Campaign Contributions and Lobbying in Legislatures: Buying and Using Access*

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October 31, 2017

*I am indebted to Tasos Kalandrakis for many helpful discussions, and thank Avi Acharya, Emiel Awad, Peter Bils, John Duggan, Wioletta Dziuda, Mark Fey, Michael Gibilisco, Brenton Kenkel, Christopher Li, Zhao Li, Adam Meirowitz, Salvatore Nunnari, MaryClare Roche, Larry Rothenberg, Richard DiSalvo, Brad Smith, Yannis Vassiliadis, Stephane Wolton, and Jan Zápal for comments and suggestions.

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Abstract

To lobby for favorable policy, interest groups need access to policymakers so that they can make their case. How does interest group access affect legislative policymaking? In turn, what connections do interest groups want to create with different kinds of legislators? I show that access can have subtle consequences in legislatures due to the collaborative nature of policymaking. Under broad conditions, interest groups forgo access to certain more centrist legislators to avoid polarizing the policymaking environment. In practice, campaign contributions are an important source of access and forgoing access is consistent with the empirical regularities that (i) many interest groups do not contribute and (ii) contributing groups often fail to approach legal limits. Equilibrium behavior is consistent with several other well-documented empirical findings.

Political expenditures by interest groups arouse widespread public distrust in the US. Two notable types of interest group expenditures are campaign contributions and lobbying, which are subject to close legal and scholarly scrutiny. Evidence suggests that interest groups typically use contributions and lobbying in tandem (Ansolabehere et al., 2002; Lake, 2015), and a prominent view is that interest groups use contributions to gain *access* to individual legislators, which improves their chances of lobbying during future policymaking efforts (Wright, 1990; Powell, 2014).[1] This sequence of influence appears to fit the popular narrative that interest group expenditures skew political outcomes, but the empirical and behavioral consequences of such a connection are "rarely spelled out" (Hall and Deardorff, 2006, pg. 80). In particular, our current theoretical understanding of how interest groups acquire, and use, access remains underdeveloped.[2]

To sharpen these expectations, I study a game-theoretic model in which interest groups can acquire access to expand their future opportunities to influence policy through lobbying. What are the effects of access? In turn, which legislators do interest groups seek access to and, if they get the opportunity, lobby? Substantively, the model distinguishes between campaign contributions, which buy access before policymaking begins in earnest, and lobbying, which occurs during policymaking and influences policy directly. To capture the empirical connection between these two types of expenditures, greater access increases an interest group's chances to lobby. Overall, the model traces the link between contributions and lobbying to explore the consequences of access and shed light on empirical regularities in political expenditure data.[3]

I show that interest groups forgo access to certain more moderate legislators because the prospect of their lobbying increases polarization. In general, however, access can have either a moderating or polarizing effect on policymaking. In pursuing these theoretical questions, I also shed light on substantive questions derived from prominent empirical regularities regarding campaign finance and lobbying. I provide several intuitive results that support existing theoretical expectations and empirical work, but also establish results that speak to longstanding empirical puzzles and have social welfare implications

[1]For example, Powell (2014) provides evidence supporting "the 'access' view of lobbying in which the opportunity to lobby is largely contingent on campaign donations" (pg. 77). Also see, e.g., Milbrath (1976); Herndon (1982); Gopoian et al. (1984); Langbein (1986) and Ainsworth (2002).

[2]As noted by Hall and Deardorff (2006), "[t]hat money buys access is a common theme among campaign finance reformers, who claim that, at the very least, contributors are more likely to have their phone calls returned. But the consequences of improved access are rarely spelled out" (pg. 80).

[3]Studying access-seeking contributions and lobbying in a unified framework has been suggested by several empirical studies. For example, Powell (2014) emphasizes that "the linkage between lobbying and contributing means that those of us who study campaign finance must also take account of lobbying activity to more fully understand the complex relationship that constitute influence" (pg. 94).

for attempts to regulate political expenditures. The results demonstrate that the collaborative nature of legislative policymaking has important consequences for how interest groups buy access and use it to influence policy.

Although I highlight counterintuitive results, the model produces equilibrium behavior that is consistent with several well-documented empirical regularities in the US. First, interest groups optimally forgo access to certain legislators in the model. This behavior is consistent with the regularities that (i) many interest groups do not contribute and (ii) contributing groups typically give small amounts (Tullock, 1972; Ansolabehere et al., 2003). Second, the model suggests that ideologically centrist groups are especially keen on gaining access to legislators from a broad ideological spectrum. Recent empirical work supports this implication, as contributing groups appear to be overwhelmingly centrist and give broadly (Bonica, 2013; Barber, 2016). Third, equilibrium lobbying expenditures grow as the legislature becomes increasingly influenced by ideologically extreme legislators. This comparative static squares with the positive correlation between polarization and total lobbying payments over time in Congress (Garlick, 2016). Fourth, equilibrium lobbying expenditures increase with the stakes of policymaking in the model, which matches a central empirical regularity of lobbying in the US (see, e.g., Baumgartner and Leech, 2001; de Figueiredo and Richter, 2014). Finally, interest groups are willing to pay more to buy access to powerful legislators who have greater control over the policymaking agenda. This result fits with evidence that interest group contributions favor members of relevant committees, and committee chairs in particular (Ainsworth, 2002; Hojnacki and Kimball, 1999; Grimmer and Powell, 2016; Berry and Fowler, 2016; Fouirnaies, 2017).

To illustrate how lobbying affects legislative policymaking, I first study a benchmark model in which interest groups are exogenously endowed with access. The environment reflects empirical evidence suggesting that interest groups often use access to lobby for more favorable policy (Richter et al., 2009; de Figueiredo and Silverman, 2006; Kang, 2015). In the model, policymaking occurs in a dynamic legislative setting where legislators make proposals until a policy is passed and interest groups lobby throughout. Moreover, legislators and interest groups are dynamically sophisticated and act based upon their expectations about future play.

I establish the existence of an equilibrium and show that equilibrium behavior is unique. As expected, interest groups always pull policy in their favored direction whenever they have access to the legislator tasked with proposing policy. Interest groups may be constrained, however, because successful policy proposals must appeal to a majority of legislators. Lobbying can engender more or less extreme policy in equilibrium, depending on the respective preferences of interest groups and their associated legislators. Crucially, the dynamic policymaking environment ensures that anticipated lobbying behavior affects the expectations of each legislator. Thus, interest group access influences which policies can pass and, consequently, the policy proposals of certain legislators. The magnitude of this indirect effect depends on the extent of the group's access.

Next, I extend the baseline model to let interest groups choose their access to particular legislators before policymaking begins. Substantively, this setting captures the observation that interest groups frequently use campaign contributions to buy targeted access (Hall and Wayman, 1990; Hansen, 1991; Powell, 2014; Grimmer and Powell, 2016; McCarty et al., 2016). The sharp characterization of equilibrium behavior in the baseline model pins down whether an interest group improves its welfare by increasing or decreasing its access to a given legislator. Scholars widely agree that interest groups covet access because it serves as a precondition for influencing policy,[4] and naïve intuition suggests that an interest group is sure to be better off by increasing its access to any legislator. After all, greater access increases the group's chances of being able to lobby for more favorable policy.

I show that this intuition does not hold up when interest groups seek access to legislators who set policy in a collective body: interest groups prefer to forgo access to certain legislators. This surprising behavior arises because access can have negative spillover effects on the proposals of other legislators, causing the group to face a time inconsistency problem when buying access. On the one hand, greater access increases the interest group's opportunities to lobby *during* the policymaking process. If the group gets the opportunity to lobby, then it always profitably lobbies for more favorable policy. In practice, however, access must be acquired well ahead of time, *before* active policymaking begins. If the prospect of the interest group's lobbying has a polarizing effect on policymaking, then buying access opens the door for other legislators to pass more extreme policy. Consequently, the group may prefer to forgo access to avoid polarizing the policymaking environment.

The relative extremism of the interest group and legislator is important for distinguishing whether the group wants access. Specifically, interest groups choose not to acquire access to their neighboring legislators who are relatively more centrist. In this case, greater access increases policy extremism, which can outweigh the group's benefit from improving its chances of lobbying and lead the group to forgo access even if it can be acquired freely.

[4] See, e.g., Wright (1989, 1990); Hall and Wayman (1990); Hansen (1991); Ainsworth (1993); de Figueiredo and Silverman (2006) and Powell (2014).

In contrast, interest groups do buy access to nearby legislators who are relatively more extreme. In this case, the group benefits from access because it (i) increases opportunities to lobby and (ii) decreases expected policy extremism in the legislature.

To illustrate the logic in a stylized example, consider a regional energy interest group that is anticipating national legislation regulating emissions and prefers moderately tighter regulations to capitalize on recent investments in clean technology. The group can contribute to buy access to its local congressman, who wants to tighten existing regulations more than the group does. If the group buys access, thereby raising its chances of getting a meeting with the congressman, then moderate and pro-environment legislators have less optimistic expectations about the eventual regulatory outcome. In particular, these legislators know that if the congressman is tasked with drafting policy and allows the group to participate, then the resulting policy will be more extreme than if the congressman had acted independently. Consequently, these other legislators are willing to approve more extreme policies. The group's access opens the door for extreme pro-energy legislators to successfully pass weaker emissions regulations if they draft policy, which would reduce the group's benefits from its recent investments. I show that this threat of greater extremism can worsen the regional group's expectations about policymaking to the point where the group prefers to forgo access altogether.

Additionally, I show that under broad conditions interest groups are willing to pay a higher price to acquire access to majority-party legislators who are more distant ideologically. Fixing the relative extremism of an interest group and legislator, the group has less to gain from acquiring access to its ideological neighbors and thus is less willing to pay for access. This result suggests that recent empirical work is right to be cautious about including access-oriented interest groups when estimating ideology using models that assume contributors give more to ideologically proximal politicians (see, e.g., Bonica, 2014).

Beyond its substantive contributions regarding political expenditures in legislatures, this paper also contributes to an extensive formal literature analyzing the consequences of special interests in politics. Previous models of political expenditures by interest groups have a long and varied tradition. For example, contributions have been modeled as a tool to affect a candidate's probability of getting elected (Baron, 1989; Snyder Jr., 1990; Coate, 2004; Morton and Myerson, 2012), influence candidate platforms (Grossman and Helpman, 1996), influence policy directly (Denzau and Munger, 1986; Grossman and Helpman, 1994; Che and Gale, 1998), provide information to voters (Austen-Smith, 1987; Baron, 1994; Prat, 2002b,a; Ashworth, 2006), or gain access to officeholders (Hall and Wayman, 1990; Austen-Smith, 1995). These models typically study campaign contributions and lobbying in isolation, however, or blur the distinction between them.

I follow in the tradition of models in which interest groups use contributions to acquire access to individual legislators before policymaking begins (Austen-Smith, 1995; Cotton, 2012, 2016; Schnakenberg, 2017). In contrast to these papers, which study informational lobbying,[5] I focus on *lobbying as exchange* in the spirit of Grossman and Helpman (1994), where interest groups make payments to directly influence the content of policy proposals.[6] Specifically, the lobbying technology in this paper is closely related to that of Bils, Duggan and Judd (2017), which studies lobbying in a model of repeated elections.[7] There, the focus is on the competing effects of lobbying and re-election motivation for executive policymaking. Ideology exogenously determines access, and the interest group is always able to lobby the officeholders to which it has access. Here, I endogenize access and study whether interest groups want to acquire access. Also, I study legislative policymaking, where policy is made collaboratively, and allow for partial access, where the group is not guaranteed the opportunity to lobby.

Schnakenberg (2017) also studies a setting in which interest groups can buy access in a collective body and then lobby during policymaking. As in this paper, exercising influence in a legislature is substantially different from exercising influence over an executive who can enact policy unilaterally because legislative policy must receive sufficiently widespread support to pass. Schnakenberg (2017) focuses on informational lobbying in an incomplete information setting with exogenous policy proposals, however, whereas I analyze a complete information setting with endogenous policy proposals that can be directly affected by lobbying. Additionally, I study a dynamic policymaking environment rather than a static setting.

This paper also contributes to the theoretical literature on legislative bargaining and lobbying collective decision-making bodies. The bargaining environment builds upon the canonical legislative bargaining framework of Baron and Ferejohn (1989).[8] In particular, I incorporate ideological interest groups into the one-dimensional spatial version of Baron and Ferejohn (1989), previously studied in Cho and Duggan (2003) and Banks and Duggan (2006a). Recent work introduces lobbying into the distributive Baron and Ferejohn (1989) framework by allowing players to compete for proposal power (Yildirim, 2007, 2010; Levy

[5]See Schnakenberg and Turner (2016) and Schnakenberg (2017) for recent work on informational lobbying, as well as overviews of the preceding literature.

[6]See Grossman and Helpman (2002) for an extensive overview of this setting, which they apply in the context of campaign contributions.

[7]See Martimort and Semenov (2008) and an extension in Acemoglu et al. (2013) for recent studies that use a similar approach to model lobbying.

[8]For a more thorough discussion, see Eraslan and McLennan (2013).

and Razin, 2013; Ali, 2015).[9] There is also a prominent literature studying lobbying as an instrument for buying votes from legislators (Groseclose and Snyder, 1996; Banks, 2000; Dal Bo, 2007; Dekel et al., 2009). In contrast, I model lobbying as a tool to influence policy proposals in a spatial setting.[10] I build in a rich bargaining environment to disentangle interest group incentives to buy access from their incentives to influence policy. Expanding the scope of application of the canonical legislative bargaining framework is of independent theoretical interest.

Finally, a key result in this paper, that interest groups prefer to forgo access to certain more centrist legislators, shares a similar logic with moderation results in models of dynamic spatial bargaining with an endogenous status quo (Baron, 1996; Zápal, 2014; Forand, 2014; Buisseret and Bernhardt, 2017).[11] In these papers, legislators prefer to propose policies in equilibrium that are more moderate than their ideal point to constrain future proposers. Essentially, legislators forgo the full power of their current proposer status to constrain the scale of policy changes by future proposers who may have substantially different preferences. The setting in this paper is different, as here policymaking ends once a proposal passes, but the ex ante incentive for interest groups to limit their access arises from the same desire to constrain possible future proposers who are ideologically distant.

Model

In the baseline model, legislators bargain to set a common policy in the presence of ideological interest groups who can influence policymaking by providing favors in exchange for policy proposals. The logic for the main results can be illustrated in a simplified version of the model with four legislators and one interest group.[12] Thus, I present this streamlined setting and defer the full model to Appendix A. The four legislators consist of a leftist legislator L, a moderate legislator M, a right-leaning legislator R, and a generic legislator ℓ. Let N denote the set of legislators. Additionally, the interest group is

[9] Cotton (2009) and Cotton (2016) study a setting in which interest groups compete for access to an individual decision maker via an all-pay auction, as in Yildirim (2010).

[10] Existing models of campaign contributions or lobbying in the legislative setting largely focus on bargaining environments that are either distributive or concern the provision of public goods (Snyder Jr., 1991; Helpman and Persson, 2001; Bennedsen and Feldmann, 2002).

[11] Although Forand (2014) is cast as a model of elections, it can be interpreted as a spatial bargaining model with an endogenous status quo.

[12] Assuming one interest group is primarily to illustrate the main results more clearly, but it is also substantively relevant. As noted by Baumgartner and Leech (2001), interest groups are often unopposed. In particular, policy areas such as regulation and trade policy are noted for the absence of competing interest groups (see, e.g. Leaver and Makris, 2006; Dal Bo, 2007, for more discussion).

denoted by g. The policy space, X, is one-dimensional, $X \subseteq \mathbb{R}$, and each legislator $i \in N$ is associated with an ideal point $\hat{x}_i \in X$. Similarly, g has associated ideal point $\hat{x}_g \in X$.

A key feature of the model is that the interest group, g, can lobby to affect the content of ℓ's policy proposals. Specifically, g is linked to legislator ℓ, where the strength of this connection is given by g's *access*, $\alpha \in [0, 1]$. The group's access determines the probability that the group is able to lobby ℓ. This modeling approach aims to capture the standard view that access is "a precondition for influence, not influence itself" (Wright, 1989, pg. 714).[13] In the baseline model, g's access is exogenously endowed, but later I endogenize this connection by allowing g to choose α before policymaking begins.

Legislative bargaining occurs over an infinite horizon, with periods discrete and indexed by $t \in \{1, 2, \dots\}$. Let ρ_i denote the probability that legislator $i \in N$ is chosen to propose policy in any period t. Then $\rho = (\rho_\ell, \rho_L, \rho_M, \rho_R)$ denotes the distribution of legislator recognition probabilities, which sum to one. In each legislative period t, bargaining proceeds as follows. If no policy has passed before period t, then legislator i is recognized as the period-t proposer with probability $\rho_i > 0$. The identity of the period-t proposer, i_t, is publicly observed.

If i_t is some legislator other than ℓ, then interest group g is not active and i_t proposes any policy $x_t \in X$. Thus, g does not have access to legislators other than ℓ in the baseline setting.[14] If legislator ℓ is the period-t proposer, then g is able to lobby ℓ in period t with probability α. If g is able to lobby, then g offers ℓ a binding contract (y_t, m_t), which consists of a policy $y_t \in X$ and a transfer $m_t \geq 0$. After observing g's offer, legislator ℓ decides whether to accept it or reject. If ℓ accepts g's offer, then she is committed to propose $x_t = y_t$ and m_t is transferred from g to ℓ. On the other hand, if ℓ rejects g's offer, then she is free to propose any $x_t \in X$ and g keeps m_t.[15] With probability $1 - \alpha$, the group is unable to lobby. In this case, ℓ simply proposes any $x_t \in X$ and g does not make a lobby offer.

In each case, all legislators observe the period-t proposal, x_t. Next, the moderate legislator, M, chooses whether to accept or reject the policy proposal.[16] If M votes in favor, then the proposal is passed and bargaining ends with x_t enacted in period t and

[13] Also see, e.g., Milbrath (1976); Hall and Wayman (1990); Hansen (1991); Grossman and Helpman (2002); Hall and Deardorff (2006) and Powell (2014).

[14] The assumption that an interest group has access to only one legislator is used to streamline the analysis, and is relaxed in the appendix.

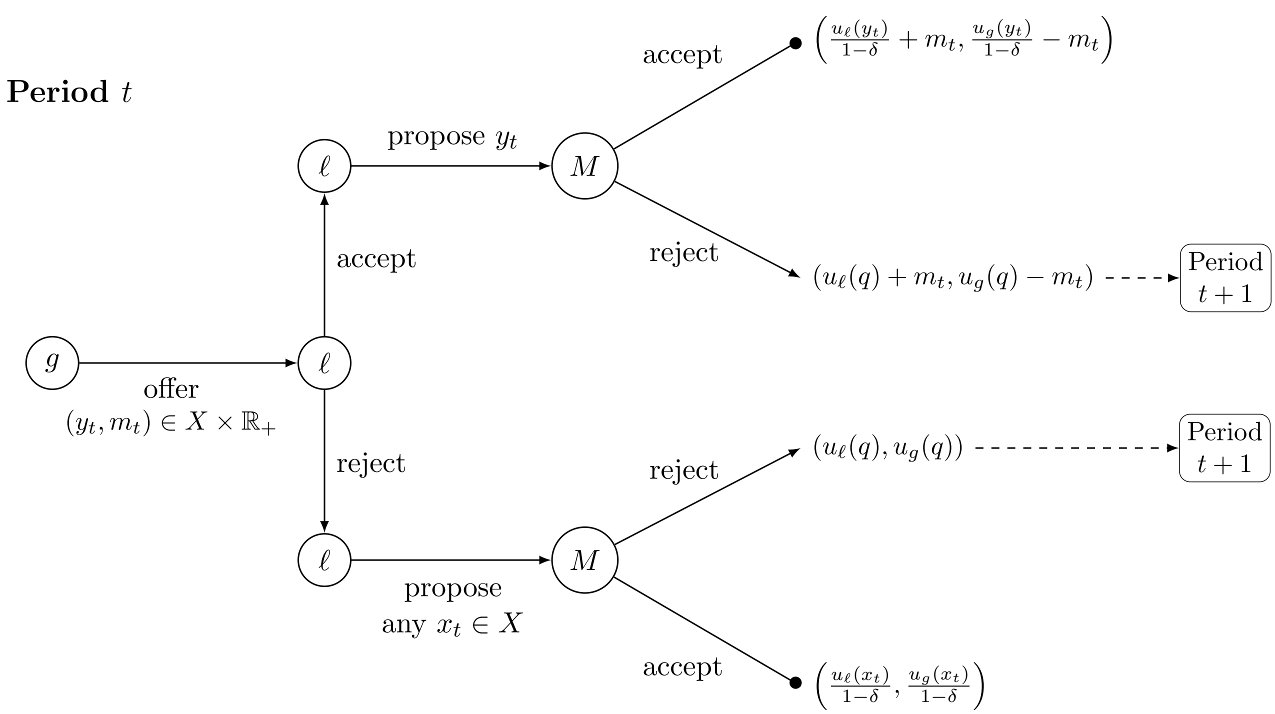
[15] The approach used to model lobbying in this paper is analogous to that of Bils et al. (2017).

[16] This framing is intended to capture a more general setting in which all legislators vote. Because voters are ordered in a one-dimensional setting and u is quadratic, the decision of the moderate legislator, M, corresponds to the outcome of legislative voting.

all subsequent periods. If M does not accept the proposal, then the status quo $q \in \mathbb{R}$ is enacted in period t and bargaining proceeds to period $t+1$.

If legislator ℓ is the period-t proposer, ℓ accepts interest group g's offer (y, m), and x_t is the enacted policy in t,[17] then g's stage payoff is $u_g(x_t) - m$ and ℓ's stage payoff is $u_\ell(x_t) + m$. All players have quadratic policy preferences and discount streams of stage utility by the common discount factor $\delta \in (0, 1)$. See Appendix A for explicit expressions of dynamic payoffs. Figure 1 illustrates the within period interaction and accumulation of payoffs for a period in which ℓ is recognized to propose and g is able to lobby. For a period in which ℓ is not the proposer or g is unable to lobby, the within period interaction is analogous to the section of Figure 1 following from ℓ rejecting g's offer.

