theta_i$ for all θ_i and all i. The PM grants access to IG_1 when it lobbies, and adopts $p_1 = \theta_1$. When IG_1 does not lobby, the PM infers $\theta_1 = 0$ and chooses $p_1 = 0$. He then grants access to a lobbying IG_2, and, the agenda constraint being non-binding (since $p_1 = 0$), chooses $p_2 = \theta_2$. If IG_2 does not lobby, the PM infers $\theta_2 = 0$ and chooses $p_2 = 0$. Key to observe is that the PM chooses $p^{\sim S} = p^{FI}$ with probability one.

Neither IG wants to deviate from truthful lobbying. When $\theta_1 = 1$, IG_1 gets $p_1 = 1$ if it lobbies; its expected utility is then equal to $1 - f \ \ (> 0)$. If IG_1 were to deviate and not lobby, it would get zero expected utility since the PM would infer $\theta_1 = 0$ and choose $p_1 = 0$, which is strictly smaller than its expected utility if it lobbies. When $\theta_1 = 0$, IG_1 anticipates that if it were to deviate and lobby, it would be granted access and the PM would then observe $\theta_1 = 0$ and choose $p_1 = 0$; IG_1's expected utility would then be equal to $-f \ \ (< 0)$, which is strictly smaller than the zero expected utility it gets by not lobbying.

Let us now look at IG_2. When $\theta_2 = 1$, a lobbying IG_2 gets $p_2 = 1$ with probability $1 - \pi$ (i.e., whenever $\theta_1 = 0$, in which case the PM chooses $p_1 = 0$ and the agenda constraint is then non-binding); its expected utility is equal to $1 - \pi - f \ \ (\geq 0)$, which is at least as large as the zero expected utility it would get by deviating and not lobbying (the PM then inferring $\theta_2 = 0$ and choosing

$p_2 = 0$). When $\theta_2 = 0$, IG_2 gets zero utility by not lobbying. If it were to deviate and lobby, it would have to pay the lobbying cost, f, while still getting $p_2 = 0$. Indeed, whenever $\theta_1 = 1$, and IG_1 lobbies, the PM chooses $p_1 = 1$, making the agenda constraint binding and then forcing the PM to choose $p_2 = 0$ independently of whether IG_2 lobbies or not; and whenever $\theta_1 = 0$, and IG_1 does not lobby, the PM would grant access to a lobbying IG_2 and then observe $\theta_2 = 0$ and choose $p_2 = 0$. Thus, if IG_2 were to deviate and lobby when $\theta_2 = 0$, its expected utility would be equal to $-f$, which is strictly smaller than the zero expected utility it gets by not lobbying.

For higher values of the lobbying cost (i.e., $f > 1 - \pi$), truthful lobbying by every IG can no longer be supported in equilibrium. Indeed, when $\theta_2 = 1$, IG_2 would now have an incentive to deviate and not lobby since it would then get zero expected utility, which is strictly bigger than its expected utility when it lobbies, which is equal to $1 - \pi - f$ (< 0). Instead, in equilibrium IG_1 lobbies truthfully and IG_2 abstains from lobbying, i.e., $\lambda_1(\theta_1) = \theta_1$ and $\lambda_2(\theta_2) = 0$ for all θ_1 and θ_2.[17] The PM is able to infer θ_1 from IG_1's lobbying decision, and chooses $p_1 = \theta_1$. At the same time, the PM is unable to infer anything about θ_2 from IG_2's lobbying decision, and then chooses $p_2 = 0$ based on prior belief π $(< 1/2)$. Observe that when the realized state is $(\theta_1, \theta_2) = (0, 1)$, which occurs with probability $\pi \cdot (1 - \pi)$, the PM chooses $p^{\sim S} = (0, 0) \neq (0, 1) = p^{FI}$. Hence, when $f > 1 - \pi$, a PM who is not endowed with subpoena power chooses $p^{\sim S} = p^{FI}$ with probability strictly less than one.

Suppose the PM gets endowed with subpoena power (Subpoena game). Key to note is that subpoena power can affect the signalling content of IGs' lobbying decisions in two ways: (1) by weakening IGs' incentives to lobby when they have favorable information (i.e., when $\theta_i = 1$), since they might now have the opportunity to reveal their evidence without having to lobby first and, therefore, without having to bear the lobbying cost, f; or (2) by strengthening IGs' incentives to lobby when they have unfavorable information (i.e., when $\theta_i = 0$), offering preemptively their

[17] In Appendix B, we further prove that in this range of the parameters space, any equilibrium involves one IG lobbying truthfully and the other IG abstaining from lobbying.

information so to avoid having to bear the cost of answering a subpoena, c. The former way is more likely to occur when lobbying is relatively costly; the latter way is more likely to occur when answering a subpoena is relatively costly.

It is also important to note that when endowed with subpoena power, the PM no longer needs all IGs to lobby truthfully to be able to choose the fully-informed policy in every state of the world. He only needs one IG to lobby truthfully since he can then infer the realized state for this issue from the IG's lobbying decision, and then grant access or issue a subpoena to the other IG to learn the realized state for the other issue.

When $f \geq (1-\pi) \cdot c$, an equilibrium exists in which IG_1 lobbies truthfully and IG_2 abstains from lobbying, i.e., $\lambda_1(\theta_1) = \theta_1$ and $\lambda_2(\theta_2) = 0$ for all θ_1 and θ_2. When $f < (1-\pi) \cdot c$ (and, therefore, $c > f$), an equilibrium exists in which IG_1 lobbies truthfully and IG_2 lobbies all the time, i.e., $\lambda_1(\theta_1) = \theta_1$ and $\lambda_2(\theta_2) = 1$ for all θ_1 and θ_2. In either case, the PM grants access to a lobbying IG_1 and chooses $p_1 = \theta_1$. The PM does not want to deviate and grant access or issue a subpoena to IG_2 because he infers $\theta_1 = 1$ from IG_1's lobbying decision and thus anticipates that the agenda constraint will be binding (since $p_1 = 1$) and, therefore, that he will choose $p_2 = 0$ independently of θ_2. IG_2's information has then no value for the PM, meaning there is no gain for him to deviate and grant access or issue a subpoena to IG_2 in order to learn θ_2. When IG_1 does not lobby, the PM infers $\theta_1 = 0$ and chooses $p_1 = 0$. He then grants access to a lobbying IG_2 or issues a subpoena to a non-lobbying IG_2, and, the agenda constraint being non-binding (since $p_1 = 0$), chooses $p_2 = \theta_2$. To sum up, whether f is smaller or bigger than $(1-\pi) \cdot c$, the PM chooses $p^S = p^{FI}$ with probability one.

In conclusion, endowing the PM with subpoena power may affect the signalling content of IGs' lobbying decisions, by weakening or strengthening their incentives to lobby. We call this the *indirect effect* of subpoena power. But the resulting potential information loss for the PM can be compensated by using his subpoena power to get information that is not voluntarily provided via lobbying. We call this the *direct effect* of subpoena power. When $f \leq 1-\pi$, the direct effect compensates exactly for the indirect effect, and the PM always chooses the fully-informed policy whether or not he is endowed with subpoena power. Subpoena power is in this case neutral to the informational quality of policymaking. When $f > 1 - \pi$, there is a direct effect but no indirect effect, meaning the PM is more likely to choose the fully-informed policy when he is endowed with subpoena power than when he is not. In this case subpoena power improves the informational quality of policymaking.

4.3. Policymaking with No Agenda Constraint (N=2)

We now proceed with the case where the PM can choose to adopt both reform projects. When $N = 2$, the fully-informed policy is $p^{FI} = (\theta_1, \theta_2)$.

Proposition 2. *Suppose $N = 2$. We have:*

1. $\Pr\left(p^S = p^{FI}\right) = \Pr\left(p^{\sim S} = p^{FI}\right) = 1$ if $f \in \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$.
2. $\Pr\left(p^S = p^{FI}\right) < \Pr\left(p^{\sim S} = p^{FI}\right) = 1$ if $f \in \left[\frac{\pi}{2}, \frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right) \cup \left(\frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, 1\right)$.
3. $1 > \Pr\left(p^S = p^{FI}\right) \geq \Pr\left(p^{\sim S} = p^{FI}\right)$ if $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$.

Thus, we can partition the space of lobbying costs into several intervals. For moderately high values of the lobbying cost, $f \in \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$, the PM chooses p^{FI} whether or not he is endowed with subpoena power; Subpoena power is then neutral to the informational quality of policymaking. For moderately low values of the lobbying cost, $f \in \left[\frac{\pi}{2}, \frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right)$, and for high values, $f > \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c$, endowing the PM with subpoena power makes him **less** likely to choose p^{FI}. Specifically, the PM always chooses $p^{\sim S} = p^{FI}$ when he is not endowed with subpoena power, but sometimes chooses $p^S \neq p^{FI}$ when he is endowed with subpoena power. Thus, subpoena power is here detrimental to the informational quality of policymaking. Finally, for low values of the lobbying cost, $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$, the PM sometimes chooses $p \neq p^{FI}$ whether or not he is endowed with subpoena power. Furthermore, in this region of the parameters space the PM is at least as likely to choose p^{FI} when he is endowed with subpoena power as when he is not, although, as we shall discuss below, we have been unable to construct equilibria where $\Pr\left(p^{S}=p^{FI}\right)>\Pr\left(p^{\sim S}=p^{FI}\right)$. Thus, in this region of the parameters space, we can conclude that subpoena power is not detrimental to the informational quality of policymaking, and that we cannot generally rule out the possibility it is actually beneficial.[18]

We now explain the intuition underlying this result. We start with the first two parts of Proposition 2, where the lobbying cost takes moderate or high values (i.e., $f \geq \pi/2$).

When the PM is not endowed with subpoena power (No-subpoena game), an equilibrium exists in which every IG lobbies truthfully. The PM is then able to infer the realized state θ from IGs' lobbying decisions, and chooses $p^{\sim S}=p^{FI}$.

Neither IG wants to deviate from truthful lobbying. When $\theta_i=1$, IG_i gets $p_i=1$ if it lobbies; its expected utility is then equal to $1-f\ \ (>0)$. If IG_i were to deviate and not lobby, the PM would infer $\theta_i=0$ and choose $p_i=0$; IG_i would then get zero expected utility, which is smaller than its expected utility when it lobbies. When $\theta_i=0$, IG_i anticipates that if he were to deviate and lobby, he would be granted access with probability Γ_i^1, in which case the PM would observe $\theta_i=0$ and, as when IG_i does not lobby, choose $p_i=0$. But with probability $1-\Gamma_i^1$, IG_i would not be granted access, in which case the PM would infer $\theta_i=1$ from IG_i's lobbying decision and choose $p_i=1$. For IG_i to be unwilling to deviate and lobby when $\theta_i=0$, it must be that the expected utility it would get by lobbying, which is equal to $1-\Gamma_i^1-f$, is lower than the zero expected utility it gets by not lobbying. It must then be that when it lobbies, IG_i is granted access with probability $\Gamma_i^1\geq 1-f$, where $\Gamma_i^1=\pi\cdot\gamma_i\left(1;1\right)+\left(1-\pi\right)$. This condition is satisfied for all IGs if and only if $\gamma_i\left(1;1\right)\in\left[1-\frac{f}{\pi},\frac{f}{\pi}\right]$ for all i, which is possible if and only if $f\geq\pi/2$.

