Subpoena Power and Information Transmission

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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 verify the evidence provided 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 is *worse off* by having subpoena power. The key insight behind these findings is that subpoena power influences interest groups' incentives to provide information voluntarily, and that this influence differs depending on whether or not the policymaker is agenda-constrained.

Key Words: Lobbying; Information transmission; Subpoena; Access; 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

[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).

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, for a large part, 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 a particular topic of interest and invite experts as well as stakeholders to testify before them. The House and the Senate also grant power 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; p. 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]

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."

In this paper we approach the efficacy of endowing policymakers with subpoena power purely from the viewpoint of information transmission. Here we use the term 'subpoena power' in a broad sense, to include all forms of investigative actions that include seeking of testimonies, depositions, hearing of expert opinions and other

[2]Several key contributions in these literatures are: on signalling, Potters and van Winden (1992), Lohmann (1993; 1995), Rasmusen (1993), Ainsworth (1993); on cheap talk, Crawford and Sobel (1982), Austen-Smith (1993); on persuasion, Milgrom (1981), Milgrom and Roberts (1986), Kamenica and Gentzkow (2011), Alonso and Câmara (2016).

[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.

means of obtaining information that may not be voluntarily provided by different stakeholders. 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 issue, we propose a game-theoretical 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 IG 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: the IGs may hire professional lobbyists to obtain access to the PM and present their information; alternatively, the IGs may commission a policy paper detailing the available information and send it to the PM; or, as yet another option, the 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 the IG. The specific activities may involve holding meetings with the 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 the IGs to hand over proprietary information and analyze that information to learn about the state of the world.

We consider two policymaking regimes: one with subpoena power, and another without. In the regime without subpoena power, the PM can grant access and verify 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 to 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 right to compel the IGs to disclose information, which they would not have voluntarily offered via lobbying.

A key feature of our model is that lobbying is costly for IGs since it involves spending time and resources towards obtaining access to the PM (such as lobbyists' fees). On the other hand, being subpoenaed does not involve incurring the lobbying costs. This feature implies that IGs may have weaker incentives to lobby in the regime with subpoena power than in the regime without since they have the option to save on lobbying costs and instead wait for the PM to issue subpoena. While our formal analysis assumes that the cost of providing information when subpoenaed is zero, our results simply require that lobbying is *more* expensive relative to answering to a request for information by the PM, reflecting the fact that lobbying involves the additional costs of 'buying' access to the PM. By one account, these costs can be substantial—as high as $50,000 a month in retainer to a lobbying firm.[4] Also, as Groll and Ellis (2014) argues, lobby groups, who have their long term reputation to protect, act as 'certifiers' of the veracity of the information provided by the IGs. This certifcation function commands a premium, which is a further reason why accessing the PM through lobbying is more expensive than answering subpoena.

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 positive, and is in line with the above-cited quote from Justice Van Devanter. The indirect effect comes from the change in the informativeness of IGs' lobbying behavior; we show that, in equilibrium, this effect is never positive. Whether subpoena power leads to better-informed policy choices therefore depends on which effect dominates.

Another key feature of our model is that the PM is faced with limited time and resources, which restricts his ability to subpoena or grant access to 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) "The decisions

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

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?"[5]

In particular, our model assumes that the PM has time/resources to subpoena or grant access to only one IG. Furthermore, we consider two cases: one with an agenda constraint, where the PM cannot reform more than one issue; and another case with no agenda constraint, where the PM can reform both issues, if he wishes to. The presence of the access and agenda constraints affects IGs' incentives to lobby and the PM's policy choice. Moreover, the extent to which these constraints are operative plays a key role in determining whether or not subpoena power results in better informed policy choices and improves welfare. To see this, we consider two policy regimes: one in which the PM is endowed with subpoena power; and another regime in which he cannot issue subpoena.

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

Our analysis yields several interesting results. We find that in either game, the equilibrium lobbying strategy of an IG must be one of three types: 1) truthful lobbying, i.e., lobby if and only if there is *favorable information* (i.e., information that the state of the world is pro-reform); 2) overlobbying, i.e., lobby when there is favorable information, and randomize between lobbying and not lobbying when there is *unfavorable information* (i.e., information that the state of the world is pro-status quo); 3) underlobbying, i.e., do not lobby irrespective of favorable or unfavorable information.

First, we study the case with no 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). When an IG overlobbies, it does so anticipating that the PM interprets the act of lobbying as the state being favorable

[5] Other contributions that investigate the presence of time constraints, and how it can lead to inefficient outcomes, include Caldeira and Wright (1988), Hansen (1991), Jones and Baumgartner (2005), Daley and Snowberg (2011), and Cotton and Dellis (2016).

to reform while hoping that its 'bluff' is not called due to the access constraint faced by the PM. Notice that, in both cases–when lobbying is perfectly informative and when IGs overlobby–an IG that has unfavorable information does not lobby, meaning that the act of *not* lobbying is perfectly informative.

We then show that in the absence of agenda constraint, endowing the PM with subpoena power results in weakly less-informed policy choices. This happens because the granting of subpoena power either leaves IGs' lobbying behavior unchanged or results in less informative lobbying. In either case we show that the weakly less informative lobbying behavior is not compensated by a direct informational benefit associated with the PM's ability to subpoena a non-lobbying IG. This happens because subpoena power serves to force a non-lobbying IG to reveal its information but, as was noted above, the act of not lobbying was already perfectly informative in the absence of subpoena power.

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, equilibrium lobbying is either perfectly informative or one of the two IGs underlobbies. Importantly, the equilibrium lobbying behavior of the IG advocating the issue that the PM considers to be the more important is perfectly informative. In contrast to the case with no agenda constraint, this is here possible because the agenda constraint implies that when the PM knows that reforming the more important issue is profitable, the information on the other issue has no longer any value for him (since he will reform the more important issue and, given the agenda constraint, will be unable to reform the other issue). This allows the PM to credibly choose 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 this IG lobbies and, when granted access, provides pro-reform 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 that issue as well. It follows that with subpoena power, the PM always makes the same equilibrium policy choice as the one he would make under complete information. This is not true however in the absence of subpoena power since, in that case, he cannot get or infer the information owned by an IG that underlobbies.

Third, we consider the welfare implications of endowing the PM with subpoena power. It follows from the above discussion that endowing the PM with subpoena power leads to (weakly) *less* informed policy choices in the case without agenda constraint, and to (weakly) *better* informed policy choices in the case with agenda constraint. Hence, the granting of subpoena power decreases the PM's welfare in the case without agenda constraint, and improves it in the case with agenda constraint. We further show that whether there is an agenda constraint or not, each IG is at least as well off when the PM is endowed with subpoena power as when he is not. This follows because the granting of subpoena power allows IGs to save on lobbying costs by relying on the PM to issue subpoena. It follows from the above results that endowing the PM with subpoena power generates a Pareto improvement if and only if the PM is agenda-constrained.

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 information transmission and policymaking; Section 4 provides an illustrative example that captures the basic flavor of our general results, which are formally analyzed in Section 5; Section 6 discusses the intuition behind our main findings and concludes. All proofs are contained in the Appendix.

2. RELATED LITERATURE

Our paper contributes to the literature on the informational role of lobbying.[6] Within this literature, a small set of papers looks at lobbying as means of obtaining access to a PM. In particular, Austen-Smith (1995; 1998) and Cotton (2009; 2012) consider access models, in which IGs make monetary contributions to the PM in the hope of securing access and present him their information.[7] To the best of our knowledge, ours is the first paper to look at the effect of subpoena power on lobbying behavior and information transmission. Moreover, those papers differ vis-à-vis ours in how the PM values access. In those papers access has a monetary value for the PM, IGs making monetary contributions to the PM in exchange for access. By contrast, in our setting access has only an informational value for the PM since IGs are not allowed to make direct monetary contributions to the PM.

Our approach is also related to the literature on the effect of (product quality) disclosure laws.[8] Matthews and Postlewaite (1985), Polinsky and Shavell (2012), and Schweizer (2017) study the effect of mandatory disclosure on the seller's incentive to test product quality. These papers show that, by preventing the seller from keeping silent when he gets unfavorable information, mandatory disclosure laws destroy the seller's incentives to test for product quality, which could reduce

[6] Seminal contributions in this literature are, among others, Austen-Smith and Wright (1992), Potters and van Winden (1992), Rasmusen (1993), and Lohmann (1995).

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

[8] See Dranove and Jin (2010) for a survey of the literature on quality disclosure.

consumers' welfare compared to a situation where disclosure is voluntary.[9] Our paper differs from this literature in two important ways. First, those papers focus on the detrimental incentive of mandatory disclosure on the *production* of information. We, on the other hand, show that even when the information is readily available, but costly to transmit, subpoena power can reduce the extent of information being transmited.[10] Second, those papers focus on the decision of one information provider (the firm) and its impact on the receiver (the consumers). Our model, on the other hand, studies the strategic interaction between several providers of information whose decisions are interrelated through the receiver's access constraint.

Other papers in this literature look at the disclosure of exogenous 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, verifiable 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 to disclose. Contrary to our setting in which the PM is the one facing an access constraint, in Fishman and Hagerty (1990) this is the sender who is limited in the number of pieces of information he can 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 that 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.

3. MODEL

We develop our argument using a simple model of access.[11] We consider a PM who must choose policy on two issues, indexed by $i = 1, 2$. For each issue i, the PM can either adopt a reform project or keep the status quo. We denote a policy by $p = (p_1, p_2)$, where $p_i = 1$ (resp. $p_i = 0$) if the PM reforms issue i (resp. keeps the status quo on issue i).

There are two possible states of the world for issue i: $\theta_i \in \{0, 1\}$. States are independently distributed across issues. The state of the world $\theta = (\theta_1, \theta_2)$ is

[9] Other papers studying disclosure laws with endogenous information find that mandatory disclosure can be 1) socially desirable, when there are several firms which values are correlated (Admati and Pfleiderer (2000)), or 2) equilibrium outcome neutral, in the context of a persuasion game (Gentzkow and Kamenica (2017)).

[10] 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 paper.

[11] The basic structure of this model was developed in Dellis and Oak (2017), which we extend here to allow for subpoena power.

unknown to the PM, but its distribution is common knowledge: for each issue i,

$$\theta_i = \begin{cases} 1 & \text{with probability } \pi_i \in \left(0, \frac{1}{2}\right) \\ 0 & \text{with probability } 1 - \pi_i. \end{cases}$$

The PM has state-contingent preferences over policy. Specifically, given state $\theta = (\theta_1, \theta_2)$, the PM gets utility

$$U(p, \theta) = \alpha \cdot u_1(p_1, \theta_1) + u_2(p_2, \theta_2)$$

from policy $p = (p_1, p_2)$, where $\alpha > 1$ measures the importance of issue 1 relative to issue 2, and

$$u_i(p_i, \theta_i) = \begin{cases} 1 & \text{if } p_i = \theta_i \\ 0 & \text{if } p_i \neq \theta_i \end{cases}$$

is the PM's utility over the policy on issue i. Thus, the PM gains (resp. loses) from reforming issue i in state $\theta_i = 1$ (resp. $\theta_i = 0$).

There are two IGs, each advocating a separate issue; IG_1 is associated with issue 1 and IG_2 with issue 2. IGs have state-independent preferences over policy, each preferring its issue to be reformed, independently of state θ. Specifically, IG_i gets utility $v_i(p) = p_i$ from policy p. IG_i has private verifiable evidence on θ_i, and decides whether to lobby the PM at utility cost $f_i \in (0, 1)$.

Upon observing IGs' lobbying decisions, the PM decides whether to grant access to an IG in order to verify or scrutinize its evidence. When granted access an IG_i must reveal its evidence on θ_i.[12] The PM faces a time constraint that prevents him from granting access to more than one IG.

We are interested in comparing the implications of two regimes. In one regime, the PM has subpoena power, meaning he can grant access or issue subpoena to an IG whether it lobbies or not. In the other regime, the PM does not have subpoena power, meaning he can grant access only to a lobbying IG; he cannot issue subpoena and, therefore, cannot grant access to an IG that does not lobby.

We are furthermore interested in studying how the implications of these two regimes depend on whether the PM faces an agenda constraint. We denote by $N \in \{1, 2\}$ the maximum number of issues the PM can choose to reform. We say that the PM faces an agenda constraint if $N = 1$, i.e., if he can choose to adopt at most one reform project. By contrast, we say that the PM does not face an agenda constraint if $N = 2$, i.e., if he can choose to reform both issues.

The policymaking process has four stages. At stage 0, Nature chooses θ_i for

[12] Results would be similar if, when granted access, an IG could decide whether or not to costlessly reveal its evidence. Indeed, the unraveling result of Grossman (1981) and Milgrom (1981) would apply, meaning that in equilibrium 1) an IG_i would reveal its evidence whenever it is favorable (i.e., $\theta_i = 1$), and 2) the PM would infer $\theta_i = 0$ if IG_i were choosing to not reveal its evidence.

each issue i, and reveals it to IG$_i$. The realization of the state for issue i, θ_i, is private information to IG$_i$. At stage 1, IGs decide simultaneously and independently whether to lobby. The PM observes IGs' lobbying decisions. At stage 2, the PM decides to which IG, if any, he grants access. If IG$_i$ is granted access, it must reveal θ_i to the PM. 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 IGs' lobbying decisions and, if he has granted access to an IG, the realized state for the issue advocated by this IG. We denote IG$_i$'s lobbying decision by $\ell_i \in \{0,1\}$, where $\ell_i = 1$ (resp. $\ell_i = 0$) if IG$_i$ lobbies (resp. does not lobby). We denote the PM's decision to grant access to IG$_i$ by $a_i \in \{0,1\}$, where $a_i = 1$ (resp. $a_i = 0$) if the PM grants access to IG$_i$ (resp. does not grant access to IG$_i$). Given lobbying profile $\ell = (\ell_1, \ell_2)$ and access profile $a = (a_1, a_2)$, the PM forms belief $\beta_i(\ell_i, a_i; \theta_i)$ that $\theta_i = 1$, using Bayes' rule whenever possible. To lighten notation, we write β_i in place of $\beta_i(\ell_i, a_i; \theta_i)$ when this does not create confusion.