Figure 1: A period in which the interest group can lobby



There are several potential interpretations for the access parameter, α. As noted previously, empirical work demonstrates that many interest groups use campaign contributions to buy access.[18] Accordingly, α could reflect campaign contributions that ℓ receives from

[17] Notice that $x_t = q$ if y is not passed in period t.

[18] See, e.g., Langbein (1986); Romer and Snyder Jr. (1994); Kalla and Broockman (2015); Barber (2016);

g in a preceding, yet unmodeled, election. Later, I allow g to choose α before bargaining begins to study how interest groups use contributions to buy access. Another interpretation derives from empirical work on lobbying that stresses the importance of access and connections in lobbying (Blanes i Vidal et al., 2012; Bertrand et al., 2014; Cain and Drutman, 2014; Kang and You, 2015). In this interpretation, α reflects the personal connections possessed by g's lobbyists, which determine their chances of getting a meeting with ℓ. Finally, α could reflect the degree to which ℓ values demonstrating her true policy preferences to constituents via policy proposals, which may affect her propensity to meet with lobbyists. Such concerns likely arise in practice due to expectations about electoral consequences or legacy.

Analysis

I study a selection of the model's subgame perfect equilibria (SPE). Strategies in an SPE may be complex and condition on histories in ways that are unreasonable in the current setting, so I apply standard refinements from the legislative bargaining literature that require simple legislative behavior. In particular, I focus on *no-delay pure strategy stationary legislative lobbying equilibria*, in which g's offers to ℓ are independent of previous play; ℓ chooses whether to accept or reject g's offer based only on the terms of the offer and ℓ's policy proposals in lieu of acceptance are independent of the preceding history; legislators other than ℓ propose policy independent of preceding play; and M's voting decision depends only on current policy proposal.

A strategy profile σ is *no-delay* if it specifies that all legislators propose socially acceptable policy and the interest group's policy offer is socially acceptable. Informally, a no-delay pure strategy stationary legislative lobbying equilibrium requires the following conditions: (i) g's policy offer is socially acceptable and g cannot profitably deviate to another offer; (ii) legislator ℓ accepts a lobby offer if and only if she weakly prefers the offer over the alternative of making her own proposal; (iii) each legislator proposes socially acceptable policy and cannot profitably deviate to a different proposal conditional on not receiving a payment from g; and (iv) M votes to pass a policy if and only if she weakly prefers the policy relative to rejecting it and extending active bargaining.[19]

Before proceeding, I now comment further on several of features of stationary legislative lobbying equilibrium. First, although players use simple behavioral rules in a

Grimmer and Powell (2016) and Fouirnaies and Hall (2017).

[19] See Appendix A for a formal definition of this equilibrium concept.

stationary legislative lobbying equilibrium, no player can profitably deviate to any other strategy, no matter how complex. Second, the model requires g to make an offer in each period that ℓ is the proposer and g can lobby, but this requirement is innocuous because g can effectively forgo lobbying by offering a contract composed of ℓ's' default proposal and no payment. Third, ℓ always accepts g's offer when indifferent, but this restriction is without loss of generality. Finally, I focus on no-delay strategy profiles for convenience, as this restriction is inconsequential.[20]

Proposition 1 provides three results. First, I establish that a no-delay pure strategy stationary legislative lobbying equilibrium exists. Along the way, I obtain a sharp characterization of equilibrium behavior. Next, I show that a large class of more general equilibria are equivalent in a strong sense to no-delay pure strategy stationary legislative lobbying equilibria.[21] Finally, I prove that there is a unique equilibrium outcome distribution, which capitalizes on Cho and Duggan (2003) and ensures that the extension to endogenous access does not require consequential equilibrium selection.

Proposition 1.

1. *A no-delay pure strategy stationary legislative lobbying equilibrium exists.*
2. *Every stationary legislative lobbying equilibrium is equivalent in outcome distribution to a no-delay pure strategy stationary legislative lobbying equilibrium.*
3. *Every stationary legislative lobbying equilibrium has the same outcome distribution.*

In light of Proposition 1, I refer to no-delay pure strategy stationary legislative lobbying equilibria as *equilibria* throughout the rest of the analysis. As is standard in the legislative bargaining literature, equilibria can be characterized by their *social acceptance set*, which is denoted $A(\sigma)$ and corresponds to the set of policies that M votes to accept under the strategy profile σ.[22] Figure 2 illustrates the equilibrium social acceptance set for a hypothetical legislature, along with its corresponding equilibrium proposals. In general, the equilibrium social acceptance set is a closed interval that is symmetric about M's ideal policy. Additionally, y is skewed away from $\hat{x}_\ell$ towards $\hat{x}_g$.

The model, although complicated by lobbying, can be reinterpreted as a one-dimensional spatial bargaining environment with an additional legislator who has positive recognition

[20]See Appendix B for more details regarding these comments.

[21]In Appendix B I define *mixed strategy stationary legislative lobbying equilibrium* and show that every such equilibrium is equivalent in outcome distribution to a no-delay pure strategy stationary legislative lobbying equilibrium with deferential voting and deferential acceptance.

[22]See, e.g., Cho and Duggan (2003) and Banks and Duggan (2006a).

probability equal to $\alpha\rho_\ell$ and an ideal point, $\hat{y}$, located between those of the interest group and legislator ℓ. After expanding the legislature to add this additional proposer representing the effect of g's lobbying, legislators propose bills that are closest to their ideal point among those that are acceptable. Uniqueness follows from Cho and Duggan (2003) applied to this fictitious enlarged legislature.

Figure 2: Equilibrium characterization

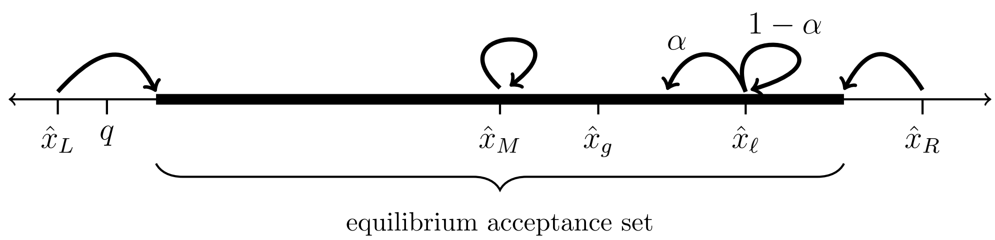


Figure 2 illustrates the characterization of equilibrium legislative proposals in an example legislature. Arrows point from each legislator's ideal point to the policy they propose if recognized. The social acceptance set is the bold interval. The moderate legislator, M, proposes her ideal point, $\hat{x}_M$. With probability α, legislator ℓ proposes the acceptable policy closest to $\hat{y} = \frac{\hat{x}_g + \hat{x}_\ell}{2}$, and ℓ proposes the acceptable policy closest to $\hat{x}_\ell$ with probability $1 - \alpha$. Finally, the leftist legislator, L, proposes the lower bound of the acceptance set, $A(\sigma)$, and the rightist legislator, R, proposes the upper bound.

In an equilibrium σ, the acceptance set is $A(\sigma) = [\underline{x}(\sigma), \overline{x}(\sigma)]$, where $\underline{x}(\sigma)$ and $\overline{x}(\sigma)$ are the two policies that M is indifferent between approving and rejecting.[23] The structure of $A(\sigma)$ facilitates a sharp characterization of proposal strategies. In the hypothetical legislature illustrated in Figure 2, M proposes $\hat{x}_M$ if recognized, legislator L proposes $\underline{x}(\sigma)$, and R proposes $\overline{x}(\sigma)$. In this example, L and R do not propose their respective ideal policies because they are constrained by M's voting power.

If legislator ℓ is recognized as the proposer and does not accept a lobby offer from the interest group, g, either because g is not able to lobby or because ℓ rejects the g's offer, then ℓ proposes her most preferred policy in the acceptance set. Notably, however, ℓ never rejects a lobby offer from g on the equilibrium path of play because g always makes an offer that ℓ prefers to accept. In particular, g's equilibrium lobby payment exactly satisfies ℓ's acceptance condition, given g's policy offer, as g is made strictly worse off by giving ℓ a surplus transfer. Additionally, g's policy offer always passes in equilibrium, that is $y \in A(\sigma)$.

Formally, the interest group's equilibrium policy offer (y, m) is composed of the policy

[23] Formally, $u_M(\underline{x}(\sigma)) = u_M(\overline{x}(\sigma)) = (1 - \delta)u_M(q) + \delta V_M(\sigma)$.

offer

$$y = \underset{y \in A(\sigma)}{\arg\max}\, u_g(y) + u_\ell(y) - u_\ell(z_\ell) \tag{1}$$

and the transfer $m = u_\ell(z_\ell) - u_\ell(y)$. Since $u_\ell(z_\ell)$ does not depend on g's offer, it follows that g's policy offer is

$$y = \underset{y \in A(\sigma)}{\arg\max}\, u_g(y) + u_\ell(y), \tag{2}$$

which is uniquely defined and maximizes the joint surplus of g and ℓ, subject to the constraint that y is approved by M.[24] Notice that it is always feasible for g to offer ℓ's independent proposal, z_ℓ, with zero payment. Since $z_\ell \in A(\sigma)$, it follows that g weakly prefers to make successful offers that ℓ accepts. For convenience, define

$$\hat{y} = \arg \max_{y \in X} u_g(y) + u_\ell(y), \tag{3}$$

which is g's *unconstrained policy offer*. Moreover, $\hat{y} = \frac{\hat{x}_g + \hat{x}_\ell}{2}$ because u_g and u_ℓ are quadratic. Notice that $\hat{y}$ is solely a function of primitives and if $\hat{y} \in A(\sigma)$, then $y = \hat{y}$. Otherwise, strict concavity implies that y is equal to the boundary of $A(\sigma)$ that is closest to $\hat{y}$.

To facilitate the following analysis, I now define several terms reflecting the respective ideologies of the interest group, g, and legislator ℓ. First, I define terminology to distinguish whether a particular player can successfully propose their ideal policy in equilibrium. Given an equilibrium σ, say that ℓ is *partisan* if ℓ's ideal policy is not in the interior of the acceptance set, that is $\hat{x}_\ell \notin \text{int}A(\sigma)$. Analogously, g is partisan if $\hat{x}_g \notin \text{int}A(\sigma)$. Otherwise, say that ℓ or g is *centrist*. Next, ℓ and g are *aligned* if their respective ideal points are on the same side of $\hat{x}_M$, for example $\hat{x}_\ell \leq \hat{x}_M$ and $\hat{x}_g \leq \hat{x}_M$. Conversely, ℓ and g are *opposed* if they are not aligned. Combining the preceding defintions, ℓ and g are *aligned partisans* if, for example, $\hat{x}_\ell \leq \underline{x}(\sigma)$ and $\hat{x}_g \leq \underline{x}(\sigma)$.

An initial observation regarding equilibrium behavior is that two conditions are necessary for non-trivial lobbying. First, g must have positive access to ℓ, as g never has the opportunity to lobby ℓ otherwise. Second, g and ℓ cannot be aligned partisans because, in this case, g cannot profitably lobby to improve upon ℓ's independent policy proposal.

[24]That y is unique follows because u_g and u_ℓ are strictly concave, and $A(\sigma)$ is compact and nonempty.

Comparative Statics on Lobbying Expenditures

I now establish several comparative static results to characterize how the interest group's equilibrium lobby expenditures vary with respect to exogenous features of the bargaining environment. First, I show that g's payments are weakly greater if policies less favorable to the moderate legislator, M, become more likely.

Given a distribution of proposal power, ρ, and g's access, α, let the median legislator's *unconstrained extremism lottery* be the lottery that puts probability $\alpha\rho_\ell$ on $|\hat{x}_M - \hat{y}|$, probability $\rho_\ell(1-\alpha)$ on $|\hat{x}_M - \hat{x}_\ell|$, and probability ρ_j on $|\hat{x}_M - \hat{x}_j|$ for each legislator $j \neq \ell$. Thus, the outcomes of an unconstrained extremism lottery are measured in terms of absolute distance to the moderate legislator's ideal point, $\hat{x}_M$, independently of which side they fall on. Say that *legislative extremism* under (ρ, α) is lower than (ρ', α') if M's unconstrained extremism lottery associated with (ρ', α') first order stochastically dominates M's unconstrained extremism lottery induced by (ρ, α).[25] For example, legislative extremism increases if proposal power is transferred away from the moderate legislator, M, to the other legislators.

Proposition 2. *If legislative extremism increases, holding constant the respective ideologies of the interest group and legislator ℓ, then the interest group's equilibrium lobbying expenditures weakly increase.*

Proposition 2 shows that g's equilibrium lobby payments are weakly increasing in legislative extremism. Increasing legislative extremism worsens M's expectation about future policy because extreme policy proposals become more likely, without an offsetting increase in the chance of moderate policy proposals. In turn, M is willing to accept more extreme policy proposals, thereby expanding the acceptance set, $A(\sigma)$. Recall that g's equilibrium transfer to ℓ is $m = u_\ell(z_\ell) - u_\ell(y)$, which implies that g's equilibrium lobbying expenditures increase if either (i) its equilibrium policy offer becomes worse for ℓ or (ii) ℓ is able to pass more favorable policy after rejecting g's overtures. Thus, there are two ways that a larger acceptance set can increase g's lobbying expenditures: (i) more slack for g to shift ℓ's proposal, or (ii) a better outside option for ℓ.

First, if g is partisan and M's acceptance constraint binds at g's equilibrium policy offer, that is $\hat{y}$ is extreme, then greater legislative extremism gives g additional slack to lobby ℓ to propose more extreme policy. Consequently, g's lobbying expenditures increase

[25] In this context, the unconstrained extremism lottery (ρ', α') *first order stochastically dominates* another unconstrained extremism lottery (ρ, α) if: (i) for all $x \in X$, (ρ', α') puts weakly greater probability on x' such that $|\hat{x}_M - x'| \geq |\hat{x}_M - x|$ and (ii) for some $x \in X$, (ρ', α') puts strictly greater probability on x' such that $|\hat{x}_M - x'| \geq |\hat{x}_M - x|$.

Figure 3: Greater legislative extremism increases lobbying expenditures (Proposition 2)

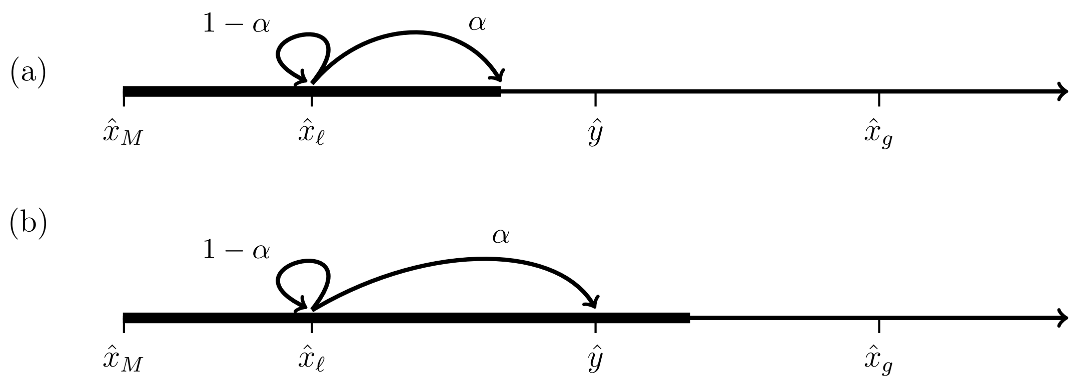


Figure 3 illustrates how greater extremism increases the interest group's equilibrium lobbying expenditures if the interest group, g, is partisan and legislator ℓ is centrist. First, (a) displays equilibrium behavior for a baseline level of legislative extremism. Notably, g's policy offer is constrained by the acceptance set, and ℓ's policy proposal is unconstrained. Next, (b) displays equilibrium behavior if legislative extremism increases. In this case, g's expenditures increase because greater legislative extremism expands the acceptance set, which in turn allows g to make a more extreme policy offer to ℓ. Thus, g pays more to obtain a more extreme policy.

because its policy offer is worse for ℓ. Figure 3 displays this case. If g and ℓ are aligned partisans, then $z_\ell = y$ and g's lobbying expenditures are constant in legislative extremism.

Second, if ℓ is partisan then increasing legislative extremism improves ℓ's expected dynamic payoff from rejecting g's offer because z_ℓ is equal to the boundary of $A(\sigma)$ closest to $\hat{x}_\ell$, which shifts towards $\hat{x}_\ell$ as legislative extremism increases. Thus, ℓ's outside option improves, which forces g to provide a larger transfer to successfully lobby ℓ away from z_ℓ. If ℓ is not too ideologically extreme, and g is aligned with ℓ and also partisan, then $y \neq z_\ell$. Therefore increasing legislative extremism makes it more expensive for g to successfully lobby ℓ, even though g's policy offer is unchanged, because ℓ is better off from rejecting g's overtures. Figure 4 illustrates this case.

Next, I state two corollaries of Proposition 2 to demonstrate how substantively meaningful features of the model affect legislative extremism and, in turn, lobbying expenditures. First, Corollary 1 establishes that lobbying expenditures grow if the moderate legislator, M, loses proposal power. Legislative extremism weakly increases if M loses proposal power, and consequently, the acceptance set grows. Substantively, this result suggests that reducing the agenda setting power of moderate legislators encourages more vigorous lobbying.

Corollary 1. *If proposal power is transferred away from the moderate legislator, then the* *interest group's equilibrium lobbying expenditures weakly increase.*

In the second result derived from Proposition 2, Corollary 2 states that lobbying expenditures grow if either of the unaffiliated legislators, L or R, moves farther away from M ideologically. Legislative extremism increases as a result of this change because these legislators propose weakly more extreme policy. This result indicates that interest groups will spend more on lobbying in legislatures that are more polarized, in the colloquial sense of having greater ideological spread among legislators.

Corollary 2. *If either the right-leaning legislator or the left-leaning legislator move farther away from the moderate legislator ideologically, then the interest group's equilibrium lobbying expenditures weakly increase.*

Figure 4: Greater legislative extremism increases lobbying expenditures (Proposition 2)

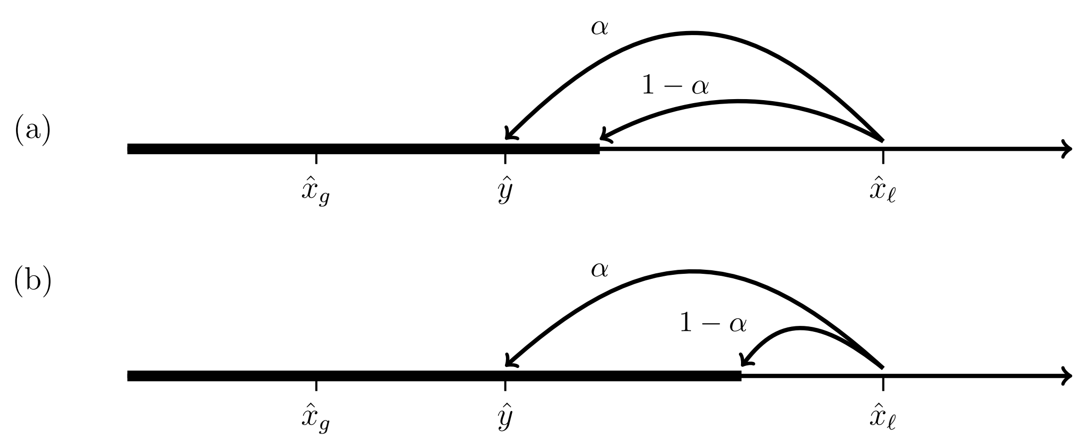


Figure 4 illustrates how greater extremism increases the interest group's equilibrium lobbying expenditures if legislator ℓ is partisan and the interest group, g, is centrist. First, (a) displays equilibrium behavior for a baseline level of legislative extremism. Notably, ℓ's policy proposal is constrained by the acceptance set, and g's policy offer is unconstrained. Next, (b) displays equilibrium behavior if legislative extremism increases. In this case, g's expenditures increase because greater legislative extremism expands the acceptance set, which in turn increases ℓ's reservation value because she can pass more favorable policy if she rejects g's offer. Thus, g pays more to obtain the same policy.

In addition to increasing with legislative extremism, g's lobbying expenditures also weakly increase as the stakes of policymaking grow. Let the *stakes of bargaining* refer to the distance between the status quo, q, and the moderate legislator's ideal point, $\hat{x}_M$. Increasing the stakes of bargaining, $|\hat{x}_M - q|$, has a similar effect as increasing legislative extremism: M's expectation about future policy worsens, causing $A(\sigma)$ to expand. In this case, M's expectations worsen because she is more averse to enduring the status quo until a new policy passes. Consequently, g's equilibrium lobby payments weakly increase, as in Proposition 2. The mechanics of why lobbying expenditures change, and for whom, parallel those for legislative extremism.

Proposition 3. *If the stakes of bargaining increase, then the interest group's equilibrium lobbying expenditures weakly increase.*

Campaign Contributions as Endogenous Access

To study access-seeking behavior, I now allow the interest group, g, to choose its access to legislator ℓ before the legislative stage. Proposition 1 ensures that g's choice of access pins down equilibrium play and optimal lobbying in the legislature. Substantively, this extension allows g to use campaign contributions to buy access before policymaking. Scholars generally believe that access must be acquired well before policymaking begins in earnest (Snyder Jr., 1992; Grossman and Helpman, 2002; Grimmer and Powell, 2016).[26] and empirical evidence indicates that contributing interest groups typically use their contributions to gain access to legislators (Gordon et al., 2007; Grimmer and Powell, 2016; Barber, 2016; Fouirnaies and Hall, 2017, 2016; McCarty et al., 2016).[27] Moreover, there is strong evidence that contributions do indeed translate into access, thereby increasing an interest group's chances of getting an audience with a legislator (Kalla and Broockman, 2015). In line with this empirical evidence, legislators occasionally admit to feeling the pull of large donors. For example, Sen. John McCain (AZ) has "personally experienced the pull from campaign staff alerting me to a call from a large donor, [...] I do believe they buy access" (Powell, 2014, pg. 82).