Suppose the PM gets endowed with subpoena power (Subpoena game). Key to observe is that IG_i is issued a subpoena with probability $\Gamma_i^0\in[0,1]$ when it does not

[18] For the region of the parameters space where $f<\min\left\{\left(1-\frac{2\pi\alpha}{2\alpha-1}\right)\cdot c,\frac{\pi}{2}\right\}$ (which requires $c>0$), the No-subpoena game has a unique equilibrium. In this equilibrium, we have $\Pr\left(p^{\sim S}=p^{FI}\right)<1$. We also have $\Pr\left(p^{S}=p^{FI}\right)<1$ in any equilibrium of the Subpoena game. However, while there exist equilibria of the Subpoena game where $\Pr\left(p^{S}=p^{FI}\right)<\Pr\left(p^{\sim S}=p^{FI}\right)$, we have unfortunately been unable to rule out the existence of equilibria where $\Pr\left(p^{S}=p^{FI}\right)\geq\Pr\left(p^{\sim S}=p^{FI}\right)$, although we have also been unable to construct any such equilibrium.

lobby, which alters its incentives to lobby truthfully compared to the No-subpoena game (where $\Gamma_i^0 = 0$). To understand how subpoena power affects IGs' incentives to lobby truthfully, consider first the hypothetical situation where $\Gamma_i^0 = 1$ for some IG_i, i.e., IG_i is issued a subpoena whenever it does not lobby. If lobbying is more costly than answering a subpoena (i.e., $f > c$), then IG_i would want to deviate and not lobby when $\theta_i = 1$ since it could then reveal θ_i at a cheaper cost (c instead of f). If instead lobbying is less costly than answering a subpoena (i.e., $f < c$), then IG_i would want to deviate and lobby when $\theta_i = 0$ so to save on the cost of answering a subpoena (IG_i would pay f instead of c). In other words, when lobbying is relatively costly compared to answering a subpoena, IG_i would have an incentive to deviate from truthful lobbying and abstains from lobbying when $\theta_i = 1$. And when lobbying is relatively cheap compared to answering a subpoena, IG_i would have an incentive to deviate from truthful lobbying and lobbies when $\theta_i = 0$.

Let's now leave this hypothetical situation where $\Gamma_i^0 = 1$ for some IG_i, and consider the general case where $\Gamma_i^0 \in [0, 1]$. IG_i's expected cost of lobbying is equal to $f - \Gamma_i^0 \cdot c$, i.e., the lobbying cost f minus the expected cost of answering a subpoena if IG_i were to not lobby, which is equal to the cost c of answering a subpoena times the probability $\Gamma_i^0 = \pi \cdot \gamma_i(0; 1) + (1 - \pi) \cdot \gamma_i(0; 0)$ of being issued a subpoena when it does not lobby.

When $\theta_i = 1$, IG_i's expected benefit of lobbying is equal to $1 - \Gamma_i^0$. Specifically, if IG_i lobbies, the PM infers $\theta_i = 1$ and chooses $p_i = 1$. If IG_i were to deviate and not lobby, the PM would infer $\theta_i = 0$ from IG_i's decision to not lobby and then choose $p_i = 1$ only if he issues a subpoena to IG_i and observes its evidence that $\theta_i = 1$, an event which occurs with probability Γ_i^0. Thus, if IG_i were to deviate and not lobby, the probability that $p_i = 1$ would decrease from 1 to Γ_i^0. To sum up, IG_i does not want to deviate from truthful lobbying when $\theta_i = 1$ if and only if $1 - \Gamma_i^0 \geq f - \Gamma_i^0 \cdot c$, i.e., the expected benefit of lobbying exceeds the expected cost.[19]

[19]Put differently, IG_i does not want to deviate from truthful lobbying when $\theta_i = 1$ if and only if the expected policy utility loss exceeds the expected saving cost.

When $\theta_i = 0$, IG_i's expected benefit of deviating and lobbying is equal to $1-\Gamma_i^1$. Specifically, if IG_i does not lobby, the PM infers $\theta_i = 0$ and chooses $p_i = 0$. If IG_i were to deviate and lobby, the PM would infer $\theta_i = 1$ from IG_i's decision to lobby and then choose $p_i = 1$ if he does not grant access to IG_i and, therefore, does not observe its evidence that $\theta_i = 0$. The latter event occurs with probability $1 - \Gamma_i^1$, where $\Gamma_i^1 = \pi \cdot \gamma_i (1; 1) + (1 - \pi) \cdot \gamma_i (1; 0)$. To sum up, IG_i does not want to deviate from truthful lobbying when $\theta_i = 0$ if and only if $f - \Gamma_i^0 \cdot c \geq 1 - \Gamma_i^1$, i.e., the expected cost of lobbying exceeds the expected benefit.

In the proof of Proposition 2 in Appendix C, we show that the above conditions for IG_i to not deviate from truthful lobbying,

$$1 - \Gamma_i^0 \geq f - \Gamma_i^0 \cdot c \geq 1 - \Gamma_i^1,$$

can be satisfied for each IG_i if and only if $f \in \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$. If the lobbying cost is bigger ($f > \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c$ and, therefore, $f > c$), one IG will want to deviate and not lobby when it has favorable information, hoping to be issued a subpoena and have the opportunity to reveal its information at a cost of c instead of f.[20] This corresponds to a situation where subpoena power weakens IGs' incentives to lobby when they have favorable information. If the lobbying cost is smaller ($f < \frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c$), one IG will want to deviate and lobby when it has unfavorable information, offering preemptively its information so to avoid being issued a subpoena and having to bear the cost c of answering the subpoena. This corresponds to a situation where subpoena power strengthens the IGs' incentives to lobby when they have unfavorable information.

To sum up, when $f \in \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$, an equilibrium exists in which every IG lobbies truthfully, meaning the PM is able to infer θ from IGs' lobbying decisions and choose policy $p^S = p^{FI} \; \left(= p^{\sim S}\right)$. In this region of the parameters space, subpoena power has no direct or indirect effect and is therefore neutral to the informational quality of policymaking. When $f > \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot$

[20] In a supplementary Appendix, we show that in this region of the parameters space, every equilibrium has $\lambda_i (\theta_i) > 0$ for some θ_i and $|\lambda_i (1) - \lambda_i (0)| < 1$ for some i and $\lambda_{-i} (\theta_{-i}) = 0$ for all θ_{-i}, i.e., one IG lobbies untruthfully and the other IG abstains from lobbying.

c, truthful lobbying cannot be supported in equilibrium because subpoena power *weakens the IGs' incentives to lobby* when they have *favorable* information. When $f \in \left[\frac{\pi}{2}, \frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$, truthful lobbying cannot be supported in equilibrium either, but this time because subpoena power *strengthens the IGs' incentives to lobby* when they have *unfavorable* information. In these two regions of the parameters space, subpoena power has an indirect effect, which is not fully compensated by the direct effect of subpoena power, meaning the PM sometimes chooses $p^S \neq p^{FI} \ \left(= p^{\sim S}\right)$. Subpoena power is here detrimental to the informational quality of policymaking.

Before moving to the region where $f < \pi/2$, it is worth comparing the effect of subpoena power when $N = 2$ and $N = 1$. We have seen that when $N = 1$, the direct effect of subpoena power can compensate fully for its indirect effect. As we have just seen, this is not always the case when $N = 2$. The key feature that explains this difference is that when $N = 1$ and the PM infers $\theta_1 = 1$, he chooses $p_1 = 1$, meaning the agenda constraint is binding and information about θ_2 becomes valueless for the PM. This feature allows the PM to prioritize issue 1 (formally, $\Gamma_1^1 = 1$), in this way inducing IG_1 to lobby truthfully and allowing the PM to get informed about θ_2 (by granting access or issuing a subpoena to IG_2) when he considers choosing $p_2 = 1$ (which occurs when $\theta_1 = 0$ and the agenda constraint is then non-binding). By contrast, when $N = 2$ there is no constraint on the agenda and information about θ_2 is still valuable for the PM when he infers $\theta_1 = 1$. In equilibrium the PM is then not able to commit on prioritizing one issue and, therefore, is not able to induce an IG to lobby truthfully.

It remains to consider the third part of Proposition 2, where the lobbying cost takes relatively low values, $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$. In this region of the parameters space, no equilibrium exists in which IGs lobby truthfully, whether or not the PM is endowed with subpoena power. This is because an IG_i would want to deviate and lobby when $\theta_i = 0$, either because lobbying is cheaper than answering a subpoena (as we observed above when $f \in \left[\frac{\pi}{2}, \frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$), or because the probability of not being granted access when lobbying, and thus the probability of getting $p_i = 1$ even though $\theta_i = 0$, is sufficiently large compared to the lobbying cost f. To sum up, in this region of the parameters space we have $\Pr\left(p = p^{FI}\right) < 1$ for both $p = p^{\sim S}$ and $p = p^{S}$.[21]

How do $\Pr\left(p^{\sim S} = p^{FI}\right)$ and $\Pr\left(p^{S} = p^{FI}\right)$ compare in this region of the parameters space? When the PM is not endowed with subpoena power (No-subpoena game), a unique equilibrium exists. In this equilibrium, every IG lobbies when it has favorable information and randomizes between lobbying and not lobbying when it has unfavorable information, i.e., $\lambda_i(1) = 1$ and $\lambda_i(0) \in (0,1)$ for all i. IG$_i$ lobbies with positive probability when $\theta_i = 0$, hoping that it will not be granted access and that the PM will infer from its lobbying decision that $\theta_i = 1$ is more likely than $\theta_i = 0$, and will then choose $p_i = 1$. An equilibrium with the same lobbying and access strategies exists when the PM is endowed with subpoena power (Subpoena game). In this equilibrium, the PM is as likely to choose $p^{S} = p^{FI}$ as he is to choose $p^{\sim S} = p^{FI}$ in the unique equilibrium of the No-subpoena game. We can then conclude that $\Pr\left(p^{S} = p^{FI}\right) \geq \Pr\left(p^{\sim S} = p^{FI}\right)$.

In the polar case where answering a subpoena is costless (i.e., $c = 0$), there is no equilibrium in which $\Pr\left(p^{S} = p^{FI}\right) > \Pr\left(p^{\sim S} = p^{FI}\right)$. It follows that $\Pr\left(p^{S} = p^{FI}\right) = \Pr\left(p^{\sim S} = p^{FI}\right)$ when $c = 0$ and $f < \pi/2$. Given our findings for the region of the parameters space where $f \geq \pi/2$, we can then conclude that when $c = 0$, we have

$$\begin{cases} \Pr\left(p^{S} = p^{FI}\right) = \Pr\left(p^{\sim S} = p^{FI}\right) & \text{when } f \leq \frac{1+\pi}{2} \\ \Pr\left(p^{S} = p^{FI}\right) < \Pr\left(p^{\sim S} = p^{FI}\right) & \text{when } f > \frac{1+\pi}{2}. \end{cases}$$

Thus, subpoena power is in this case at best neutral and at worst detrimental to the informational quality of policymaking.

In the case where $c \in (0,1)$, we cannot generally rule out the existence of equilibria where $\Pr\left(p^{S} = p^{FI}\right) > \Pr\left(p^{\sim S} = p^{FI}\right)$ when $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$. At the same time, we have also been unable to construct such equilibria. Thus, when $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$ and $c \in (0,1)$, we can only conclude that $\Pr\left(p^{S} = p^{FI}\right) \geq \Pr\left(p^{\sim S} = p^{FI}\right)$.

[21] This result is actually true for the whole region of the parameters space where $f < \pi/2$.

5. CONCLUSION

Our paper is, to the best of our knowledge, the first to model the combined effect of subpoena and lobbying on the informational quality of policymaking. As our results show, the precise nature of the effect is ambiguous, which is somewhat surprising. Our analysis suggests that the informational implications of endowing lawmakers with subpoena power are sensitive to factors such as the relative cost of lobbying vis-à-vis answering a subpoena and the agenda constraint faced by lawmakers. One policy implication emerging from our analysis is that if lawmakers are agenda constrained, subpoena power is at worst neutral to and at best improves the informational quality of policymaking. This policy implication is consistent with the main rationale that has been provided in several countries for endowing their lawmakers with subpoena power. However, this policy implication cannot be offered as a general institutional design principle. Indeed, we also show that if there is no constraint on the agenda, subpoena power can actually be detrimental to the informational quality of policymaking. The main contribution of the paper is not so much to offer a general institutional design principle, but rather to offer a cautionary argument against an institutional principle that would recommend always granting lawmakers subpoena power.