A policy strategy, $\rho = (\rho_1, \rho_2)$, specifies for each issue i the probability $\rho_i(\ell, a; \theta) \in [0,1]$ that the PM reforms issue i given lobbying profile $\ell = (\ell_1, \ell_2)$ and access profile $a = (a_1, a_2)$. To further lighten notation, we omit N as argument of all strategies.

When $N = 2$, the PM maximizes his expected utility with policy strategy $\rho = (\rho_1, \rho_2)$, where

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

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

When $N = 1$, the PM maximizes his expected utility with policy strategy $\rho = (\rho_1, \rho_2)$, where

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

with the restriction that $\sum_{i \in \{1,2\}} \rho_i(\ell, a; \theta) \leq 1$, where $\alpha_1 \equiv \alpha$ and $\alpha_2 \equiv 1$. In words, the PM reforms issue i when, again, he believes $\theta_i = 1$ is more likely than $\theta_i = 0$, and he furthermore expects a greater utility gain from reforming issue i than from reforming the other issue.

3.2. Stage 2: Access

By the time the PM chooses to which IG granting access, he has observed 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.[13]

An access strategy for the PM, $\gamma = (\gamma_1, \gamma_2)$, specifies the probability $\gamma_i(\ell) \in [0,1]$ that the PM grants access to IG$_i$ given lobbying profile $\ell = (\ell_1, \ell_2)$. Since the PM cannot grant access to more than one IG, we have $\sum_{i\in\{1,2\}} \gamma_i(\ell) \leq 1$.

The PM's expected utility associated with access strategy γ is given by

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

where $W_i(\ell)$ (resp. $Z_i(\ell)$) is the probability that the PM chooses $p_i = \theta_i$ if he grants access to IG$_i$ (resp. IG$_{-i}$) given lobbying decisions $\ell = (\ell_1, \ell_2)$ (and policy strategy ρ). Granting access to IG$_i$ instead of IG$_{-i}$ increases by $X_i(\ell) \equiv W_i(\ell) - Z_i(\ell)$ the probability that the PM chooses $p_i = \theta_i$. The expressions for $W_i(\ell)$ and $Z_i(\ell)$ can be found in the Appendix.

The PM chooses an access strategy γ that solves

$$\begin{cases} \max\limits_{\gamma(\ell)\in[0,1]^2} & EU(\gamma(\ell) \mid \rho) \\ \text{s.t.} & \gamma_1(\ell) + \gamma_2(\ell) \leq 1 \end{cases}$$

with the additional restriction in the no-subpoena games that $\gamma_1(0, \ell_2) = \gamma_2(\ell_1, 0) = 0$. Throughout the analysis we maintain the tie-breaking assumption that when indifferent whether or not to grant access to an IG, which happens when lobbying decisions fully reveal θ, the PM chooses in favor of granting access. This tie-breaking assumption implies $\sum_{i\in\{1,2\}} \gamma_i(\ell) = 1$, except when $\ell = (0,0)$ in the no-subpoena game (in which case $\gamma_i(0,0) = 0$ for each i). We discuss in greater detail this tie-breaking assumption in section 5.1.1.

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

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

Note that $X_i(\ell) \cdot \alpha_i$ corresponds to the PM's expected utility gain on issue i from granting access to IG$_i$ instead of IG$_{-i}$. Thus, the access strategy prescribes the PM to grant access to the IG which information he expects to be the most valuable for him.

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

3.3. Stage 1: Lobbying

A lobbying strategy for IG_i, λ_i, specifies the probability $\lambda_i(\theta_i) \in [0,1]$ that IG_i lobbies the PM given θ_i. IG_i chooses a lobbying strategy that solves for each θ_i

$$\max_{\lambda_i(\theta_i)\in[0,1]} \quad Ep_i\left(\lambda_i\left(\theta_i\right), \lambda_{-i}, \gamma, \rho\right) - \lambda_i\left(\theta_i\right) \cdot f_i,$$

where $Ep_i\left(\lambda_i\left(\theta_i\right), \lambda_{-i}, \gamma, \rho\right)$ is the probability that the PM chooses $p_i = 1$.

3.4. Equilibrium

The solution concept is Perfect Bayesian equilibrium. Roughly speaking, an equilibrium consists of a strategy profile $\{\lambda(\cdot), \gamma(\cdot), \rho(\cdot)\}$ and a system of beliefs $\left\{\beta^{Acc}(\cdot), \beta(\cdot)\right\}$ such that 1) the strategy profile is sequentially rational given the system of beliefs, and 2) the beliefs are obtained from the strategies using Bayes' rule whenever possible.

The finiteness of the game implies that an equilibrium exists in every game. In case of equilibrium multiplicity, we shall, as is standard in the literature, restrict attention to most-informative equilibria (which, incidentally, correspond to the equilibria preferred by the PM). In order to make clear where exactly this refinement is used in the analysis, we shall write: 1) "an equilibrium exists in which ...", when we make use of this refinement; and 2) "a unique equilibrium exists ..." or "in any equilibrium ...", when we do not use this refinement.

4. AN ILLUSTRATIVE EXAMPLE

Before presenting a general analysis of the model developed above, we provide the flavor of our results using a specific example, where $\pi_1 = \pi_2 = 0.3$, and $f_1 = f_2 = 0.75$.

4.1. Policymaking with No agenda constraint

We start by considering a game where the PM can choose to reform both issues (i.e. $N = 2$). 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 ($\lambda_i(\theta_i) = \theta_i$ for each θ_i and each i), i.e., lobbies if it has favorable information, and abstains from lobbying if it has unfavorable information. To verify our claim, consider the following access and policy strategies by the PM: $\gamma_i(1,1) = 0.5$, $\rho_i(0,0) = 0$, $\rho_i(1,0) = 1$ and $\rho_i(1,1) = \theta_i$ (writing $\rho_i(\ell, a)$ as $\rho_i(\ell_i, a_i)$). In words, when both IGs lobby, the PM grants each access with probability 1/2; if IG_i does not lobby, the PM maintains the status quo on issue i; if IG_i lobbies but is not granted access, the PM reforms issue i; if IG_i lobbies and is granted access, the PM chooses the optimal policy for state θ_i. The PM's interim beliefs are $\beta_i^{Acc} = \ell_i$; in words, the PM believes $\theta_i = 1$ (resp. $\theta_i = 0$) if IG$_i$ lobbies (resp. does not lobby).

To verify that these strategies and beliefs are part of an equilibrium, note that the PM's beliefs are consistent with the lobbying and access 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 $(1 > 0.75)$, it is optimal for each IG$_i$ to lobby when $\theta_i = 1$. Would IG$_i$ want to deviate 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 $(0.3)(0.5) = 0.15$, i.e., the probability that the other IG lobbies and is granted access. Hence, in state $\theta_i = 0$ the expected gain from deviating to lobby is $0.15 - 0.75 = -0.6$, implying the deviation is not profitable. As a result, there exists an equilibrium of the no-subpoena game without agenda constraint in which the first-best policy is implemented.

We now consider the case where the PM has subpoena power. Would there be a truthful lobbying equilibrium 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 its issue reformed, which yields net payoff of $1 - 0.75 = 0.25$. If it deviates to not lobby, then with probability 0.7 neither IG lobbies, in which the PM issues IG$_i$ subpoena with probability $\gamma_i^*(0, 0)$. Hence, IG$_i$'s expected payoff from not lobbying when $\theta_i = 1$ is $(0.7) \cdot \gamma_i^*(0, 0)$. Similarly, IG$_j$'s expected payoff from not lobbying when $\theta_j = 1$ is $(0.7) \cdot [1 - \gamma_i^*(0, 0)]$. For both IGs to not want to lobby when both have favorable information, it must be the case that $(0.7) \cdot \gamma_i^*(0, 0) < 0.25$ and $(0.7) \cdot [1 - \gamma_i^*(0, 0)] < 0.25$, both of which cannot be simultaneously true. Hence, subpoena power destroys IGs' incentives to lobby truthfully since they are better off abstaining from lobbying and waiting for the PM to subpoena them, in this way getting access without having to bear the lobbying costs. As we prove in the next section, in any equilibrium of the subpoena game without agenda constraint, one IG abstains from lobbying while the other does not lobby truthfully. This leads to loss of voluntarily provided information, which we show cannot be made up for by the subpoena power. As a result, in any equilibrium of the subpoena game without agenda constraint, the PM cannot implement the first-best policy.

To sum up, the example illustrates that in the absence of agenda constraint, subpoena power makes the PM worse off. In Section 5, we show this result to hold weakly over the entire range of parameters values, i.e., subpoena power can never make the PM better off, and does sometimes, as for the parameters values considered in this example, makes him strictly worse off.

4.2. Policymaking with an agenda constraint

We now consider the game where the PM can adopt at most one reform project (i.e. $N = 1$). We start again with the case where the PM has no subpoena power. As shown in Lemma 3 in the following section, the most informative equilibrium in this case is as follows. IG_1 lobbies truthfully, while IG_2 abstains from lobbying. The PM's beliefs are: $\beta_1^{Acc}(\ell_1) = \ell_1$ for each $\ell_1 \in \{0,1\}$,and $\beta_2^{Acc}(0) = \pi_2 = 0.3$. 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 only 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 is possible when $N = 1$, even though it was 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 will reform issue 1 and, due to the agenda constraint, will be unable to reform issue 2. 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 optimal strategy even when $\theta_2 = 1$. Under this strategy IG_2's payoff is 0. If it were to deviate to lobby, it would be granted access with probability 0.7 (i.e., when IG_1 does not lobby) and hence would receive expected payoff $(0.7)(1) - 0.75 = -0.05$, which is lower than its payoff if it does not lobby. This establishes that the strategies described above constitute an equilibrium. Note therefore that the equilibrium of the game with agenda constraint but without subpoena power cannot implement the first-best policy.

Turning to the case where the PM is endowed with subpoena power, we show in Lemma 4 that the most informative equilibrium consists of the same strategies as in the game without subpoena power, but with one difference: when neither IG lobbies, the PM subpoenas IG_2. 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 subpoena to IG_2. In other words, subpoena power does not decrease voluntary provision of information, implying subpoena power has benefits but no costs. Thus, in the case where there is an agenda constraint and the PM has subpoena power, he makes the same policy choices as he would if he were perfectly informed about the state of the world, i.e., the equilibrium outcome coincides with the first best policy choice.

To sum up, the example illustrates that in the presence of an agenda constraint, subpoena power makes the PM better off. In Section 5, our general analysis shows this result to hold weakly over the entire range of parameters values, i.e., subpoena power can never make the PM worse off, and does sometimes, as for the parameters values considered in this example, make him strictly better off.

5. GENERAL ANALYSIS

We now proceed with the analysis of the model. First, we describe (most-informative) equilibria for each of the four games. Second, fixing N we compare each player's equilibrium ex ante expected payoffs in the games with and without subpoena power. We show that IGs are always at least as well off when the PM has subpoena power as when he does not. At the same time, a PM who faces no agenda constraint can never be better off being granted subpoena power, while a PM who faces an agenda constraint can never be worse off from being granted subpoena power.

5.1. Equilibrium

In this section, we describe equilibria, starting with the games without agenda constraint, and then continuing with the games with agenda constraint.