Endogenizing access helps disentangle the effects of campaign contributions and lobbying expenditures to study conditions under which the interest group may wish to limit, or even forgo, access. In light of empirical evidence that contributions buy access and lobbying influences policy, Powell (2014) emphasizes that "scholars need to examine the resources spent on both lobbying and donations to fully understand the influence of money in the legislative process" (pg. 77). I take a step in this direction by studying whether an

[26]For example, Grimmer and Powell (2016) note that "PACs may make contributions in anticipation that they may need access to a legislator during a legislative term, rather than when the necessity to purchase influence arises" (pg. 10). See Schnakenberg (2017) for recent work studying an informational lobbying model in which interest groups buy access before the particulars of the policymaking process are fully revealed.

[27]Also see, e.g., Grier and Munger (1991); Snyder Jr. (1992); Romer and Snyder Jr. (1994) and Ansolabehere and Snyder Jr (1998).

interest group wants to acquire access in a setting where lobbying is possible only if the interest group has access to the legislator tasked with designing policy.

Throughout this section, I assume that the status quo, q, is closer to the moderate legislator's ideal point, $\hat{x}_M$, than either the left-leaning legislator's ideal point, $\hat{x}_L$, or the right-leaning legislator's ideal point, $\hat{x}_R$. Formally, legislator L's ideal point satisfies $|\hat{x}_L - \hat{x}_M| > |\hat{x}_L - q|$, and analogously $|\hat{x}_R - \hat{x}_M| > |\hat{x}_L - q|$ for R. Substantively this assumption ensures that L and R are always partisan, regardless of $\hat{x}_\ell$, $\hat{x}_g$, and α. This assumption is used to illustrate the results most clearly.[28]

The results in this section abstract away from the particular mapping between campaign contributions and access by allowing the interest group to freely choose its access, α, prior to the legislative stage.[29] In practice, this mapping almost certainly depends on idiosyncratic factors such as the connections of the interest group's lobbyists (Blanes i Vidal et al., 2012; Bertrand et al., 2014; Kang and You, 2015), constituent interests within the legislator's district (Stratmann, 1992), or the number of voters affiliated with the interest group (Bombardini and Trebbi, 2011). The following results are driven purely by policy considerations and hold even if acquiring access is free.

Propositions 4 and 5 study whether the interest group, g, wants access to legislator ℓ. Specifically, these results fix g's ideology and study whether it prefers to have positive access, that is $\alpha > 0$, as ℓ's ideal point, $\hat{x}_\ell$, varies. Importantly, $\hat{x}_\ell$ and α can affect equilibrium behavior in the legislature by changing policy proposals and the social acceptance set. Consequently, whether g is partisan or centrist depends in part on these features.[30] For example, g may be partisan if its access is low and ℓ is sufficiently more centrist than g, but may be centrist if its access is high enough or ℓ is sufficiently extreme.

Propositions 4 and 5 are distinguished by whether or not the interest group is partisan if it shares the same ideal point as legislator ℓ. This distinction is important because it determines whether g is centrist regardless of its access when ℓ and g are sufficiently close together ideologically. Furthermore, it has a simple partitional characterization. In particular, there are two cutpoints $\underline{x}$ and $\overline{x}$ satisfying $\underline{x} < \hat{x}_M < \overline{x}$ such that if g and ℓ share the same ideal point $\hat{x}$, then they are centrist if and only if $\hat{x} \in (\underline{x}, \overline{x})$.[31] Formally,

[28] Alternatively, we could apply this assumption to only one of L or R.

[29] La Raja and Schaffner (2015) emphasize that contributions do not translate into influence in the same fashion for different pairs of interest groups and legislators.

[30] Recall that g is *partisan* if $\hat{x}_g \notin \text{int}A(\sigma)$ and *centrist* otherwise, and similarly for ℓ.

[31] See Lemma 1 in Appendix A for a formal statement and proof of this result. Under the maintained assumptions, $\underline{x}$ and $\overline{x}$ solve

$$u_M(\underline{x}) = u_M(\overline{x}) = \frac{(1-\delta)u_M(q) + \delta\rho_M\, u_M(\hat{x}_M)}{1 - \delta(\rho_L + \rho_R + \rho_\ell)}.$$

if $\hat{x}_g = \hat{x}_\ell \in (\underline{x}, \overline{x})$ then g and ℓ are centrist in equilibrium, and if $\hat{x}_g = \hat{x}_\ell \notin (\underline{x}, \overline{x})$ then g and ℓ are partisan in equilibrium. Importantly, $\underline{x}$ and $\overline{x}$ do not depend on the respective ideologies of g and ℓ, or g's access. I now define important terminology.

Definition 1. Say that the interest group, g, is a *non-ideologue* if $\hat{x}_g \in (\underline{x}, \overline{x})$, and an *ideologue* otherwise.

Notably, whether g is an ideologue or non-ideologue *does not* vary with its access or ℓ's ideology, even though g's status as a partisan or centrist *can* change depending on these features. For example, if g is a non-ideologue then it will be centrist if ℓ is sufficiently extreme, but may be partisan if its access is low and ℓ is sufficiently centrist. If g is an ideologue, however, then it is partisan regardless of its access and ℓ's ideology.

Proposition 4 reveals that it is optimal for a non-ideologue interest group to forgo access under certain conditions. Recall that g and ℓ are *aligned* if their ideal points are on the same side of the moderate legislator's ideal point, $\hat{x}_M$.

Proposition 4. *Assume the interest group, g, is a non-ideologue and legislator ℓ is aligned with g.*

1. *If ℓ is more centrist than g, but not too centrist, then g prefers to forgo access.*

2. *If ℓ is more extreme than g, but not too extreme, then g prefers positive access.*

3. *If ℓ is sufficiently more extreme than g, then g is indifferent over access.*

The following discussion explains the logic underlying Proposition 4 using the case in which g is a right-leaning non-ideologue, which is illustrated in Figure 5. The logic is analogous for the symmetric case where g is a left-leaning non-ideologue.

Note that the cutpoints $\underline{x}$ and $\overline{x}$ do not necessarily equal the respective boundaries of $A(\sigma)$ conditional on $\hat{x}_g = \hat{x}_\ell$.

Figure 5: Does the interest group want access? (Proposition 4)

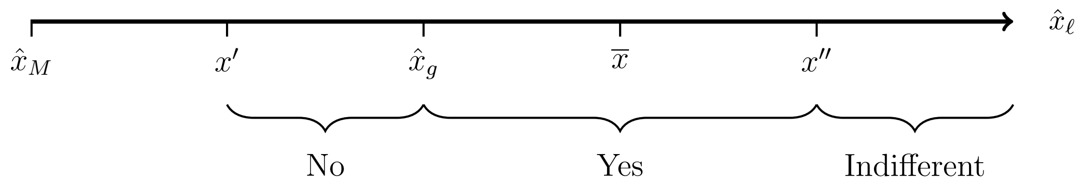


Figure 5 illustrates Proposition 4 for the case in which the interest group, g, is right-leaning. First, if legislator ℓ satisfies $\hat{x}_\ell \in (x', \hat{x}_g)$, then g prefers to forgo access to ℓ, that is $\alpha = 0$. Next, if $\hat{x}_\ell \in (\hat{x}_g, x'')$, then g prefers to have positive access, $\alpha > 0$. Finally, if $\hat{x}_\ell \geq x''$, then g is indifferent about its access.

Before the policymaking process begins, g's expected payoff depends on its access, α, in two ways. First, α determines the probability that g can lobby ℓ and enjoy the resulting surplus. Second, α indirectly affects the acceptance set, $A(\sigma)$, by changing M's policy expectations. At the time g acquires access to ℓ, it is uncertain about which legislators will propose policy and, moreover, whether it will be able to lobby those proposers. Therefore g internalizes how its access affects M's expectations about continued bargaining because they determine the set of policies that pass and, in turn, the proposals of the partisan legislators L and R.

Proposition 4 shows that g may prefer to forgo access if ℓ is more centrist than g. The basic intuition is as follows. In this case, the acceptance set expands as g's access increases because M is willing to pass more extreme legislative proposals. Expanding the acceptance set reduces g's ex ante expected payoff due to (i) the presence of partisan legislators, L and R, who can pass more extreme policy, and (ii) uncertainty about the sequence of proposers in the legislature. If ℓ is not too centrist relative to g, then g's expected cost from enabling L and R to pass more extreme policy outweighs g's expected benefit from increasing its chances of lobbying ℓ. Figure 6 illustrates the logic underlying why the group prefers to forgo access in this case.

Figure 6: Forgoing access to a more centrist legislator

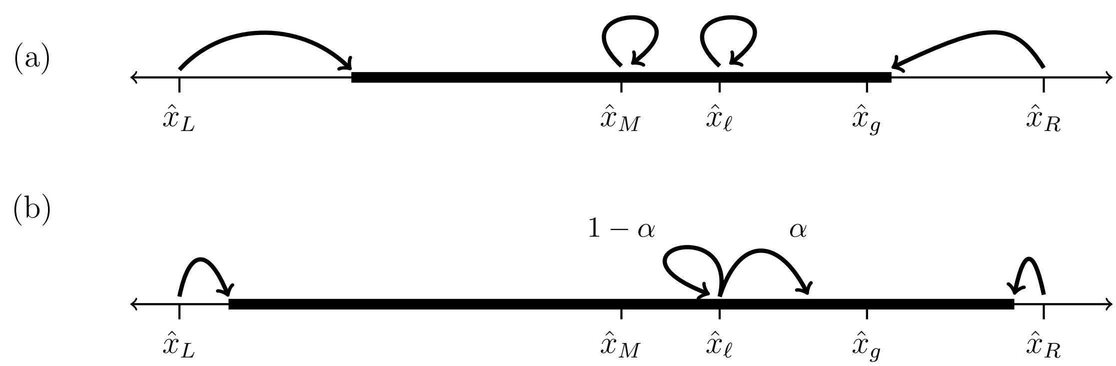


Figure 6 illustrates why the interest group, g, forgoes access if g is a non-ideologue and legislator ℓ satisfies $\hat{x}_\ell \in (x', \hat{x}_g)$. Specifically, (a) displays equilibrium behavior if g has zero access to ℓ, that is $\alpha = 0$, and (b) illustrates equilibrium behavior if $\alpha > 0$. Increasing access affects g's expectations about policymaking in two ways: (i) g has a chance of enjoying the rents from lobbying, and (ii) g's access to ℓ worsens M's expectations about policymaking. Therefore the acceptance set is larger if $\alpha > 0$, as shown in (b), and the partisan legislators L and R propose more extreme policy. If g and ℓ are sufficiently similar ideologically, then the second effect dominates and g's forgoes access.

More concretely, the interest group's access, α, affects its ex ante expected utility by changing the probability that it can lobby ℓ and enjoy the resulting surplus, as well as by changing the proposals of the partisan legislators L and R. In particular, if g is more extreme than ℓ, then greater access increases the probability that ℓ proposes y, at the expense of z_ℓ. Therefore M's continuation value from rejecting a policy proposal decreases in α because M prefers z_ℓ to y in this case. As a result, M is willing to pass more extreme policy proposals as α increases, and thus $\underline{x}(\sigma)$ decreases in α and symmetrically $\overline{x}(\sigma)$ increases. Because L and R are partisan for any α, increasing α causes their legislative proposals to become more extreme. Proposition 4 simply establishes the existence of $x' < \hat{x}_g$ such that if $\hat{x}_\ell \in (x', \hat{x}_g)$, then g's indirect cost from enabling L and R to pass more extreme policy outweighs g's direct benefit from increasing its chances of lobbying ℓ. Yet, Proposition 4 leaves open the possibility that the interest group may prefer to buy access if ℓ is sufficiently centrist, that is $\hat{x}_\ell \in [\hat{x}_M, x')$. In this case, g's optimal access may be positive because g receives a larger benefit from lobbying.

Figure 7: Seeking access to a more extreme legislator

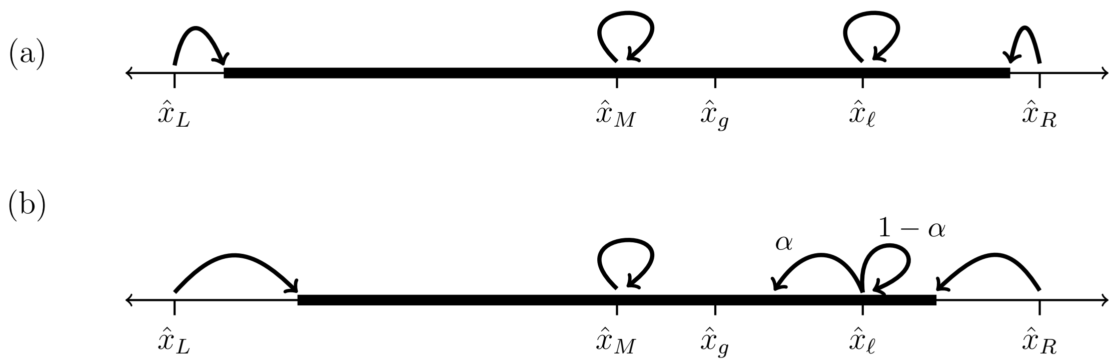


Figure 7 illustrates why the interest group, g, prefers to have strictly positive access, $\alpha > 0$, if it is a non-ideologue and legislator ℓ satisfies $\hat{x}_\ell \in (\hat{x}_g, x'')$. Specifically, (a) displays equilibrium behavior if g has zero access to ℓ, that is $\alpha = 0$, and (b) illustrates equilibrium behavior if $\alpha > 0$. Access affects g's expectations about policymaking in two ways: (i) g has a chance of enjoying the rents from lobbying, and (ii) g's access to ℓ improves the moderate legislator's expectations about policymaking. Therefore the acceptance set shrinks if $\alpha > 0$, as shown in (b), and the partisan legislators L and R propose more centrist policy. Both of these effects improve g's expectations about policymaking.

In light of Proposition 4, the interest group, g, may not want access to legislator ℓ when they are close together ideologically. This does not imply that g *never* wants access to ℓ if they are ideologically similar, however, as g *does* want access if ℓ is relatively more extreme. Specifically, g wants access if ℓ is more extreme than g, but not too extreme, $\hat{x}_\ell \in (\hat{x}_g, x'')$. In this case, policy extremism decreases in g's access. Consequently, g strictly benefits from buying access because it (i) increases g's chances of enjoying rents from lobbying and (ii) further constrains partisan legislators to propose policies that are more favorable to g. Figure 7 depicts the logic for this case.

Finally, if ℓ and g are aligned, and ℓ is sufficiently extreme, then g cannot profitably lobby to change ℓ's policy proposal, as illustrated in Figure 8 for $\hat{x}_\ell > x''$. Consequently, g is indifferent over its access in this case.

Figure 8: Indifferent over access to sufficiently extreme legislator

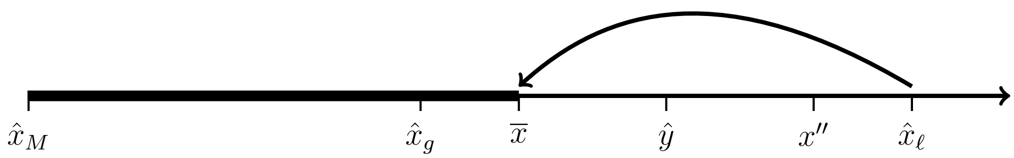


Figure 8 illustrates why the interest group, g, is indifferent over its access to legislator ℓ if g and ℓ are aligned and ℓ is sufficiently extreme. In this case, g's policy offer is identical to ℓ's independent policy proposal because they are both constrained by the upper boundary of the acceptance set. Thus, ℓ's proposal in unaffected by g's lobbying.

Proposition 4 partially characterizes whether a non-ideologue interest group wants to acquire access to legislator ℓ. I now study an ideologue interest group's preferences over access.[32] As noted previously, if ℓ and the interest group, g, are aligned ideologues, then g is indifferent over its access because lobbying is inconsequential. Otherwise, if ℓ is a non-ideologue, or ℓ and g are opposed ideologues, then lobbying is consequential but g's preferences over access are difficult to characterize in general. Specifically, if g's access changes the acceptance set, then either L or R's equilibrium proposal becomes worse for g while the other's proposal becomes more favorable to g. The specific balance of partisan proposal power determines which effect dominates. Thus, it is difficult to draw strong conclusions about an ideologue interest group's preference over access without restricting the balance of partisan proposal power.

There is a substantively relevant restriction on relative partisan power that also permits a sharp characterization of an ideologue interest group's preferences over access. In U.S. legislatures, the majority party typically exercises substantial control over committee assignments and committee leadership positions (Cox and McCubbins, 2005, 2007). To reflect this observation, I now restrict proposal power to one side of the moderate legislator. Say that there is *right-party majority control* if each legislator i has positive proposal power only if i is right-leaning, $\hat{x}_i \geq \hat{x}_M$, and define *left-party majority control* symmetrically. Say that the legislature is under *majority party control* if there is either right-party majority control or left-party majority control. Thus, the left-leaning legislator, L, has zero proposal power under right-party majority control and similarly for the right-leaning legislator, R, under left-party majority control. Additionally, legislator ℓ has positive proposal power only if she is aligned with the majority party, which I refer

[32]Recall that the interest group, g, is an *ideologue* if $\hat{x}_g \notin (\underline{x}, \overline{x})$.

to as *majority-leaning*. The setting with majority party control reflects the widespread belief that majority parties monopolize agenda setting power, but is also consistent with empirical work suggesting that individual legislators possess some degree of freedom from their party and thus can be influenced by interest groups (Fouirnaies, 2017).

Proposition 5 establishes that if g is a majority-leaning ideologue under majority party control, then it is indifferent over access if ℓ is also a majority-leaning ideologue, and wants access if ℓ is a majority-leaning non-ideologue. The result focuses on majority-leaning legislators because minority-leaning legislators do not have proposal power and thus it is immediate that the interest group is indifferent over its access.

Proposition 5. *Assume majority party control and that the interest group, g, is a majority-leaning ideologue.*

1. *If legislator ℓ is a majority-leaning ideologue, then g is indifferent over access.*
2. *If ℓ is a majority-leaning non-ideologue, then g prefers positive access.*

The first part of Proposition 5, that g is indifferent over access if ℓ is also a majority-party ideologue, follows because g cannot profitably lobby to change ℓ's proposal, as noted previously. The second part of Proposition 5, that g wants access to a majority-leaning non-ideologue legislator, follows because access provides two benefits for g under majority party control. First, lobbying is profitable for g and greater access increases g's chances of enjoying that profit. Second, greater access for g diminishes M's expectations about future policy in this case, and thus expands the acceptance set. Consequently, partisan legislators can pass more extreme policy. Minority party partisans are unable to propose policy under majority party rule, however, so g benefits from emboldening its aligned partisan legislator without risking more extreme policy proposals by opposed partisans.

Willingness to Pay for Access

In the preceding section, Proposition 4 establishes conditions under which the interest group, g, does not buy any access to legislator ℓ. Of course, many interest groups do contribute in practice, and previous empirical work suggests that acquiring access is a primary motivation. Accordingly, we want to study how contribution *amounts* depend on the political environment. In this section, I provide results that address two questions. First, do legislators receive greater contributions from ideologically proximal interest groups or more distant groups? I show that ideologically distant access-seeking groups are willing to pay more to acquire access to a given legislator under broad conditions. Second, do interest groups contribute more to powerful legislators? Consistent a large body of empirical work, I demonstrate that groups are willing to contribute more to buy access to legislators with greater proposal power.

Throughout this section, I study g's willingness to pay for access. Substantively, this exercise speaks to the contribution behavior of access-seeking interest groups by characterizing how much they are willing to contribute to buy access. Ideally, we would study contributions by characterizing g's optimal amount of access and comparing the cost of that access under different conditions. However, this task requires a description of the function representing the cost of access. Given the difficulty of convincingly restricting this class of functions, I focus instead on g's willingness to pay for access.[33] This approach sheds light on the price of access for particular legislator-group pairs, without imposing questionable assumptions on the cost of access function. In a market for access, the group's marginal cost of access equals the group's willingness to pay for additional access, and thus a higher willingness to pay corresponds to a higher price of access.

Proposition 6 studies the effect of g's ideology on its willingness to buy access to a majority-leaning legislator under majority party control. In particular, the result fixes legislator ℓ's ideology and analyzes g's willingness to pay for increasing its access from zero, which I refer to as g's *willingness to acquire acccess*. Under broad conditions, g's willingness to acquire access weakly increases as its ideology diverges in either direction from legislator ℓ's ideology.

Proposition 6. *Assume majority party control and that legislator ℓ is majority-leaning. If either (i) the interest group, g, is more centrist than ℓ, or (ii) g is majority-leaning and more extreme than ℓ, then g's willingness to acquire access weakly decreases as g becomes more similar to ℓ ideologically.*

Without loss of generality, I discuss the logic for Proposition 6 using the case with right-party majority rule, which is illustrated in Figure 9. The first part of Proposition 6 assumes that the interest group, g, is more centrist than legislator ℓ, which requires that g is closer than ℓ to the moderate legislator, M, ideologically. Under these conditions, g's willingness to acquire access decreases as $\hat{x}_g$ increases towards $\hat{x}_\ell$ for two reasons. First, g's surplus from lobbying shrinks, so it has less to gain from buying access to increase its chances of enjoying this surplus. Second, g's access does not force majority party partisan legislators to moderate their policy proposals as much and thus the group has less to gain

[33] See, e.g., Denzau and Munger (1986) and Hall and Deardorff (2006) for previous work on access-seeking campaign contributions that studies willingness to pay.

from forcing these partisans to moderate. Together, these effects decrease g's willingness to acquire access as it becomes more ideologically similar to ℓ.