In order to make our point in a succinct way we have made a number of simplifying assumptions. In particular, we have assumed only two issues. Our model can be extended to consider multiple issues. We believe that our qualitative results will be unaffected since the main forces driving our results are 1) the inability of the PM to give access to all IGs, and 2) the relative cost of answering subpoena vis-à-vis the lobbying cost. Similarly, the assumption that an IG is perfectly informed about the state of the world can be relaxed; the main point that we wish to capture is that an IG has information that is valuable to the PM, and that such information can be obtained and scrutinized by granting access or issuing subpoenas to IGs.

There are still aspects to be explored about the main topic of interest of this paper, viz. the role played by subpoena power in the policymaking process. Among the rationale for subpoena power, one idea worth exploring is that subpoena power enables lawmakers to 'demonstrate' to the public (say, voters) the basis on which they have chosen a particular policy (since testimonies are typically public information). Whether having such transparency is a good idea depends on its effect on the availability of other channels of influence (unobservable to the public) as well as on lawmakers' incentives to pander to the public in light of publicly observed information. We leave this topic for future research.

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APPENDIX

A. Deriving $X_i(\ell)$

We start with the case where $N = 2$. Since there is no constraint on the agenda, the PM chooses p_i based solely on his belief $\beta_i(\ell_i, a_i)$. It follows that the probability the PM chooses $p_i = 1$, $\rho_i(\ell; a)$, depends only on IG$_i$'s lobbying decision, ℓ_i, and the PM's access decision towards IG$_i$, a_i. To lighten notation, we shall write $\rho_i(\ell_i; a_i)$ as a shorthand for $\rho_i(\ell; a)$.

If the PM grants access or issues a subpoena to IG$_i$, he anticipates he will choose $p_i = \theta_i$ with probability $W_i(\ell) = 1$. If the PM does not grant access or issue a subpoena to IG$_i$, he anticipates he will choose $p_i = \theta_i$ with probability

$$Z_i(\ell) = \beta_i^{Acc}(\ell_i) \cdot \rho_i(\ell_i; \emptyset) + \left(1 - \beta_i^{Acc}(\ell_i)\right) \cdot [1 - \rho_i(\ell_i; \emptyset)].$$

We then get:

$$\begin{aligned} X_i(\ell) &\equiv W_i(\ell) - Z_i(\ell) \\ &= \rho_i(\ell_i; \emptyset) \cdot \left(1 - \beta_i^{Acc}(\ell_i)\right) + [1 - \rho_i(\ell_i; \emptyset)] \cdot \beta_i^{Acc}(\ell_i), \end{aligned}$$

which is equal to the PM's belief he will choose $p_i \neq \theta_i$ if he does not grant access or issue a subpoena to IG$_i$. Observe that $X_i(\ell) \in [0, 1/2]$.

We continue with the case where $N = 1$. Since there is a constraint on the agenda, the PM chooses p_i based on both $\beta_i(\ell_i, a_i)$ and $\beta_{-i}(\ell_{-i}, a_{-i})$.

The expressions for $W_i(\ell)$ and $Z_i(\ell)$ are given by

$$\begin{cases} W_i(\ell) = \beta_i^{Acc}(\ell_i) \cdot \rho_i(\theta_i = 1; \ell_{-i}) + \left(1 - \beta_i^{Acc}(\ell_i)\right) \\ Z_i(\ell) = \left(1 - \beta_i^{Acc}(\ell_i)\right) \\ \qquad + \left(2\beta_i^{Acc}(\ell_i) - 1\right) \cdot \left[\beta_{-i}^{Acc}(\ell_{-i}) \cdot \rho_i(\theta_{-i} = 1; \ell_i) + \left(1 - \beta_{-i}^{Acc}(\ell_{-i})\right) \cdot \rho_i(\theta_{-i} = 0; \ell_i)\right], \end{cases}$$

where $\rho_i(\theta_i; \ell_{-i})$ (resp. $\rho_i(\theta_{-i}; \ell_i)$) stands for the probability the PM chooses $p_i = 1$ given IG$_{-i}$'s lobbying decision ℓ_{-i} (resp. IG$_i$'s lobbying decision ℓ_i) and the

PM's decision to grant access or issue a subpoena to IG_i (resp. IG_{-i}). We then get:

$$\begin{aligned} X_i(\ell) &= \beta_i^{Acc}(\ell_i)\cdot\rho_i(\theta_i=1;\ell_{-i}) \\ &\quad -\beta_i^{Acc}(\ell_i)\cdot\left[\beta_{-i}^{Acc}(\ell_{-i})\cdot\rho_i(\theta_{-i}=1;\ell_i)+\left(1-\beta_{-i}^{Acc}(\ell_{-i})\right)\cdot\rho_i(\theta_{-i}=0;\ell_i)\right] \\ &\quad +\left(1-\beta_i^{Acc}(\ell_i)\right)\cdot\left[\beta_{-i}^{Acc}(\ell_{-i})\cdot\rho_i(\theta_{-i}=1;\ell_i)+\left(1-\beta_{-i}^{Acc}(\ell_{-i})\right)\cdot\rho_i(\theta_{-i}=0;\ell_i)\right], \end{aligned}$$

which is equal to

1. the PM's belief that $\theta_i = 1$ and that he will choose $p_i = 1$ if he grants access or issues a subpoena to IG_i (first term on the r.h.s.),
2. from which we subtract the PM's belief that $\theta_i = 1$ and that he will choose $p_i = 1$ if he grants access or issues a subpoena to IG_{-i} (second term on the r.h.s.),
3. to which we add the PM's belief that $\theta_i = 0$ and that he will choose $p_i = 1$ if he grants access or issues a subpoena to IG_{-i} (third term on the r.h.s.).

The first two parts measure the increase in the probability $p_i = 1$ when $\theta_i = 1$ caused by the PM granting access or issuing a subpoena to IG_i. The third part measures the increase in the probability $p_i = 1$ when $\theta_i = 0$ caused by the PM granting access or issuing a subpoena to IG_i.

B. Proof of Proposition 1

We proceed via a sequence of claims.

We start with the No-subpoena game. The first claim establishes the existence of an equilibrium with truthful lobbying when $f \leq 1-\pi$. We say IG_i lobbies truthfully if $\lambda_i(\theta_i) = \theta_i$ for all θ_i, i.e., IG_i lobbies when $\theta_i = 1$ and abstains from lobbying when $\theta_i = 0$. In an equilibrium with truthful lobbying, we have $\Pr\left(p = p^{FI}\right) = 1$.

Claim 1.1 *Consider the No-subpoena game where* $N = 1$. *Suppose* $f \leq 1 - \pi$. *An equilibrium exists in which* $\lambda_i(\theta_i) = \theta_i$ *for all* θ_i *and all* i.

Proof. We proceed by construction. Let

$$\begin{cases} \lambda_i(\theta_i) = \theta_i \\ \gamma_1(1, \ell_2) = \gamma_2(0,1) = 1 \ \&\ \gamma_i(0;0) = 0 \\ \rho_1(1, \ell_2; 1, \emptyset) = \rho_1(1,1;\emptyset,\theta_2) = 1 \ \&\ \rho_1(1,\ell_2;0,\emptyset) = \rho_1(0,\ell_2;\emptyset,a_2) = 0 \\ \rho_2(1,1;0,\emptyset) = 1,\ \rho_2(0,1;\emptyset,\theta_2) = \theta_2 \ \&\ \rho_2(\ell_1,0;a_1,\emptyset) = \rho_2(1,1;1,\emptyset) = \rho_2(1,1;\emptyset,\theta_2) = 0 \\ \beta_i^{Acc}(\ell_i) = \beta_i(\ell_i,\emptyset) = \ell_i \ \&\ \beta_i(1,\theta_i) = \theta_i \end{cases}$$

for all θ_i, ℓ_i, a_i and i.

Observe that $X_i(1,1) = 0$ for all i, implying $X_1(1,1) \cdot \alpha = X_2(1,1)$. Furthermore, the IGs' expected utilities are given by

$$\begin{cases} EU_1(\lambda_1(1)) = \lambda_1(1) \cdot (1-f) & \Rightarrow \frac{\partial EU_1}{\partial \lambda_1(1)} = 1 - f > 0 \\ EU_2(\lambda_2(1)) = \lambda_2(1) \cdot (1 - \pi - f) & \Rightarrow \frac{\partial EU_2}{\partial \lambda_2(1)} = 1 - \pi - f \geq 0 \\ EU_i(\lambda_i(0)) = \lambda_i(0) \cdot (-f) & \Rightarrow \frac{\partial EU_i}{\partial \lambda_i(0)} = -f < 0 \end{cases}$$

for all i, where $EU_i(\lambda_i(\theta_i))$ stands for IG$_i$'s expected utility in state θ_i. Thus, the above strategies and beliefs do constitute an equilibrium. ∎

The next four claims establish that when $f > 1 - \pi$, in any equilibrium one IG lobbies truthfully while the other IG abstains from lobbying. We start by establishing that no IG lobbies all the time. We define $\delta_i \equiv \pi \cdot \lambda_i(1) + (1-\pi) \cdot \lambda_i(0)$ as the ex ante probability IG$_i$ lobbies.

Claim 1.2 *Consider the No-subpoena game where* $N = 1$. *Suppose* $f > 1 - \pi$. *In equilibrium, we have* $\delta_i < 1$ *for all* i.

Proof. Assume by way of contradiction that an equilibrium exists in which $\delta_i = 1$ for some i. It follows that $\beta_i^{Acc}(1) = \pi$ $(< 1/2)$ and, therefore, that $\rho_i(1,1;\emptyset,\theta_{-i}) = 0$ for all θ_{-i}, i.e., the PM chooses $p_i = 1$ with probability zero when both IGs lobby and the PM grants access to IG$_{-i}$. IG$_i$'s expected utility when $\theta_i = 0$ is then given by

$$EU_i(\lambda_i(0)) = \lambda_i(0) \cdot (-f) + (1 - \lambda_i(0)) \cdot \Pr(p_i = 1 \mid \ell_i = 0),$$

where $\Pr(p_i = 1 \mid \ell_i = 0) \in [0,1]$ stands for the probability the PM chooses $p_i = 1$ when IG_i does not lobby. It follows that

$$\frac{\partial EU_i}{\partial \lambda_i(0)} = -f - \Pr(p_i = 1 \mid \ell_i = 0) < 0,$$

which contradicts $\lambda_i(0) = 1$. ∎

We continue by establishing that IG_1's equilibrium lobbying strategy is pure. We define $\Gamma_i^1 \equiv \delta_{-i} \cdot \gamma_i(1;1) + (1 - \delta_{-i}) \cdot \gamma_i(1;0)$ as the probability IG_i is granted access when it lobbies.