5.1.1. *Games without agenda constraint*

We start with the case where the PM does not have subpoena power.[14]

LEMMA 1 (Dellis and Oak 2017). *Consider the $N = 2$-game without subpoena power.*

1. *An equilibrium exists in which $\beta_i \in \{0, 1\}$ for each i if and only if $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} \geq 1$. In this equilibrium, $\lambda_i(\theta_i) = \theta_i$ for each θ_i and each i, and the PM chooses $p = \theta$ for every θ.*
2. *If $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$, a unique equilibrium exists. In this equilibrium, we have for each i*

$$\begin{cases} \lambda_i(1) = 1 \text{ and } \lambda_i(0) = \frac{\pi_i}{1-\pi_i}\frac{1}{2\alpha_i - 1} \in (0,1) \\ \gamma_2(1,1) = 1 - \gamma_1(1,1) = \frac{f_1}{2\pi_2} \in (0,1)\,,\ \gamma_1(1,0) = \gamma_2(0,1) = 1 \text{ \& } \gamma_i(0,0) = 0 \\ \rho_i(0,0;\theta_i) = 0,\ \rho_1(1,0;\theta_1) = 1 \text{ \& } \rho_2(1,0;\theta_2) = \frac{\pi_2 f_2 \cdot (2\alpha - 1)}{\pi_1 \alpha \cdot (2\pi_2 - f_1)} \in (0,1) \\ \beta_i^{Acc}(0) = \beta_i(0,0;\theta_i) = 0 \\ \beta_2^{Acc}(1) = \beta_2(1,0;\theta_2) = \frac{1}{2} < \beta_1^{Acc}(1) = \beta_1(1,0;\theta_1) < 1. \end{cases}$$

We say that a lobbying strategy is *truthful* for IG$_i$ if $|\lambda_i(1) - \lambda_i(0)| = 1$, i.e., IG$_i$'s lobbying decision reveals θ_i. An *equilibrium with truthful lobbying* is an equilibrium in which every IG lobbies truthfully. Notice that since lobbying is costly, an equilibrium truthful lobbying strategy for IG$_i$ takes the form $\lambda_i(\theta_i) = \theta_i$ for each θ_i, i.e., IG$_i$ lobbies when it has favorable information ($\theta_i = 1$), and abstains from lobbying when it has unfavorable information ($\theta_i = 0$). Notice furthermore

[14] For expositional purposes, in all four lemmata below, we state only the equilibrium strategies and beliefs we need to compute players' equilibrium payoffs. Complete strategies and beliefs profiles can be found in the proofs of the lemmata.

that in an equilibrium with truthful lobbying, lobbying decisions reveal θ, implying $\beta_i^{Acc}, \beta_i \in \{0,1\}$ for each issue i, and, since there is no agenda constraint, the PM chooses policy $p = \theta$.

The first part of lemma 1 establishes that an equilibrium with truthful lobbying exists if and only if lobbying is costly enough (in the sense that $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} \geq 1$). Let's first go over the intuition underlying the *necessity* of this condition. Consider an equilibrium with truthful lobbying. Since we are in equilibrium, neither IG with unfavorable information wants to deviate to lobby. If IG_i does not lobby, its equilibrium payoff equals 0 since the PM, inferring $\theta_i = 0$, chooses $p_i = 0$. If IG_i were to deviate to lobby when $\theta_i = 0$, the PM would believe $\theta_i = 1$ and choose $p_i = 1$ if and only if he does not grant IG_i access and, therefore, does not verify IG_i's evidence. Since the PM does not have subpoena power, the latter event requires that the other IG, IG_{-i}, lobbies as well and that the PM grants it access, which happens with probability $\pi_{-i} \cdot \gamma_{-i}(1,1)$. IG_i's expected payoff from deviating to lobby would then be equal to $\pi_{-i} \cdot \gamma_{-i}(1,1) - f_i$. Hence IG_i does not want to deviate to lobby when $\theta_i = 0$ only if $0 \geq \pi_{-i} \cdot \gamma_{-i}(1,1) - f_i$. This condition is satisfied for each i if and only if

$$1 - \gamma_2(1,1) = \gamma_1(1,1) \in \left[1 - \frac{f_1}{\pi_2}, \frac{f_2}{\pi_1}\right],$$

i.e., each IG is granted access with a sufficiently high probability. This interval is non-empty if and only if $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} \geq 1$.

Let's now go over the intuition underlying the *sufficiency* of the condition $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} \geq 1$. By the same argument as above, we get that if the condition holds, both IGs can be deterred to deviate from truthful lobbying when they have unfavorable information. We further argue that neither IG with favorable information wants to deviate from truthful lobbying. To see why, suppose again that IGs lobby truthfully. IG_i's payoff from lobbying is equal to $1 - f_i$ since the PM infers $\theta_i = 1$ from IG_i's decision to lobby, and chooses $p_i = 1$. If IG_i were to deviate to not lobby, its payoff would be equal to zero since the PM would infer $\theta_i = 0$ and choose $p_i = 0$. Given $f_i < 1$, IG_i does not want to deviate.

The second part of lemma 1 considers the case where $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$. In this case, there is a unique equilibrium, in which each IG 1) lobbies when it has favorable information, and 2) randomizes between lobbying and not lobbying when it has unfavorable information. Since IG_i abstains from lobbying only when $\theta_i = 0$, the PM infers $\theta_i = 0$ from IG_i's decision to not lobby, and chooses $p_i = 0$. By contrast, the PM cannot perfectly infer θ_i from IG_i's decision to lobby. If IG_i is the only lobbying IG, the PM grants it access and learns θ_i, in which case he gets perfectly informed about θ and chooses $p = \theta$. If instead both IGs lobby, the PM randomizes between granting IG_1 access and granting IG_2 access, and learns θ_i from IG_i to whom he grants access ($\beta_i \in \{0,1\}$) while remaining imperfectly informed about θ_{-i} ($\beta_{-i} \in [1/2, 1)$). In this event, the PM chooses $p \neq \theta$ with positive probability.

We continue with the case where the PM is endowed with subpoena power.

Lemma 2. *Consider the $N = 2$-game with subpoena power.*

1. *An equilibrium in which $\beta_i \in \{0,1\}$ for each i exists if and only if*

$$\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} \geq 1 \geq \frac{(1-\pi_1)\cdot f_1 + (1-\pi_2)\cdot f_2}{1-\pi_1\pi_2}.$$

In this equilibrium, $\lambda_i(\theta_i) = \theta_i$ for each θ_i and each i, and the PM chooses $p = \theta$ for every θ.

2. *If $\frac{\pi_1 f_1+\pi_2 f_2}{\pi_1\pi_2} < 1$, the strategies and beliefs of the unique equilibrium of the no-subpoena game (lemma 1.2) still constitute an equilibrium in the subpoena game, with the exception of $\gamma_i(0,0) = 0$ for each i which is replaced with $\gamma(0,0)$ satisfying $\sum_{i\in\{1,2\}} \gamma_i(0,0) = 1$.*[15]

3. *If $\frac{(1-\pi_1)\cdot f_1+(1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} > 1$, an equilibrium exists in which*

$$\begin{cases} \lambda_1(1) = 1 \text{ \& } \lambda_1(0) = \frac{\pi_1\pi_2}{(1-\pi_1)(\alpha-\pi_2)} \in (0,1) \\ \lambda_2(1) = \lambda_2(0) = 0 \\ \gamma_1(0,0) = 1-\gamma_2(0,0) = 0 \\ \gamma_1(1,0) = 1-\gamma_2(1,0) = (1-f_1) \in (0,1) \\ \beta_1^{Acc}(0) = 0 < \beta_2^{Acc}(0) = \pi_2 < \frac{1}{2} < \left(1-\frac{\pi_2}{\alpha}\right) = \beta_1^{Acc}(1) < 1 \\ \rho_1(1,0;\theta_1) = 1 \text{ \& } \rho_i(0,0;\theta_i) = 0 \text{ for each } i. \end{cases}$$

Moreover, in any equilibrium, lobbying strategies are such that

$$|\lambda_i(1) - \lambda_i(0)| < 1 \text{ for each } i,$$

[15] In the proof of the lemma, we show that another equilibrium with lobbying IGs exists if and only if, in addition to $\frac{\pi_1 f_1+\pi_2 f_2}{\pi_1\pi_2} < 1$, we have $2\pi_1\alpha > 1$. In this equilibrium, strategies and beliefs are given by

$$\begin{cases} \lambda_1(1) = \frac{(2\pi_1\alpha-1)\cdot(2\alpha-1)}{4\alpha\cdot(\alpha-1)\cdot\pi_1} \text{ \& } \lambda_1(0) = \frac{2\pi_1\alpha-1}{4\alpha\cdot(\alpha-1)\cdot(1-\pi_1)} \\ \lambda_2(1) = 1 \text{ \& } \lambda_2(0) = \frac{\pi_2}{1-\pi_2} \\ 0 = \beta_2^{Acc}(0) < \beta_1^{Acc}(0) < \frac{1}{2} = \beta_2^{Acc}(1) < \beta_1^{Acc}(1) < 1 \\ \gamma_1(\ell_1,0) = 1 \text{ \& } \gamma_1(\ell_1,1) = \left(1-\frac{f_1}{2\pi_2}\right) \text{ for each } \ell_1 \\ \rho_1(1,0;\theta_1) = 1 \text{ \& } \rho_2(1,0;\theta_2) = \frac{2\pi_2 f_2}{2\pi_2 - f_1} \\ \rho_i(0,0;\theta_i) = 0 \text{ for each } i. \end{cases}$$

We furthermore establish that there is no other equilibrium with lobbying IGs. Finally, we show that 1) the above equilibrium is less informative than the one in the statement, the probability the PM chooses $p_i = \theta_i$ being strictly smaller for every issue i, and 2) it is dominated in the sense that, while IG_1 gets the same ex ante expected payoff in the two equilibria, both the PM and IG_2 gets a strictly higher expected payoff in the equilibrium of the no-subpoena game than in the above equilibrium.

with

$$\lambda_i(1) = \lambda_i(0) = 0 \text{ for some } i.$$

The intuition runs as follows. First, an equilibrium with truthful lobbying exists if and only if lobbying is sufficiently cheap (in the sense that $\frac{(1-\pi_1)\cdot f_1+(1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} \leq 1$), but not too cheap (in the sense that $\frac{\pi_1 f_1+\pi_2 f_2}{\pi_1\pi_2} \geq 1$). The latter is identical to the necessary and sufficient condition for the existence of an equilibrium with truthful lobbying in the no-subpoena game (lemma 1). As in the no-subpoena game, this restriction is necessary for deterring IGs with unfavorable information from deviating to lobby. However, in the subpoena game this restriction is no longer sufficient to guarantee existence of an equilibrium with truthful lobbying; it must be furthermore that lobbying is cheap enough so that IGs with favorable information are deterred from deviating to not lobby. To understand the necessity of this condition, consider an equilibrium with truthful lobbying, and suppose $\theta_i = 1$. In equilibrium the PM infers $\theta_i = 1$ from IG_i's decision to lobby, and chooses $p_i = 1$. IG_i's equilibrium payoff is then equal to $1 - f_i$. If IG_i were to deviate to not lobby, the PM would believe $\theta_i = 0$ and choose $p_i = 0$, except if he were to subpoena IG_i. The latter would occur with probability $\Gamma_i \equiv \pi_{-i} \cdot \gamma_i(0;1) + (1-\pi_{-i}) \cdot \gamma_i(0;0)$, where $\gamma_i(0;\ell_{-i})$ is the probability the PM subpoenas IG_i given $\ell_i = 0$ and IG_{-i}'s lobbying decision ℓ_{-i}. IG_i's expected payoff would then be equal to Γ_i. Thus, IG_i does not want to deviate to not lobby when $\theta_i = 1$ only if $1 - f_i \geq \Gamma_i$ or, equivalently, $f_i \leq 1 - \Gamma_i$. Now, let $\gamma_i(0;1) = 0$ for each i, which 1) by reducing Γ_i without increasing Γ_{-i}, makes it easier to satisfy the condition $f_i \leq 1 - \Gamma_i$ for each i, and 2) is possible since truthful lobbying implies $X_i(\ell) = 0$ for each i. It follows that $f_i \leq 1 - \Gamma_i$ for each IG_i if and only if

$$1 - \gamma_2(0;0) = \gamma_1(0;0) \in \left[\frac{f_2 - \pi_1}{1-\pi_1}, \frac{1-f_1}{1-\pi_2}\right]$$

i.e., neither IG is issued subpoena with too high a probability. This interval is non-empty if and only if $\frac{(1-\pi_1)\cdot f_1+(1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} \leq 1$.[16]

It is worth mentioning that the necessity of this condition depends on our tie-breaking assumption that $\sum_{i\in\{1,2\}} \gamma_i(\ell_1,\ell_2) = 1$ for all $(\ell_1,\ell_2) \in \{0,1\}^2$. As we have just argued, if $\frac{(1-\pi_1)\cdot f_1+(1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} > 1$, an IG with favorable information would deviate to not lobby since it expects to be subpoenaed, and get its issue reformed, with a high enough probability, while saving on the lobbying cost. This restriction would not be necessary if we were to allow $\sum_{i\in\{1,2\}} \gamma_i(\ell_1,\ell_2) \leq 1$. To see why, suppose IG_i were to deviate to not lobby when $\theta_i = 1$. Anticipating truthful lobbying, the PM would be indifferent whether or not to subpoena IG_i

[16] As was mentioned above, this condition is not necessary in the no-subpoena game. This is because the PM having no subpoena power, we have $\Gamma_i = 0$ for each i, which implies that $f_i \leq 1 - \Gamma_i$ is trivially satisfied and, therefore, that neither IG with favorable information wants to deviate from truthful lobbying.

(since $X_i(\ell) = 0$), and therefore could choose against subpoenaing IG$_i$ ($\gamma_i(0; \ell_{-i}) = 0$). Since, furthermore, he would infer $\theta_i = 0$ from IG$_i$'s decision to not lobby, the PM would then choose $p_i = 0$. In other words, IG$_i$ would no longer be able to get its issue reformed without having to bear the lobbying cost, and therefore, would no longer want to deviate to not lobby when $\theta_i = 1$. Having said this, it is important to emphasize that our main conclusions, which appear in proposition 1 below, do not depend on this tie-breaking assumption. Specifically, whether we make this tie-breaking assumption or not, we get that 1) when there is no agenda constraint, the PM cannot be better off with than without subpoena power, and 2) when there is an agenda constraint, he cannot be worse off with than without subpoena power.[17]

Since $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} > \frac{(1-\pi_1)\cdot f_1 + (1-\pi_2)\cdot f_2}{1-\pi_1\pi_2}$, we can partition the parameters space into three regions. One region corresponds to the part of the parameters space where $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} \geq 1 \geq \frac{(1-\pi_1)\cdot f_1 + (1-\pi_2)\cdot f_2}{1-\pi_1\pi_2}$, i.e., where lobbying costs are intermediate. Lemma 2.1 establishes that, for every configuration of parameters values in this region, an equilibrium with truthful lobbying exists. Given the absence of agenda constraint, the PM then chooses $p = \theta$.