Figure 9: Willingness to acquire access (Proposition 6)

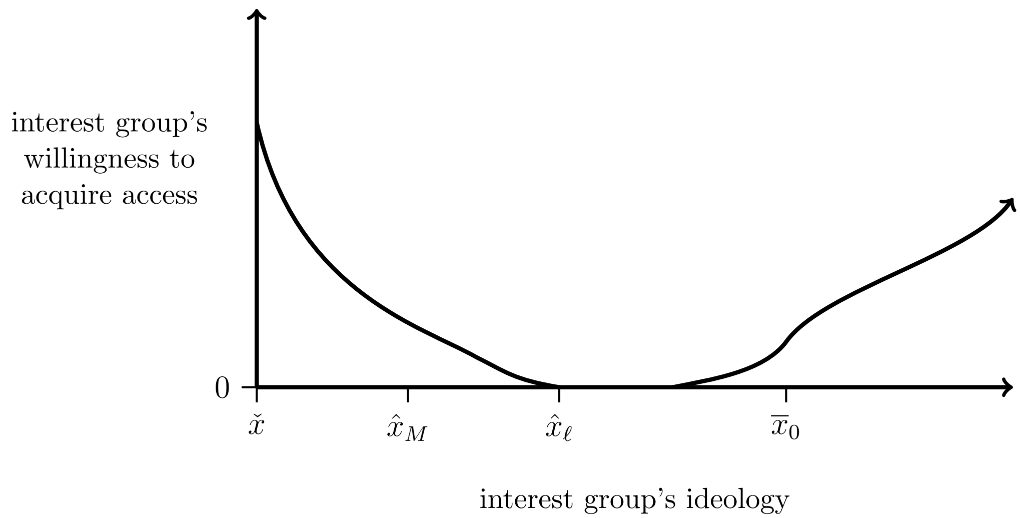


Figure 9 illustrates Proposition 6 for the case in which legislator ℓ is a majority party centrist under right-party majority control. Let $\check{x} = 2\hat{x}_M - \hat{x}_\ell$. First, if the interest group, g, is more centrist than ℓ, $\hat{x}_g \in [\check{x}, \hat{x}_\ell]$, then g's willingness to acquire access is decreasing in $\hat{x}_g$. Next, if $\hat{x}_g \geq \hat{x}_\ell$, then g's willingness to acquire access is weakly increasing in $\hat{x}_g$.

The logic for the second part of Proposition 6, in which g is majority-leaning and more extreme than ℓ, is best described in two cases distinguished by whether g is partisan or centrist when it has zero access. First, assume g is partisan. In Figure 9, this corresponds to $\hat{x}_g \geq \overline{x}_0$. If ℓ is centrist, as pictured in Figure 9, then g's willingness to acquire access decreases as $\hat{x}_g$ shifts towards $\hat{x}_\ell$ for reasons similar to part one: (i) g's lobbying surplus decreases and (ii) g's benefit from inciting more extreme proposals by majority party partisans also decreases. If ℓ is partisan, which corresponds to $\hat{x}_\ell \geq \overline{x}_0$ in Figure 9, then g's lobbying is inconsequential. Therefore its willingness to acquire access is zero and thus constant as $\hat{x}_g$ approaches $\hat{x}_\ell$.

For the second case, assume g is centrist when it has no access to ℓ, which corresponds to $\hat{x}_g \in (\hat{x}_\ell, \overline{x}_0)$ in Figure 9. Access has competing effects in this case. By the same logic as Proposition 4, g does not want to acquire access if $\hat{x}_g$ is sufficiently close to $\hat{x}_\ell$ because the threat of more extreme proposals by majority party partisans outweighs the group's the gain from increasing its chances of enjoying the lobbying surplus. However, if g is sufficiently more extreme than ℓ so that it does want to acquire access in this case, then its willingness to acquire access increases as $\hat{x}_g$ moves away from $\hat{x}_\ell$. Specifically, Proposition 6 demonstrates that if g's willingness to acquire access is positive, then shifting $\hat{x}_g$ away from $\hat{x}_\ell$ causes its lobbying surplus to grow faster than its loss from inciting more extreme proposals. Consequently, g's willingness to acquire access is zero if $\hat{x}_g$ is close enough to $\hat{x}_\ell$, and then increases in $\hat{x}_g$ once g is sufficiently more extreme than ℓ, as depicted in Figure 9. An additional observation is that if g's willingness to acquire access to ℓ is zero, then g is not willing to pay for any positive amount of access. Therefore Proposition 6 implies that a majority-leaning group does not buy positive access if it is slightly more ideologically extreme than ℓ, mirroring Proposition 4.[34]

Next, I study how the interest group's willingness to pay for access depends on proposal power. To state Proposition 7, it is useful to modify the baseline model to compare across distinct legislator-group pairs. Specifically, assume there are two arbitrary legislators, ℓ_1 and ℓ_2, and two interest groups, g_1 and g_2.[35] These modifications do not change the spirit of the characterization of equilibrium behavior in the baseline model. Since the result focuses on differences in legislator proposal power, legislators ℓ_1 and ℓ_2 are identical ideologically, but differ in their respective recognition probability, and the interest groups are identical.

Proposition 7 considers the benchmark case in which both interest groups purchase the same amount of access to their associated legislator. This approach ensures that additional access builds upon the same baseline in each legislator-group pair, so that differences in willingness to pay are driven solely by the feature of interest, proposal power. Although the amount of access bought in equilibrium may differ across legislator-group pairs, such differences will depend on the particular access cost function. Proposition 7 shows that, all else equal, interest groups have a higher willingness to pay for access to more powerful legislators.

Proposition 7. *Consider the modified baseline model with legislators ℓ_1 and ℓ_2 who share the same ideal point, and identical interest groups g_1 and g_2. If ℓ_2 has greater proposal power than ℓ_1, then g_2's willingness to pay for α access to ℓ_2 is weakly greater than g_1's willingness to pay for α access to ℓ_1. A symmetric result holds if ℓ_1 has greater proposal power than ℓ_2.*

In Proposition 7, proposal power amplifies the marginal benefit of access. Greater proposal power increases the probability that the interest group can extract surplus via

[34]See Lemma 2 in Appendix A for more details.

[35]I use two identical interest groups to avoid complications that arise if one group has access to two legislators, where the group accounts for how its access to one legislator affects its offer to the other. These complications do not affect the spirit of the results and add unenlightening complexity.

lobbying, thereby making additional access more valuable. On the other hand, greater proposal power also increases the sensitivity of the acceptance set to increases in access, which may help or harm the interest group. Notably, the cumulative effect is proportional to the legislator's recognition probability if g's willingness to pay is strictly positive. Thus, the interest group either has zero willingness to pay for additional access, as foreshadowed by Proposition 4, or the group has positive willingness to pay for both legislators, which is amplified by greater proposal power. Importantly, Proposition 7 does not depend on the respective ideologies of the legislator and interest group. Furthermore, it does not require majority party control. Proposition 7 suggests that interest groups will pay a higher price for access to more powerful legislators, which fits with the widespread empirical finding that groups contribute more to powerful legislators (Grimmer and Powell, 2016; Fouirnaies, 2017).

Model Discussion

The main results of this paper do not arise in a simpler bargaining setting such as that of Romer and Rosenthal (1978).[36] The rich, dynamic policymaking environment is the key ingredient that enables us to analyze the interaction between outside influence and policy extremism in a natural way. In particular, policy extremism can increase or decrease endogenously as a function of policy proposals, which are in turn affected by interest group influence via lobbying activity. This property is what causes some interest groups to forgo access in this paper.

I now elaborate on several features of the model. First, the interest group can only acquire access to one legislator. This assumption can be relaxed, as demonstrated in the appendix, but it reflects the general notion that interest groups typically target a subset of legislators to exercise influence. It is possible that the interest group is unable to feasibly increase its access to certain legislators due to exogenous factors. For example, voters in the legislator's district may be strongly opposed to the group's mission or tactics (Stratmann, 1992). Alternatively, the group may be a regional interest group that does not have any geographic connection with the legislator's district (Wright, 1989).

Second, I model lobbying as using resources to shape policy directly. Empirically, interest groups frequently draft legislation for legislators (Schlozman and Tierney, 1983) and evidence suggests that lobbying can successfully influence policy content (Kang, 2015;

[36]Note that we can obtain the model studied in Romer and Rosenthal (1978) by fixing $\delta = 0$ and setting $\rho_i = 1$ for some legislator i.

Bombardini and Trebbi, 2011; Richter et al., 2009; de Figueiredo and Silverman, 2006).[37] Of course, explicit quid pro quo lobbying is illegal, but there are many ways that interest groups can exert influence without resorting to bribery (De Figueiredo and Garrett, 2004).[38] In practice, interest groups spend substantial effort drafting legislation (Schlozman and Tierney, 1986) and frequently present *model bills* for legislators to propose (Kroeger, 2016).[39] Consequently, the legislator saves the time and effort required to research and formulate policy on the given issue. Moreover, the legislator is freed to work on other tasks such as constituent service and fundraising, in the spirit of Hall and Deardorff (2006). Finally, the interest group may also provide the legislator with valuable political intelligence or write speeches to help sell the policy to the legislators constituents and copartisans (Schlozman and Tierney, 1983, 1986; Hall and Wayman, 1990; Wright, 1996). The group's transfer, m, captures these benefits.

Third, I model lobby offers as binding contracts. This feature has a long tradition in models of money in politics and is primarily for simplicity, but it also captures the importance that lobbyists place on their reputation (Schlozman and Tierney, 1986; Hansen, 1991; Ainsworth, 2002; Kroszner and Stratmann, 2005). Lobbyists want to maintain a good reputation with legislators to maintain their access premium (Blanes i Vidal et al., 2012; Bertrand et al., 2014) and command high fees from interest groups in the future. Therefore they have incentives to follow through on any contracted favors that supplement the time and effort the legislator saves by allowing the interest group's lobbyists to help draft the bill. On a cautionary note, McCarty and Rothenberg (1996) emphasize the tenuous nature of *campaign contribution contracts* by highlighting the lag between the interest group's contribution and the eventual policy proposal, as well as uncertainty about which legislators will be in charge of formulating policy. These issues are less concerning in this paper, however, as I model *lobbying contracts* that occur during legislative periods. Specifically, the interest group lobbies while the bill is in committee and knows which legislator is in charge of drafting policy.

Finally, there is complete information in the model, and the only uncertainty concerns the identity of future proposers. Although complete information is a simplification, there is reason to believe that legislators and interest groups are well informed about the legislative

[37] See de Figueiredo and Richter (2014) for an overview of the literature.

[38] See Grossman and Helpman (2002) for a more complete discussion. Powell (2014) notes that "there is a range of behaviors in which the legislator, consciously or unconsciously, prioritizes the interests of donors over those of constituents. Influence occurs when a legislator acts to favor donors in a way he or she would not have absent contributions" (pg. 83).

[39] Also see, e.g., Levy and Razin (2013) for several examples of interest groups explicitly supplying legislators with model bills.

environment (Baumgartner et al., 2014). Legislators have professional staffs who keep them abreast of the distribution of both power and ideology within the legislature, as well as the ideologies and connections of the interest groups involved in a particular issue (Cain and Drutman, 2014).[40] On the other side, a primary objective of interest groups is to be well-informed about their relevant issues and the legislative environment. Moreover, they employ and seek out well-connected lobbyists, perpetuating the "revolving door" between legislatures and lobbying firms (Blanes i Vidal et al., 2012; Cain and Drutman, 2014).

Implications

The model provides an explanation for the empirical regularity that many interest groups do not contribute and, furthermore, that contributing groups typically do not reach legal contribution limits (Tullock, 1972; Ansolabehere et al., 2003). This empirical finding is puzzling in light of evidence that contributions buy access, access generates substantial benefits, and interest groups allocate their contributions strategically (Snyder Jr., 1990, 1992; Grimmer and Powell, 2016; Fouirnaies and Hall, 2017). Accordingly, scholars have sought a richer theoretical basis for why strategic interest groups appear to pursue access halfheartedly, or forgo it altogether.[41] In this paper, the distinction between campaign contributions and lobbying plays a crucial role in rationalizing Tullock's puzzle.[42]

When an interest group weighs whether to buy access to a relatively more centrist legislator, it accounts for the centrifugal effect its access will have during the legislative policymaking process. As many voters fear, interest groups *can* increase policy extremism. However, interest groups also feel the consequences of greater policy extremism, particularly when they are uncertain about which legislators will formulate policy. There is a limit to how much additional polarization interest groups are willing to incite and, as shown by Proposition 4, interest groups may limit their access to more centrist legislators. This self-regulation manifests empirically as surprisingly low campaign contributions or no contributions at all.

Furthermore, the explanation for Tullock's puzzle in this paper squares with empiri-

[40]Hall and Deardorff (2006) note that "[t]he interests of most groups active on an issue typically are transparent – made so by past and present testimony, reports, press releases, website postings, and other activities that publicly commit them to a position" (pg. 75).

[41]To use a recent example, Fouirnaies and Hall (2017) argue that reconciling Tullock's puzzle with empirical evidence of strategic interest group contributions "is perhaps one of the most important tasks for future work in this literature" (pg. 28).

[42]See Chamon and Kaplan (2013) for recent work rationalizes Tullock's puzzle using interest group competition.

cal evidence that the interest groups which do contribute are typically centrist (Bonica, 2013) and seek access to an ideologically diverse set of legislators (Barber, 2016). In the model, centrist groups want to buy access to a broad spectrum of relatively more extreme legislators on their side of the aisle. They increase their chances profitably lobbying by doing so, and constrain partisan legislators to moderate their behavior. Moreover, centrist groups have a greater willingness to pay for access. Together, these results suggest that centrist groups will seek access to a broader spectrum of legislators and pay a premium to ensure they receive it. Additionally, interest groups have incentives to free-ride off of the lobbying efforts of more centrist groups under certain conditions. Centrist interest groups are especially keen on buying access, and a range of less centrist interest groups on the same side of the aisle prefer to stay out of their way.

Next, the model suggests a reason for the empirical observation that ideologically extreme legislators receive lower contributions from access-seeking interest groups than do moderate and centrist legislators (Bonica, 2013; La Raja and Schaffner, 2015). In the model, centrist groups do not buy access to sufficiently extreme partisan legislators because the group cannot profitably lobby these legislators to moderate their proposals. Under the empirically reasonable assumption that exogenous factors render it infeasible for interest groups to buy access to legislators far on the other side of the aisle, no interest groups buy access to these extreme legislators. Empirically, these legislators should receive fewer contributions and be lobbied less frequently.

Finally, the results are relevant for empirical work using campaign contributions to measure the ideologies of various political actors. Specifically, I provide additional support for omitting access-seeking interest groups when using contributions to estimate ideology, as done in Bonica (2014). The model indicates that there is good reason to be cautious about estimating the ideologies of access-seeking interest groups using models that assume contributors prefer to give more to ideologically proximal legislators. Instead, Proposition 6 suggests that a legislator will receive greater contributions from access-seeking interest groups that are more ideologically distant. Access-seeking interest groups have weaker incentives to buy access to ideologically proximal legislators because their lobbying barely affects the policy proposals of these legislators and, consequently, barely affects the proposal behavior of other legislators as well.

In addition to strengthening the theoretical foundations for several empirical regularities concerning money in politics, this paper has several policy implications. First, regulations and limits on interest group campaign contributions should be easier to enact and enforce than lobbying regulations. Interest groups are not affected by contribution limits that they will not exceed if left to their own devices. This squares with the empirical observation that many interest groups do not max out their contribution limits.[43] In contrast, lobbying regulations should be harder to enforce because interest groups have strong incentives to find workarounds to wield influence if one of their affiliated legislators is in charge of policymaking.

Second, ongoing efforts to level the playing field in campaign contributions should proceed carefully. It is important to distinguish different types of contributions and interest group incentives.[44] This paper demonstrates that groups with low observed contributions may be acting optimally to avoid increasing policy extremism. Allocating money to these groups to help them buy access may be a waste at best and increase policy extremism at worst. I emphasize that these results apply to access-oriented campaign contributions geared towards influencing policy. It is possible that partisan interest groups are more inclined towards contributions that are primarily motivated by electoral considerations, for example, but this conclusion is not obvious because concerns about policy extremism remain. The results here suggest that policies aimed at closing the contribution gap should support contributions by needy centrist interest groups.

More generally, this paper suggests that *inside influence* may not be the best tactic for certain interest groups, in line with Wolton (2016). This observation applies broadly and reflects that interest groups direct their efforts where the results are most favorable, which does not necessarily to equate to acquiring greater access to policymakers. The model is limited in this sense, as interest groups cannot influence policy through channels beyond campaign contributions and lobbying. For example, I do not study how interest groups use protests or public relations to influence policy.[45] These efforts cost money, however, and I offer a partial explanation for why certain interest groups focus on grassroots efforts rather than campaign contributions and lobbying (Kollman, 1998; Goldstein, 1999).

Conclusion

I study how policy-motivated interest groups acquire and use access to influence legislative policymaking. To do so, I construct and analyze a formal model featuring interest groups

[43]Also, see Bonica (2016) and Hansen et al. (2015) for recent work showing that corporate contribution expenditures in the U.S. have not changed much in the wake of Citizens United.

[44]Powell (2014) discusses New York City's "Matching Funds Program" as an example, and observes that the "argument for matching contribution programs for small donors rests on the reasonable supposition that reducing the fraction of money from big givers will diminish their influence, but as yet, we have no empirical evidence on the representational effects of these laws" (pg. 99).

[45]See Smith (2015) for a recent discussion of these tactics.

that can acquire access prior to policymaking and then lobby during policymaking to influence policy proposals. I first highlight the conditions under which lobbying increases or decreases policy extremism. I then show that interest groups have incentives to limit their access to particular legislators under broad conditions. This result arises from a neglected consequence of lobbying: increasing policy extremism can hurt interest groups if they are uncertain about which legislators will formulate policy.

The model provides a tractable window to observe how interest group contribution decisions depend on the larger legislative context. Interest groups consider a multitude of institutional and political factors when they decide whether to buy access to a particular legislator. Does greater access increase or decrease policy extremism in the legislature? Is the legislator likely to have substantial control over policymaking? Are partisan legislators likely to be tasked with drafting policy? While interest groups certainly account for many factors in practice, I refine our understanding of how interest groups weigh these questions when buying access. Additionally, the results speak to empirical work studying how interest groups allocate campaign contributions, as well as work using contributions to estimate ideology.

Appendix A

Model

Let N^V denote the set of voting legislators, N^L denote the set of committee members, and N^G denote the set of interest groups. Denote the set of all players as $N = N^V \cup N^L \cup N^G$. There are a finite and odd number of voters, denoted n^v; the number of committee members in N^L is denoted n^L, where $n^L \geq 3$ is finite and odd; and there are $n^G \leq n^L$ interest groups. Throughout, I refer to voting legislators as *voters* and denote an arbitrary voter by i. I denote an arbitrary committee member by ℓ and an arbitrary interest group by g.[46] Each committee member is associated with one interest group. Let g_ℓ denote the interest group that has access to committee member ℓ, and let N^L_g denote the set of committee members to whom group g has access. The policy space $X \subseteq \mathbb{R}$ is non-empty, compact, and convex. Each player is associated with an ideal point in X.

Interest groups are endowed with access to their associated committee members. Let $\alpha_\ell \in [0, 1]$ denote g_ℓ's access to committee member $\ell \in N^L_g$. Interest groups may have access to more than one legislator, and may have only nominal access to certain legislators, that is $\alpha_\ell = 0$.

Legislative bargaining occurs over an infinite horizon, with periods discrete and indexed by $t \in \{1, 2, \dots\}$. Let $\rho = (\rho_1, \dots, \rho_{n^L}) \in \Delta([0, 1])^{n^L}$, be the distribution of recognition probabilities among committee members.[47] In each legislative period t, bargaining proceeds as follows. If no policy has passed before period t, then committee member ℓ is recognized as the proposer with probability $\rho_\ell > 0$. The identity of the period-t proposer ℓ_t is publicly observed. With probability $1 - \alpha_\ell$, the interest group g_{ℓ_t} does not have the opportunity to lobby and ℓ_t freely proposes any $x_t \in X$. On the other hand, with probability α_ℓ, the group g_{ℓ_t} has the opportunity to lobby and offers ℓ_t the binding contract (y_t, m_t) consisting of a policy $y_t \in X$ and a payment $m_t \in \mathbb{R}_+$. Next, ℓ_t decides whether to accept or reject g_{ℓ_t}'s offer. Let $a_t \in \{0, 1\}$ denote ℓ_t's acceptance decision, where $a_t = 1$ indicates that ℓ_t accepts the period t offer if g_{ℓ_t} is able to lobby, and $a_t = 0$ if either ℓ_t rejects g_{ℓ_t}'s offer or g_{ℓ_t} is unable to lobby in period t. If ℓ_t accepts g_{ℓ_t}'s offer, then ℓ_t is committed to propose $x_t = y_t$ in period t and m_t is transferred to ℓ_t. If ℓ_t rejects g_{ℓ_t}'s offer, then ℓ_t is free to propose any $x_t \in X$ and g_{ℓ_t} keeps m_t. All players observe ℓ_t's proposal, and a simultaneous vote is held. In particular, each voter

[46] I am currently working to generalize this setting to allow for the possibility that multiple interest groups can have access to each legislator and relax the distinction between voting legislators and committee members.

[47] Where $\Delta([0, 1])^{n^\ell}$ denotes the n^ℓ-dimensional unit simplex

chooses whether to vote in favor of the proposal. If a majority of votes are in favor of ℓ_t's proposal, then x_t is passed and bargaining ends with x_t enacted in period t and all subsequent periods. If the proposal is not accepted by a majority of legislators, then the status quo $q \in \mathbb{R}$ is enacted in period t and bargaining proceeds to period $t+1$.

All players have quadratic policy preferences and discount streams of stage utility by the common discount factor $\delta \in (0,1)$. For convenience, I normalize per period payoffs by $(1-\delta)$. Let $I_t^\ell \in \{0,1\}$ be an indicator function that takes the value one if ℓ is the period-t proposer and g_{ℓ_t} is able to lobby in that period. Given a sequence of offers $(y_1, m_1), (y_2, m_2), \ldots$, a sequence of proposers $\ell_1, \ell_2, \ldots$ a sequence of acceptance decision $a_1, a_2, \ldots$, and a sequence of independent policy proposals $x_1, x_2, \ldots$ such that legislative proposals are rejected until period t, the discounted sum of per period payoffs for each voter $i \in N^v$ is

$$(1-\delta)\sum_{t'=1}^{t-1} \delta^{t'-1} u_i(q) + \delta^{t-1}\Big[(1-a_t)u_i(x_t) + a_t u_i(y_t)\Big].$$

For each committee member $\ell \in N^\ell$, the discounted sum of per period payoffs is

$$(1-\delta)\sum_{t'=1}^{t-1} \delta^{t'-1}[u_\ell(q) + I_{t'}^\ell a_{t'} m_{t'}] + \delta^{t-1}\Bigg[(1-a_t)u_\ell(x_t) + a_t\Big(u_\ell(y_t) + I_t^\ell m_t\Big)\Bigg].$$

In a similar fashion, the discounted sum of per period payoffs for each group $g \in N^g$ is

$$(1-\delta)\sum_{t'=1}^{t-1} \delta^{t'-1}\Bigg[u_g(q) - a_{t'} m_{t'} \sum_{\ell \in N_g^\ell} I_{t'}^\ell\Bigg] + \delta^{t-1}\Bigg[(1-a_t)u_g(x_t) + a_t\Bigg(u_g(y_t) - m_t \sum_{\ell \in N_g^\ell} I_{t'}^\ell\Bigg)\Bigg].$$

Let M denote the median voting legislator. Throughout, I assume that M has some preference to move policy, i.e. $\hat{x}_M \neq q$. Additionally, I assume that there is not complete status quo bias among committee members and interest groups. In particular, there exists a committee member $\ell \in N^L$ who is on the same side of q as M and is not influenced by some group on the opposite side of q. To illustrate, assume $\hat{x}_M < q$. Then $\hat{x}_\ell < q$ and either (i) $\hat{x}_{g_\ell} < q$, or (ii) $\alpha_\ell = 0$. This assumption ensures that there is some committee member who wants to move policy in the same direction as M and, furthermore, that the committee member's associated interest group shares this preference.