Claim 1.3 *Consider the No-subpoena game where $N = 1$. Suppose $f > 1 - \pi$. In equilibrium, we have $\lambda_1(\theta_1) \in \{0,1\}$ for all θ_1.*

Proof. Assume by way of contradiction that an equilibrium exists in which $\lambda_1(\theta_1) \in (0,1)$ for some θ_1. There are three cases to consider:

1. $\lambda_1(1) = 1$ and $\lambda_1(0) \in (0,1)$: Observe that $\beta_1^{Acc}(1) \in (0,1)$ and $\beta_1^{Acc}(0) = 0$. IG_2's expected utility when $\theta_2 = 0$ is given by

$$\begin{aligned} EU_2(\lambda_2(0)) &= \lambda_2(0) \cdot [(1-\pi) \cdot \lambda_1(0) \cdot \gamma_1(1,1) \cdot \rho_2(1,1;0,\emptyset) - f] \\ &\quad + (1 - \lambda_2(0)) \cdot \Pr(p_2 = 1 \mid \ell_2 = 0), \end{aligned}$$

where $\Pr(p_2 = 1 \mid \ell_2 = 0)$ stands for the probability the PM chooses $p_2 = 1$ when IG_2 does not lobby. It follows that

$$\begin{aligned} \frac{\partial EU_2}{\partial \lambda_2(0)} &= (1-\pi) \cdot \lambda_1(0) \cdot \gamma_1(1,1) \cdot \rho_2(1,1;0,\emptyset) - f - \Pr(p_2 = 1 \mid \ell_2 = 0) \\ &< (1-\pi) - f \\ &< 0, \end{aligned}$$

which implies $\lambda_2(0) = 0$. The first strict inequality follows from $\lambda_1(0) \cdot \gamma_1(1,1) \cdot \rho_2(1,1;0,\emptyset) < 1$ and $\Pr(p_2 = 1 \mid \ell_2 = 0) \geq 0$. The second strict inequality follows from $f > 1 - \pi$.

Either $\lambda_2(1) > 0$, in which case $\beta_2^{Acc}(1) = 1$, implying $X_1(1,1) \cdot \alpha > 0 = X_2(1,1)$ and, therefore, $\gamma_1(1,1) = 1$. Or $\lambda_2(1) = 0$, in which case $\delta_2 = 0$. In either case, $\Gamma_1^1 = 1$, i.e., IG$_1$ is granted access with probability 1 when it lobbies. IG$_1$'s expected utility when $\theta_1 = 0$ is then given by $EU_1(\lambda_1(0)) = \lambda_1(0) \cdot (-f)$. Hence

$$\frac{\partial EU_1}{\partial \lambda_1(0)} = -f < 0,$$

which contradicts $\lambda_1(0) > 0$.

2. $\lambda_1(1) \in (0,1)$ and $\lambda_1(0) \in (0,1)$: We have that

$$\frac{\partial EU_1}{\partial \lambda_1(1)} = \frac{\partial EU_1}{\partial \lambda_1(0)} \quad (= 0),$$

which requires $\Gamma_1^1 = 0$, i.e., IG$_1$ is never granted access when it lobbies. Since $\Gamma_1^1 \equiv \delta_2 \cdot \gamma_1(1,1) + (1 - \delta_2)$, it must then be that $\delta_2 = 1$, which implies $\beta_2^{Acc}(1) = \pi$ $(< 1/2)$ and, therefore,

$$\frac{\partial EU_2}{\partial \lambda_2(0)} \leq -f < 0,$$

which contradicts $\lambda_2(0) = 1$.

3. $\lambda_1(1) \in (0,1)$ and $\lambda_1(0) = 0$: Observe that $\beta_1^{Acc}(1) = 1$ and $\beta_1^{Acc}(0) < \pi$ $(< 1/2)$. IG$_1$'s expected utility when $\theta_1 = 1$ is then given by $EU_1(\lambda_1(1)) = \lambda_1(1) \cdot (1 - f)$. Hence,

$$\frac{\partial EU_1}{\partial \lambda_1(1)} = 1 - f > 0,$$

which contradicts $\lambda_1(1) < 1$.

∎

Given Claims 1.2 and 1.3, IG_1's equilibrium lobbying strategy can take one of two forms: (i) $\lambda_1(\theta_1) = 0$ for all θ_1; or (ii) $\lambda_1(\theta_1) = \theta_1$ for all θ_1. The next claim establishes that if the latter is true, then IG_2 always abstains from lobbying.

CLAIM 1.4 *Consider the No-subpoena game where $N = 1$. Suppose $f > 1 - \pi$. In equilibrium, we have that*

$$\lambda_1(\theta_1) = \theta_1 \text{ for all } \theta_1 \quad \Rightarrow \quad \lambda_2(\theta_2) = 0 \text{ for all } \theta_2.$$

Proof. Suppose an equilibrium exists in which $\lambda_1(\theta_1) = \theta_1$ for all θ_1. Using Bayes' rule, we get $\beta_1^{Acc}(\ell_1) = \ell_1$ for all ℓ_1. IG_2's expected utilities are then given by

$$\begin{cases} EU_2(\lambda_2(1)) = \lambda_2(1) \cdot (1 - \pi - f) + (1 - \lambda_2(1)) \cdot \Pr(p_2 = 1 \mid \ell_2 = 0) \\ EU_2(\lambda_2(0)) = \lambda_2(0) \cdot (-f) + (1 - \lambda_2(0)) \cdot \Pr(p_2 = 1 \mid \ell_2 = 0), \end{cases}$$

where $\Pr(p_2 = 1 \mid \ell_2 = 0) \in [0, 1]$ stands for the probability the PM chooses $p_2 = 1$ when IG_2 does not lobby.

We then have:

$$\begin{cases} \frac{\partial EU_2}{\partial \lambda_2(1)} = (1 - \pi - f) - \Pr(p_2 = 1 \mid \ell_2 = 0) < 0 \\ \frac{\partial EU_2}{\partial \lambda_2(0)} = -f - \Pr(p_2 = 1 \mid \ell_2 = 0) < 0, \end{cases}$$

which implies $\lambda_2(1) = \lambda_2(0) = 0$. ∎

The next claim establishes that if case (i) is true (i.e., IG_1 abstains from lobbying), then IG_2 lobbies truthfully.

CLAIM 1.5 *Consider the No-subpoena game where $N = 1$. Suppose $f > 1 - \pi$. In equilibrium, we have that*

$$\lambda_1(\theta_1) = 0 \text{ for all } \theta_1 \quad \Rightarrow \quad \lambda_2(\theta_2) = \theta_2 \text{ for all } \theta_2.$$

Proof. Suppose an equilibrium exists in which $\lambda_1(\theta_1) = 0$ for all θ_1. Using

Bayes' rule, we get $\beta_1^{Acc}(0) = \pi$ $(< 1/2)$ and, therefore, $\rho_1(0, \ell_2; \emptyset, a_2) = 0$ for all ℓ_2 and a_2.

Observe that we must have $\delta_2 > 0$ (otherwise the PM would choose $p_2 = 0$ and IG_2 would be strictly better off deviating and lobbying when $\theta_2 = 1$ since, being the only lobbying IG, it would be granted access with probability 1, would show $\theta_2 = 1$, and would then get $p_2 = 1$). Since $\delta_1 = 0$, we have $\Gamma_2^1 = 1$, i.e., IG_2 is granted access when it lobbies. IG_2's expected utility when $\theta_2 = 0$ is then given by

$$EU_2(\lambda_2(0)) = \lambda_2(0) \cdot (-f) + (1 - \lambda_2(0)) \cdot \Pr(p_2 = 1 \mid \ell_2 = 0),$$

where $\Pr(p_2 = 1 \mid \ell_2 = 0) \in [0, 1]$ stands for the probability the PM chooses $p_2 = 1$ when IG_2 does not lobby. It follows that

$$\frac{\partial EU_2}{\partial \lambda_2(0)} = -f - \Pr(p_2 = 1 \mid \ell_2 = 0) < 0,$$

which implies $\lambda_2(0) = 0$. This, together with $\delta_2 > 0$, implies $\lambda_2(1) > 0$ and, therefore, $\beta_2^{Acc}(1) = 1$ and $\beta_2^{Acc}(0) < \pi$ $(< 1/2)$. IG_2's expected utility when $\theta_2 = 1$ is then given by $EU_2(\lambda_2(1)) = \lambda_2(1) \cdot (1 - f)$. Hence,

$$\frac{\partial EU_2}{\partial \lambda_2(1)} = 1 - f > 0,$$

which implies $\lambda_2(1) = 1$. ∎

Given Claims 1.4 and 1.5, we have in equilibrium that either IG_1 lobbies truthfully and IG_2 abstains from lobbying, or the reverse. The next claim establishes the existence of an equilibrium in which IG_1 lobbies truthfully and IG_2 abstains from lobbying.

Claim 1.6 *Consider the No-subpoena game where $N = 1$. Suppose $f > 1 - \pi$.*

An equilibrium exists in which

$$\begin{cases} \lambda_1(\theta_1) = \theta_1 \text{ for all } \theta_1 \\ \lambda_2(\theta_2) = 0 \text{ for all } \theta_2. \end{cases}$$

Proof. We proceed by construction. Let

$$\begin{cases} \lambda_1(\theta_1) = \theta_1 \ \& \ \lambda_2(\theta_2) = 0 \\ \gamma_1(1,1) \in [0,1], \gamma_1(1,0) = \gamma_2(0,1) = 1 \ \& \ \gamma_i(0;0) = 0 \\ \rho_1(1,\ell_2;1,\emptyset) = \rho_1(1,1;\emptyset,\theta_2) = 1 \ \& \ \rho_1(1,\ell_2;0,\emptyset) = \rho_1(0,\ell_2;\emptyset,a_2) = 0 \\ \rho_2(1,1;1,\emptyset) = \rho_2(1,1;\emptyset,\theta_2) = \rho_2(\ell_1,0;a_1,\emptyset) = 0, \ \rho_2(0,1;\emptyset,\theta_2) = \theta_2 \\ \qquad \& \ \rho_2(1,1;0,\emptyset) = 1\left(\beta_2^{Acc}(1) \geq 1/2\right) \\ \beta_1^{Acc}(\ell_1) = \beta_1(\ell_1,\emptyset) = \ell_1 \ \& \ \beta_1(1,\theta_1) = \theta_1 \\ \beta_2^{Acc}(0) = \beta_2(0,\emptyset) = \pi, \ \beta_2^{Acc}(1) \in [0,1] \ \& \ \beta_2(1,\theta_2) = \theta_2 \end{cases}$$

where $1(\cdot)$ is the indicator function, for all θ_i, ℓ_i, a_i and i.

Observe that $X_i(1,1) = 0$ for all i, implying $X_1(1,1) \cdot \alpha = X_2(1,1)$. Furthermore, IGs' expected utilities are given by

$$\begin{cases} EU_1(\lambda_1(1)) = \lambda_1(1) \cdot (1-f) & \Rightarrow \frac{\partial EU_1}{\partial \lambda_1(1)} = 1-f > 0 \\ EU_2(\lambda_2(1)) = \lambda_2(1) \cdot (1-\pi-f) & \Rightarrow \frac{\partial EU_2}{\partial \lambda_2(1)} = 1-\pi-f < 0 \\ EU_i(\lambda_i(0)) = \lambda_i(0) \cdot (-f) & \Rightarrow \frac{\partial EU_i}{\partial \lambda_i(0)} = -f < 0 \end{cases}$$

for all i. Thus, the above strategies and beliefs do constitute an equilibrium. ∎

Observe that in this equilibrium, the PM chooses $p^{\sim S} = (\theta_1, 0)$, implying $\Pr\left(p^{\sim S} = p^{FI}\right) < 1$. The same would be true if IG_1 were to abstain from lobbying and IG_2 were to lobby truthfully.

It remains to consider the Subpoena game. Given the constraint on the agenda, it is only sufficient that IG_1 lobbies truthfully for $\Pr\left(p^S = p^{FI}\right) = 1$; the PM can infer θ_1 from IG_1's lobbying decision ℓ_1 and, when $\theta_1 = 0$, can grant access or issue a subpoena to IG_2 to learn about θ_2. The following two claims establish that for all parameters values, an equilibrium exists in which IG_1 lobbies truthfully and IG_2 either lobbies all the time or abstains from lobbying.