Lemma 2.2 considers the region of the parameters space where $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$, i.e., where lobbying is cheap enough that an IG with unfavorable information would want to deviate to lobby, hoping that the PM will not grant it access and, believing $\theta_i = 1$, reform issue i. In this region of the parameters space, the unique equilibrium policy outcome from the no-subpoena game is still the (most-informative) equilibrium policy outcome in the subpoena game. This is essentially because in this equilibrium, only an IG$_i$ with unfavorable information does not lobby, meaning that the PM can infer $\theta_i = 0$ from IG$_i$'s decision to not lobby, and therefore does not get any further information about θ_i by issuing subpoena to IG$_i$.

Finally, lemma 2.3 considers the region of the parameters space where $\frac{(1-\pi_1)\cdot f_1 + (1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} > 1$, i.e., where lobbying is costly enough that an IG with favorable information would want to deviate to not lobby, hoping to be subpoenaed and be able to present its evidence, thereby getting its issue reformed without having to bear the lobbying cost. Lemma 2.3 establishes that in this region of the parameters space, equilibria involve at least one IG always abstaining from lobbying. Moreover, if an IG$_i$ lobbies, it does so 'untruthfully', in the sense that $|\lambda_i(1) - \lambda_i(0)| < 1$. This is because if an IG$_i$ were lobbying truthfully, the PM would subpoena the other IG, IG$_{-i}$, since he would infer $\theta_i = \ell_i$ from IG$_i$'s lobbying decision, but would be uncertain about θ_{-i}; formally, $X_i(\ell) = 0 < \pi_{-i} = X_{-i}(\ell)$. The PM would then choose $p_i = \ell_i$ without granting IG$_i$ access, meaning that IG$_i$ would be better off lobbying even when $\theta_i = 0$.

[17] Observe furthermore that equilibria with truthful lobbying that rely on $\sum_{i\in\{1,2\}} \gamma_i(\ell_1, \ell_2) < 1$ for some (ℓ_1, ℓ_2) are not robust to the introduction of trembles in IGs' lobbying. Indeed, with trembles, subpoenaing would always be informative, implying that in equilibrium, $\sum_{i\in\{1,2\}} \gamma_i(\ell_1, \ell_2) = 1$ for all (ℓ_1, ℓ_2), including $(\ell_1, \ell_2) = (0, 0)$.

5.1.2. Games with an agenda constraint

We start with the case where the PM does not have subpoena power.

LEMMA 3 (Dellis and Oak 2017). *Consider the $N = 1$-game without subpoena power.*

1. *If $f_2 > 1 - \pi_1$, an equilibrium exists in which lobbying strategies are given by $\lambda_1(\theta_1) = \theta_1$ and $\lambda_2(1) = \lambda_2(0) = 0$. Moreover, in any equilibrium, lobbying strategies are given by $\lambda_i(\theta_i) = \theta_i$ for some i and $\lambda_{-i}(1) = \lambda_{-i}(0) = 0$.*
2. *If $f_2 \leq 1 - \pi_1$, an equilibrium exists in which $\lambda_i(\theta_i) = \theta_i$ for each θ_i and each i. If, in addition, $f_i < 1 - \pi_i$ for each i, then in any equilibrium lobbying strategies are given by $\lambda_i(\theta_i) = \theta_i$ for each θ_i and each i.*

Thus, an equilibrium with truthful lobbying exists if and only if lobbying is sufficiently cheap for IG_2 (in the sense that $f_2 \leq 1 - \pi_1$). The key difference to the $N = 2$-game is that the agenda constraint allows the PM to deter IGs with unfavorable information from lobbying. To see why, suppose IGs lobby truthfully. When both IGs lobby, the PM infers $\theta = (1, 1)$ and is indifferent granting IG_1 or IG_2 access. This indifference makes it possible for the PM to adopt the following strategy: grant IG_1 access and reform its issue whenever it lobbies and, when granted access, shows evidence that $\theta_1 = 1$; grant IG_2 access and reform its issue whenever it is the only lobbying IG and, when granted access, shows evidence that $\theta_2 = 1$. IG_1 has clearly no incentive to deviate from truthful lobbying since 1) the PM grants it access when it lobbies, and 2) the PM believes $\theta_1 = 0$ when he observes $\ell_1 = 0$. Likewise, IG_2 has clearly no incentive to deviate to lobby when $\theta_2 = 0$ since, along the equilibrium path, the PM reforms issue 2 only after having granted IG_2 access. Likewise, IG_2 has no incentive to deviate to not lobby when $\theta_2 = 1$ since when lobbying its issue is reformed with probability $1 - \pi_1$ (i.e., the probability $\theta_1 = 0$ and IG_1 does not lobby), giving an expected payoff equal to $1 - \pi_1 - f_2$, which is bigger than 0, its payoff if it does not lobby (the PM then infering $\theta_2 = 0$ and choosing $p_2 = 0$). Hence the existence of an equilibrium with truthful lobbying when $f_2 \leq 1 - \pi_1$.[18] Lemma 3.2 further establishes that when $f_i < 1 - \pi_i$ for each i, equilibrium lobbying is truthful.

Lemma 3.1 considers the case where $f_2 > 1 - \pi_1$. In this case, lobbying is too costly to support an equilibrium with truthful lobbying since IG_2 is better off abstaining from lobbying when $\theta_2 = 1$, and this even though the PM would then believe $\theta_2 = 0$ and choose $p_2 = 0$. Although an equilibrium with truthful

[18] As shown in the discussion following lemma 1, the 'lexicographic' strategy we have just described cannot be part of an equilibrium with truthful lobbying in the $N = 2$-game when $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$. This is because the PM would then want to reform both issues when both IGs lobby. As a result, the PM would have to grant each IG access with a sufficiently high probability to deter them from deviating to lobby when they have unfavorable information. When $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$, these probabilities would have to be so large that their sum would exceed one.

lobbying cannot be supported in this case, lemma 3.1 shows that in equilibrium, one IG lobbies truthfully while the other abstains completely from lobbying. Thus, the PM chooses $p_i = \theta_i$ on the issue advocated by the lobbying IG_i and, since $\beta_{-i} = \pi_{-i} < 1/2$, chooses $p_{-i} = 0$ on the other issue.

It remains to consider the case where the PM is endowed with subpoena power.

LEMMA 4. *Consider the $N = 1$-game with subpoena power. There always exists an equilibrium in which*

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

Thus, an equilibrium always exists in which the PM makes the same policy choice as the one he would make if he were completely informed about θ, namely, he reforms issue 1 when the agenda constraint is binding (i.e., when $\theta = (1,1)$), and chooses the policy that coincides with the state θ when the agenda constraint is not binding (i.e., when $\theta \neq (1,1)$).

In this equilibrium, IG_1 lobbies truthfully and IG_2 always abstains from lobbying. To understand why each IG can be deterred from deviating, observe that: 1) since $N = 1$, the PM does not value information on θ_2 once he believes $\theta_1 = 1$ with probability one (formally, $X_2(\ell) = 0$); and 2) when IG_1 lobbies truthfully, the PM does not get any new information by granting IG_1 access (formally, $X_1(\ell) = 0$). These two observations allow the PM to adopt the following strategy: 1) grant IG_1 access and choose $p = (\theta_1, 0)$ whenever IG_1 lobbies; 2) subpoena IG_2 and choose $p = (0, \theta_2)$ whenever IG_1 does not lobby. IG_1 has no incentive to deviate from truthful lobbying since the PM reforms its issue only when it lobbies and $\theta_1 = 1$. Likewise, IG_2 has no incentive to deviate to lobby since it gets subpoenaed in the very event where the PM considers reforming its issue (i.e., when $\theta_1 = 0$).

Interestingly, these lobbying strategies are the same as the ones described in lemma 3.1. However, the key difference is that in the no-subpoena game of lemma 3, the PM does not always make the same policy choice as if he were perfectly informed about θ. Specifically, the PM chooses $p = (0,0)$ in state $\theta = (0,1)$ since his posterior belief on θ_2 is $\beta_2 = \pi_2 < 1/2$ (since IG_2 always abstains from lobbying and the PM is unable to subpoena IG_2). By contrast, in the subpoena game of lemma 4, the PM can subpoena IG_2, observe IG_2's evidence that $\theta_2 = 1$, and choose $p = (0,1)$.

5.2. Payoff comparison

We are now ready to answer the question of who gains and who loses from the PM being endowed with subpoena power? To answer this question, we fix N

and compare each player's equilibrium ex ante expected payoff in the game with subpoena power with the corresponding equilibrium payoff in the game without subpoena power.

We first need to introduce some extra notation. Let EU_k^S (resp. $EU_k^{\sim S}$) denote the equilibrium ex ante expected payoff of player $k \in \{1, 2, PM\}$ in the game with subpoena power (resp. without subpoena power), where $k = 1$ (resp. $k = 2$, $k =$PM) stands for IG_1 (resp. IG_2, the PM).

PROPOSITION 1. *We have:*

1. *When $N = 2$,*

$$\begin{cases} EU_{PM}^S \le EU_{PM}^{\sim S} \text{ with a strict inequality if and only if } \frac{(1-\pi_1)\cdot f_1+(1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} > 1. \\ EU_k^S \ge EU_k^{\sim S} \text{ for } k = 1, 2. \end{cases}$$

2. *When $N = 1$,*

$$\begin{cases} EU_{PM}^S \ge EU_{PM}^{\sim S} \text{ with a strict inequality if and only if } f_2 > 1 - \pi_1. \\ EU_k^S \ge EU_k^{\sim S} \text{ for } k = 1, 2, \text{ with at least one inequality strict.} \end{cases}$$

Thus, each IG is weakly better off, and strictly better off for some configurations of parameters values, when the PM is endowed with subpoena power than when he is not. By contrast, the PM can be either better off or worse off from being endowed with subpoena power, depending on whether he faces an agenda constraint. Without agenda constraint, the PM can never be better off with subpoena power than without, and is strictly worse off when lobbying costs are high. When facing an agenda constraint, the reverse is true, i.e., the PM is always at least as well off with as without subpoena power, and is strictly better off when IG_2's lobbying cost is high. Notice that endowing the PM with subpoena power generates an ex ante Pareto improvement if and only if the PM faces a constraint on the agenda.

We start by discussing the intuition underlying the case where $N = 2$. Notice from lemmata 1 and 2 that we can partition the parameters space into three regions, depending on lobbying costs.

1. When lobbying is cheap (in the sense that $\frac{\pi_1 f_1+\pi_2 f_2}{\pi_1\pi_2} < 1$), equilibrium lobbying strategies and policy outcomes are identical in the games with and without subpoena power, meaning each player's ex ante expected payoff is the same whether or not the PM is endowed with subpoena power. This happens for essentially two related reasons. The first reason is that lobbying is cheap enough that, even when the PM is endowed with subpoena power, an IG with favorable information prefers to lobby than wait to be issued subpoena. The second reason is that, since only an IG_i with unfavorable information abstains from lobbying, the PM can infer $\theta_i = 0$ from IG_i's decision to not lobby, implying the PM obtains no further information by issuing subpoena

to IG_i.

2. When lobbying costs are intermediate (in the sense that $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} \geq 1 \geq \frac{(1-\pi_1)\cdot f_1 + (1-\pi_2)\cdot f_2}{1-\pi_1\pi_2}$), equilibrium lobbying is truthful, independently of whether the PM has subpoena power or not. Thus, each player is as well off when the PM is endowed with subpoena power as when he is not.
3. When lobbying costs are high (in the sense that $\frac{(1-\pi_1)\cdot f_1 + (1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} > 1$), equilibrium lobbying is truthful when the PM does not have subpoena power. This is not true when the PM is endowed with subpoena power. In the latter case, one IG lobbies 'untruthfully', while the other IG always abstains from lobbying in an effort at saving on lobbying costs, knowing it will be issued subpoena and show its evidence with a sufficiently high probability. Thus, the PM is in this case strictly better off without than with subpoena power. By contrast, thanks to savings on lobbying costs, IGs are each at least as well off when the PM is endowed with subpoena power as when he is not.

It remains to discuss the intuition underlying the case where $N = 1$. Notice from lemmata 3 and 4 that we can partition the parameters space into two regions, depending on IG_2's lobbying cost.

1. When IG_2's lobbying cost is low (in the sense that $f_2 \leq 1 - \pi_1$), the PM makes the same equilibrium policy choice as under complete information, independently of whether he has subpoena power or not. Thus, the PM is as well off with as without subpoena power. The same applies to IG_1 since in both cases it lobbies truthfully and has its issue prioritized. Finally, IG_2 is strictly better off when the PM is endowed with subpoena power than when he is not. This is because, on the one hand, the PM reforms issue 2 with the same probability in both cases, namely, $(1 - \pi_1) \cdot \pi_2$. On the other hand, IG_2 lobbies truthfully in the no-subpoena game, while it abstains from lobbying in the subpoena game, thereby spending less on lobbying in the latter game. In other words, IG_2 gets its issue reformed with the same probability, but saves on lobbying costs when the PM has subpoena power.
2. When IG_2's lobbying cost is high (in the sense that $f_2 > 1 - \pi_1$), equilibrium lobbying strategies are the same whether the PM has subpoena power or not: IG_1 lobbies truthfully, while IG_2 abstains from lobbying. It follows that IG_1 is again indifferent whether or not the PM is endowed with subpoena power. By contrast, both the PM and IG_2 are each strictly better off when the PM is endowed with subpoena power than when he is not. This is because lobbying strategies are the same in both cases, but in the subpoena game the PM can subpoena IG_2 and observe when $\theta_2 = 1$, which he cannot do without subpoena power.