Unless otherwise noted, results are proved for this more general setting, as the model presented in the text is a special case. To see this, first assume that there is one voting legislator with ideal point $\hat{x}_M$. Second, assume that there are four committee members with ideal points $\hat{x}_L, \hat{x}_M, \hat{x}_\ell$, and $\hat{x}_R$, respectively. Finally, assume there is one interest group with ideal point $\hat{x}_g$ that has access to ℓ, i.e. $\alpha_\ell \geq 0$, and does not have access to committee members other than ℓ, i.e. $\alpha_{g_j} = 0$ for all $j \neq \ell$.

Strategies

I study a selection of subgame perfect equilibrium (SPE) and augment SPE with standard refinements from the legislative bargaining literature. First, I define mixed strategies, as well as the notion of mixed strategy stationary legislative lobbying equilibrium. Next, I formally define pure strategies and no-delay pure strategy stationary legislative lobbying equilibrium with deferential voting and deferential acceptance. In Appendix B, I show that all mixed strategy stationary legislative lobbying equilibrium are equivalent in outcome distribution to a no-delay pure strategy stationary legislative lobbying equilibrium with deferential voting and deferential acceptance.

Define $\Delta(X)$ to be the set of probability measures on X. Let $W = X \times \mathbb{R}_+$ denote the interest group offer space, and let $\Delta(W)$ denote the set of probability measures on W. A mixed stationary strategy for group g consists of a probability measure $\lambda_g \in \Delta(W)^{|N_g^L|}$ over g's policy offers $y \in X$ and transfer offers $m \in \mathbb{R}_+$, respectively, to each committee member $\ell \in N_g^L$. A mixed stationary legislative strategy for committee member ℓ is a pair (π_ℓ, φ_ℓ); where the proposal strategy $\pi_\ell \in \Delta(X)$ specifies a probability measure over the committee member's proposal in any legislative period that they are recognized as the proposer and reject g_ℓ's offer, the acceptance strategy $\varphi_\ell : W \to [0,1]$ represents the probability that ℓ accepts g_ℓ's offer. Finally, each voter i's strategy is $\nu_i : X \to [0,1]$, which specifies the probability that i votes in favor of policy proposal x.

Let λ denote a profile of interest group strategies, (π, φ) denote a profile of committee member strategies, and ν denote a profile of voter strategies. Denote a strategy profile as $\sigma = (\lambda, \pi, \varphi, \nu)$. Let $\bar{\nu}(x)$ represent the probability that x is passed by the legislature under σ.

Continuation Values

For convenience, let $w = (y, m) \in W$ denote an arbitrary interest group offer. For convenience, define

$$\xi_\ell(\alpha, \sigma) = (1 - \alpha_\ell) + \alpha_\ell \int_W [1 - \varphi_\ell(y, m)] \lambda_g^\ell(dw), \tag{4}$$

which is the probability that ℓ makes an independent policy proposal under strategy profile σ in each period that ℓ is recognized to propose before policy is passed. Given a stationary strategy profile σ, the continuation value of voter $i \in N^V$ is

$$V_i(\sigma) = \sum_{\ell \in N^\ell} \rho_\ell \Bigg\{ \alpha_\ell \int_W \varphi_\ell(y,m) \Big[\overline{\nu}(y) u_i(y) + [1-\overline{\nu}(y)][(1-\delta)u_i(q) + \delta V_i(\sigma)] \Big] \lambda^\ell_{g_\ell}(dw)$$

$$+ \xi_\ell(\alpha,\sigma) \int_X \Big[\overline{\nu}(x) u_i(x) + [1-\overline{\nu}(x)][(1-\delta)u_i(q) + \delta V_i(\sigma)] \Big] \pi_\ell(dx) \Bigg\}, \tag{5}$$

the continuation value of committee member $\ell \in N^L$ is

$$\tilde{V}_\ell(\sigma) = \sum_{j \neq \ell} \rho_j \Bigg\{ \alpha_j \int_W \varphi_j(y,m) \Big[\overline{\nu}(y) u_\ell(y) + [1-\overline{\nu}(y)][(1-\delta)u_\ell(q) + \delta \tilde{V}_\ell(\sigma)] \Big] \lambda^j_{g_j}(dw)$$

$$+ \xi_j(\alpha,\sigma) \int_X \Big[\overline{\nu}(x) u_\ell(x) + [1-\overline{\nu}(x)][(1-\delta)u_\ell(q) + \delta \tilde{V}_\ell(\sigma)] \Big] \pi_j(dx) \Bigg\},$$

$$+ \rho_\ell \Bigg\{ \alpha_\ell \int_W \varphi_\ell(y,m) \Big[\overline{\nu}(y) u_\ell(y) + [1-\overline{\nu}(y)][(1-\delta)u_\ell(q) + \delta \tilde{V}_\ell(\sigma)] + m \Big] \lambda^\ell_{g_\ell}(dw)$$

$$+ \xi_\ell(\alpha,\sigma) \int_X \Big[\overline{\nu}(x) u_\ell(x) + [1-\overline{\nu}(x)][(1-\delta)u_\ell(q) + \delta \tilde{V}_\ell(\sigma)] \Big] \pi_\ell(dx) \Bigg\}, \tag{6}$$

and the continuation value of each group $g \in N^G$ is

$$\hat{V}_g(\sigma) = \sum_{\ell \notin N^\ell_g} \rho_\ell \Bigg\{ \alpha_\ell \int_W \varphi_\ell(y,m) \Big[\overline{\nu}(y) u_g(y) + [1-\overline{\nu}(y)][(1-\delta)u_g(q) + \delta \hat{V}_g(\sigma)] \Big] \lambda^\ell_{g_\ell}(dw)$$

$$+ \xi_\ell(\alpha,\sigma) \int_X \Big[\overline{\nu}(x) u_g(x) + [1-\overline{\nu}(x)][(1-\delta)u_g(q) + \delta \hat{V}_g(\sigma)] \Big] \pi_\ell(dx) \Bigg\},$$

$$+ \sum_{\ell \in N^\ell_g} \rho_\ell \Bigg\{ \alpha_\ell \int_W \varphi_\ell(y,m) \Big[\overline{\nu}(y) u_g(y) + [1-\overline{\nu}(y)][(1-\delta)u_g(q) + \delta \hat{V}_g(\sigma)] - m \Big] \lambda^\ell_{g_\ell}(dw)$$

$$+ \xi_\ell(\alpha,\sigma) \int_X \Big[\overline{\nu}(x) u_g(x) + [1-\overline{\nu}(x)][(1-\delta)u_g(q) + \delta \hat{V}_g(\sigma)] \Big] \pi_\ell(dx) \Bigg\}, \tag{7}$$

Stationary Legislative Lobbying Equilibrium

A strategy profile $\sigma = (\lambda, \pi, \varphi, \nu)$ is a *mixed strategy stationary legislative lobbying equilibrium* if it satisfies four conditions. First, for all interest groups g and committee members $\ell \in N_g^L$, λ_g^ℓ places probability one on optimal offers that weakly satisfy ℓ's acceptance constraint,[48] i.e. solutions to

$$\begin{aligned} \arg\max_{(y,m)} \; & \bar{\nu}(y)u_g(y) + [1-\bar{\nu}(y)][(1-\delta)u_g(q) + \delta\hat{V}_g(\sigma)] - m \\ \text{s.t. } & \overline{\nu}(y)u_\ell(y) + [1-\overline{\nu}(y)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)] + m \\ & \geq \\ & \int_X \left[\overline{\nu}(x)u_\ell(x) + [1-\overline{\nu}(x)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)]\right]\pi_\ell(dx). \end{aligned} \tag{8}$$

Second, for all committee members ℓ and offers (y, m) from ℓ's affiliated interest group g_ℓ,

$$\begin{aligned} & \overline{\nu}(y)u_\ell(y) + [1-\overline{\nu}(y)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)] + m \\ & > \\ & \int_X \left[\overline{\nu}(x)u_\ell(x) + [1-\overline{\nu}(x)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)]\right]\pi_\ell(dx). \end{aligned} \tag{9}$$

implies $\varphi_\ell(y, m) = 1$ and the opposite strict inequality implies $\varphi_\ell(y, m) = 0$. Third, each committee member places probability one on optimal policy proposals, conditional on rejecting their affiliated group's offer, i.e.

$$\pi_\ell\left(\arg\max_{x \in X} \overline{\nu}(x)u_\ell(x) + [1-\overline{\nu}(x)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)]\right) = 1. \tag{10}$$

Finally, for all voters i and policy proposals $x \in X$, $u_i(x) > (1-\delta)u_i(q) + \delta V_i(\sigma)$ implies $\nu_i(x) = 1$ and $u_i(x) < (1-\delta)u_i(q) + \delta V_i(\sigma)$ implies $\nu_i(x) = 0$. This condition implies that voters use *stage-undominated* voting strategies (Baron and Kalai, 1993; Banks and Duggan, 2006a).

Formally, a stationary pure strategy for group g is a pair of vectors $(y_g, m_g) \in X^{|N_g^L|} \times \mathbb{R}_+^{|N_g^L|}$, where y_g denotes a profile of policy offers and m_g denotes a profile of monetary offers. For committee member ℓ, the pair (y_g, m_g) stipulates that g will transfer m_g^ℓ to ℓ

[48] This restriction is without loss of generality because the group can always make offers consisting of zero payment and policy that is equivalent to the legislator's proposal strategy.

in exchange for the policy proposal y_g^ℓ in each period that ℓ is the proposer and accepts g's offer. A pure stationary strategy for committee member ℓ is a pair (z_ℓ, a_ℓ); where $z_\ell \in X$ specifies ℓ's legislative proposal in any legislative period that ℓ is recognized as the proposer and rejects g_ℓ's offer, and $a_\ell : X \times \mathbb{R} \to \{0,1\}$ takes the value of one if and only if ℓ accepts g_ℓ's offer. Finally, for each voter i, $v_i : X \to \{0,1\}$ takes the value of one if and only if i votes in favor of the policy proposal.

To ease the expression of the formal pure strategy equilibrium conditions, define the *dynamic policy utility* of voter $i \in N^V$ from policy proposal x under σ as

$$U_i(x;\sigma) = \begin{cases} u_i(x) & \text{if } x \in A(\sigma) \\ (1-\delta)u_i(q) + \delta V_i(\sigma) & \text{else,} \end{cases} \tag{11}$$

where stage payoffs are normalized by $1-\delta$ for convenience. For $\ell \in N^L$, define the dynamic utility of ℓ as

$$\tilde{U}_\ell(x;\sigma) = \begin{cases} u_\ell(x) & \text{if } x \in A(\sigma) \\ (1-\delta)u_\ell(q) + \delta \tilde{V}_\ell(\sigma) & \text{else,} \end{cases} \tag{12}$$

which is the pure strategy analogue to (92).

Formally, $\sigma = (y, m, z, a, v)$ is a *no-delay pure strategy stationary legislative lobbying equilibrium with deferential voting and deferential acceptance* if it satisfies four conditions. First, for all $g \in N^G$ and $\ell \in N_g^L$, the offer (y_g^ℓ, m_g^ℓ) satisfies

$$y_g^\ell = \arg\max_{y \in A(\sigma)} u_{g_\ell}(y) + u_\ell(y) - u_\ell(z_\ell) \tag{13}$$

and

$$m_g^\ell = u_\ell(z_\ell) - u_\ell(y_g^\ell). \tag{14}$$

Second, for all $\ell \in N^L$ and offers (y, m), ℓ's acceptance strategy specifies $a_\ell(y, m) = 1$ if and only if

$$\tilde{U}_\ell(y;\sigma) + m \geq \tilde{U}_\ell(z_\ell;\sigma). \tag{15}$$

Third, each committee member ℓ proposes her most preferred policy in the social acceptance set, conditional on rejecting g_ℓ's offer, i.e. z_ℓ solves

$$\max_{x \in A(\sigma)} u_\ell(x) \tag{16}$$

for each $\ell \in N^L$. Finally, each voter i votes in favor of a proposal $x \in X$ if and only if

$$u_i(x) \geq (1-\delta)u_i(q) + \delta V_i(\sigma). \tag{17}$$

Existence

I now prove part 1 of Proposition 1.

Proposition 1.1. *There exists a no-delay pure strategy stationary legislative lobbying equilibrium with deferential voting and deferential acceptance.*

Proof. The proof has three parts. Part 1 shows the existence of a fixed point that maps a profile consisting of (i) no-delay pure interest group policy offer strategies and (ii) no-delay pure committee member proposal strategies to itself as the solution to optimization problems for each interest group and committee member. Part 2 uses this fixed point to construct a strategy profile σ. Part 3 shows that σ satisfies the conditions of a no-delay pure strategy stationary legislative lobbying equilibrium.

Part 1: Let $y = (y_1, \dots, y_n) \in X^{n^L}$ denote a profile of pure interest group policy offer strategies. Similarly, let $z = (z_1, \dots, z_n) \in X^{n^L}$ denote a profile of pure committee member proposal strategies. Define

$$r_i(y, z) = \sum_{\ell \in N^L} \rho_\ell \Big(\alpha_\ell u_i(y_\ell) + (1-\alpha_\ell) u_i(z_\ell) \Big), \tag{18}$$

which corresponds to voter i's continuation value if all policy proposals are accepted and passed with probability one. Thus, i's reservation value is $(1-\delta)u_i(q) + \delta r_i(y, z)$. In particular, M's reservation value induces an acceptance set for M, denoted $A_M(r(y, z))$. By Banks and Duggan (2006b) and Duggan (2014), M is decisive over lotteries, so $A_M(r(y, z)) = A(r(y, z))$. It follows that $A(r(y, z))$ is a compact, non-empty interval because X is one-dimensional and u_M is strictly concave.

For each $\ell \in N^L$, define

$$\tilde{\phi}_\ell(y, z) = \operatorname*{arg\,max}_{x \in A(r(y,z))} u_{g_\ell}(x) + u_\ell(x), \tag{19}$$

which is unique because the objective function is strictly concave and continuous in x and $A(r(y,z))$ is compact and non-empty. The Theorem of the Maximum implies that (19) is continuous in (y,z) because $A(r(y,z))$ is continuous in (y,z) and (19) is unique for all (y,z). Also, define

$$\phi_\ell(y,z) = \underset{x \in A(r(y,z))}{\arg\max}\ u_\ell(x), \tag{20}$$

which is unique because u_ℓ is strictly concave and continuous in x and $A(r(y,z))$ is compact and non-empty. Thus, the Theorem of the Maximum implies that (20) is continuous.

Define the mapping $\Phi : X^{2n^L} \to X^{2n^L}$ as $\Phi(y,z) = \prod_{\ell \in N^L} \tilde{\phi}_\ell(y,z) \times \prod_{\ell \in N^L} \phi_\ell(y,z)$, which is continuous in (y,z) because Φ is the $2n^L$-fold product of functions that are continuous in (y,z). A fixed point $(y^*, z^*) = \Phi(y^*, z^*)$ exists, by Brouwer's theorem, because Φ is a continuous function that maps a compact, convex, nonempty set into itself.

Part 2: Define a pure strategy legislative lobbying equilibrium σ as follows. First, for each $\ell \in N^L$, define ℓ's proposal strategy to be $z_\ell = z_\ell^*$. Second, for each $\ell \in N^L$ define g_ℓ's offer strategy as $y_g^\ell = y_\ell^*$ and $m_g^\ell = u_\ell(z_\ell^*) - u_\ell(y_\ell^*)$. Third, for each $\ell \in N^L$ define ℓ's acceptance strategy a_ℓ to be

$$a_\ell(y,m) = \begin{cases} 1 & \text{if } u_\ell(y) + m \geq u_\ell(p_\ell), \text{ for } y \in A(r(y^*, z^*)) \\ 1 & \text{if } (1-\delta)u_\ell(q) + \delta[r_\ell(y^*) + \rho_\ell \alpha_\ell m_g^\ell] + m \geq u_\ell(p_\ell), \text{ for } y \notin A(r(y^*, z^*)) \\ 0 & \text{else.} \end{cases} \tag{21}$$

Finally, for each $i \in N^V$ define v_i so that $v_i(x) = 1$ if $u_i(x) \geq (1-\delta)u_i(q) + \delta r_\ell(y^*, z^*)$ and $v_i(x) = 0$ otherwise.

Part 3: We complete the proof by verifying that the proposed strategies are optimal.

First, consider committee member $\ell \in N^L$ with associated interest group g_ℓ. It is without loss of generality to restrict focus to acceptable offers because g can always offer the pair $(z_\ell, 0)$, which ℓ accepts. By Lemma B.3, y_g^ℓ must solve

$$\max_{x \in A(r(y^*, z^*))} u_{g_\ell}(x) + u_\ell(x) - u_\ell(z_\ell). \tag{22}$$

By (20), the solution to (22) is equivalent to $\phi_\ell(y^*, z^*) = y_\ell^*$, as desired. Next, $y^* \in A(r(y^*, z^*))$ ensures that $m_g^\ell = u_\ell(z_\ell) - u_\ell(y_\ell^*)$ is the minimal transfer m such that

$\alpha(y_g^\ell, m) = 1$. Thus, m_g^ℓ is optimal by Lemma B.1. Altogether, the preceding implies that (y_g^ℓ, m_g^ℓ) satisfies (13), as desired.

To check voter strategies, first notice that $a_\ell(y_g^\ell, m_g^\ell) = 1$ and $y_g^\ell = y_\ell^* \in A(r(y^*, z^*))$ for all $\ell \in N^\ell$. Moreover, $z_\ell = z_\ell^* \in A(r(y^*, z^*))$ for all $\ell \in N^\ell$. Thus, voter i's continuation value under σ is $V_i(\sigma) = \sum_{\ell \in N^\ell} \rho_\ell[\alpha_\ell u_i(y_\ell^*) + (1-\alpha_\ell)u_i(z_\ell^*)] = r_i(y^*, z^*)$. Therefore each voter's strategy satisfies (17), as desired.

To check committee member strategies, there are two cases. First, if $\hat{x}_\ell \in A(r(y^*, z^*))$ then $z_\ell = \hat{x}_\ell$ is clearly optimal. Next, consider $\hat{x}_\ell \notin A(r(y^*, z^*))$. Without loss of generality, assume $\hat{x}_\ell < \underline{x}(r(y^*, z^*))$, which implies $z_\ell = \underline{x}(r(y^*, z^*)$. Define

$$x^{y^*} = (1-\delta)q + \delta \sum_{i \in N^\ell} \rho_i \bigg(\alpha_i y_i^* + (1-\alpha_i) z_\ell \bigg), \tag{23}$$

which is the mean of the continuation distribution if policy is rejected under the proposed strategy profile. Under our maintained assumptions, Jensen's inequality implies $u_i(x^{y^*}) > (1-\delta)u_i(q) + \delta V_i(\sigma)$ for all $i \in N^v$. Thus, $x^{y^*} \in \text{int} A(r(y^*, z^*))$, which implies $z_\ell < x^{y^*}$.

Under the proposed strategy profile, if policy does not pass in a given period then ℓ's continuation value is equivalent to

$$\tilde{V}_\ell(r(y^*, z^*)) = \Bigg(\rho_\ell u_\ell(z_\ell) + \sum_{i \in N^\ell \setminus \{\ell\}} \rho_i[\alpha_i u_\ell(y_i^*) + (1-\alpha_i) u_\ell(z_i^*)] \Bigg). \tag{24}$$

Thus, ℓ's dynamic payoff from proposing a policy that is rejected is $(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(r(y^*, z^*))$, which is equivalent to ℓ's expected utility from a lottery with the following continuation distribution:

$$(1-\delta)q + \delta \Bigg(\rho_\ell z_\ell + \sum_{i \in N^\ell \setminus \{\ell\}} \rho_i[\alpha_i y_i^* + (1-\alpha_i) z_i^*] \Bigg). \tag{25}$$

Let x^{z_ℓ} denote the the mean of (25). Under our maintained assumptions, Jensen's inequality implies $u_\ell(x^{z_\ell}) > (1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(r(y^*, z^*))$. By $z_\ell < x^{y^*}$ and $z_\ell \leq y_\ell^*$, it follows that $z_\ell \leq x^{z_\ell}$. Strict concavity of u_ℓ implies $u_\ell(z_\ell) \geq u_\ell(x^{z_\ell}) > (1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(r(y^*, z^*))$. Thus, ℓ does not have a profitable deviation to $x \notin A(r(y^*, z^*))$ and $z_\ell = \underline{x}(r(y^*, z^*))$ is optimal in this case.

To check that $a_\ell(y, m)$ is optimal for all $(y, m) \in Z$ for each $\ell \in N^L$, note that ℓ's expected dynamic payoff from rejecting g_ℓ's offer is $u_\ell(z_\ell)$ under σ. Thus, ℓ weakly prefers to accept any offer (y, m) such that $y \in A(r(y^*, z^*))$ if and only if $u_\ell(y) + m \geq u_\ell(z_\ell)$.