Claim 1.7 *Consider the Subpoena game where $N = 1$. Suppose $f \geq (1-\pi)\cdot c$. An equilibrium exists in which*

$$\begin{cases} \lambda_1(\theta_1) = \theta_1 \text{ for all } \theta_1 \\ \lambda_2(\theta_2) = 0 \text{ for all } \theta_2. \end{cases}$$

Proof. We proceed by construction. Let

$$\begin{cases} \lambda_1(\theta_1) = \theta_1 \;\&\; \lambda_2(\theta_2) = 0 \\ \gamma_1(1,0) = \gamma_2(0,1) = \gamma_2(0,0) = 1 \;\&\; \gamma_1(1,1) \in [0,1] \\ \rho_1(\ell_1,\ell_2;1,\emptyset) = \rho_1(1,\ell_2;\emptyset,\theta_2) = 1 \;\&\; \rho_1(\ell_1,\ell_2;a_1,a_2) = 0 \text{ for all other } (\ell_1,\ell_2;a_1,a_2) \\ \rho_2(\ell_1,\ell_2;1,\emptyset) = \rho_2(1,\ell_2;\emptyset,\theta_2) = 0,\ \rho_2(0,\ell_2;\emptyset,1) = 1,\ \rho_2(\ell_1,0;0,\emptyset) = \rho_2(\ell_1,\ell_2;\emptyset,0) = 0 \\ \qquad\qquad \&\; \rho_2(\ell_1,1;0,\emptyset) = 1\left(\beta_2^{Acc}(1) \geq 1/2\right) \\ \beta_1^{Acc}(\ell_1) = \beta_1(\ell_1,\emptyset) = \ell_1 \;\&\; \beta_1(\ell_1,\theta_1) = \theta_1 \\ \beta_2^{Acc}(1) = \beta_2(1,\emptyset) \in [0,1],\ \beta_2^{Acc}(0) = \beta_2(0,\emptyset) = \pi \;\&\; \beta_2(\ell_2,\theta_2) = \theta_2 \end{cases}$$

where $1(\cdot)$ is the indicator function, for all (ℓ_1,ℓ_2) and (θ_1,θ_2).

Observe that $X_i(1,\ell_2) = 0$ and $X_2(0,\ell_2) \geq 0 = X_1(0,\ell_2)$ for all ℓ_2 and all i. Furthermore, IGs' expected utilities are given by

$$\begin{cases} EU_1(\lambda_1(1)) = \lambda_1(1)\cdot(1-f) \quad \Rightarrow \frac{\partial EU_1}{\partial \lambda_1(1)} = 1-f > 0 \\ EU_1(\lambda_1(0)) = \lambda_1(0)\cdot(-f) \quad \Rightarrow \frac{\partial EU_1}{\partial \lambda_1(0)} = -f < 0 \\ EU_2(\lambda_2(1)) = \lambda_2(1)\cdot(1-\pi-f) + (1-\lambda_2(1))\cdot(1-\pi)\cdot(1-c) \\ \qquad \Rightarrow \frac{\partial EU_2}{\partial \lambda_2(1)} = -f + (1-\pi)\cdot c \leq 0 \\ EU_2(\lambda_2(0)) = \lambda_2(0)\cdot(-f) + (1-\lambda_2(0))\cdot(1-\pi)\cdot(-c) \\ \qquad \Rightarrow \frac{\partial EU_2}{\partial \lambda_2(0)} = -f + (1-\pi)\cdot c \leq 0. \end{cases}$$

Thus, the above strategies and beliefs do constitute an equilibrium. ∎

CLAIM 1.8 *Consider the Subpoena game where $N = 1$. Suppose $f < (1-\pi)\cdot c$. An equilibrium exists in which*

$$\begin{cases} \lambda_1(\theta_1) = \theta_1 \text{ for all } \theta_1 \\ \lambda_2(\theta_2) = \mathit{1} \text{ for all } \theta_2. \end{cases}$$

Proof. We proceed by construction. Let

$$\begin{cases} \lambda_1(\theta_1) = \theta_1 \;\&\; \lambda_2(\theta_2) = 1 \\ \gamma_1(1,1) = \gamma_2(0,1) = \gamma_2(\ell_1,0) = 1 \\ \rho_1(\ell_1,\ell_2;1,\emptyset) = \rho_1(1,\ell_2;\emptyset,\theta_2) = 1 \;\&\; \rho_1(\ell_1,\ell_2;a_1,a_2) = 0 \text{ for all other } (\ell_1,\ell_2;a_1,a_2) \\ \rho_2(\ell_1,\ell_2;1,\emptyset) = \rho_2(\ell_1,1;0,\emptyset) = \rho_2(1,\ell_2;\emptyset,1) = \rho_2(\ell_1,\ell_2;\emptyset,0) = 0, \\ \qquad \rho_2(0,\ell_2;\emptyset,1) = 1 \;\&\; \rho_2(\ell_1,0;0,\emptyset) = 1\left(\beta_2^{Acc}(0) \geq 1/2\right) \\ \beta_1^{Acc}(\ell_1) = \beta_1(\ell_1,\emptyset) = \ell_1 \;\&\; \beta_1(\ell_1,\theta_1) = \theta_1 \\ \beta_2^{Acc}(1) = \beta_2(1,\emptyset) = \pi,\; \beta_2^{Acc}(0) = \beta_2(0,\emptyset) \in [0,1] \;\&\; \beta_2(\ell_2,\theta_2) = \theta_2 \end{cases}$$

where $1(\cdot)$ is the indicator function, for all (ℓ_1,ℓ_2) and (θ_1,θ_2).

Observe that $X_i(1,\ell_2) = 0$ and $X_2(0,\ell_2) \geq 0 = X_1(0,\ell_2)$ for all ℓ_2 and all i. Furthermore, IGs' expected utilities are given by

$$\begin{cases} EU_1(\lambda_1(1)) = \lambda_1(1)\cdot(1-f) \qquad \Rightarrow \frac{\partial EU_1}{\partial \lambda_1(1)} = 1-f > 0 \\ EU_1(\lambda_1(0)) = \lambda_1(0)\cdot(-f) \qquad \Rightarrow \frac{\partial EU_1}{\partial \lambda_1(0)} = -f < 0 \\ EU_2(\lambda_2(1)) = \lambda_2(1)\cdot(1-\pi-f) + (1-\lambda_2(1))\cdot[\pi\cdot(-c) + (1-\pi)\cdot(1-c)] \\ \qquad \Rightarrow \frac{\partial EU_2}{\partial \lambda_2(1)} = c-f > 0 \\ EU_2(\lambda_2(0)) = \lambda_2(0)\cdot(-f) + (1-\lambda_2(0))\cdot(-c) \\ \qquad \Rightarrow \frac{\partial EU_2}{\partial \lambda_2(0)} = c-f > 0 \end{cases}$$

the latter two inequalities since $f < (1-\pi)\cdot c < c$.

Thus, the above strategies and beliefs do constitute an equilibrium. ∎

C. Proof of Proposition 2

We proceed via a sequence of claims. We start by establishing that an equilibrium with truthful lobbying exists in the No-subpoena game if and only if $f \geq \pi/2$.

Claim 2.1 *Consider the No-subpoena game where $N = 2$. An equilibrium exists in which $\lambda_i(\theta_i) = \theta_i$ for all θ_i and all i if and only if $f \geq \frac{\pi}{2}$.*

Proof. (Necessity) Consider an equilibrium in which $\lambda_i(\theta_i) = \theta_i$ for all θ_i and all i. It follows that $\beta_i^{Acc}(\ell_i) = \ell_i$ and, therefore, $\rho_i(\ell_i; \emptyset) = \ell_i$ for all ℓ_i and all i. Moreover, $X_i(1,1) = 0$ for all i.

IG$_i$'s expected utility when $\theta_i = 0$ is then given by

$$EU_i(\lambda_i(0)) = \lambda_i(0) \cdot \left(1 - \Gamma_i^1 - f\right)$$

where $\Gamma_i^1 = \pi \cdot \gamma_i(1,1) + (1-\pi)$ stands for the probability IG$_i$ is granted access when it lobbies. It follows that

$$\frac{\partial EU_i}{\partial \lambda_i(0)} \leq 0 \Leftrightarrow \gamma_i(1;1) \geq 1 - \frac{f}{\pi}.$$

Given that this inequality must be true for all i and that $\gamma_1(1,1) + \gamma_2(1,1) = 1$, we must then have $\gamma_i(1;1) \in \left[1 - \frac{f}{\pi}, \frac{f}{\pi}\right]$ for all i. This interval is non-empty only if $f \geq \pi/2$.

(Sufficiency) Suppose $f \geq \pi/2$. We proceed by construction. Let

$$\begin{cases} \lambda_i(\theta_i) = \theta_i \\ \gamma_1(1,1) = \frac{1}{2},\ \gamma_1(1,0) = \gamma_2(0,1) = 1\ \&\ \gamma_i(0;0) = 0 \\ \rho_i(1;1) = \rho_i(1;\emptyset) = 1\ \&\ \rho_i(1;0) = \rho_i(0;\emptyset) = 0 \\ \beta_i^{Acc}(\ell_i) = \beta_i(\ell_i, \emptyset) = \ell_i\ \&\ \beta_i(1, \theta_i) = \theta_i \end{cases}$$

for all θ_i, ℓ_i and i.

Observe that $X_i(1,1) = 0$ for all i, implying $X_1(1,1) \cdot \alpha = X_2(1,1)$. Furthermore, IG$_i$'s expected utilities are given by

$$\begin{cases} EU_i(\lambda_i(1)) = \lambda_i(1) \cdot (1-f) & \Rightarrow \frac{\partial EU_i}{\partial \lambda_i(1)} = 1 - f > 0 \\ EU_i(\lambda_i(0)) = \lambda_i(0) \cdot \left(\frac{\pi}{2} - f\right) & \Rightarrow \frac{\partial EU_i}{\partial \lambda_i(0)} = \frac{\pi}{2} - f \leq 0. \end{cases}$$

Thus, the above strategies and beliefs do constitute an equilibrium. ∎

We start by considering the region of the parameters space where $f \geq \pi/2$. We know from Claim 2.1 that in the No-subpoena game, an equilibrium exists in which $\Pr\left(p^{\sim S} = p^{FI}\right) = 1$. Our next claim establishes that an equilibrium with truthful lobbying exists in the Subpoena game if and only if $f \in \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$. In this equilibrium, we have $\Pr\left(p^{S} = p^{FI}\right) = 1$. We define $\Gamma_i^0 \equiv \delta_{-i} \cdot \gamma_i(0;1) + (1-\delta_{-i}) \cdot \gamma_i(0;0)$ as the probability IG$_i$ is issued a subpoena when it does not lobby.

Claim 2.2 *Consider the Subpoena game where $N = 2$. An equilibrium exists in which $\lambda_i(\theta_i) = \theta_i$ for all θ_i and all i if and only if*

$$f \in \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right].$$

Proof. (Necessity) Consider an equilibrium in which $\lambda_i(\theta_i) = \theta_i$ for all θ_i and all i. It follows that $\beta_i^{Acc}(\ell_i) = \ell_i$ and, therefore, $\rho_i(\ell_i; \emptyset) = \ell_i$ and $X_i(\ell_1, \ell_2) = 0$ for all i and (ℓ_1, ℓ_2).