To sum up, subpoena power increases IGs' incentives to abstain from lobbying and wait to be issued subpoena, in which case they can present their evidence without bearing the lobbying costs. When there is no agenda constraint, the PM extracts (weakly) less information about θ, and is therefore (weakly) less likely to choose policy $p = \theta$, when he is endowed with subpoena power than when he is not. By contrast, when there is an agenda constraint, the PM can use this constraint to discipline the lobbying behavior of one IG, the one advocating the more important issue, extracting from this IG's lobbying decision all the information about the state for this issue, and, whenever useful for his policy choice, can make use of his subpoena power to get information about the state for the other issue. In this case, the PM is (weakly) more likely to make fully-informed policy choices when he is endowed with subpoena power than when he is not.

6. CONCLUSION

In this paper we have developed a two-issue model of policymaking featuring informed but biased IGs. The verifiable information possessed by the IGs can be transmitted to the PM in two ways; one, by IGs lobbying the PM, and two, by the PM granting access to IGs so he can obtain and verify their information. A key feature of our model is that the PM faces time and resource constraints when granting access to the IGs (i.e., an *access constraint*), and may face further constraints in reforming issues (i.e., an *agenda constraint*). We have employed this model to study the extent of information transmission between the IGs and the PM under two regimes; one, a regime without subpoena power, and two, a regime with subpoena power. In the first regime, the PM can grant access to an IG only if it lobbies. In the second regime, the PM has the option to grant access or issue subpoena to an IG, irrespective of whether the IG lobbies.

We found that IGs are always weakly better off under subpoena power, since it allows them to save on lobbying costs. We further found that the PM can be either better off or worse off under subpoena power depending on the effect subpoena power has on IGs' incentives to lobby, which themselves depend on the PM's agenda constraint. Since lobbying is costly, subpoena power creates an incentive for the IGs to abstain from lobbying in an effort to save on lobbying costs, in the hope that the PM will subpoena them to obtain the information. This effect is counterbalanced by the PM's ability to use his subpoena power to access information which otherwise would not have been provided. The net effect depends on the severity of the agenda constraint. In a nutshell, if the PM does not face an agenda constraint, the first effect weakly dominates the second, implying the PM is (weakly) worse off with subpoena power. On the other hand, when there is an agenda constraint, the second effect weakly dominates the first one, implying the PM is (weakly) better off with subpoena power. Finally, we found that endowing the PM with subpoena power generates a Pareto improvement if and only if there is a constraint on the agenda.

In order to make our point in a succinct way we made a number of simplifying assumptions. In particular, we 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 possibility subpoena power offers IGs to reveal their information without having to bear lobbying costs. 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 better information than the PM, that such information is useful to the PM, and that such information can be obtained and verified by granting IGs access.

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 the PM to 'demonstrate' to the public (say, voters) the basis on which he/she has 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 the PM's incentive to pander to the public in light of publicly observed information. We leave this topic for future research.

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APPENDIX

Expressions for $W_i(\ell)$ and $Z_i(\ell)$. We start by considering the case where $N = 2$. Here the PM chooses p_i based only on his belief for issue i, $\beta_i(\ell_i, a_i; \theta_i)$. If the PM grants access to/subpoenas IG_i, he anticipates to make the correct policy choice for issue i with probability one. Hence $W_i(\ell) = 1$. If the PM grants access to IG_{-i}, he anticipates to make the correct policy choice for issue i with probability

$$Z_i(\ell) = \beta_i^{Acc}(\ell_i) \cdot \rho_i(\ell_i, 0; \theta_i) + \left(1 - \beta_i^{Acc}(\ell_i)\right) \cdot [1 - \rho_i(\ell_i, 0; \theta_i)]$$

where $\rho_i(\ell_i, 0; \theta_i)$ denotes the probability that the PM chooses $p_i = 1$ given ℓ_i and $a_i = 0$. Hence, we get the following expression for $X_i(\ell)$:

$$\begin{aligned} X_i(\ell) &\equiv W_i(\ell) - Z_i(\ell) \\ &= \rho_i(\ell_i, 0; \theta_i) \cdot \left(1 - \beta_i^{Acc}\right) + [1 - \rho_i(\ell_i, 0; \theta_i)] \cdot \beta_i^{Acc}, \end{aligned}$$

which corresponds to the PM's belief that he will choose $p_i \neq \theta_i$ if he does not grant access to/subpoena IG_i.

We continue with the case where $N = 1$. Here the PM's policy choice depends on his beliefs for both issues, $\beta_1(\ell_1, a_1; \theta_1)$ and $\beta_2(\ell_2, a_2; \theta_2)$. After some manipulations, we get the following expressions for $W_i(\ell)$ and $Z_i(\ell)$:

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

where $\rho_i(\theta_i; \ell_{-i})$ (resp. $\rho_i(\theta_{-i}; \ell_i)$) denotes the probability that the PM chooses $p_i = 1$ given that he granted access to/subpoenaed IG_i (resp. IG_{-i}) and observed θ_i (resp. θ_{-i}), while IG_{-i}'s lobbying decision is ℓ_{-i} (resp. IG_i's lobbying decision is ℓ_i). After some manipulations, we get

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

which corresponds to

1. the PM's belief that the state is $\theta_i = 1$ and that he will choose $p_i = 1$ if he grants access to/subpoenas IG_i (first term on the r.h.s),
2. from which we subtract the PM's belief that the state is $\theta_i = 1$ and that he will choose $p_i = 1$ if he grants access to/subpoenas IG_{-i} ($\beta_i^{Acc}(\ell_i)$ times the term in square brackets),
3. to which we add the PM's belief that the state is $\theta_i = 0$ and that he will

choose $p_i = 1$ if he grants access to/subpoenas IG$_{-i}$ ($\left(1 - \beta_i^{Acc}(\ell_i)\right)$ times the term in square brackets).

The first two parts correspond to the change in the probability of choosing $p_i = \theta_i$ when $\theta_i = 1$ due to granting access to/subpoenaing IG$_i$. The third part corresponds to the corresponding change in the probability of choosing $p_i \neq \theta_i$ when $\theta_i = 0$.

Proof of Lemma 1. See proof of lemma 1 in Dellis and Oak (2017).

Proof of Lemma 2. We start by introducing extra notation. Let $\delta_i \equiv \pi_i \cdot \lambda_i(1) + (1 - \pi_i) \cdot \lambda_i(0)$ be the probability that IG$_i$ lobbies. We denote the probability that IG$_i$ is granted access/subpoenaed, given its lobbying decision $\ell_i \in \{0, 1\}$, by

$$\Gamma_i(\ell_i) \equiv \delta_{-i} \cdot \gamma_i(\ell_i; 1) + (1 - \delta_{-i}) \cdot \gamma_i(\ell_i; 0),$$

where $\gamma_i(\ell_i; \ell_{-i})$ denotes the probability IG$_i$ is granted access/subpoenaed given lobbying decisions ℓ_i and ℓ_{-i} by IG$_i$ and IG$_{-i}$, respectively.

In order to lighten notation, we write $\rho_i(\ell_i)$ as a shorthand for $\rho_i(\ell_i, a_i = 0; \theta_i)$. We shall furthermore write $X_i(\ell_i)$, which is without loss of generality since, given $N = 2$, $X_i(\ell)$ is anyway independent of ℓ_{-i}.

We are now ready to state IG$_i$'s lobbying problem. Given θ_i, IG$_i$ chooses $\lambda_i(\theta_i)$ that solves

$$\max_{\lambda_i(\theta_i) \in [0,1]} Ev_i(\lambda_i(\theta_i))$$

where

$$\begin{aligned} Ev_i(\lambda_i(\theta_i)) &= \lambda_i(\theta_i) \cdot [\Gamma_i(1) \cdot \theta_i + (1 - \Gamma_i(1)) \cdot \rho_i(1) - f_i] \\ &\quad + (1 - \lambda_i(\theta_i)) \cdot [\Gamma_i(0) \cdot \theta_i + (1 - \Gamma_i(0)) \cdot \rho_i(0)] \end{aligned}$$

is IG$_i$'s expected payoff given $\lambda_i(\theta_i)$.

Proof of (1). We first establish the sufficiency of the condition. Suppose that the condition stated in part 1 of the lemma is satisfied. Let $\lambda_i(1) = 1$ and $\lambda_i(0) = 0$ for each i. It follows that $\delta_i = \pi_i$. Furthermore, $\beta_i^{Acc}(1) = 1$ and $\beta_i^{Acc}(0) = 0$ for each i, implying $X_i(\ell_i) = 0$ for each i and every ℓ_i.

We have:

$$\begin{cases} \frac{dEv_i}{d\lambda_i(1)} \geq 0 \Leftrightarrow 1 - \Gamma_i(0) - f_i \geq 0 \\ \frac{dEv_i}{d\lambda_i(0)} \leq 0 \Leftrightarrow 1 - \Gamma_i(1) - f_i \leq 0. \end{cases}$$

Given $X_i(\ell_i) = 0$ for each i and ℓ_i, we can set $\gamma_1(1, 0) = \gamma_2(0, 1) = 1$, which minimizes $\Gamma_i(0)$ and maximizes $\Gamma_i(1)$. The two inequalities above are therefore satisfied if and only if we set

$$\begin{cases} \gamma_1(1,1) = [1-\gamma_2(1,1)] \in \left[1-\frac{f_1}{\pi_2}, \frac{f_2}{\pi_1}\right] \\ \gamma_1(0,0) = [1-\gamma_2(0,0)] \in \left[\frac{f_2-\pi_1}{1-\pi_1}, \frac{1-f_1}{1-\pi_2}\right]. \end{cases}$$

Given $\frac{\pi_1 f_1+\pi_2 f_2}{\pi_1\pi_2} \geq 1 \geq \frac{(1-\pi_1)\cdot f_1+(1-\pi_2)\cdot f_2}{1-\pi_1\pi_2}$, neither of these two intervals is empty. Moreover, the lower-bounds (resp. upper-bounds) of the two intervals are smaller than one (resp. bigger than zero). Hence, there exists an equilibrium with strategy profile $\{\lambda(.), \gamma(.), \rho(.)\}$, in which $\beta_i^{Acc}, \beta_i \in \{0,1\}$ for each i, and $p = \theta$ for every θ.

We continue by establishing the necessity of the condition. Suppose that $\frac{\pi_1 f_1+\pi_2 f_2}{\pi_1\pi_2} \geq 1 \geq \frac{(1-\pi_1)\cdot f_1+(1-\pi_2)\cdot f_2}{1-\pi_1\pi_2}$ does not hold, and assume by way of contradiction that an equilibrium exists in which $\beta_i \in \{0,1\}$ for each i. Since the PM can grant access to only one IG, $\beta_i \in \{0,1\}$ for each i requires that at least one IG lobbies truthfully, i.e., $\lambda_i(1) = 1$ and $\lambda_i(0) = 0$. Observe that $\lambda_i(0) = 0$ requires

$$\frac{dEv_i}{d\lambda_i(0)} \leq 0 \Leftrightarrow \Gamma_i(1) \geq 1 - f_i.$$

Hence, it must be that $\Gamma_i(1) > 0$ and, therefore, $\gamma_i(1;\ell_{-i}) > 0$ for some ℓ_{-i}. However, since IG$_i$ lobbies truthfully, we have $X_i(\ell_i) = 0$ for every ℓ_i. It follows that $\Gamma_i(1) > 0$ requires $\beta_{-i}^{Acc}(\ell_{-i}) \in \{0,1\}$ for some ℓ_{-i} and, therefore, $\lambda_{-i}(1) \neq \lambda_{-i}(0)$ (otherwise $\beta_{-i}^{Acc}(\ell_{-i}) = \pi_{-i}$, implying $X_{-i}(\ell_{-i}) > 0 = X_i(\ell_i)$ and, therefore, $\Gamma_i(1) = 0$). There are three cases to consider:

1. $\lambda_{-i}(1) = 1$ and $\lambda_{-i}(0) \in (0,1)$. In this case, $\beta_{-i}^{Acc}(0) = 0$ and $\beta_{-i}^{Acc}(1) \in (0,1)$, implying $\rho_{-i}(0) = 0$ and $\Gamma_{-i}(1) = 1$. It follows that $\frac{dEv_{-i}}{d\lambda_{-i}(0)} = -f_{-i} < 0$, contradicting $\lambda_{-i}(0) > 0$.
2. $\lambda_{-i}(1) \in (0,1)$ and $\lambda_{-i}(0) = 0$. In this case, $\beta_{-i}^{Acc}(1) = 1$ and $\beta_{-i}^{Acc}(0) \in (0,1)$, implying $\rho_{-i}(1) = 1$ and $\Gamma_{-i}(0) = 1$. It follows that $\frac{dEv_{-i}}{d\lambda_{-i}(1)} = -f_{-i} < 0$, contradicting $\lambda_{-i}(1) > 0$.
3. $\lambda_{-i}(1) = 1$ and $\lambda_{-i}(0) = 0$. In this case, we have $\lambda_i(1) = 1$ and $\lambda_i(0) = 0$ for each i. Proceeding as in the proof of sufficiency above, we obtain a contradiction since $\frac{\pi_1 f_1+\pi_2 f_2}{\pi_1\pi_2} \geq 1 \geq \frac{(1-\pi_1)\cdot f_1+(1-\pi_2)\cdot f_2}{1-\pi_1\pi_2}$ does not hold.