If $y \notin A(r(y^*, z^*))$, then ℓ weakly prefers to accept (y, m) if and only if $(1-\delta)u_\ell(q) + \delta[r_\ell(y^*, z^*) + \rho_\ell \alpha_\ell m_g^\ell] + m \geq u_\ell(z_\ell)$. Thus, a_ℓ satisfies (15) for all (y, m), as desired.

□

Equilibrium Analysis

Appendix B shows that every mixed strategy legislative lobbying equilibrium is equivalent in outcome distribution to a no-delay pure strategy legislative lobbying equilibrium with deferential voting and deferential acceptance. The rest of the analysis focuses on these equilibria and we drop the qualifiers, simply referring to *equilibria*.

For convenience, define

$$\hat{y}_\ell = \arg\max_{y \in X} u_{g_\ell}(y) + u_\ell(y). \tag{26}$$

Notice that $\hat{y}_\ell$ is uniquely defined because u_{g_ℓ} and u_ℓ are strictly concave and X is compact and non-empty. In particular, $\hat{y}_\ell$ satisfies the first order condition

$$\frac{\partial u_{g_\ell}(x)}{\partial x} + \frac{\partial u_\ell(x)}{\partial x} = 0. \tag{27}$$

Since u is quadratic, the unique solution to (27) is $\hat{y}_\ell = \frac{\hat{x}_{g_\ell} + \hat{x}_\ell}{2}$. Furthermore, $\hat{y}_\ell$ does not depend on ℓ's reservation value, $\tilde{U}_\ell(z_\ell; \sigma)$.

Recall that $u_\ell(z_\ell)$ is ℓ's expected dynamic payoff in equilibrium, conditional on rejecting g_ℓ's offer. By (13), y_g^ℓ solves

$$\max_{y \in A(\sigma)} u_{g_\ell}(y) + u_\ell(y) - u_\ell(z_\ell) \tag{28}$$

in equilibrium, which implies that y_g^ℓ is equivalent to

$$\arg\max_{y \in A(\sigma)} u_{g_\ell}(y) + u_\ell(y), \tag{29}$$

because $u_\ell(z_\ell)$ is constant in y. If $\hat{y}_\ell \in A(\sigma)$, then $y_g^\ell = \hat{y}_\ell$. Otherwise, strict concavity of the objective function in (29) implies y_g^ℓ is equal to the boundary of $A(\sigma)$ that is closest to $\hat{y}_\ell$. The preceding discussion applies to every equilibrium, and thus there is a strong connection to equilibrium behavior in the setting studied by Cho and Duggan (2003).

The following proposition establishes part 3 of Proposition 1.

Proposition 1.3. *Every stationary legislative lobbying equilibrium has the same* *outcome distribution.*

Proof. Let σ and σ' be stationary legislative lobbying equilibria. It suffices to show that $(y_g, m_g) = (y'_g, m'_g)$ for all $g \in N^G$ and $z_\ell = z'_\ell$ for all $\ell \in N^L$. Assume $y_{g_\ell} \neq y'_{g_\ell}$ or $z_\ell \neq z'_\ell$ for some $\ell \in N^L$. An argument analogous to that of Proposition 1 in Cho and Duggan (2003) establishes a contradiction. Since σ and σ' are both no-delay, it follows that $A(\sigma) = A(\sigma')$. Thus, ℓ's expected dynamic payoff from rejecting g_ℓ's offer is equal to $u_\ell(z_\ell)$ under both σ and σ'. Lemma B.1 implies $m^\ell_g = u_\ell(y^\ell_g) - u_\ell(z_\ell)$ in both σ and σ'. Therefore $(y_{g_\ell}, m_{g_\ell}) = (y'_{g_\ell}, m'_{g_\ell})$ and $z_\ell = z'_\ell$, as desired. □

Comparative Statics on Lobbying Expenditures

Given a distribution of proposal power, ρ, and a distribution of access probabilities, α, let the median legislator's *unconstrained extremism lottery* under (ρ, α) be the lottery that puts probability $\rho_j \alpha_j$ on $|\hat{x}_M - \hat{y}_j|$ and probability $\rho_j(1 - \alpha_j)$ on $|\hat{x}_M - \hat{x}_j|$ for each $j \in N^L$. Say that *legislative extremism* under (ρ, α) is lower than under (ρ', α') if M's unconstrained extremism lottery associated with (ρ', α') first order stochastically dominates M's unconstrained extremism lottery induced by (ρ, α).[49]

Proposition 2. *For all committee members $\ell \in N^L$, if legislative extremism increases, holding $\hat{x}_\ell$ and $\hat{x}_{g_\ell}$ constant, then g_ℓ's equilibrium transfer weakly increases.*

Proof. Step 1: I first show that increasing legislative extremism expands the social acceptance set. Consider the unconstrained extremism lotteries (ρ, α) and (ρ', α'). Let σ and σ' denote the respective equilibrium corresponding to each lottery. Finally, assume that extremism is lower under (ρ, α) than (ρ', α').

The equilibrium characterization implies that for all $\ell \in N^L$, z_ℓ is equal to $\hat{x}_\ell$ or the boundary of $A(\sigma)$ closest to $\hat{x}_\ell$. Similarly, $y^\ell_{g_\ell}$ is equal to $\hat{y}_\ell$ or the boundary of $A(\sigma)$ closest to $\hat{y}_\ell$. An analogous characterization applies to σ'. Since extremism is lower under (ρ, α), it follows that for all $x \in A(\sigma)$, the probability of proposals closer to $\hat{x}_M$ than x is weakly greater under (ρ, α) than under (ρ', α'). Thus, the probability of proposals weakly further from $\hat{x}_M$ than $\overline{x}(\sigma)$ is weakly greater under (ρ', α') than under (ρ, α). Together, these two observations imply that $V_M(\sigma) \geq V_M(\sigma')$. It follows that $A(\sigma) \subseteq A(\sigma')$.

[49] Here, the unconstrained extremism lottery (ρ', α') *first order stochastically dominates* the unconstrained extremism lottery (ρ, α) if: (i) for all $x \in X$, (ρ', α') puts weakly greater probability on x' such that $|\hat{x}_M - x'| \geq |\hat{x}_M - x|$ and (i) for some $x \in X$, (ρ', α') puts strictly greater probability on x' such that $|\hat{x}_M - x'| \geq |\hat{x}_M - x|$.

Step 2: Let σ denote an equilibrium, where the dependence on legislative extremism is suppressed to spare notation. Step 1 implies that $\underline{x}(\sigma)$ is weakly decreasing in legislative extremism, and symmetrically $\overline{x}(\sigma)$ is weakly increasing. Thus, $A(\sigma)$ weakly expands as legislative extremism increases. There are two cases.

Case 1. Consider $\ell \in N^L$ such that $\hat{x}_\ell \in A(\sigma)$, which implies $z_\ell = \hat{x}_\ell$. There are two subcases.

First, assume $\hat{y}_\ell \in A(\sigma)$, which implies $y_g^\ell = \hat{y}_\ell$. Lemma B.1 and (13) together imply $m_g^\ell = u_\ell(\hat{x}_\ell) - u_\ell(y_g^\ell)$. Since $A(\sigma)$ expands as legislative extremism increases, it follows that z_ℓ and y_g^ℓ are constant as legislative extremism increases. Thus, m_g^ℓ is constant.

Next, assume $\hat{y}_\ell \notin A(\sigma)$. Since $\hat{x}_\ell \in A(\sigma)$, this requires $\hat{x}_{g_\ell} \notin [\underline{x}(\sigma), \overline{x}(\sigma)]$. Without loss of generality, assume $\hat{x}_{g_\ell} > \overline{x}(\sigma)$. Then $\hat{x}_\ell \in A(\sigma)$ and $\hat{y}_\ell \notin A(\sigma)$ imply $\hat{y}_\ell > \overline{x}(\sigma)$. Thus, $z_\ell = \hat{x}_\ell$ and $y_g^\ell = \overline{x}(\sigma)$. By Lemma B.1 and (13), we have $m_g^\ell = u_\ell(\hat{x}_\ell) - u_\ell(\overline{x}(\sigma))$. Because $A(\sigma)$ expands as legislative extremism increases, $y_g^\ell = \overline{x}(\sigma)$ is increasing in legislative extremism and z_ℓ is constant. It follows that m_g^ℓ increases in legislative extremism.

Case 2. Consider $\ell \in N^L$ such that $\hat{x}_\ell \notin A(\sigma)$. Without loss of generality, assume $\hat{x}_\ell > \hat{x}_M$, which implies $\hat{x}_\ell > z_\ell = \overline{x}(\sigma)$. There are three subcases.

First, assume $\hat{y}_\ell < \underline{x}(\sigma)$, which implies $y_g^\ell = \underline{x}(\sigma)$. By Lemma B.1 and (13), $m_g^\ell = u_\ell(\overline{x}(\sigma)) - u_\ell(\underline{x}(\sigma))$. It follows that m_g^ℓ increases in legislative extremism because $\overline{x}(\sigma)$ increases in legislative extremism, $\underline{x}(\sigma)$ decreases in legislative extremism, and $\underline{x}(\sigma) < \overline{x}(\sigma) < \hat{x}_\ell$.

Second, assume $\hat{y}_\ell \in A(\sigma)$, which implies $y_g^\ell = \hat{y}_\ell$ and y_g^ℓ is constant as legislative extremism increases. An argument symmetric to the second subcases of Case 1 implies that m_g^ℓ increases in legislative extremism.

Finally, assume $\hat{y}_\ell \geq \overline{x}(\sigma)$, which implies $y_g^\ell = \overline{x}(\sigma)$. By Lemma B.1 and (13), $m_g^\ell = u_\ell(\overline{x}(\sigma)) - u_\ell(\overline{x}(\sigma)) = 0$, which is constant in legislative extremism.

Altogether, the preceding argument shows that m_g^ℓ is weakly increasing in legislative extremism, as desired. □

Before proving Proposition 3, I define useful notation to indicate whether or not proposals are in the interior of the acceptance set, $A(\sigma)$. First, let C_j denote the indicator function that takes the value 1 if $\hat{x}_j \in \text{int}A(\sigma)$ and 0 otherwise. Thus, C_j indicates whether z_j is constrained by $A(\sigma)$. Similarly, let $\tilde{C}_j = 1$ if $\hat{y}_j \in \text{int}A(\sigma)$ and take the value 0 otherwise, so that $\tilde{C}_j$ indicates whether y_g^ℓ is constrained by $A(\sigma)$.

Proposition 3. *For all committee members $\ell \in N^L$, increasing the stakes of bargaining, $|\hat{x}_M - q|$, weakly increases g_ℓ's equilibrium transfer.*

Proof. Let σ denote an equilibrium. The lower bound of $A(\sigma)$ satisfies

$$u_M(\underline{x}(\sigma)) = \frac{(1-\delta)u_M(q) + \delta\sum_{j\in N^L}\rho_j\Big[C_j(1-\alpha_j)u_M(\hat{x}_j) + \tilde{C}_j\alpha_j u_M(\hat{y}_j)\Big]}{1-\delta\sum_{j\in N^\ell}\rho_j[(1-C_j)(1-\alpha_j)+(1-\tilde{C}_j)\alpha_j]}, \tag{30}$$

and similarly for the upper bound, $\overline{x}(\sigma)$. The right side of (30) is strictly decreasing in $|\hat{x}_M - q|$, which implies that $\underline{x}(\sigma)$ decreases in $|\hat{x}_M - q|$ and symmetrically $\overline{x}(\sigma)$ is increases. Thus, $A(\sigma)$ expands as $|\hat{x}_M - q|$ increases.

An argument analogous to that of Proposition 2 implies that m_g^ℓ is weakly increasing in $|\hat{x}_M - q|$, as desired. □

Endogenous Access

Throughout this section, I focus on an arbitrary $\ell \in N^L$ with associated interest group g_ℓ. For convenience, I refer to the group as g throughout the analysis. Recall $\hat{y}_\ell = \frac{\hat{x}_g+\hat{x}_\ell}{2}$. The results in this section fix $\hat{x}_g$ and vary $\hat{x}_\ell$. Thus, $\hat{x}_\ell$ pins down $\hat{y}_\ell$ and it is convenient to condition on $\hat{x}_\ell$ and α_ℓ directly, and suppress the dependence on $\tilde{x}_{-\ell}$ and $\alpha_{-\ell}$ to spare notation. In particular, let $\sigma(\hat{x}_\ell, \alpha_\ell)$ denote an equilibrium given $\hat{x}_\ell$ and α_ℓ. Let $A(\sigma(\hat{x}_\ell, \alpha_\ell))$ denote the corresponding social acceptance set. For convenience, let $A(\sigma(\hat{x}_g))$ denote the equilibrium acceptance set if $\hat{x}_\ell = \hat{x}_g$, which is constant in α_ℓ. Finally, let $\underline{x}(\hat{x}_\ell, \alpha_\ell)$ and $\overline{x}(\hat{x}_\ell, \alpha_\ell)$ denote the lower and upper bounds, respectively, of $A(\sigma(\hat{x}_\ell, \alpha_\ell))$.

Lemma 1. *For all $\ell \in N^L$, there exist cutpoints $\underline{x}_\ell$ and $\overline{x}_\ell$ satisfying $\underline{x}_\ell < \hat{x}_M < \overline{x}_\ell$ such that $\hat{x}_g \in intA(\sigma(\hat{x}_g))$ if and only if $\hat{x}_g \in (\underline{x}_\ell, \overline{x}_\ell)$.*

Proof. Consider $\ell \in N^L$ with associated interest group $g \in N^G$. The proof proceeds in three parts. Part 1 defines $\underline{x}_\ell$ and $\overline{x}_\ell$. Part 2 demonstrates that $\hat{x}_g \in (\underline{x}_\ell, \overline{x}_\ell)$ implies $\hat{x}_g \in \text{int}A(\sigma(\hat{x}_g))$. Part 3 shows that $\hat{x}_g \notin (\underline{x}_\ell, \overline{x}_\ell)$ implies $\hat{x}_g \notin \text{int}A(\sigma(\hat{x}_g))$.

Part 1. Theorem 7 of Banks and Duggan (2006a) implies that $q \notin A(\sigma)$. For $j \neq \ell$, let C_j^q take the value of 1 if $\hat{x}_j \in \text{int}A(\sigma(q))$ and 0 otherwise. Similarly, let $\tilde{C}_j^q$ be equal to 1 if $\hat{y}_j \in \text{int}A(\sigma(q))$ and 0 otherwise. Let $\underline{x}_\ell$ and $\overline{x}_\ell$ denote the respective upper and lower solutions of

$$u_M(x) = \frac{(1-\delta)u_M(q) + \delta\sum_{j\neq\ell}\rho_j\Big[C_j^q(1-\alpha_j)u_M(\hat{x}_j) + \tilde{C}_j^q\alpha_j u_M(\hat{y}_j)\Big]}{1-\delta\Big(\rho_\ell + \sum_{j\neq\ell}\rho_j[(1-C_j^q)(1-\alpha_j)+(1-\tilde{C}_j^q)\alpha_j]\Big)}.$$

Notice that $\delta \in (0,1)$ and $\hat{x}_M \neq q$ imply $\underline{x}_\ell < \hat{x}_M < \overline{x}_\ell$.

Part 2. I now show that $\hat{x}_g \in (\underline{x}_\ell, \overline{x}_\ell)$ implies $\hat{x}_g \in \text{int}A(\sigma(\hat{x}_g))$. For a contradiction, assume $\hat{x}_g \in (\underline{x}_\ell, \overline{x}_\ell)$ and $\hat{x}_g \notin \text{int}A(\sigma(\hat{x}_g))$. Without loss of generality, assume $\hat{x}_g \leq \underline{x}(\sigma(\hat{x}_g))$. Since $\hat{x}_g > \underline{x}_\ell$, we must have $A(\sigma(\hat{x}_g)) \subset [\underline{x}_\ell, \overline{x}_\ell] = A'$. An argument analogous to the proof of Proposition 1 in Cho and Duggan (2003) shows a contradiction.

Part 3. Next, I establish that if $\hat{x}_g \notin (\underline{x}_\ell, \overline{x}_\ell)$ then $A(\sigma(\hat{x}_g)) = [\underline{x}_\ell, \overline{x}_\ell]$, which implies $\hat{x}_g \notin \text{int}A(\sigma(\hat{x}_g))$. Assume $\hat{x}_g \notin \text{int}A(\sigma(\hat{x}_g))$ and $A(\sigma(\hat{x}_g)) \neq [\underline{x}_\ell, \overline{x}_\ell]$. An argument analogous to the proof of Proposition 1 in Cho and Duggan (2003) establishes a contradiction.

Together, Parts 2 and 3 establish the desired result. □

Corollary 3. *Assume $\hat{x}_g \in (\underline{x}_\ell, \overline{x}_\ell)$. There exists $\tilde{x}$ that is strictly more centrist than $\hat{x}_g$ such that if (i) ℓ is aligned with g and (ii) $\hat{x}_\ell$ is more extreme than $\tilde{x}$, then $\hat{x}_g \in A(\sigma(\hat{x}_\ell, \alpha_g^\ell))$ for all $\alpha_g^\ell \in [0,1]$.*

Recall Proposition 4 from the text:

Proposition 4 *Assume the interest group, g, is a non-ideologue and legislator ℓ is aligned with g.*

1. *If ℓ is more centrist than g, but not too centrist, then g prefers to forgo access.*
2. *If ℓ is more extreme than g, but not too extreme, then g prefers positive access.*
3. *If ℓ is sufficiently more extreme than g, then g is indifferent over access.*

Next, I state and prove the analogous result for the more general setting.

Proposition A.4 *Assume $\hat{x}_g \in (\underline{x}_\ell, \overline{x}_\ell)$ and that there exists $j \in N^L$ such that either $\alpha_j < 1$ and $\hat{x}_j \notin A(\sigma(\hat{x}_g))$, or $\alpha_j > 0$ and $\hat{y}_j \notin A(\sigma(\hat{x}_g))$. If $\hat{x}_g > \hat{x}_M$, then there exist x' and x'' satisfying $x' < \hat{x}_g < \overline{x}_\ell < x''$ such that, ex ante,*

1. *if $\hat{x}_\ell \in [x', \hat{x}_g)$, then g prefers to have no access to ℓ;*
2. *if $\hat{x}_\ell \in (\hat{x}_g, x'')$, then g prefers to have positive access to ℓ; and*
3. *if $\hat{x}_\ell \geq x''$, then g is indifferent over its access to ℓ.*

A symmetric result holds if $\hat{x}_g < \hat{x}_M$.

Proof. Consider $\ell \in N^L$ with associated interest group $g \in N^G$. Assume $\hat{x}_M < \hat{x}_g < \overline{x}_\ell$. Also, assume there exists $j \in N^L$ such that either either $\alpha_j < 1$ and $\hat{x}_j \notin A(\sigma(\hat{x}_g))$, or

$\alpha_j > 0$ and $\hat{y}_j \notin A(\sigma(\hat{x}_g))$. For convenience, normalize $\hat{x}_M = 0$. I prove each part of the proposition in order.

1. Since $\hat{x}_g \in (\hat{x}_M, \overline{x}_\ell)$, Corollary 3 implies the existence of $\tilde{x} \in [\hat{x}_M, \hat{x}_g)$ such that $\hat{x}_g \in (\underline{x}(\hat{x}_\ell, 0), \overline{x}(\hat{x}_\ell, 0))$ for all $\hat{x}_\ell > \tilde{x}$. Consider $\hat{x}_\ell \in (\tilde{x}, \hat{x}_g)$, which implies $\hat{y}_\ell \in (\tilde{x}, \hat{x}_g)$. It follows that $\hat{x}_g \in A(\sigma(\hat{x}_\ell, \alpha_\ell))$ for all $\alpha_\ell \in [0,1]$, and therefore $z_\ell = \hat{x}_\ell \in A(\sigma(\hat{x}_\ell, \alpha_\ell))$ and $y_g^\ell = \hat{y}_\ell \in A(\sigma(\hat{x}_\ell, \alpha_\ell))$ for all $\alpha_\ell \in [0,1]$.

The proof of part 1 proceeds in three steps. Step 1 expresses g's ex ante expected payoff. Step 2 shows that one component of g's ex ante expected utility is strictly increasing in α_ℓ, and that the rest of the expression is strictly decreasing in α_ℓ. Step 3 uses Step 2 to show that if $\hat{x}_\ell$ is sufficiently close to $\hat{x}_g$, then g's ex ante expected payoff is strictly decreasing in α_ℓ. This implies the existence of $x' < \hat{x}_g$ such that g strictly prefers $\alpha_\ell = 0$ if $\hat{x}_\ell \in (x', \hat{x}_g)$.

Step 1: To ease the expression of g's ex ante expected payoffs, for each committee member $j \in N^L$ define the function

$$E_j^{LB}(\hat{x}_\ell, \alpha_\ell) = \begin{cases} 1 & \text{if } \hat{x}_j \leq \underline{x}(\sigma(\hat{x}_\ell, \alpha_\ell)) \\ 0 & \text{else,} \end{cases}$$

which indicates whether j proposes the lower bound of $A(\sigma(\hat{x}_\ell, \alpha_\ell))$ in the absence of a lobby payment, that is $z_j = \underline{x}(\hat{x}_\ell, \alpha_\ell)$. Next, let $E_j^{UB}(\hat{x}_\ell, \alpha_\ell)$ be the function indicating whether $z_j = \overline{x}(\hat{x}_\ell, \alpha_\ell)$. Finally, let the function $C_j(\hat{x}_\ell, \alpha_\ell)$ indicate whether $z_j \in \text{int}A(\sigma(\hat{x}_\ell, \alpha_\ell))$. Define $\tilde{E}_j^{LB}(\hat{x}_\ell, \alpha_\ell)$, $\tilde{E}_j^{UB}(\hat{x}_\ell, \alpha_\ell)$, and $\tilde{C}_j(\hat{x}_\ell, \alpha_\ell)$ analogously for $y_{g_j}^j$. Let $I_g^j \in \{0,1\}$ indicate whether g is associated with j.