IG$_i$'s expected utilities are given by

$$\begin{cases} EU_i(\lambda_i(1)) = \lambda_i(1) \cdot (1-f) + (1-\lambda_i(1)) \cdot \Gamma_i^0 \cdot (1-c) \\ EU_i(\lambda_i(0)) = \lambda_i(0) \cdot \left(1 - \Gamma_i^1 - f\right) + (1-\lambda_i(0)) \cdot \Gamma_i^0 \cdot (-c). \end{cases}$$

Since $\lambda_i(\theta_i) = \theta_i$ for all θ_i, we have that:

$$\begin{cases} \frac{\partial EU_i}{\partial \lambda_i(1)} \geq 0 \Leftrightarrow 1 - f \geq \Gamma_i^0 \cdot (1-c) \\ \frac{\partial EU_i}{\partial \lambda_i(0)} \leq 0 \Leftrightarrow 1 - f \leq \Gamma_i^1 - \Gamma_i^0 \cdot c \end{cases}$$

where

$$\begin{cases} \Gamma_i^1 = \pi \cdot \gamma_i(1;1) + (1-\pi) \cdot \gamma_i(1;0) \\ \Gamma_i^0 = \pi \cdot \gamma_i(0;1) + (1-\pi) \cdot \gamma_i(0;0). \end{cases}$$

These inequalities are the most easily satisfied for all i when we set $\gamma_i(1;0) = 1$ and $\gamma_i(1;1) = \gamma_i(0;0) = 1/2$ (which is possible since $X_1(\ell_1, \ell_2) \cdot \alpha = X_2(\ell_1, \ell_2)$ for all (ℓ_1, ℓ_2)). We then get $\Gamma_i^1 = 1 - \frac{\pi}{2}$ and $\Gamma_i^0 = \frac{1-\pi}{2}$. The above inequalities are then satisfied for all i only if $f \in \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$.

(Sufficiency) Suppose $f \in \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$. We proceed by construction. Let

$$\begin{cases} \lambda_i(\theta_i) = \theta_i \\ \gamma_i(1;1) = \gamma_i(0;0) = 1/2 \text{ \& } \gamma_i(1;0) = 1 \\ \rho_i(\ell_i;\theta_i) = \theta_i \text{ \& } \rho_i(\ell_i;\emptyset) = \ell_i \\ \beta_i^{Acc}(\ell_i) = \beta_i(\ell_i, \emptyset) = \ell_i \text{ \& } \beta_i(\ell_i, \theta_i) = \theta_i \end{cases}$$

for all θ_i, ℓ_i and i.

Observe that $\Gamma_i^1 = 1 - \frac{\pi}{2}$ and $\Gamma_i^0 = \frac{1-\pi}{2}$ for all i. Furthermore, $X_i(\ell_1, \ell_2) = 0$ for all i and (ℓ_1, ℓ_2), implying $X_1(\ell_1, \ell_2) \cdot \alpha = X_2(\ell_1, \ell_2)$ for all (ℓ_1, ℓ_2). Finally, IGs' expected utilities are given by

$$\begin{aligned} EU_i(\lambda_i(1)) &= \lambda_i(1) \cdot (1-f) + (1-\lambda_i(1)) \cdot \left(\frac{1-\pi}{2}\right) \cdot (1-c) \\ &\Rightarrow \frac{\partial EU_i}{\partial \lambda_i(1)} = \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c - f \geq 0 \\ EU_i(\lambda_i(0)) &= \lambda_i(0) \cdot \left(\frac{\pi}{2} - f\right) + (1-\lambda_i(0)) \cdot \left(\frac{1-\pi}{2}\right) \cdot (-c) \\ &\Rightarrow \frac{\partial EU_i}{\partial \lambda_i(0)} = \frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c - f \leq 0. \end{aligned}$$

Thus, the above strategies and beliefs do constitute an equilibrium. ∎

This completes the proof of part (1) of Proposition 2.

Our next three claims establish that in the region of the parameters space where

$f \notin \left[\frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c, \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c\right]$, we have $\Pr\left(p^S = p^{FI}\right) < 1$ in any equilibrium of the Subpoena game. We start by observing that since the PM can grant access or issue a subpoena to only one IG, $\Pr\left(p^S = p^{FI}\right) = 1$ requires that at least one IG lobbies truthfully in equilibrium. We already know from Claim 2.2 that in this region of the parameters space, there is no equilibrium in which all IGs lobby truthfully. It remains to show that there is no equilibrium in which one IG lobbies truthfully. To do so, we first establish that there is no equilibrium of the Subpoena game in which $\lambda_i(1) \in (0,1)$ and $\lambda_i(0) = 0$ for some i.

CLAIM 2.3 *Consider the Subpoena game where $N = 2$. There is no equilibrium in which $\lambda_i(1) \in (0,1)$ and $\lambda_i(1) = 0$ for some i.*

Proof. Assume by way of contradiction that an equilibrium exists in which $\lambda_i(1) \in (0,1)$ and $\lambda_i(0) = 0$ for some i. It follows that $\beta_i^{Acc}(1) = 1$, implying $\rho_i(1;\emptyset) = 1$ and $X_i(1;\ell_{-i}) = 0$ for all ℓ_{-i}. At the same time, $\beta_i^{Acc}(0) \in (0,\pi)$, implying $\rho_i(0;\emptyset) = 0$ and $X_i(0;\ell_{-i}) > 0$ for all ℓ_{-i}.

For $\lambda_i(1) \in (0,1)$ and $\lambda_i(0) = 0$, it must be that

$$\begin{cases} \frac{\partial EU_i}{\partial \lambda_i(1)} = 0 \Leftrightarrow \Gamma_i^0 = \frac{1-f}{1-c} \\ \frac{\partial EU_i}{\partial \lambda_i(0)} \leq 0 \Leftrightarrow \Gamma_i^1 \geq \frac{1-f}{1-c}. \end{cases}$$

Hence $\Gamma_i^1 \geq \Gamma_i^0$. Moreover, $\Gamma_i^1 > 0$ which, together with $X_i(1;\ell_{-i}) = 0$ for all ℓ_{-i}, requires $X_{-i}(\ell_{-i};1) = 0$ for some ℓ_{-i}. There are three possible cases :

1. <u>$\lambda_{-i}(1) = 1$ and $\lambda_{-i}(0) = 0$:</u> It follows that $\beta_{-i}^{Acc}(\ell_{-i}) = \ell_{-i}$, implying $\rho_{-i}(\ell_{-i};\emptyset) = \ell_{-i}$ and $X_{-i}(\ell_{-i};\ell_i) = 0$ for all ℓ_{-i} and ℓ_i. Since $X_i(0;\ell_{-i}) > 0$ for all ℓ_{-i}, we then have $\Gamma_i^0 = 1$ and, therefore, $\Gamma_i^1 = 1$. Hence, $\Gamma_{-i}^1 = \Gamma_{-i}^0 = 0$, implying

$$\frac{\partial EU_{-i}}{\partial \lambda_{-i}(0)} = 1 - f > 0,$$

which contradicts $\lambda_{-i}(0) = 0$.

2. <u>$\lambda_{-i}(1) = 1$ and $\lambda_{-i}(0) \in (0,1)$:</u> It follows that $\beta_{-i}^{Acc}(1) \in (0,1)$, implying $X_{-i}(1;\ell_i) > 0$ for all ℓ_i. We also have $\beta_{-i}^{Acc}(0) = 0$, implying $\rho_{-i}(0;\emptyset) = 0$

and $X_{-i}(0;\ell_i)=0$ for all ℓ_i. Since $X_i(0;\ell_{-i})>0=X_i(1;\ell_{-i})$ for all ℓ_{-i}, we then have $\gamma_i(0;0)=\gamma_{-i}(1;1)=1$, implying

$$\begin{cases} \Gamma_i^1 = (1-\delta_{-i})\cdot\gamma_i(1;0) \\ \Gamma_i^0 = \delta_{-i}\cdot\gamma_i(0;1)+(1-\delta_{-i}). \end{cases}$$

This, together with $\Gamma_i^1 \geq \Gamma_i^0$ and $\delta_{-i}\in(0,1)$, implies $\gamma_i(1;0)=1$ and $\gamma_i(0;1)=0$. We then have $\Gamma_{-i}^1=1$ and $\Gamma_{-i}^0=0$. It follows that

$$\frac{\partial EU_i}{\partial\lambda_i(0)}=-f<0,$$

which contradicts $\lambda_{-i}(0)\in(0,1)$.

3. $\lambda_{-i}(1)\in(0,1)$ and $\lambda_{-i}(0)=0$: It follows that $\beta_{-i}^{Acc}(1)=1$, implying $\rho_{-i}(1;\emptyset)=1$ and $X_{-i}(1;\ell_i)=0$ for all ℓ_i. We also have $\beta_{-i}^{Acc}(0)\in(0,\pi)$, implying $\rho_{-i}(0;\emptyset)=0$ and $X_{-i}(0;\ell_i)>0$ for all ℓ_i. Since $X_i(0;\ell_{-i})>0=X_i(1;\ell_{-i})$ for all ℓ_{-i}, we then have $\gamma_i(0;1)=\gamma_{-i}(0;1)=1$, implying

$$\begin{cases} \Gamma_i^1 = \delta_{-i}\cdot\gamma_i(1;1) \\ \Gamma_i^0 = \delta_{-i}+(1-\delta_{-i})\cdot\gamma_i(0;0). \end{cases}$$

This, together with $\Gamma_i^1 \geq \Gamma_i^0$ and $\delta_{-i}\in(0,1)$, implies $\gamma_i(1;1)=1$ and $\gamma_i(0;0)=0$. We then have $\Gamma_{-i}^1=0$. Using the same conditions as for IG$_i$, we have that $\lambda_{-i}(1)\in(0,1)$ and $\lambda_{-i}(0)=0$ require $\Gamma_{-i}^1\geq\Gamma_{-i}^0=\frac{1-f}{1-c}$, which contradicts $\Gamma_{-i}^1=0$.

∎

The next claim establishes that no equilibrium exists in which one IG lobbies truthfully when $f<\frac{\pi}{2}+\left(\frac{1-\pi}{2}\right)\cdot c$.

Claim 2.4 *Consider the Subpoena game where $N=2$. Suppose $f<\frac{\pi}{2}+\left(\frac{1-\pi}{2}\right)\cdot c$. There is no equilibrium in which $\lambda_i(\theta_i)=\theta_i$ for some i and all θ_i.*

Proof. Assume by way of contradiction that an equilibrium exists in which $\lambda_i(\theta_i) = \theta_i$ for some i and all θ_i. It follows that $\beta_i^{Acc}(\ell_i) = \ell_i$ and $\rho_i(\ell_i; \emptyset) = \ell_i$ for all ℓ_i, and $X_i(\ell_i; \ell_{-i}) = 0$ for all ℓ_i and ℓ_{-i}.

For $\lambda_i(0) = 0$, it must be that

$$\frac{\partial EU_i}{\partial \lambda_i(0)} \leq 0 \Leftrightarrow 1 - f \leq \Gamma_i^1 - \Gamma_i^0 \cdot c, \qquad (*)$$

which requires $\Gamma_i^1 > 0$. Since $X_i(\ell_i; \ell_{-i}) = 0$ for all ℓ_i and ℓ_{-i}, it must then be that $X_{-i}(\ell_{-i}; \ell_i) = 0$ for some ℓ_{-i}. This can happen only if one of the following three cases holds: (i) $\lambda_{-i}(\theta_{-i}) = \theta_{-i}$ for all θ_{-i}; (ii) $\lambda_{-i}(1) = 1$ and $\lambda_{-i}(0) \in (0,1)$; or (iii) $\lambda_{-i}(1) \in (0,1)$ and $\lambda_{-i}(0) = 0$. Claims 2.2 and 2.3 rule out cases (i) and (iii). Thus, case (ii) must apply. It follows that $\beta_{-i}^{Acc}(1) \in (0,1)$, implying $X_{-i}(1; \ell_i) > 0$ for all ℓ_i, and thus $\Gamma_{-i}^1 = 1$. We also have $\beta_{-i}^{Acc}(0) = 0$, implying $\rho_{-i}(0; \emptyset) = 0$.