This completes the proof since these three cases exhaust all possibilities.

Proof of (2). We start by identifying a series of necessary conditions for the existence of an equilibrium where $\delta_i > 0$ for each i. We proceed via a sequence of claims.

CLAIM 1. $\beta_i^{Acc}(0) < 1/2$ and $\rho_i(0) = 0$ for each i.

Proof of Claim 1. Assume by way of contradiction that $\beta_i^{Acc}(0) \geq 1/2$ for some i. Given $\pi_i < 1/2$, either $\lambda_i(1) = \lambda_i(0) = 1$ or $\lambda_i(0) > \lambda_i(1)$. In either case, $\lambda_i(0) > 0$ and $\beta_i^{Acc}(1) < 1/2$. The latter implies $\rho_i(1) = 0$. It follows that $\frac{dEv_i}{d\lambda_i(0)} \leq -f_i < 0$, contradicting $\lambda_i(0) > 0$. Hence $\beta_i^{Acc}(0) < 1/2$ for each i, implying $\rho_i(0) = 0$.

Claim 2. $\beta_i^{Acc}(1) \geq 1/2$ for each i.

Proof of Claim 2. Assume by way of contradiction that $\beta_i^{Acc}(1) < 1/2$ for some i. It follows that $\rho_i(1) = 0$ which, together with $\rho_i(0) = 0$, implies $\frac{dEv_i}{d\lambda_i(0)} = -f_i < 0$. Hence $\lambda_i(0) = 0$. Since $\delta_i > 0$, we have $\lambda_i(1) > 0$ and $\beta_i^{Acc}(1) = 1$, contradicting $\beta_i^{Acc}(1) < 1/2$.

Claim 3. $\beta_1^{Acc}(1) > 1/2$ and $\rho_1(1) = 1$.

Proof of Claim 3. We already know from Claim 2 that $\beta_1^{Acc}(1) \geq 1/2$. Assume by way of contradiction that $\beta_1^{Acc}(1) = 1/2$, implying $X_1(1) = 1/2$. Given $\alpha > 1$ and $X_2(\ell_2) \in \left\{1 - \beta_2^{Acc}(1), \beta_2^{Acc}(0)\right\} \leq 1/2$, we get $X_1(1) \cdot \alpha > X_2(\ell_2)$ for every ℓ_2, implying $\Gamma_1(1) = 1$. It follows that $\frac{dEv_1}{d\lambda_1(0)} = -f_1 < 0$ and, therefore, $\lambda_1(0) = 0$. Since $\delta_1 > 0$, we have $\lambda_1(1) > 0$ and $\beta_1^{Acc}(1) = 1$, contradicting $\beta_1^{Acc}(1) = 1/2$.

Claim 4. $\lambda_i(0) > 0$ for some i.

Proof of Claim 4. Assume by way of contradiction that $\lambda_i(0) = 0$ for each i. Given $\delta_i > 0$, we have $\lambda_i(1) > 0$ and, therefore, $\beta_i^{Acc}(1) = 1$ together with $\rho_i(1) = 1$.

We start by showing that $\lambda_i(1) \in (0,1)$ for each i. Assume by way of contradiction that $\lambda_i(1) = 1$ for some i. Given $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$, part (1) implies $\lambda_{-i}(1) \in (0,1)$. Hence $X_{-i}(0) > 0 = X_i(0) = X_i(1)$ and, therefore, $\Gamma_{-i}(0) = 1$. It follows that $\frac{dEv_{-i}}{d\lambda_{-i}(1)} = -f_i < 0$, contradicting $\lambda_{-i}(1) \in (0,1)$.

We continue with two implications from $\lambda_i(1) \in (0,1)$ and $\lambda_i(0) = 0$ for each i. First, $X_i(0) > 0 = X_i(1)$ for each i, implying $\gamma_1(0,1) = \gamma_2(1,0) = 1$ and $\Gamma_i(0) \geq \Gamma_i(1)$. Second, we have for each i

$$\begin{cases} \frac{dEv_i}{d\lambda_i(1)} = 0 \Leftrightarrow \Gamma_i(0) = 1 - f_i \\ \frac{dEv_i}{d\lambda_i(0)} \leq 0 \Leftrightarrow \Gamma_i(1) \geq 1 - f_i, \end{cases}$$

implying $\Gamma_i(1) \geq \Gamma_i(0)$. It follows from these two implications that $\Gamma_i(1) = \Gamma_i(0)$ for each i. Given $\gamma_1(0,1) = \gamma_2(1,0) = 1$, it must then be that $\gamma_i(1,1) = 1$ and $\gamma_i(0,0) = 0$ for each i, a contradiction.

Claim 5. $\lambda_i(0) > 0$ for each i.

Proof of Claim 5. Assume by way of contradiction that $\lambda_i(0) = 0$ for some i. This assumption has two implications: 1) $\lambda_i(1) > 0$, from which we get $\beta_i^{Acc}(1) = 1$, $\rho_i(1) = 1$ and $X_i(1) = 0$; and 2) $\lambda_{-i}(0) > 0$ (by claim 4). Given $\beta_{-i}^{Acc}(1) \geq 1/2$ and $\pi_{-i} < 1/2$, we have $\lambda_{-i}(1) > \lambda_{-i}(0)$ and $X_{-i}(1) > 0$. Hence, $X_{-i}(1) > 0 = X_i(1)$, implying $\gamma_{-i}(1,1) = 1$.

We continue by showing that we must have $\lambda_{-i}(1) = 1$. Given $\lambda_i(0) = 0$, we have

$$\frac{dEv_i}{d\lambda_i(0)} \leq 0 \Leftrightarrow \Gamma_i(1) \geq 1 - f_i,$$

implying $\Gamma_i(1) > 0$. Given $\gamma_{-i}(1,1) = 1$, we must have $\gamma_i(1;0) > 0$ and, therefore, $X_i(1) \cdot \alpha_i \geq X_{-i}(0) \cdot \alpha_{-i}$. Given $X_i(1) = 0$, it must be that $X_{-i}(0) = 0$ and, therefore, $\lambda_{-i}(1) = 1$.

Furthermore, we must have $\lambda_i(1) \in (0,1)$. To see this, observe that $\lambda_{-i}(0) \in (0,1)$ requires

$$\frac{dEv_{-i}}{d\lambda_{-i}(0)} = 0 \Leftrightarrow [1 - \Gamma_{-i}(1)] \cdot \rho_{-i}(1) = f_{-i},$$

implying $\Gamma_{-i}(1) < 1$. Given $\gamma_{-i}(1,1) = 1$, it must be that $\gamma_{-i}(1;0) < 1$ and, therefore, $X_i(0) \cdot \alpha_i \geq X_{-i}(1) \cdot \alpha_{-i}$. Given $X_{-i}(1) > 0$, it must be that $X_i(0) > 0$ and, therefore, $\lambda_i(1) < 1$.

Finally, observe that together $X_i(0) > 0 = X_i(1)$ and $X_{-i}(0) = 0 < X_{-i}(1)$ imply $\gamma_i(0,0) = \gamma_{-i}(1,1) = 1$. Moreover, $\lambda_i(1) \in (0,1)$ and $\lambda_i(0) = 0$ require

$$\begin{cases} \frac{dEv_i}{d\lambda_i(1)} = 0 \Leftrightarrow \Gamma_i(0) = 1 - f_i \\ \frac{dEv_i}{d\lambda_i(0)} \leq 0 \Leftrightarrow \Gamma_i(1) \geq 1 - f_i, \end{cases}$$

implying $\Gamma_i(1) \geq \Gamma_i(0)$. Given $\gamma_i(0,0) = 1$ and $\gamma_i(1,1) = 0$, it must then be that $\gamma_i(1;0) = 1$ and $\gamma_i(0;1) = 0$. It follows that $\Gamma_{-i}(1) = 1$ and, therefore, $\frac{dEv_{-i}}{d\lambda_{-i}(0)} = -f_{-i} < 0$, contradicting $\lambda_{-i}(0) > 0$.

Claim 6. $\lambda_2(1) = 1$.

Proof of Claim 6. Assume by way of contradiction that $\lambda_2(1) < 1$. We then have $1 > \lambda_2(1) > \lambda_2(0) > 0$. This requires

$$\begin{cases} \frac{dEv_2}{d\lambda_2(1)} = 0 \Leftrightarrow \Gamma_2(1) - \Gamma_2(0) + (1 - \Gamma_2(1)) \cdot \rho_2(1) = f_2 \\ \frac{dEv_2}{d\lambda_2(0)} = 0 \Leftrightarrow (1 - \Gamma_2(1)) \cdot \rho_2(1) = f_2, \end{cases}$$

implying $\Gamma_2(0) = \Gamma_2(1) < 1$. This furthermore implies $X_2(\ell_2) > 0$ for every ℓ_2.

Recall from claims 3 and 5 that $\rho_1(1) = 1$ and $\lambda_1(0) \in (0,1)$, the latter requiring

$$\frac{dEv_1}{d\lambda_1(0)} = 0 \Leftrightarrow \Gamma_1(1) = 1 - f_1.$$

We establish the contradiction in two steps, first for $\lambda_1(1) = 1$ and then for $\lambda_1(1) < 1$.

Suppose $\lambda_1(1) = 1$. Given $\lambda_1(0) \in (0,1)$, we have $\beta_1^{Acc}(0) = 0$, implying $\rho_1(0) = 0$ and $X_1(0) = 0$. Given $X_2(\ell_2) > 0$ for each ℓ_2, we get $\gamma_2(0,0) = \gamma_2(0,1) = 1$. Furthermore, we must have $\gamma_2(1,0) = \gamma_2(1,1) = f_1 \in (0,1)$ given $\Gamma_2(0) = \Gamma_2(1)$ (for the first equality) and $\Gamma_1(1) = 1 - f_1$ (for the second equality). For $\gamma_2(1,\ell_2) \in (0,1)$, it must be that $X_2(0) = X_2(1) = X_1(1) \cdot \alpha$. Given $X_2(0) = \beta_2^{Acc}(0) < 1/2$, we thus get $X_2(1) < 1/2$, which is true only if $\beta_2^{Acc}(1) > 1/2$, implying $\rho_2(1) = 1$. Given $\frac{dEv_2}{d\lambda_2(0)} = 0$, we then get $\Gamma_2(1) = 1 - f_2$ and

$$f_2 = \delta_1 \cdot (1 - f_1) \Leftrightarrow \lambda_1(0) = \frac{1}{1-\pi_1} \cdot \left[\frac{f_2}{1-f_1} - \pi_1\right].$$

Hence the contradiction since $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$ implies $\lambda_1(0) < 0$.

Now, suppose $\lambda_1(1) < 1$. We thus have $1 > \lambda_1(1) > \lambda_1(0) > 0$, requiring

$$\frac{dEv_1}{d\lambda_1(1)} = 0 \Leftrightarrow \Gamma_1(0) = 1 - f_1.$$

Recall from above that $\lambda_1(0) \in (0,1)$ implies $\Gamma_1(1) = 1 - f_1$. It follows that $\Gamma_1(0) = \Gamma_1(1) = (1 - f_1) \in (0,1)$.