Thus, g's ex ante expected payoff from α_ℓ access to ℓ is equivalent to

$$\begin{aligned} &\rho_\ell \Bigg(\alpha_\ell \Big[u_g(\hat{y}_\ell) + u_\ell(\hat{y}_\ell) - u_\ell(\hat{x}_\ell) \Big] + (1-\alpha_\ell)\, u_g(\hat{x}_\ell) \Bigg) \\ &\quad + \sum_{j \neq \ell} \rho_j \Bigg\{ \Big[\alpha_j\, \tilde{E}_j^{LB}(\hat{x}_\ell, \alpha_\ell) + (1-\alpha_j)\, E_j^{LB}(\hat{x}_\ell, \alpha_\ell) \Big]\, u_g(\underline{x}(\hat{x}_\ell, \alpha_\ell)) \\ &\qquad + \Big[\alpha_j\, \tilde{E}_j^{UB}(\hat{x}_\ell, \alpha_\ell) + (1-\alpha_j)\, E_j^{UB}(\hat{x}_\ell, \alpha_\ell) \Big]\, u_g(\overline{x}(\hat{x}_\ell, \alpha_\ell)) \\ &\qquad + \alpha_j \Big[\tilde{C}_j(\hat{x}_\ell, \alpha_\ell)\, u_g(\hat{y}_j) - I_g^j\, m_g^j(\hat{x}_\ell, \alpha_\ell) \Big] + (1-\alpha_j)\, C_j(\hat{x}_\ell, \alpha_\ell)\, u_g(\hat{x}_j) \Bigg\}. \qquad (31) \end{aligned}$$

Step 2: I now break (31) into two components. One component is increasing in α_ℓ, while the other component decreases in α_ℓ.

The first component of (31) is

$$\rho_\ell \Bigg(\alpha_\ell \Big[u_g(\hat{y}_\ell) + u_\ell(\hat{y}_\ell) - u_\ell(\hat{x}_\ell) \Big] + (1-\alpha_\ell)\, u_g(\hat{x}_\ell) \Bigg), \tag{32}$$

which increases in α_ℓ because the partial derivative of (32) with respect to α_ℓ is equivalent to $\frac{\rho_\ell}{2}(\hat{x}_g - \hat{x}_\ell)^2 > 0$.

Next, I show that the second component of (31),

$$\begin{aligned} \sum_{j \neq \ell} \rho_j \Bigg\{ & \Big[\alpha_j\, \tilde{E}_j^{LB}(\hat{x}_\ell, \alpha_\ell) + (1-\alpha_j)\, E_j^{LB}(\hat{x}_\ell, \alpha_\ell) \Big]\, u_g(\underline{x}(\hat{x}_\ell, \alpha_\ell)) \\ & + \Big[\alpha_j\, \tilde{E}_j^{UB}(\hat{x}_\ell, \alpha_\ell) + (1-\alpha_j)\, E_j^{UB}(\hat{x}_\ell, \alpha_\ell) \Big]\, u_g(\overline{x}(\hat{x}_\ell, \alpha_\ell)) \\ & + \alpha_j \Big[\tilde{C}_j(\hat{x}_\ell, \alpha_\ell)\, u_g(\hat{y}_j) - I_g^j\, m_g^j(\hat{x}_\ell, \alpha_\ell) \Big] + (1-\alpha_j)\, C_j(\hat{x}_\ell, \alpha_\ell)\, u_g(\hat{x}_j) \Bigg\} \end{aligned} \tag{33}$$

is strictly decreasing in α_ℓ. Since $\hat{x}_\ell \in (\hat{x}_M, \hat{x}_g)$, it follows that $\underline{x}(\hat{x}_\ell, \alpha_\ell)$ is decreasing in α_ℓ and symmetrically $\overline{x}(\hat{x}_\ell, \alpha_\ell)$ is decreasing. This implies that $u_g(\underline{x}_\alpha(\hat{x}_\ell))$ and $u_g(\overline{x}_\alpha(\hat{x}_\ell))$ are both decreasing in α_ℓ. Furthermore, it implies that $m_g^j(\hat{x}_\ell, \alpha_\ell)$ weakly increases for all $j \in N_g^L$, by the arguments in Proposition 2. The existence of $j \in N^\ell$ such that either $\alpha_j < 1$ and $\hat{x}_j \notin A(\sigma(\hat{x}_g))$, or $\alpha_j > 0$ and $\hat{y}_j \notin A(\sigma(\hat{x}_g))$, then implies $\sum_{j \neq \ell} \Big[\alpha_j\, \tilde{E}_j^{LB}(\hat{x}_\ell, \alpha_\ell) + (1-\alpha_j)\, E_j^{LB}(\hat{x}_\ell, \alpha_\ell) + \alpha_j\, \tilde{E}_j^{UB}(\hat{x}_\ell, \alpha_\ell) + (1-\alpha_j)\, E_j^{UB}(\hat{x}_\ell, \alpha_\ell) \Big] > 0$. Consequently, (33) is strictly decreasing.

Step 3: To complete the proof, I show that if $\hat{x}_\ell$ is sufficiently close to $\hat{x}_g$ then (32) increases at in α_ℓ at a slower rate than (33) decreases in α_ℓ. This implies that there exists $x' < \hat{x}_g$ such that g strictly prefers $\alpha_\ell = 0$ if $\hat{x}_\ell \in (x', \hat{x}_g)$. Fix $\hat{x}_\ell \in (\tilde{x}, \hat{x}_g)$ and $\alpha_\ell \in [0, 1]$.

First, I define preliminaries used to characterize an upper bound on the partial derivative of (33) with respect to α_ℓ. Define

$$\Gamma(\hat{x}_\ell, \alpha_\ell) = \sum_{j \neq \ell} \rho_j \Bigg\{ \Big[\alpha_j \, \tilde{E}_j^{LB}(\hat{x}_\ell, \alpha_\ell) + (1 - \alpha_j) \, E_j^{LB}(\hat{x}_\ell, \alpha_\ell)\Big] \frac{\partial u_g(\underline{x}(\hat{x}_\ell, \alpha_\ell))}{\partial \underline{x}(\hat{x}_\ell, \alpha_\ell)}$$
$$- \Big[\alpha_j \, \tilde{E}_j^{UB}(\hat{x}_\ell, \alpha_\ell) + (1 - \alpha_j) \, E_j^{UB}(\hat{x}_\ell, \alpha_\ell)\Big] \frac{\partial u_g(\overline{x}(\hat{x}_\ell, \alpha_\ell))}{\partial \overline{x}(\hat{x}_\ell, \alpha_\ell)} - I_g^j \, \alpha_j \, \frac{\partial m_g^j(\hat{x}_\ell, \alpha_\ell)}{\partial \underline{x}(\hat{x}_\ell, \alpha_\ell)} \Bigg\}, \tag{34}$$

and

$$\Gamma = \sum_{j \neq \ell} \rho_j \Bigg\{ \Big[\alpha_j \, \tilde{E}_j^{LB}(\hat{x}_g) + (1 - \alpha_j) \, E_j^{LB}(\hat{x}_g)\Big] \frac{\partial u_g(\underline{x}(\tilde{x}))}{\partial \underline{x}(\tilde{x})}$$
$$- \Big[\alpha_j \, \tilde{E}_j^{UB}(\hat{x}_g) + (1 - \alpha_j) \, E_j^{UB}(\hat{x}_g)\Big] \frac{\partial u_g(\overline{x}(\tilde{x}))}{\partial \overline{x}(\tilde{x})} \Bigg\}, \tag{35}$$

which does not depend on $\hat{x}_\ell$ or α_ℓ.

I claim that $\Gamma < \Gamma(\hat{x}_\ell, \alpha_\ell)$. First, $\hat{x}_\ell \in (\tilde{x}, \hat{x}_g)$ implies $\underline{x}(\hat{x}_g) \leq \underline{x}(\hat{x}_\ell, \alpha_\ell)$. Therefore $\tilde{E}_j^{LB}(\hat{x}_g) \leq \tilde{E}_j^{LB}(\hat{x}_\ell, \alpha_\ell)$ and $E_j^{LB}(\hat{x}_g) \leq E_j^{LB}(\hat{x}_\ell, \alpha_\ell)$ for all $j \neq \ell$. Symmetrically, $\tilde{E}_j^{UB}(\hat{x}_g) \leq \tilde{E}_j^{UB}(\hat{x}_\ell, \alpha_\ell)$ and $E_j^{UB}(\hat{x}_g) \leq E_j^{UB}(\hat{x}_\ell, \alpha_\ell)$ for all $j \neq \ell$ because $\overline{x}(\hat{x}_g) \geq \overline{x}(\hat{x}_\ell, \alpha_\ell)$. Next, $\hat{x}_g > \underline{x}(\tilde{x}) > \underline{x}(\hat{x}_\ell, \alpha_\ell)$ implies $\frac{\partial u_g(\underline{x}(\hat{x}_\ell, \alpha_\ell))}{\partial \underline{x}(\hat{x}_\ell, \alpha_\ell)} > \frac{\partial u_g(\underline{x}(\tilde{x}))}{\partial \underline{x}(\tilde{x})} > 0$ and symmetrically $\hat{x}_g < \overline{x}(\tilde{x}) < \overline{x}(\hat{x}_\ell, \alpha_\ell)$ implies $\frac{\partial u_g(\overline{x}(\hat{x}_\ell, \alpha_\ell))}{\partial \overline{x}(\hat{x}_\ell, \alpha_\ell)} < \frac{\partial u_g(\overline{x}(\tilde{x}))}{\partial \overline{x}(\tilde{x})} < 0$. Finally, $\frac{\partial m_g^j(\hat{x}_\ell, \alpha_\ell)}{\partial \underline{x}(\hat{x}_\ell, \alpha_\ell)} \leq 0$ for all $j \in N_g^L$ by the arguments in Proposition 2.

Additionally, $\Gamma > 0$ because (i) $\hat{x}_g \in (\underline{x}(\tilde{x}), \overline{x}(\tilde{x}))$ implies $\frac{\partial u_g(\underline{x}(\tilde{x}))}{\partial \underline{x}(\tilde{x})} > 0 > \frac{\partial u_g(\overline{x}(\tilde{x}))}{\partial \overline{x}(\tilde{x})}$, and (ii) there exists $j \in N^L$ such that either $\alpha_j < 1$ and $\hat{x}_j \notin A(\sigma(\hat{x}_g))$, or $\alpha_j > 0$ and $\hat{y}_j \notin A(\sigma(\hat{x}_g))$.

For almost all $\alpha_\ell \in [0,1]$, the partial derivative of (33) with respect to α_ℓ satisfies

$$\Gamma(\hat{x}_\ell, \alpha_\ell)\frac{\partial \underline{x}(\hat{x}_\ell, \alpha_\ell)}{\partial \alpha_\ell} < \Gamma \frac{\partial \underline{x}(\hat{x}_\ell, \alpha_\ell)}{\partial \alpha_\ell} \tag{36}$$

$$= \Gamma \frac{\delta \rho_\ell \Big[u_M(\hat{y}_\ell) - u_M(\hat{x}_\ell) \Big]}{2\overline{x}(\hat{x}_\ell, \alpha_\ell)\Big[1 - \delta\Big(\sum_{j \in N^\ell} \rho_j [(1 - C_j(\hat{x}_\ell, \alpha_\ell))(1-\alpha_j) + (1 - \tilde{C}_j(\hat{x}_\ell, \alpha_\ell))\alpha_j] \Big)\Big]} \tag{37}$$

$$< \frac{\delta \rho_\ell \Gamma \Big[u_M(\hat{y}_\ell) - u_M(\hat{x}_\ell) \Big]}{2\overline{x}_\ell} \tag{38}$$

$$= \frac{\delta \rho_\ell \Gamma \Big[\frac{1}{4}(\hat{x}_\ell - \hat{x}_g)(3\hat{x}_\ell + \hat{x}_g) \Big]}{2\overline{x}_\ell} \tag{39}$$

where (36) follows from $\frac{\partial \underline{x}(\hat{x}_\ell, \alpha_\ell)}{\partial \alpha_\ell} < 0$ and $0 < \Gamma < \Gamma(\hat{x}_\ell, \alpha_\ell)$; (37) follows from applying the implicit function theorem to $\underline{x}(\hat{x}_\ell, \alpha_\ell)$, which is possible for almost all $\alpha_\ell \in [0,1]$; (38) follows because (i) $u_M(\hat{x}_\ell) > u_M(\hat{y}_\ell)$, (ii) $\overline{x}_\ell > \overline{x}(\hat{x}_\ell, \alpha_\ell) > 0$, and (iii) $\delta \sum_{j \in N^\ell} \rho_j [(1 - C_j(\hat{x}_g))(1-\alpha_j) + (1 - \tilde{C}_j(\hat{x}_g))\alpha_j] \in (0,1)$; and (39) follows from simplifying because (i) u_M is quadratic, (ii) $\hat{x}_M = 0$, and (iii) $\hat{y}_\ell = \frac{\hat{x}_g + \hat{x}_\ell}{2}$.

Recall from Step 2 that the partial derivative of (32) with respect to α_ℓ is $\frac{\rho_\ell}{2}(\hat{x}_g - \hat{x}_\ell)^2$. Thus, (39) implies that a sufficient condition for (31) to strictly decrease in α_ℓ is

$$0 > \frac{\rho_\ell}{2}(\hat{x}_g - \hat{x}_\ell)^2 + \frac{\delta \rho_\ell \Gamma}{2\overline{x}_\ell}\left[\frac{1}{4}(\hat{x}_\ell - \hat{x}_g)(3\hat{x}_\ell + \hat{x}_g)\right] \tag{40}$$

$$0 > (\hat{x}_g - \hat{x}_\ell) - \frac{\delta\Gamma}{4\overline{x}_\ell}(3\hat{x}_\ell + \hat{x}_g) \tag{41}$$

$$\hat{x}_\ell > \hat{x}_g \left(\frac{4\overline{x}_\ell - \delta\Gamma}{4\overline{x}_\ell + 3\delta\Gamma} \right). \tag{42}$$

Define $x' = \max\left\{ \tilde{x}, \hat{x}_g \left(\frac{4\overline{x}_\ell - \delta\Gamma}{4\overline{x}_\ell + 3\delta\Gamma} \right) \right\}$, which satisfies $x' < \hat{x}_g$ because $\tilde{x} < \hat{x}_g$ and $\delta\Gamma > 0$ implies $\frac{4\overline{x}_\ell - \delta\Gamma}{4\overline{x}_\ell + 3\delta\Gamma} < 1$. Thus, there exists $x' \in [\tilde{x}, \hat{x}_g)$ such that (31) strictly decreases in α_ℓ if $\hat{x}_\ell \in (x', \hat{x}_g)$. It follows that if $\hat{x}_\ell \in (x', \hat{x}_g)$, then g strictly prefers $\alpha_\ell = 0$, as desired.

2. Assume $\hat{x}_\ell \in (\hat{x}_g, x'')$, where $x'' = 2\overline{x}_\ell - \hat{x}_g$. The proof for this part establishes that g's ex ante expected utility is strictly increasing in α_ℓ at $\alpha_\ell = 0$, which implies that g strictly prefers to have positive access to ℓ.

Under the maintained assumptions, $\hat{x}_g \in (\underline{x}(\hat{x}_\ell, 0), \underline{x}(\hat{x}_\ell, 0))$ and $\hat{y}_\ell \in (\hat{x}_g, \overline{x}(\hat{x}_\ell, 0))$. Consequently, if α_ℓ is sufficiently small then $\underline{x}(\hat{x}_\ell, \alpha_\ell)$ is strictly increasing in α_ℓ and symmetrically $\overline{x}(\hat{x}_\ell, \alpha_\ell)$ is strictly increasing. Thus, $u_g(\underline{x}(\hat{x}_\ell, \alpha_\ell))$ and $u_g(\overline{x}(\hat{x}_\ell, \alpha_\ell))$ are strictly increasing for sufficiently small α_ℓ. Moreover, the argument in Proposition 2 implies that $m_g^j(\hat{x}_\ell, \alpha_\ell)$ weakly decreases in α_ℓ for all $j \in N_g^L \backslash \{\ell\}$. There are two cases.

Case 1: If $\hat{x}_\ell < \overline{x}_\ell$, then g's ex ante expected payoff is given by (31) for sufficiently small α_ℓ. Therefore the first component of (31), as expressed in (32), is strictly increasing in α_ℓ at $\alpha_\ell = 0$. Next, the preceding paragraph implies that the second component of (31), expressed in (33), is strictly increasing in α_ℓ at $\alpha_\ell = 0$. Therefore (31) is strictly increasing in α_ℓ at $\alpha_\ell = 0$. It follows that g strictly prefers $\alpha_\ell > 0$.

Case 2: If $\hat{x}_\ell > \overline{x}_\ell$, then $\overline{x}(\hat{x}_\ell, 0) = \overline{x}_\ell$ and $\underline{x}(\hat{x}_\ell, 0) = \underline{x}_\ell$. Thus, g's ex ante expected payoff from $\alpha_\ell = 0$ is

$$\rho_\ell \Bigg(\alpha_\ell \Big[u_g(\hat{y}_\ell) + u_\ell(\hat{y}_\ell) - u_\ell(\overline{x}_\ell) \Big] + (1-\alpha_\ell)\, u_g(\overline{x}_\ell) \Bigg)$$

$$+ \sum_{j \neq \ell} \rho_j \Bigg\{ \Big[\alpha_j\, \tilde{E}_j^{LB}(\hat{x}_\ell, 0) + (1-\alpha_j)\, E_j^{LB}(\hat{x}_\ell, 0) \Big] u_g(\underline{x}_\ell)$$

$$+ \Big[\alpha_j\, \tilde{E}_j^{UB}(\hat{x}_\ell, 0) + (1-\alpha_j)\, E_j^{UB}(\hat{x}_\ell, 0) \Big] u_g(\overline{x}_\ell)$$

$$+ \alpha_j\, \tilde{C}_j(\hat{x}_\ell, 0)\, u_g(\hat{y}_j) + (1-\alpha_j)\, C_j(\hat{x}_\ell, 0)\, u_g(\hat{x}_j) - I_g^j\, \alpha_j\, m_g^j(\hat{x}_\ell, \alpha_\ell) \Bigg\}. \quad (43)$$

The partial derivative of the first component of (43) with respect to α_ℓ at $\alpha_\ell = 0$ is proportional to

$$u_g(\hat{y}_\ell) + u_\ell(\hat{y}_\ell) - u_\ell(\overline{x}_\ell) - u_g(\overline{x}_\ell) + \frac{\partial \overline{x}(\hat{x}_\ell, 0)}{\partial \alpha_\ell} u_g(\overline{x}_\ell) \quad (44)$$

$$> u_g(\hat{y}_\ell) + u_\ell(\hat{y}_\ell) - u_\ell(\overline{x}_\ell) - u_g(\overline{x}_\ell) \quad (45)$$

$$> 0, \quad (46)$$

where (45) follows because $u_g(\overline{x}_\ell) < 0$ and $\frac{\partial \overline{x}(\hat{x}_\ell, 0)}{\partial \alpha_\ell}|_{\alpha_\ell = 0} < 0$; and (46) follows because u is quadratic and $\hat{x}_g < \hat{y}_\ell = \frac{\hat{x}_g + \hat{x}_\ell}{2} < \overline{x}_\ell < \hat{x}_\ell$, which implies $u_g(\hat{y}_\ell) - u_g(\overline{x}_\ell) > u_\ell(\overline{x}_\ell) - u_\ell(\hat{y}_\ell)$. Therefore the first component of (43) is strictly increasing in α_ℓ at $\alpha_\ell = 0$. The second component of (43) is identical to the previous case and thus strictly increasing in α_ℓ at $\alpha_\ell = 0$. Thus, (43) is strictly increasing in α_ℓ at $\alpha_\ell = 0$, as desired.

3. Assume $\hat{x}_\ell \geq x''$, where x'' is defined as in Part 2. It follows that $z_\ell = y_g^\ell = \overline{x}(\hat{x}_\ell, \alpha_\ell) = \overline{x}_\ell$ for all $\alpha_\ell \in [0, 1]$. Therefore changing α_ℓ has no effect on g's ex ante expected payoff and g is indifferent, as desired.

□

Recall Proposition 5 from the text:

Proposition 5 *Assume majority party control and that the interest group, g, is a majority-leaning ideologue.*

1. *If legislator ℓ is a majority-leaning ideologue, then g is indifferent over access.*

2. *If ℓ is a majority-leaning non-ideologue, then g prefers positive access.*

Next, I state and prove the analogous result for the more general setting.

Proposition A.5 *Assume $\hat{x}_g \geq \overline{x}_\ell$, and $\hat{x}_j, \hat{y}_j > \underline{x}(\hat{x}_M)$ for all $j \in N^L$. Ex ante,*

1. *if $\hat{x}_\ell \geq \overline{x}_\ell$, then g is indifferent over its access to ℓ; and*

2. *if $\hat{x}_\ell \in [\hat{x}_M, \overline{x}_\ell)$, then g prefers to have positive access to ℓ.*

A symmetric result holds if $\hat{x}_j, \hat{y}_j < \underline{x}(\hat{x}_M)$ for all $j \in N^L$.

Proof. Consider $\hat{x}_g \geq \overline{x}_\ell$. Assume $\hat{x}_j, \hat{y}_j > \underline{x}(\hat{x}_M)$ for all $j \in N^L$.

1. Assume $\hat{x}_\ell \geq \overline{x}_\ell$. An argument analogous to that of part 3 in the proof of Proposition 4 establishes the result.

2. Assume $\hat{x}_\ell \in [\hat{x}_M, \overline{x}_\ell)$. To establish the result, I show that g's ex ante expected utility is strictly increasing in α_ℓ at $\alpha_\ell = 0$.

Under the maintained assumptions, $\hat{x}_\ell \in [\hat{x}_M, \overline{x}(\hat{x}_\ell, 0))$ and $\hat{y}_\ell > \hat{x}_\ell$, which implies $\hat{x}_M \leq z_\ell(\hat{x}_\ell, 0) = \hat{x}_\ell < y_g^\ell(\hat{x}_\ell, 0) \leq \hat{y}_\ell$. Furthermore, no committee member proposes $\underline{x}(\hat{x}_\ell, 0)$ because $\hat{x}_j, \hat{y}_j > \underline{x}(\hat{x}_M)$ for all $j \in N^L$. Thus, g's ex ante expected payoff from $\alpha_\ell = 0$ is

$$\rho_\ell \Bigg(\alpha_\ell \left[u_g(y_g^\ell(\hat{x}_\ell, 0)) + u_\ell(y_g^\ell(\hat{x}_\ell, 0)) - u_\ell(\hat{x}_\ell) \right] + (1 - \alpha_\ell)\, u_g(\hat{x}_\ell) \Bigg)$$
$$+ \sum_{j \neq \ell} \rho_j \Bigg\{ \left[\alpha_j\, \tilde{E}_j^{UB}(\hat{x}_\ell, 0) + (1 - \alpha_j)\, E_j^{UB}(\hat{x}_\ell, 0) \right] u_g(\overline{x}(\hat{x}_\ell, 0))$$
$$+ \alpha_j \left[\tilde{C}_j(\hat{x}_\ell, 0)\, u_g(\hat{y}_j) - I_g^j\, m_g^j(\hat{x}_\ell, 0) \right] + (1 - \alpha_j)\, C_j(\hat{x}_\ell, 0)\, u_g(\hat{x}_j) \Bigg\}. \quad (47)$$

I now use three steps to show that (47) is strictly increasing in α_ℓ at $\alpha_\ell = 0$.