For $\lambda_{-i}(0) \in (0,1)$, it must be that

$$\frac{\partial EU_{-i}}{\partial \lambda_{-i}(0)} = 0 \Leftrightarrow \Gamma_{-i}^0 = \frac{f}{c}. \qquad (**)$$

Given $\Gamma_{-i}^1 = 1$, we get

$$\begin{cases} \Gamma_i^{\ell_i} = (1 - \delta_{-i}) \cdot \gamma_i(\ell_i; 0) \\ \Gamma_{-i}^0 = \pi \cdot \gamma_{-i}(0;1) + (1-\pi) \cdot \gamma_{-i}(0;0). \end{cases}$$

Let $\gamma_i(1;0) = 1 - \varepsilon$ for $\varepsilon \in [0,1)$. We get from $(**)$

$$\gamma_i(0;0) = 1 - \frac{(f/c) - \pi\varepsilon}{1 - \pi}$$

(for $\varepsilon \in \left[1 - \frac{1-(f/c)}{\pi}, \frac{f}{\pi c}\right]$). We then get from $(*)$ that

$$f \geq \frac{1-\pi}{(1-\pi) + (1-\delta_{-i})} \left\{1 - (1 - \delta_{-i}) \cdot \left[1 - \varepsilon - c - \frac{\pi\varepsilon c}{1-\pi}\right]\right\}.$$

Since $f < \frac{\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c$, we get

$$(\delta_{-i} - \pi)\left[1 + (1-\pi)(1-c)\right] < 2\varepsilon \cdot (1 - \pi + \pi c)(\delta_{-i} - 1).$$

Observe that $\delta_{-i} \in (\pi, 1)$ implies the l.h.s. is strictly positive and the r.h.s. non-positive, a contradiction. ∎

The next claim establishes that no equilibrium exists in which one IG lobbies truthfully when $f > \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c$.

Claim 2.5 *Consider the Subpoena game where $N = 2$. Suppose $f > \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) \cdot c$. There is no equilibrium in which $\lambda_i(\theta_i) = \theta_i$ for some i and all θ_i.*

Proof. Assume by way of contradiction that an equilibrium exists in which $\lambda_i(\theta_i) = \theta_i$ for some i and all θ_i. It follows that $\beta_i^{Acc}(\ell_i) = \ell_i$ and $\rho_i(\ell_i; \emptyset) = \ell_i$ for all ℓ_i, and $X_i(\ell_i; \ell_{-i}) = 0$ for all ℓ_i and ℓ_{-i}.

For $\lambda_i(0) = 0$, it must be that

$$\frac{\partial EU_i}{\partial \lambda_i(0)} \leq 0 \Leftrightarrow 1 - f \leq \Gamma_i^1 - \Gamma_i^0 \cdot c$$

which requires $\Gamma_i^1 > 0$. Since $X_i(1; \ell_{-i}) = 0$ for all ℓ_{-i}, it must then be that $X_{-i}(\ell_{-i}; 1) = 0$ for some ℓ_{-i}. Given Claims 2.2 and 2.3, it must then be that $\lambda_{-i}(1) = 1$ and $\lambda_{-i}(0) \in (0,1)$. It follows that $\beta_{-i}^{Acc}(1) \in (0,1)$, implying $X_{-i}(1; \ell_i) > 0 = X_i(\ell_i; 1)$ for all ℓ_i and, therefore, $\Gamma_{-i}^1 = 1$. Moreover, $\beta_{-i}^{Acc}(0) = 0$ and, therefore, $\rho_{-i}(0; \emptyset) = 0$.

For $\lambda_{-i}(0) \in (0,1)$, it must be that

$$\frac{\partial EU_{-i}}{\partial \lambda_{-i}(0)} = 0 \Leftrightarrow \Gamma_{-i}^0 = \frac{f}{c}.$$

However, $f > \frac{1+\pi}{2} + \left(\frac{1-\pi}{2}\right) c$ implies $f > c$ and, therefore, $\Gamma_{-i}^0 > 1$, a contradiction.

∎

This completes the proof of part (2) of Proposition 2.

It remains to consider the region of the parameters space where $f < \pi/2$. Our next claim characterizes the unique equilibrium in the No-subpoena game.

Claim 2.6 *Consider the No-subpoena game where $N = 2$. Suppose $f < \frac{\pi}{2}$. There exists a unique equilibrium:*

$$\begin{cases} \lambda_i(1) = 1 \ \& \ \lambda_i(0) = \frac{\pi}{1-\pi} \cdot \frac{1}{2\alpha_i - 1} \\ \gamma_1(1,1) = 1 - \frac{f}{2\pi}, \ \gamma_1(1,0) = \gamma_2(0,1) = 1 \ \& \ \gamma_i(0;0) = 0 \\ \rho_1(1;\emptyset) = 1, \ \rho_2(1;\emptyset) = \frac{(2\alpha-1)\cdot f}{\alpha\cdot(2\pi - f)}, \ \rho_i(1;\theta_i) = \theta_i \ \& \ \rho_i(0;\emptyset) = 0 \\ \beta_i^{Acc}(1) = \beta_i(1,\emptyset) = \frac{2\alpha_i - 1}{2\alpha_i}, \ \beta_i^{Acc}(1,\theta_i) = \theta_i \ \& \ \beta_i^{Acc}(0) = \beta_i(0,\emptyset) = 0 \end{cases}$$

for all θ_i and i.

Proof. Consider an equilibrium. We proceed via a sequence of steps.

First, we establish that $\beta_i^{Acc}(0) < 1/2$ and, therefore, $\rho_i(0;\emptyset) = 0$ for all i. Assume by way of contradiction that $\beta_i^{Acc}(0) \geq 1/2$ for some i. Since $\pi < 1/2$ (and $\lambda_i(1) \geq \lambda_i(0)$), it must then be that $\delta_i = 1$. It follows that $\beta_i^{Acc}(1) = \pi$ $(< 1/2)$ and, therefore, $\rho_i(1;\emptyset) = 0$. IG$_i$'s expected utility when $\theta_i = 0$ is then given by

$$EU_i(\lambda_i(0)) = \lambda_i(0) \cdot (-f) + (1 - \lambda_i(0)) \cdot \rho_i(0;\emptyset).$$

It follows that

$$\frac{\partial EU_i}{\partial \lambda_i(0)} = -f - \rho_i(0;\emptyset) < 0,$$

which contradicts $\lambda_i(0) = 1$.

Second, we establish that $\delta_i > 0$ for all i. Assume by way of contradiction that $\delta_i = 0$ for some i. We then have $\beta_i^{Acc}(0) = \pi$ $(< 1/2)$ and, therefore, $\rho_i(0;\emptyset) = 0$. IG$_i$'s expected utility is then equal to zero in either state θ_i.

There are two cases to consider:

1. $\underline{\delta_{-i} = 0:}$ If IG$_i$ were to deviate and lobby when $\theta_i = 1$, it would be granted

access and get $p_i = 1$. Its expected utility would then be equal to $(1 - f) > 0$, a contradiction.

2. $\underline{\delta_{-i} > 0:}$ Since $\delta_i = 0$, we have $\Gamma^1_{-i} = 1$, i.e., IG$_{-i}$ is granted access whenever it lobbies. Its expected utility when $\theta_{-i} = 0$ is then given by $EU_{-i}(\lambda_{-i}(0)) = \lambda_{-i}(0) \cdot (-f)$, which implies $\lambda_{-i}(0) = 0$. If IG$_i$ were to deviate and lobby when $\theta_i = 1$, it would then be granted access and get $p_i = 1$ with probability $\Gamma^1_i \geq 1 - \pi$. Its expected utility would then be equal to

$$\Gamma^1_i + \left(1 - \Gamma^1_i\right) \cdot \rho_i(1; \emptyset) - f \geq 1 - \pi - f > 0,$$

a contradiction.

Third, we establish that $\delta_i < 1$ for all i. Assume by way of contradiction that $\delta_i = 1$ for some i. We then have $\beta^{Acc}_i(1) = \pi$ $(< 1/2)$ and, therefore, $\rho_i(1; \emptyset) = 0$. IG$_i$'s expected utility when $\theta_i = 0$ is then given by $EU_i(\lambda_i(0)) = \lambda_i(0) \cdot (-f)$. It follows that $\frac{\partial EU_i}{\partial \lambda_i(0)} = -f < 0$ and, therefore, $\lambda_i(0) = 0$, which contradicts $\lambda_i(0) = 1$.

Fourth, we establish that $\beta^{Acc}_i(1) \geq 1/2$ for all i. Assume by way of contradiction that for some i, $\beta^{Acc}_i(1) < 1/2$ and, therefore, $\rho_i(1; \emptyset) = 0$. IG$_i$'s expected utility when $\theta_i = 0$ is then given by $EU_i(\lambda_i(0)) = \lambda_i(0) \cdot (-f)$, which implies $\lambda_i(0) = 0$. Since $\delta_i > 0$, we then have $\lambda_i(1) > 0$, which implies $\beta^{Acc}_i(1) = 1$. This contradicts $\beta^{Acc}_i(1) < 1/2$.

Fifth, we establish that $\beta^{Acc}_1(1) > 1/2$ and, therefore, $\rho_1(1; \emptyset) = 1$. Assume by way of contradiction that $\beta^{Acc}_1(1) = 1/2$. It follows that

$$X_1(1,1) \cdot \alpha = \frac{\alpha}{2} > \frac{1}{2} \geq X_2(1,1)$$

and, therefore, $\Gamma^1_1 = 1$. IG$_1$'s expected utility when $\theta_1 = 0$ is then given by

$EU_1(\lambda_1(0)) = \lambda_1(0) \cdot (-f)$, which implies $\lambda_1(0) = 0$. Since $\delta_1 > 0$, we then have $\lambda_1(1) > 0$, which implies $\beta_1^{Acc}(1) = 1$. This contradicts $\beta_1^{Acc}(1) = 1/2$.

Sixth, we establish that $\lambda_i(1) = 1$ for all i. Given $\rho_1(1;\emptyset) = 1$, IG$_1$'s expected utility when $\theta_1 = 1$ is given by $EU_1(\lambda_1(1)) = \lambda_1(1) \cdot (1-f)$. It follows that $\frac{\partial EU_1}{\partial \lambda_1(1)} = 1 - f > 0$ and, therefore, $\lambda_1(1) = 1$.

Assume by way of contradiction that $\lambda_2(1) < 1$. It cannot be that $\lambda_2(0) = 0$, since we would then have $\beta_2^{Acc}(1) = 1$; it would then follow that $\frac{\partial EU_2}{\partial \lambda_2(1)} = 1 - f > 0$ and, therefore, $\lambda_2(1) = 1$, a contradiction. Hence, we have $\lambda_2(\theta_2) \in (0,1)$ for all θ_2. IG$_2$'s expected utilities are given by

$$\begin{aligned}
EU_2(\lambda_2(1)) &= \lambda_2(1) \cdot \left[\Gamma_2^1 + \left(1 - \Gamma_2^1\right) \cdot \rho_2(1;\emptyset) - f\right] \\
&\Rightarrow \frac{\partial EU_2}{\partial \lambda_2(1)} = 0 \Leftrightarrow \Gamma_2^1 + \left(1 - \Gamma_2^1\right) \cdot \rho_2(1;\emptyset) = f \\
EU_2(\lambda_2(0)) &= \lambda_2(0) \cdot \left[\left(1 - \Gamma_2^1\right) \cdot \rho_2(1;\emptyset) - f\right] \\
&\Rightarrow \frac{\partial EU_2}{\partial \lambda_2(0)} = 0 \Leftrightarrow \left(1 - \Gamma_2^1\right) \cdot \rho_2(1;\emptyset) = f.
\end{aligned}$$

Combining these two equalities, we get $\Gamma_2^1 = 0$, a contradiction since $\Gamma_2^1 = \delta_1 \cdot \gamma_2(1,1) + (1 - \delta_1)$ and $\delta_1 < 1$.

Seventh, we establish that $\lambda_i(0) \in (0,1)$ for all i. Given that $\delta_i < 1$ and $\lambda_i(1) = 1$, we already know that $\lambda_i(0) < 1$.