There are two cases to consider:

1. $\beta_2^{Acc}(1) > 1/2$, implying $\rho_2(1) = 1$ and $\Gamma_2(0) = \Gamma_2(1) = (1 - f_2)$. IG_1 (resp. IG_2) is thus granted access with probability $1 - f_1$ (resp. $1 - f_2$). Since these two probabilities must sum to 1, we must have $f_1 + f_2 = 1$, contradicting $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$.
2. $\beta_2^{Acc}(1) = 1/2$, implying $X_2(1) = 1/2 > \beta_2^{Acc}(0) = X_2(0)$. For $\Gamma_1(\ell_1) \in (0,1)$ for each ℓ_1, it must then be that $X_2(1) \geq X_1(\ell_1) \cdot \alpha \geq X_2(0)$ for each ℓ_1. We now show that each of these two inequalities must be strict.
   Assume by way of contradiction that $X_2(1) = X_1(\ell_1) \cdot \alpha > X_2(0)$ for some ℓ_1, implying $\gamma_1(\ell_1, 0) = 1$ and $\gamma_1(\ell_1, 1) < 1$, the latter since $\Gamma_1(\ell_1) < 1$. Given $\gamma_1(\ell_1, 1) < 1$ and $\Gamma_2(0) = \Gamma_2(1)$, we have furthermore that $\Gamma_2(0) > 0$. This, together with $\gamma_1(\ell_1, 0) = 1$, implies $\gamma_2(\sim \ell_1, 0) > 0$ and, therefore, $X_2(0) \geq X_1(\sim \ell_1) \cdot \alpha$. It follows that $X_2(1) > X_1(\sim \ell_1) \cdot \alpha$, implying $\gamma_2(\sim \ell_1, 1) = 1$. The latter, together with $\gamma_2(\ell_1, 1) > 0$ and $\gamma_2(\ell_1, 0) = 0$, implies $\Gamma_2(1) > \Gamma_2(0)$, contradicting $\Gamma_2(1) = \Gamma_2(0)$.
   Assume by way of contradiction that $X_2(1) > X_1(\ell_1) \cdot \alpha = X_2(0)$ for some ℓ_1, implying $\gamma_2(\ell_1, 1) = 1$ and $\gamma_2(\sim \ell_1, 1) < 1$, the latter since $\Gamma_2(1) < 1$. Given $\gamma_2(\sim \ell_1, 1) < 1$, we have $X_1(\sim \ell_1) \cdot \alpha \geq X_2(1)$. It follows that $X_1(\sim \ell_1) \cdot \alpha > X_2(0)$, which implies $\gamma_2(\sim \ell_1, 0) = 0$. This, together with $\gamma_2(\ell_1, 1) = 1$ and $\Gamma_2(1) = \Gamma_2(0)$, implies $\gamma_2(\ell_1, 0) = 1$ and $\gamma_2(\ell_1, 1) = 0$. We

then get $\Gamma_1(\ell_1) = 0$ and $\Gamma_1(\sim \ell_1) = 1$, which contradicts $\Gamma_1(\ell_1) = \Gamma_1(\sim \ell_1)$. Thus, we have $X_2(1) > X_1(\ell_1) \cdot \alpha > X_2(0)$ for each ℓ_1. It follows that $\Gamma_2(1) = 1$ and $\Gamma_2(0) = 0$, contradicting $\Gamma_2(0) = \Gamma_2(1)$.

CLAIM 7. $\beta_2^{Acc}(1) = 1/2$ and $\lambda_2(0) = \frac{\pi_2}{1-\pi_2}$.

PROOF OF CLAIM 7. Assume by way of contradiction that $\beta_2^{Acc}(1) > 1/2$, implying $\rho_2(1) = 1$. It follows that $\lambda_2(0) \in (0,1)$ requires $\Gamma_2(1) = 1 - f_2$. At the same time, we already know that $\lambda_1(0) \in (0,1)$ requires $\Gamma_1(1) = 1 - f_1$. Moreover, $1 = \lambda_2(1) > \lambda_2(0) > 0$ implies $X_2(0) = 0$. At the same time, $\lambda_1(1) > \lambda_1(0) > 0$ implies $X_1(1) > 0$. It follows that $X_1(1) \cdot \alpha > X_2(0)$ and, therefore, that $\gamma_1(1,0) = 1$.

All the above imply

$$\Gamma_1(1) = 1 - f_1 \Leftrightarrow \gamma_1(1,1) = 1 - \frac{f_1}{\delta_2}$$

and

$$\Gamma_1(1) + f_1 = \Gamma_2(1) + f_2 \Leftrightarrow 1 = \frac{\delta_1 f_1}{\delta_2} + (1-\delta_1) \cdot \gamma_2(0,1) + f_2. \qquad (*)$$

There are two cases to consider:

1. $\lambda_1(1) = 1$, in which case $X_1(0) = 0$ and, therefore, $\gamma_2(0,1) = 1$ (since $X_2(1) > 0$). Plugging the value of $\gamma_2(0,1)$ into $(*)$ gives $\frac{\delta_1 f_1 + \delta_2 f_2}{\delta_1 \delta_2} = 1$, which contradicts $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$ and $\delta_i > \pi_i$ for each i.
2. $\lambda_1(1) < 1$, in which case $X_1(0) > 0$ and, therefore, $\gamma_1(0,0) = 1$ (since $X_2(0) = 0$). Moreover, $\lambda_1(1) \in (0,1)$ requires

$$\frac{dEv_1}{d\lambda_1(1)} = 0 \Leftrightarrow \Gamma_1(0) = 1 - f_1,$$

which implies $\gamma_2(0,1) = \frac{f_1}{\delta_2}$ (since $\gamma_1(0,0) = 1$). Plugging the value of $\gamma_2(0,1)$ into $(*)$ gives $\frac{f_1}{\delta_2} + f_2 = 1$, which contradicts $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$ and $\delta_2 > \pi_2$.

Hence $\beta_2^{Acc}(1) = 1/2$. This, together with $\lambda_2(1) = 1$, implies $\lambda_2(0) = \frac{\pi_2}{1-\pi_2}$.

To sum up, Claims 1-7 show that in any equilibrium with $\delta_i > 0$ for each i,

$$\begin{cases} 1 \geq \lambda_1(1) > \lambda_1(0) > 0 \\ \lambda_2(1) = 1 \text{ and } \lambda_2(0) = \frac{\pi_2}{1-\pi_2} \\ \beta_1^{Acc}(1) > \beta_2^{Acc}(1) = \frac{1}{2} > \beta_1^{Acc}(0) \geq \beta_2^{Acc}(0) = 0 \\ X_2(0) = 0 \text{ and } X_2(1) = 1/2 \\ \rho_1(1) = 1 \text{ and } \rho_1(0) = \rho_2(0) = 0. \end{cases}$$

We start by considering equilibria with $\lambda_1(1) = 1$. Proceeding as for lemma 1, we can establish that: 1) such equilibria exist given $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$; and 2) the equilibrium strategies and beliefs are the same as in part (2) of lemma 1, except for $\gamma_i(0,0)$ which can take here any value in $[0,1]$ such that $\sum_{i\in\{1,2\}} \gamma_i(0,0) = 1$.

It remains to consider the possibility of equilibria where $\lambda_1(1) < 1$. We now establish that: 1) such equilibria exist if and only if $2\pi_1\alpha > 1$; and 2) there is at most one such equilibrium.

We know from above that in any equilibrium with $\lambda_1(1) < 1$, we have

$$\begin{cases} 1 > \lambda_1(1) > \lambda_1(0) > 0 \\ 1 = \lambda_2(1) > \lambda_2(0) > 0. \end{cases}$$

It follows that $X_1(\ell_1) > 0 = X_2(0)$ for each ℓ_1, implying $\gamma_1(\ell_1, 0) = 1$ and

$$\begin{cases} \Gamma_1(1) = 1 - 2\pi_2 \cdot \gamma_2(1,1) \\ \Gamma_1(0) = 1 - 2\pi_2 \cdot \gamma_2(0,1) \\ \Gamma_2(0) = 0. \end{cases}$$

Also, $1 > \lambda_1(1) > \lambda_1(0) > 0$ requires

$$\begin{cases} \frac{dEv_1}{d\lambda_1(1)} = 0 \Leftrightarrow \Gamma_1(0) = 1 - f_1 \\ \frac{dEv_1}{d\lambda_1(0)} = 0 \Leftrightarrow \Gamma_1(1) = 1 - f_1. \end{cases}$$

These two inequalities, together with the above expressions for $\Gamma_1(0)$ and $\Gamma_1(1)$, imply $\gamma_2(1,1) = \gamma_2(0,1) = \frac{f_1}{2\pi_2} \in (0,1)$ and $\Gamma_2(1) = f_1/2\pi_2$.

Since $\gamma_2(1,1) \in (0,1)$, it must be that $X_1(1) \cdot \alpha = X_2(1)$. Likewise, $\gamma_2(0,1) \in (0,1)$ requires $X_1(0) \cdot \alpha = X_2(1)$. Given that $X_1(0) = \beta_1^{Acc}(0)$, $X_1(1) = 1 - \beta_1^{Acc}(1)$ and $X_2(1) = 1/2$, we obtain from $X_1(0) \cdot \alpha = X_1(1) \cdot \alpha = X_2(1)$ that

$$\begin{cases} \lambda_1(1) = \frac{(2\pi_1\alpha - 1)\cdot(2\alpha - 1)}{4\alpha\cdot(\alpha-1)\cdot\pi_1} \\ \lambda_1(0) = \frac{2\pi_1\alpha - 1}{4\alpha\cdot(\alpha-1)\cdot(1-\pi_1)}. \end{cases}$$

Simple algebra establishes that $1 > \lambda_1(1) > \lambda_1(0) > 0$ if and only if $2\pi_1\alpha > 1$.

Using the expressions for $\lambda_1(1)$ and $\lambda_1(0)$ just obtained, we get $\beta_1^{Acc}(1) = \frac{2\alpha-1}{2\alpha} \in \left(\frac{1}{2}, 1\right)$ and $\beta_1^{Acc}(0) = \frac{1}{2\alpha} \in \left(0, \frac{1}{2}\right)$.

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

$$\frac{dEv_2}{d\lambda_2(0)} = 0 \Leftrightarrow (1 - \Gamma_2(1)) \cdot \rho_2(1) = f_2.$$

Given the expression for $\Gamma_2(1)$ obtained above, we get $\rho_2(1) = \frac{2\pi_2 f_2}{2\pi_2 - f_1} \in (0,1)$. (Observe that $\Gamma_2(1) > \Gamma_2(0)$ and $\frac{dEv_2}{d\lambda_2(0)} = 0$ imply $\frac{dEv_2}{d\lambda_2(1)} > 0$, which is consistent with $\lambda_2(1) = 1$.)

We conclude by showing that the equilibrium with $\lambda_1(1) < 1$, if it exists, is less informative than and is dominated by the equilibrium with $\lambda_1(1) = 1$. We establish the former by comparing equilibrium probabilities that the PM chooses $p = \theta$. We establish the second by comparing equilibrium ex ante expected payoffs of the different players.

Simple computations establish

$$\begin{cases} \Pr(p_1 = \theta_1 \mid \lambda_1(1) < 1) = 1 - \frac{f_1}{2\alpha} < 1 - \frac{\pi_1 f_1}{2\alpha - 1} = \Pr(p_1 = \theta_1 \mid \lambda_1(1) = 1) \\ \Pr(p_2 = \theta_2 \mid \lambda_1(1) < 1) = 1 - \pi_2 + \frac{f_1}{2} < 1 - \frac{\pi_1 \alpha \cdot (2\pi_2 - f_1)}{2\alpha - 1} = \Pr(p_2 = \theta_2 \mid \lambda_1(1) = 1), \end{cases}$$

where $\Pr(p_i = \theta_i \mid \lambda_1(1) < 1)$ (resp. $\Pr(p_i = \theta_i \mid \lambda_1(1) = 1)$) is the probability that the PM chooses $p_i = \theta_i$ in the equilibrium where $\lambda_1(1) < 1$ (resp. $\lambda_1(1) = 1$).

We denote the ex ante expected payoff of player $i \in \{1, 2, PM\}$ in the equilibrium with $\lambda_1(1) < 1$ (resp. $\lambda_1(1) = 1$) by $EU_i(\lambda_1(1) < 1)$ (resp. $EU_i(\lambda_1(1) = 1)$). Simple computations establish

$$\begin{cases} EU_{PM}(\lambda_1(1) < 1) = \alpha + 1 - \pi_2 < \alpha + 1 - \frac{2\pi_1\pi_2\alpha}{2\alpha - 1} = EU_{PM}(\lambda_1(1) = 1) \\ EU_1(\lambda_1(1) < 1) = \pi_1 \cdot (1 - f_1) = EU_1(\lambda_1(1) = 1) \\ EU_2(\lambda_1(1) < 1) = \frac{f_1}{2} < \pi_2 - \frac{\pi_1 \alpha \cdot (2\pi_2 - f_1)}{2\alpha - 1} = EU_2(\lambda_1(1) = 1). \end{cases}$$

Proof of (3). It is not difficult to check that the strategies and beliefs in the statement, together with out-of-equilibrium belief $\beta_2^{Acc}(1) = \beta_2(1, 0; \theta_2) \leq 1 - \pi_2$, are part of an equilibrium. To save space, computations are not reported here, but are available from the authors.

It remains to show that in any equilibrium, lobbying strategies are such that

$$\begin{cases} |\lambda_i(1) - \lambda_i(0)| < 1 \text{ for each } i, \text{ and} \\ \lambda_i(1) = \lambda_i(0) = 0 \text{ for some } i. \end{cases}$$

Proceeding as in the proofs of claims 1-3 above, we get that in any equilibrium: 1) $\beta_i^{Acc}(0) < 1/2$ for each i; and 2) $\delta_i > 0 \Rightarrow \beta_i^{Acc}(1) \geq 1/2$, with $\beta_1^{Acc}(1) > 1/2$ and $\rho_1(1) = 1$.

To establish that $\delta_i = 0$ for some i, we start with a sequence of claims.

Claim 8. $\delta_i < 1$ for each i.

Proof of Claim 8. Assume by way of contradiction that $\delta_i = 1$ for some i. We then have $\beta_i^{Acc}(1) = \beta_i(1, 0; \theta_i) = \pi_i < 1/2$ and $\rho_i(1) = 0$. It follows that

$$\frac{dEv_i}{d\lambda_i(0)} = -f_i - [1 - \Gamma_i(0)] \cdot \rho_i(0) < 0,$$

contradicting $\lambda_i(0) = 1$.

Claim 9. $|\lambda_i(1) - \lambda_i(0)| = 1 \Rightarrow \delta_{-i} > 0$.

Proof of Claim 9. Assume by way of contradiction that an equilibrium exists in which $|\lambda_i(1) - \lambda_i(0)| = 1$ and $\delta_{-i} = 0$. Since $\delta_i > 0$, we have $\beta_i^{Acc}(1) \geq 1/2$. Given $\pi_i < 1/2$, we must then have $\lambda_i(1) = 1$ and $\lambda_i(0) = 0$.