Assume by way of contradiction that $\lambda_1(0) = 0$. We then have $\beta_1^{Acc}(1) = 1$ and, therefore, $X_1(1,1) = 0$. Furthermore, IG$_1$'s expected utility when $\theta_1 = 0$ is then given by

$$EU_1(\lambda_1(0)) = \lambda_1(0) \cdot \left(1 - \Gamma_1^1 - f\right)$$

where $\Gamma_1^1 = \delta_2 \cdot \gamma_1(1,1) + (1 - \delta_2)$. It follows that $\frac{\partial EU_1}{\partial \lambda_1(0)} \leq 0$ if and only if $\gamma_1(1,1) \geq 1 - \frac{f}{\delta_2}$. Since $\delta_2 \geq \pi$ (recall $\lambda_2(1) = 1$) and $f < \pi/2$, we have $\gamma_1(1,1) > 0$. Hence

$$X_1(1,1) \cdot \alpha = 0 \geq X_2(1,1) = 1 - \beta_2^{Acc}(1),$$

which implies $\beta_2^{Acc}(1) = 1$ and, therefore, $\lambda_2(0) = 0$. We then have $\lambda_i(\theta_i) = \theta_i$ for all θ_i and all i, a contradiction given Claim 2.1 and $f < \pi/2$.

Since $\lambda_1(0) \in (0,1)$, we have

$$\begin{aligned} \tfrac{\partial EU_1}{\partial \lambda_1(0)} = 0 \quad & \Leftrightarrow \Gamma_1^1 = 1 - f \\ & \Leftrightarrow \gamma_1(1,1) = 1 - \tfrac{f}{\delta_2}. \end{aligned}$$

Hence $\gamma_1(1,1) \in (0,1)$, which implies $X_1(1,1) \cdot \alpha = X_2(1,1)$. Since $\lambda_1(1) = 1$ and $\lambda_1(0) \in (0,1)$, we have $\beta_1^{Acc}(1) \in (0,1)$ and, therefore, $X_1(1,1) > 0$. We must then have $X_2(1,1) > 0$. Since $X_2(1,1) = 1 - \beta_2^{Acc}(1)$, we get $\beta_2^{Acc}(1) < 1$ and, therefore, $\lambda_2(0) > 0$.

Eighth, we establish that $\beta_2^{Acc}(1) = 1/2$. We know from above that $\beta_2^{Acc}(1) \geq 1/2$. Assume by way of contradiction that $\beta_2^{Acc}(1) > 1/2$. It follows that $\rho_2(1;\emptyset) = 1$.

Each IG$_i$'s expected utility when $\theta_i = 0$ is then given by

$$EU_i(\lambda_i(0)) = \lambda_i(0) \cdot \left(1 - \Gamma_i^1 - f\right).$$

Since $\lambda_i(0) \in (0,1)$, we have

$$\frac{\partial EU_i}{\partial \lambda_i(0)} = 0 \Leftrightarrow \gamma_i(1;1) = 1 - \frac{f}{\delta_{-i}}.$$

Now, $\delta_{-i} > \pi$ and $f < \pi/2$ imply $\gamma_i(1,1) > 1/2$. We then get $\gamma_1(1,1) + \gamma_2(1,1) > 1$, a contradiction.

Since $\beta_2^{Acc}(1) = \pi/\delta_2$ and $\delta_2 = \pi + (1-\pi) \cdot \lambda_2(0)$, we get from $\beta_2^{Acc}(1) = 1/2$ that $\delta_2 = 2\pi$ and $\lambda_2(0) = \pi/(1-\pi)$.

Since $\rho_1(1;\emptyset) = 1$ and $\Gamma_1^1 = \delta_2 \cdot \gamma_1(1,1) + (1-\delta_2)$, we get from $\lambda_1(0) \in (0,1)$

and $\delta_2 = 2\pi$ that

$$\begin{aligned} \frac{\partial EU_1}{\partial \lambda_1(0)} = 0 \quad & \Leftrightarrow 1 - \Gamma_1^1 = f \\ & \Leftrightarrow \gamma_1(1,1) = \left(1 - \frac{f}{2\pi}\right) \in (0,1). \end{aligned}$$

Since $\gamma_1(1,1) \in (0,1)$, we get $X_1(1,1) \cdot \alpha = X_2(1,1)$, where $X_1(1,1) = 1 - \beta_1^{Acc}(1)$ and $X_2(1,1) = 1/2$. Hence $\beta_1^{Acc}(1) = \frac{2\alpha-1}{2\alpha}$. Since $\beta_1^{Acc}(1) = \frac{\pi}{\delta_1}$ and $\delta_1 = \pi + (1-\pi) \cdot \lambda_1(0)$, we get $\delta_1 = \frac{2\pi\alpha}{2\alpha-1}$ and $\lambda_1(0) = \frac{\pi}{1-\pi} \cdot \frac{1}{2\alpha-1}$.

Finally, $\lambda_2(0) \in (0,1)$ implies

$$\begin{aligned} \frac{\partial EU_2}{\partial \lambda_2(0)} = 0 \quad & \Leftrightarrow \left(1 - \Gamma_2^1\right) \cdot \rho_2(1;\emptyset) = f \\ & \Leftrightarrow \rho_2(1;\emptyset) = \frac{(2\alpha-1)\cdot f}{\alpha\cdot(2\pi-f)} \in (0,1). \end{aligned}$$

∎

The next claim characterizes an equilibrium in the Subpoena game for the region of the parameters space where $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$.

Claim 2.7 *Consider the Subpoena game where $N = 2$. Suppose $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$. The following strategies and beliefs constitute an equilibrium:*

$$\begin{cases} \lambda_i(1) = 1 \ \& \ \lambda_i(0) = \frac{\pi}{1-\pi} \cdot \frac{1}{2\alpha_i - 1} \\ \gamma_1(1,1) = 1 - \frac{f}{2\pi},\ \gamma_1(1,0) = \gamma_2(0,1) = \gamma_2(0,0) = 1 \\ \rho_1(1;\emptyset) = 1,\ \rho_2(1;\emptyset) = \frac{(2\alpha-1)\cdot f - [2\cdot(1-\pi)\cdot\alpha - 1]\cdot c}{(2\pi - f)\cdot\alpha},\ \rho_i(0;\emptyset) = 0 \ \& \ \rho_i(\ell_i;\theta_i) = \theta_i \\ \beta_i^{Acc}(1) = \beta_i(1,\emptyset) = \frac{2\alpha_i - 1}{2\alpha_i},\ \beta_i^{Acc}(0) = \beta_i(0,\emptyset) = 0 \ \& \ \beta_i(\ell_i,\theta_i) = \theta_i \end{cases}$$

for all θ_i, ℓ_i and i.

Proof. Consider the strategies described in the statement. Using Bayes' rule, we get the beliefs described in the statement.

Observe that each IG$_i$'s probability of being granted access when it lobbies (Γ_i^1)

and of being issued a subpoena when it does not lobby (Γ_i^0) are given by

$$\begin{cases} \Gamma_1^1 = \delta_2 \cdot \gamma_1(1,1) + (1-\delta_2) \cdot \gamma_1(1,0) = 1 - f \\ \Gamma_1^0 = \delta_2 \cdot \gamma_1(0,1) + (1-\delta_2) \cdot \gamma_1(0,0) = 0 \\ \Gamma_2^1 = \delta_1 \cdot \gamma_2(1,1) + (1-\delta_1) \cdot \gamma_2(0,1) = 1 - \frac{(2\pi - f)\cdot\alpha}{2\alpha-1} \\ \Gamma_2^0 = \delta_1 \cdot \gamma_2(1,0) + (1-\delta_1) \cdot \gamma_2(0,0) = 1 - \frac{2\pi\alpha}{2\alpha-1}. \end{cases}$$

Thus, IG_1's expected utilities are given by

$$\begin{cases} EU_1(\lambda_1(1)) = \lambda_1(1) \cdot (1-f) & \Rightarrow \frac{\partial EU_1}{\partial \lambda_1(1)} = 1 - f > 0 \\ EU_1(\lambda_1(0)) = 0 & \Rightarrow \frac{\partial EU_1}{\partial \lambda_1(0)} = 0. \end{cases}$$

IG_2's expected utilities are given by

$$\begin{cases} EU_2(\lambda_2(1)) = \lambda_2(1) \cdot \left[\Gamma_2^1 + \left(1 - \Gamma_2^1\right) \cdot \rho_2(1;\emptyset) - f\right] + (1-\lambda_2(1)) \cdot \Gamma_2^0 \cdot (1-c) \\ \qquad \Rightarrow \frac{\partial EU_2}{\partial \lambda_2(1)} = \frac{\alpha f}{2\alpha-1} > 0 \\ EU_2(\lambda_2(0)) = \lambda_2(0) \cdot \left[\left(1 - \Gamma_2^1\right) \cdot \rho_2(1;\emptyset) - f\right] + (1-\lambda_2(0)) \cdot \Gamma_2^0 \cdot (-c) \\ \qquad \Rightarrow \frac{\partial EU_2}{\partial \lambda_2(0)} = 0. \end{cases}$$

Observe that $X_i(1;\ell_{-i}) = \frac{1}{2\alpha_i}$ and $X_i(0;\ell_{-i}) = 0$, implying

$$\begin{cases} X_1(1,1) \cdot \alpha = X_2(1,1) \ \& \ X_1(0,0) \cdot \alpha = X_2(0,0) \\ X_1(1,0) \cdot \alpha > X_2(1,0) \ \& \ X_1(0,1) \cdot \alpha < X_2(0,1). \end{cases}$$

Finally, the restriction $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$ implies $\gamma_1(1,1) \in (0,1)$ and $\rho_2(1;\emptyset) \in [0,1)$.

Thus, the strategies and beliefs in the statement do constitute an equilibrium. ∎

Our last claim establishes that the probability the PM chooses p^{FI} is the same in the equilibria described in Claims 2.6 and 2.7, and that this probability is strictly lower than one.

Claim 2.8 *Suppose* $f \in \left[\left(1 - \frac{2\pi\alpha}{2\alpha-1}\right) \cdot c, \frac{\pi}{2}\right)$. *Considering the equilibria described* *in Claims 2.6 and 2.7, we get* $\Pr\left(p^{\sim S}=p^{FI}\right)=\Pr\left(p^{S}=p^{FI}\right)\in(0,1)$.

Proof. In both equilibria, the probability the PM chooses p^{FI} is given by

$$\begin{aligned}
&\pi^2\cdot\left[\gamma_1(1,1)\cdot\rho_2(1;\emptyset)+\gamma_2(1,1)\right]+\pi\cdot(1-\pi)\cdot\left[1-\lambda_2(0)\cdot\gamma_1(1,1)\cdot\rho_2(1;\emptyset)\right]\\
&\quad+\pi\cdot(1-\pi)\cdot\left[\lambda_1(0)\cdot\gamma_1(1,1)\cdot\rho_2(1;\emptyset)+(1-\lambda_1(0))\right]\\
&\quad+(1-\pi)^2\cdot\left\{\lambda_1(0)\cdot\lambda_2(0)\cdot\gamma_1(1,1)\cdot\left[1-\rho_2(1;\emptyset)\right]+1-\lambda_1(0)\cdot\lambda_2(0)\right\}.
\end{aligned}$$

Using simple algebra, we get

$$\Pr\left(p^{\sim S}=p^{FI}\right)=\Pr\left(p^{S}=p^{FI}\right)=\left\{\frac{\pi}{2\alpha-1}\left[(\alpha-1)\cdot f-\pi\right]+\left(1-\pi^2\right)\right\}\in(0,1).$$

∎

This completes the proof of part (3) of Proposition 2 since the equilibrium in Claim 2.6 is unique while we have not been able to rule out the existence of a more-informative equilibrium than the one in Claim 2.7.