Observe that $\delta_{-i} = 0$ implies $\beta_{-i}^{Acc}(0) = \beta_{-i}(1, 0; \theta_{-i}) = \pi_{-i} < 1/2$ and $\rho_{-i}(0) = 0$. It follows that $X_{-i}(0) = \pi_{-i}$. At the same time, $\lambda_i(1) = 1$ and $\lambda_i(0) = 0$ imply

$$\begin{cases} \beta_i^{Acc}(1) = 1 \Rightarrow \rho_i(1) = 1 \text{ and } X_i(1) = 0 \\ \beta_i^{Acc}(1) = 0 \Rightarrow \rho_i(0) = 0 \text{ and } X_i(0) = 0. \end{cases}$$

Hence $X_{-i}(0) > 0 = X_i(\ell_i)$ for every ℓ_i, implying $\Gamma_i(1) = \Gamma_i(0) = 0$. It follows that

$$\frac{dEv_i}{d\lambda_i(0)} = 1 - f_i > 0,$$

contradicting $\lambda_i(0) = 0$.

Claim 10. There is no equilibrium in which

$$\begin{cases} |\lambda_i(1) - \lambda_i(0)| = 1 \\ \delta_{-i} > 0 \text{ and } |\lambda_{-i}(1) - \lambda_{-i}(0)| < 1. \end{cases}$$

Proof of Claim 10. Suppose the contrary. By the same argument as in the proof of Claim 9, we get $\lambda_i(1) = 1$ and $\lambda_i(0) = 0$, implying $X_i(1) = X_i(0) = 0$.

We now show that $\beta_{-i}^{Acc}(1) = 1$. Recall that $\delta_{-i} > 0$ implies $\beta_{-i}^{Acc}(1) \geq 1/2$. If $\beta_{-i}^{Acc}(1) \in [1/2, 1)$, then $X_{-i}(1) > 0 = X_i(\ell_i)$ for every ℓ_i, implying $\Gamma_{-i}(1) = 1$ and $\frac{dEv_i}{d\lambda_{-i}(0)} < 0$. Hence $\lambda_{-i}(0) = 0$ and $\lambda_{-i}(1) \in (0,1)$, contradicting $\beta_{-i}^{Acc}(1) < 1$.

Given $\delta_{-i} \in (0,1)$ (by claim 8 and $\delta_{-i} > 0$) and $|\lambda_{-i}(1) - \lambda_{-i}(0)| < 1$, $\beta_{-i}^{Acc}(1) = 1$ implies $\lambda_{-i}(0) = 0$ and $\lambda_{-i}(1) \in (0,1)$. It follows that $X_{-i}(0) = \beta_{-i}^{Acc}(0) > 0 = \beta_i^{Acc}(\ell_i)$ for every ℓ_i, implying $\Gamma_{-i}(0) = 1$ and

$$\frac{dEv_{-i}}{d\lambda_{-i}(1)} = -f_{-i} < 0,$$

contradicting $\lambda_{-i}(1) > 0$.

Claim 11. $|\lambda_i(1) - \lambda_i(0)| < 1$ for each i.

Proof of Claim 11. Follows straightforwardly from $\frac{(1-\pi_1)\cdot f_1 + (1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} > 1$ and claims 8-10.

CLAIM 12. $\delta_i > 0$ for each i implies

$$\frac{dEv_i}{d\lambda_i(1)} \geq 0 = \frac{dEv_i}{d\lambda_i(0)}.$$

PROOF OF CLAIM 12. Given Claim 11, we know we cannot have $\frac{dEv_i}{d\lambda_i(1)} > 0 > \frac{dEv_i}{d\lambda_i(0)}$ or $\frac{dEv_i}{d\lambda_i(0)} > 0 > \frac{dEv_i}{d\lambda_i(1)}$ for either i. Likewise, we cannot have $\frac{dEv_i}{d\lambda_i(\ell_i)} > 0$ (resp. $\frac{dEv_i}{d\lambda_i(\ell_i)} < 0$) for each ℓ_i, otherwise we would have $\delta_i = 1$ (resp. $\delta_i = 0$).

Assume by way of contradiction that $\frac{dEv_i}{d\lambda_i(0)} > 0 = \frac{dEv_i}{d\lambda_i(1)}$, implying $\lambda_i(0) = 1$ and $\lambda_i(1) \in [0,1)$, the latter given $\delta_i < 1$. Hence $\beta_i^{Acc}(0) = 1$, contradicting $\beta_i^{Acc}(0) < 1/2$.

Assume by way of contradiction that $\frac{dEv_i}{d\lambda_i(0)} = 0 > \frac{dEv_i}{d\lambda_i(1)}$, implying $\lambda_i(1) = 0$ and $\lambda_i(0) \in (0,1]$, the latter given $\delta_i > 0$. Hence $\beta_i^{Acc}(1) = 0$, contradicting $\beta_i^{Acc}(1) \geq 1/2$.

Assume by way of contradiction that $\frac{dEv_i}{d\lambda_i(1)} = 0 > \frac{dEv_i}{d\lambda_i(0)}$ for some i, implying $\lambda_i(0) = 0$ and $\lambda_i(1) \in (0,1)$, the latter given claim 11 and $\delta_i > 0$. It follows that: 1) $\beta_i^{Acc}(1) = 1$, implying $\rho_i(1) = 1$ and $X_i(1) = 0$; and 2) $\beta_i^{Acc}(0) = X_i(0) \in (0, 1/2)$. Hence $X_i(0) > X_i(1)$, implying $\gamma_i(0;\ell_{-i}) \geq \gamma_i(1;\ell_{-i})$ for each ℓ_{-i}. It follows that $\Gamma_i(0) \geq \Gamma_i(1)$. At the same time, we have

$$\begin{cases} \frac{dEv_i}{d\lambda_i(1)} = 0 \Leftrightarrow \Gamma_i(0) = 1 - f_i \\ \frac{dEv_i}{d\lambda_i(0)} < 0 \Leftrightarrow \Gamma_i(1) > 1 - f_i, \end{cases}$$

contradicting $\Gamma_i(0) \geq \Gamma_i(1)$.

Hence, the only remaining possibility is $\frac{dEv_i}{d\lambda_i(1)} \geq 0 = \frac{dEv_i}{d\lambda_i(0)}$.

We are now ready to establish $\delta_i = 0$ for some i. Given claims 8-12, it is sufficient to rule out each of the following four cases: 1) $\frac{dEv_1}{d\lambda_1(1)} > 0 = \frac{dEv_1}{d\lambda_1(0)}$ and $\frac{dEv_2}{d\lambda_2(1)} > 0 = \frac{dEv_2}{d\lambda_2(0)}$; 2) $\frac{dEv_1}{d\lambda_1(1)} > 0 = \frac{dEv_1}{d\lambda_1(0)}$ and $\frac{dEv_2}{d\lambda_2(1)} = 0 = \frac{dEv_2}{d\lambda_2(0)}$; 3) $\frac{dEv_1}{d\lambda_1(1)} = 0 = \frac{dEv_1}{d\lambda_1(0)}$ and $\frac{dEv_2}{d\lambda_2(1)} > 0 = \frac{dEv_2}{d\lambda_2(0)}$; and 4) $\frac{dEv_1}{d\lambda_1(1)} = 0 = \frac{dEv_1}{d\lambda_1(0)}$ and $\frac{dEv_2}{d\lambda_2(1)} = 0 = \frac{dEv_2}{d\lambda_2(0)}$. We do not report this part of the proof here since it is quite tedious and, being mechanical, not particularly informative.[19]

Finally, $\delta_i = 0$ for some i implies $|\lambda_i(1) - \lambda_i(0)| = 0 < 1$. By the contrapositive of claim 9, we then get $|\lambda_{-i}(1) - \lambda_{-i}(0)| < 1$. Hence $|\lambda_i(1) - \lambda_i(0)| < 1$ for each i. ■

PROOF OF LEMMA 3. See proof of lemma 2 in Dellis and Oak (2017).

[19] All the computations are however available from the authors upon request.

Proof of Lemma 4. We proceed by construction. Let lobbying strategies be

$$\begin{cases} \lambda_1(1) = 1 \text{ and } \lambda_1(0) = 0 \\ \lambda_2(1) = \lambda_2(0) = 0. \end{cases}$$

Using Bayes' rule, we get $\beta_1^{Acc}(1) = 1$, $\beta_1^{Acc}(0) = 0$ and $\beta_2^{Acc}(0) = \pi_2$. We obtain $X_1(1,0) = X_1(0,0) = X_2(1,0) = 0$ and $X_2(0,0) = \pi_2$. Moreover, for any out-of-equilibrium belief $\beta_2^{Acc}(1) \in [0,1]$, we get $X_1(0,1) = 0 \leq X_2(0,1)$ and $X_1(1,1) = X_2(1,1) = 0$. Given $X_i(\ell)$, let the PM's access strategy $\gamma(\cdot)$ be such that $\gamma_1(1,0) = \gamma_1(1,1) = 1$ and $\gamma_2(0,0) = \gamma_2(0,1) = 1$. Hence, $\Gamma_1(1) = 1$, $\Gamma_1(0) = 0$ and $\Gamma_2(1) = \Gamma_2(0) = 1 - \pi_1$. We then get

$$\begin{cases} \frac{dEv_1}{d\lambda_1(1)} = 1 - f_1 > 0 \\ \frac{dEv_1}{d\lambda_1(0)} = -f_1 < 0 \\ \frac{dEv_2}{d\lambda_2(1)} = \frac{dEv_2}{d\lambda_2(0)} = -f_2 < 0, \end{cases}$$

consistent with the lobbying strategies. Finally, let $\beta(\cdot)$ be obtained from the above strategies using Bayes' rule, whenever possible. Hence, strategies $\{\lambda(\cdot), \gamma(\cdot), \rho(\cdot)\}$ and beliefs $\left\{\beta^{Acc}(\cdot), \beta(\cdot)\right\}$ constitute an equilibrium of the subpoena game where $N = 1$. Moreover, in this equilibrium the PM chooses policy

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

Proof of Proposition 1. We start by considering the case where $N = 2$. Given lemmata 1 and 3, we can partition the parameters space into three regions. Using simple algebra and the strategies and beliefs described in the (proofs of the) two lemmata, we obtain the following equilibrium ex ante expected payoffs:

1. If $\frac{(1-\pi_1)\cdot f_1 + (1-\pi_2)\cdot f_2}{1-\pi_1\pi_2} > 1$,

$$\begin{cases} EU_{PM}^{\sim S} = \alpha + 1 > EU_{PM}^{S} \\ EU_1^{\sim S} = \pi_1 \cdot (1 - f_1) = EU_1^{S} \\ EU_2^{\sim S} = \pi_2 \cdot (1 - f_2) < \pi_2 \cdot \left[1 - \frac{\pi_1\alpha\cdot(1-f_1)}{\alpha - \pi_2}\right] = EU_2^{S}. \end{cases}$$

2. If $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1\pi_2} \geq 1 \geq \frac{(1-\pi_1) f_1 + (1-\pi_2) f_2}{1-\pi_1\pi_2}$,

$$\begin{cases} EU_{PM}^{\sim S} = \alpha + 1 = EU_{PM}^{S} \\ EU_1^{\sim S} = \pi_1 \cdot (1 - f_1) = EU_1^{S} \\ EU_2^{\sim S} = \pi_2 \cdot (1 - f_2) = EU_2^{S}. \end{cases}$$

3. If $\frac{\pi_1 f_1 + \pi_2 f_2}{\pi_1 \pi_2} < 1$,

$$\begin{cases} EU_{PM}^{\sim S} = (\alpha + 1) - \frac{2\pi_1\pi_2\alpha}{2\alpha - 1} = EU_{PM}^S \\ EU_1^{\sim S} = \pi_1 \cdot (1 - f_1) = EU_1^S \\ EU_2^{\sim S} = \pi_2 - \frac{\pi_1\alpha\cdot(2\pi_2 - f_1)}{2\alpha-1} = EU_2^S. \end{cases}$$

We continue by considering the case where $N = 1$. Given lemmata 2 and 4, we can partition the parameters space into two regions. Again, using simple algebra and the strategies and beliefs described in the (proofs of the) two lemmata, we obtain the following equilibrium ex ante expected payoffs:

1. If $f_2 > 1 - \pi_1$,

$$\begin{cases} EU_{PM}^{\sim S} = \alpha + 1 - \pi_2 < \alpha + 1 - \pi_1\pi_2 = EU_{PM}^S \\ EU_1^{\sim S} = \pi_1 \cdot (1 - f_1) = EU_1^S \\ EU_2^{\sim S} = 0 < \pi_2 \cdot (1 - \pi_1) = EU_2^S. \end{cases}$$

2. If $f_2 \leq 1 - \pi_1$,

$$\begin{cases} EU_{PM}^{\sim S} = \alpha + 1 - \pi_1\pi_2 = EU_{PM}^S \\ EU_1^{\sim S} = \pi_1 \cdot (1 - f_1) = EU_1^S \\ EU_2^{\sim S} = \pi_2 \cdot (1 - \pi_1 - f_2) < \pi_2 \cdot (1 - \pi_1) = EU_2^S. \blacksquare \end{cases}$$