Step 1: First, $\hat{x}_M \leq \hat{x}_\ell < y_g^\ell(\hat{x}_\ell, 0) \leq \hat{y}_\ell$ implies that $y_g^\ell(\hat{x}_\ell, 0)$ weakly increases in α_ℓ. Therefore $u_g(y_g^\ell(\hat{x}_\ell, \alpha_\ell))$ weakly increases and $u_\ell(y_g^\ell(\hat{x}_\ell, \alpha_\ell))$ weakly decreases. Because u is quadratic and $\hat{x}_\ell < y_g^\ell(\hat{x}_\ell, 0) \leq \hat{y}_\ell = \frac{\hat{x}_g + \hat{x}_\ell}{2} < \hat{x}_g$, it follows that $u_g(y_g^\ell(\hat{x}_\ell, \alpha_\ell))$ increases weakly faster than $u_\ell(y_g^\ell(\hat{x}_\ell, \alpha_\ell))$ decreases. Therefore $u_g(y_g^\ell(\hat{x}_\ell, 0)) + u_\ell(y_g^\ell(\hat{x}_\ell, 0)) - u_\ell(\hat{x}_\ell)$ weakly increases in α_ℓ. Furthermore, $\hat{x}_\ell < y_g^\ell(\hat{x}_\ell, 0) \leq \hat{y}_\ell < \hat{x}_g$ also implies $u_g(y_g^\ell(\hat{x}_\ell, 0)) + u_\ell(y_g^\ell(\hat{x}_\ell, 0)) - u_\ell(\hat{x}_\ell) - u_g(\hat{x}_\ell) \geq 0$. Together, this establishes that $\alpha_\ell \left[u_g(y_g^\ell(\hat{x}_\ell, 0)) + u_\ell(y_g^\ell(\hat{x}_\ell, 0)) - u_\ell(\hat{x}_\ell) \right] + (1 - \alpha_\ell)\, u_g(\hat{x}_\ell)$ weakly increases in α_ℓ.

Step 2: Second, $\hat{x}_M \leq z_\ell < y_g^\ell(\hat{x}_\ell, 0) \leq \overline{x}(\hat{x}_\ell, 0)$ implies that $\overline{x}(\hat{x}_\ell, 0)$ strictly increases in α_ℓ. Since $\overline{x}(\hat{x}_\ell, 0) < \hat{x}_g$, it follows that $u_g(\overline{x}(\hat{x}_\ell, 0))$ increases in α_ℓ.

Step 3: Third, Proposition 2 implies that $m_g^j(\hat{x}_\ell, 0)$ weakly increases in α_ℓ for all $j \in N_g^L$. However, $\hat{y}_j > \overline{x}(\hat{x}_\ell, 0)$ for all $j \in N_g^L$ such that $m_g^j(\hat{x}_\ell, 0)$ strictly increases in α_ℓ, which implies that g's lobbying surplus weakly increases in α_ℓ for any such $j \in N_g^L$.

Altogether, it follows that (47) is strictly increasing in α_ℓ at $\alpha_\ell = 0$, as desired. □

Willingness to Pay for Access

The results in this section apply only to the model presented in the text. I first define useful notation. Let $\theta = (\hat{x}, \rho, q, \delta, \alpha)$ denote a vector of parameters. Define $\psi(\hat{x}_g, \theta)$ to be g's ex ante expected utility, where the dependence on $\hat{x}_g$ is made explicit for clarity. To ease notation, let $\psi_\alpha^\ell(\hat{x}_g, \theta)$ denote the partial derivative of $\psi(\hat{x}_g, \theta)$ with respect to g's access to ℓ, evaluated at access level α. Additionally, let $\overline{x}_\alpha = \overline{x}(\hat{x}_\ell, \alpha)$ denote the upper bound of the social acceptance set given $\hat{x}_\ell$ and α. Next, define $\frac{\partial \overline{x}_0}{\partial \alpha} = \frac{\partial \overline{x}_\alpha}{\partial \alpha}|_{\alpha=0}$, $\frac{\partial \overline{x}_0}{\partial \hat{x}_g} = \frac{\partial \overline{x}_\alpha}{\partial \hat{x}_g}|_{\alpha=0}$, and $\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} = \frac{\partial^2 \overline{x}_\alpha}{\partial \alpha \partial \hat{x}_g}|_{\alpha=0}$. Finally, let g's *willingness to acquire access* refer to g's willingness to pay for additional access at $\alpha = 0$, that is $\psi_0^\ell(\hat{x}_g, \theta)$.

Proposition 6. *Assume majority party control and that legislator ℓ is majority-leaning. If either (i) the interest group, g, is more centrist than ℓ, or (ii) g is majority-leaning and more extreme than ℓ, then g's willingness to acquire access weakly decreases as g becomes more similar to ℓ ideologically.*

Proof. Without loss of generality, assume right-party majority control and $\hat{x}_\ell \geq \hat{x}_M$. The proof proceeds in three parts. Part 1 establishes useful properties. Part 2 shows the result if g is more centrist than ℓ. Part 3 shows the result if g is majority-leaning and more extreme than ℓ.

Part 1. For convenience, normalize $\hat{x}_M = 0$. First, g's ex ante expected utility for $\alpha \in [0,1]$ is

$$\psi(\hat{x}_g, \theta) = \rho_\ell \bigg(\alpha[u_g(y) + u_\ell(y) - u_\ell(z_\ell)] + (1-\alpha) u_g(z_\ell) \bigg) + \rho_M u_g(\hat{x}_M) + \rho_R u_g(\overline{x}_\alpha). \tag{48}$$

Thus, g's willingness to acquire access to ℓ is

$$\psi_0^\ell(\hat{x}_g, \theta) = \rho_\ell \bigg(u_g(y) - u_g(z_\ell) + u_\ell(y) - u_\ell(z_\ell) \bigg) + \rho_R \frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \frac{\partial \overline{x}_0}{\partial \alpha}. \tag{49}$$

The partial derivative of $\psi_0^\ell(\hat{x}_g, \theta)$ with respect to $\hat{x}_g$ satisfies

$$\begin{aligned} \frac{\partial \psi_0^\ell(\hat{x}_g, \theta)}{\partial \hat{x}_g} &= \rho_\ell \Bigg\{ \bigg(\frac{\partial u_g(y)}{\partial y} + \frac{\partial u_\ell(y)}{\partial y} \bigg) \frac{\partial y}{\partial \hat{x}_g} + \frac{\partial u_g(y)}{\partial \hat{x}_g} - \frac{\partial u_g(z_\ell)}{\partial \hat{x}_g} \Bigg\} \\ &\quad + \rho_R \bigg(\frac{\partial^2 u_g(\overline{x}_0)}{\partial \overline{x}_0^2} \frac{\partial \overline{x}_0}{\partial \hat{x}_g} \frac{\partial \overline{x}_0}{\partial \alpha} + \frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} \bigg) \qquad (50) \\ &= \rho_\ell \bigg(\frac{\partial u_g(y)}{\partial \hat{x}_g} - \frac{\partial u_g(z_\ell)}{\partial \hat{x}_g} \bigg) + \rho_R \bigg(\frac{\partial^2 u_g(\overline{x}_0)}{\partial \overline{x}_0^2} \frac{\partial \overline{x}_0}{\partial \hat{x}_g} \frac{\partial \overline{x}_0}{\partial \alpha} + \frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} \bigg), \qquad (51) \end{aligned}$$

where (51) follows because either (i) $y = \overline{x}_0$, which implies $\frac{\partial y}{\partial \hat{x}_g} = 0$, or (ii) $y = \hat{y} = \frac{\hat{x}_g + \hat{x}_\ell}{2}$, which implies $\frac{\partial u_g(y)}{\partial y} = -\frac{\partial u_\ell(y)}{\partial y}$.

Part 2. Assume $\hat{x}_g \in [-\hat{x}_\ell, \hat{x}_\ell)$. The proof proceeds in two cases.

Case 1: Consider $\hat{x}_\ell \geq \overline{x}_0$, which implies $z_\ell = \overline{x}_0$. Since $\hat{x}_g \geq -\hat{x}_\ell$, it follows that $\hat{y} = \frac{\hat{x}_g + \hat{x}_\ell}{2} \geq \hat{x}_M$. There are two subcases.

First, consider $\hat{x}_g \geq 2\overline{x}_0 - \hat{x}_\ell$, which implies $y = z_\ell = \overline{x}_0$. For $\alpha \in [0,1]$, if $y = z_\ell = \overline{x}_\alpha$, then $\overline{x}_\alpha$ solves

$$0 = (1-\delta)\, u_M(q) + \delta \rho_M\, u_M(\hat{x}_M) - [1 - \delta(\rho_R + \rho_\ell)]\, u_M(\overline{x}_\alpha). \tag{52}$$

Applying the implicit function theorem to (52) yields $\frac{\partial \overline{x}_\alpha}{\partial \alpha} = 0$. Therefore $\frac{\partial \overline{x}_0}{\partial \alpha} = 0$ and it follows that $\psi_0^\ell(\hat{x}_g, \theta) = 0$. Thus, $\psi_0^\ell(\hat{x}_g, \theta)$ is constant in $\hat{x}_g$ for this case.

Second, consider $\hat{x}_g < 2\overline{x}_0 - \hat{x}_\ell$, which implies $y = \hat{y}$. For $\alpha \in [0,1]$, if $y = \hat{y}$ and $z_\ell = \overline{x}_\alpha$, then $\overline{x}_\alpha$ solves

$$0 = (1-\delta)\, u_M(q) + \delta \bigg(\rho_M\, u_M(\hat{x}_M) + \alpha \rho_\ell\, u_M(\hat{y}) \bigg) - \bigg(1 - \delta[\rho_R + (1-\alpha)\rho_\ell] \bigg)\, u_M(\overline{x}_\alpha). \tag{53}$$

Applying the implicit function theorem to (53) yields

$$\frac{\partial \overline{x}_\alpha}{\partial \alpha} = \frac{\delta \rho_\ell [u_M(\hat{y}) - u_M(\overline{x}_\alpha)]}{(1 - \delta[\rho_R + (1-\alpha)\rho_\ell]) \frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}} \tag{54}$$

$$\frac{\partial \overline{x}_\alpha}{\partial \hat{x}_g} = \frac{\alpha \delta \rho_\ell \frac{\partial u_M(\hat{y})}{\partial \hat{y}} \frac{\partial \hat{y}}{\partial \hat{x}_g}}{(1 - \delta[\rho_R + (1-\alpha)\rho_\ell]) \frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}}. \tag{55}$$

and

$$\frac{\partial^2 \overline{x}_\alpha}{\partial \alpha \partial \hat{x}_g} = \left(\frac{\delta \rho_\ell}{(1 - \delta[\rho_R + (1-\alpha)\rho_\ell])} \frac{\partial u_M(\hat{y})}{\partial \hat{y}} \frac{\partial \hat{y}}{\partial \hat{x}_g} - \frac{\partial^2 u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2} \frac{\partial \overline{x}_\alpha}{\partial \hat{x}_g} \frac{\partial \overline{x}_\alpha}{\partial \alpha} \right) \left(\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha} \right)^{-1}. \tag{56}$$

Inspecting (55) reveals $\frac{\partial \overline{x}_0}{\partial \hat{x}_g} = 0$. Consequently, we have

$$\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} = \frac{\delta \rho_\ell \frac{\partial u_M(\hat{y})}{\partial \hat{y}} \frac{\partial \hat{y}}{\partial \hat{x}_g}}{(1 - \delta[\rho_R + \rho_\ell]) \frac{\partial u_M(\overline{x}_0)}{\partial \overline{x}_0}} > 0, \tag{57}$$

where the inequality follows because (i) $\frac{\partial \hat{y}}{\partial \hat{x}_g} > 0$ and (ii) $\hat{x}_M < \hat{y} < \overline{x}_0$ implies $\frac{\partial u_M(y)}{\partial y} < 0$ and $\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha} < 0$. Therefore we have

$$\frac{\partial \psi_0^\ell(\hat{x}_g, \theta)}{\partial \hat{x}_g} = \rho_\ell \left(\frac{\partial u_g(\hat{y})}{\partial \hat{x}_g} - \frac{\partial u_g(\overline{x}_0)}{\partial \hat{x}_g} \right) + \rho_R \frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} \tag{58}$$

$$< \rho_\ell \left(\frac{\partial u_g(\hat{y})}{\partial \hat{x}_g} - \frac{\partial u_g(\overline{x}_0)}{\partial \hat{x}_g} \right) \tag{59}$$

$$< 0, \tag{60}$$

where (59) follows because (i) $\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} > 0$ and (ii) $\hat{x}_g < \overline{x}_0$ implies $\frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} < 0$; and (60) follows because $\hat{x}_g < \hat{y} < \overline{x}_0$ implies $\frac{\partial u_g(\hat{y})}{\partial \hat{x}_g} < \frac{\partial u_g(\overline{x}_0)}{\partial \hat{x}_g}$. It follows that $\psi_0^\ell(\hat{x}_g, \theta)$ is decreasing in $\hat{x}_g$ for this case.

Together, the two subcases establish that g's willingness to acquire access to ℓ is weakly decreasing in $\hat{x}_g$, as desired.

Case 2: Consider $\hat{x}_\ell < \overline{x}_0$, which implies $z_\ell = \hat{x}_\ell$. Then $\hat{x}_g \in [-\hat{x}_\ell, \hat{x}_\ell)$ implies

$y = \hat{y} \geq \hat{x}_M$. For $\alpha \in [0,1]$, if $y = \hat{y}$ and $z_\ell = \hat{x}_\ell$, then $\overline{x}_\alpha$ solves

$$u_M(\overline{x}_\alpha) = \frac{(1-\delta)u_M(q) + \delta\Big(\rho_M u_M(\hat{x}_M) + \rho_\ell[\alpha u_M(\hat{y}) + (1-\alpha)u_M(\hat{x}_\ell)]\Big)}{(1-\delta\rho_R)}. \tag{61}$$

Applying the implicit function theorem yields

$$\frac{\partial \overline{x}_\alpha}{\partial \alpha} = \frac{\delta\rho_\ell[u_M(\hat{y}) - u_M(\hat{x}_\ell)]}{(1-\delta\rho_R)\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}}, \tag{62}$$

$$\frac{\partial \overline{x}_\alpha}{\partial \hat{x}_g} = \frac{\alpha\delta\rho_\ell \frac{\partial u_M(\hat{y})}{\partial \hat{y}}\frac{\partial \hat{y}}{\partial \hat{x}_g}}{(1-\delta\rho_R)\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}}, \tag{63}$$

and

$$\frac{\partial^2 \overline{x}_\alpha}{\partial \alpha \partial \hat{x}_g} = \left(\frac{\delta\rho_\ell}{(1-\delta\rho_R)}\frac{\partial u_M(\hat{y})}{\partial \hat{y}}\frac{\partial \hat{y}}{\partial \hat{x}_g} - \frac{\partial^2 u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2}\frac{\partial \overline{x}_\alpha}{\partial \hat{x}_g}\frac{\partial \overline{x}_\alpha}{\partial \alpha}\right)\left(\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}\right)^{-1}. \tag{64}$$

Inspecting (63) reveals that $\frac{\partial \overline{x}_0}{\partial \hat{x}_g} = 0$, which implies

$$\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} = \frac{\delta\rho_\ell \frac{\partial u_M(\hat{y})}{\partial \hat{y}}\frac{\partial \hat{y}}{\partial \hat{x}_g}}{(1-\delta\rho_R)\frac{\partial u_M(\overline{x}_0)}{\partial \overline{x}_0}} > 0. \tag{65}$$

Because $\hat{x}_M \leq \hat{y} < \hat{x}_\ell$, a series of inequalities analogous to (58)-(60) imply $\frac{\partial \psi_0^\ell(\hat{x}_g,\theta)}{\partial \hat{x}_g} < 0$.

Together, the two cases show that g's willingness to acquire access weakly decreases as $\hat{x}_g$ increases towards $\hat{x}_\ell$, as desired.

Part 3. Assume $\hat{x}_g \geq \hat{x}_\ell$. There are two cases.

Case 1: Consider $\hat{x}_\ell \geq \overline{x}_0$. It follows that $y = z_\ell = \overline{x}_0$ at $\alpha = 0$, which implies that $\psi_0^\ell(\hat{x}_g, \theta) = 0$ in this case. It follows g's willingness to acquire access is constant and thus weakly increases in $\hat{x}_g$.

Case 2: Consider $\hat{x}_\ell < \overline{x}_0$, which implies $z_\ell = \hat{x}_\ell$. There are three subcases.

First, assume $\hat{x}_g \in [\hat{x}_\ell, \overline{x}_0)$, which implies $y = \hat{y}$. To show that g's willingness to acquire access weakly increases with $\hat{x}_g$ in this case, I show that $\psi_0^\ell(\hat{x}_g, \theta) \geq 0$ implies $\frac{\partial \psi_0^\ell(\hat{x}_g,\theta)}{\partial \hat{x}_g} > 0$. Since $y = \hat{y}$ and $z_\ell = \hat{x}_\ell$, it follows from Case 2 of Part 2 that $\frac{\partial \overline{x}_0}{\partial \alpha}$ is given by (62), $\frac{\partial \overline{x}_0}{\partial \hat{x}_g} = 0$, and $\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g}$ is given by (65). Therefore we have

$$\frac{\partial \psi_0^\ell(\hat{x}_g, \theta)}{\partial \hat{x}_g} = \rho_\ell \bigg(\frac{\partial u_g(\hat{y})}{\partial \hat{x}_g} - \frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g} \bigg) + \rho_R \bigg(\frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} \bigg) \tag{66}$$

$$= \rho_\ell \bigg(\frac{\partial u_g(\hat{y})}{\partial \hat{x}_g} - \frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g} \bigg) + \rho_R \bigg(\frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \frac{\delta \rho_\ell \frac{\partial u_M(\hat{y})}{\partial \hat{y}} \frac{\partial \hat{y}}{\partial \hat{x}_g}}{(1-\delta\rho_R)\frac{\partial u_M(\overline{x}_0)}{\partial \overline{x}_0}} \bigg) \tag{67}$$

$$\geq \rho_\ell \bigg(\frac{\partial u_g(\hat{y})}{\partial \hat{x}_g} - \frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g} \bigg) - \rho_R \bigg(\frac{\rho_\ell [u_g(\hat{y}) - u_g(\hat{x}_\ell) + u_\ell(\hat{y})]}{\rho_R \frac{\partial \overline{x}_0}{\partial \alpha}} \bigg) \bigg(\frac{\delta \rho_\ell \frac{\partial u_M(\hat{y})}{\partial \hat{y}} \frac{\partial \hat{y}}{\partial \hat{x}_g}}{(1-\delta\rho_R)\frac{\partial u_M(\overline{x}_0)}{\partial \overline{x}_0}} \bigg) \tag{68}$$

$$= \rho_\ell \bigg(\frac{\partial u_g(\hat{y})}{\partial \hat{x}_g} - \frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g} \bigg) - \rho_\ell \frac{\partial u_M(\hat{y})}{\partial \hat{y}} \frac{\partial \hat{y}}{\partial \hat{x}_g} \bigg(\frac{u_g(\hat{y}) - u_g(\hat{x}_\ell) + u_\ell(\hat{y})}{u_M(\hat{y}) - u_M(\hat{x}_\ell)} \bigg) \tag{69}$$

$$= \frac{5\rho_\ell}{4}(\hat{x}_g - \hat{x}_\ell) \tag{70}$$

$$> 0, \tag{71}$$

where (67) follows from using (65) to substitute for $\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g}$; (68) follows because (i) $\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} > 0$ and (ii) $\psi_0^\ell(\hat{x}_g, \theta) \geq 0$ and $\frac{\partial \overline{x}_0}{\partial \alpha} > 0$ together imply $\frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \geq -\frac{\rho_\ell [u_g(\hat{y}) - u_g(\hat{x}_\ell) + u_\ell(\hat{y})]}{\rho_R \frac{\partial \overline{x}_0}{\partial \alpha}}$; (69) follows from using (62) to substitute for $\frac{\partial \overline{x}_0}{\partial \alpha}$ and simplifying; (70) follows from simplifying because u is quadratic and $\hat{y} = \frac{\hat{x}_g + \hat{x}_\ell}{2}$; and (71) follows because $\hat{x}_g > \hat{x}_\ell$. It follows that $\psi_0^\ell(\hat{x}_g, \theta) \geq 0$ implies $\frac{\partial \psi_0^\ell(\hat{x}_g, \theta)}{\partial \hat{x}_g} > 0$.

Second, assume $\hat{x}_g \in [\overline{x}_0, 2\overline{x}_0 - \hat{x}_\ell)$, which implies $y = \hat{y}$. Thus, $\frac{\partial \overline{x}_0}{\partial \alpha}$, $\frac{\partial \overline{x}_0}{\partial \hat{x}_g}$, and $\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g}$ are defined as in the preceding subcase. Therefore we have

$$\frac{\partial \psi_0^\ell(\hat{x}_g, \theta)}{\partial \hat{x}_g} = \rho_\ell \bigg(\frac{\partial u_g(y)}{\partial \hat{x}_g} - \frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g} \bigg) + \rho_R \bigg(\frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} \bigg) \tag{72}$$

$$\geq \rho_\ell \bigg(\frac{\partial u_g(y)}{\partial \hat{x}_g} - \frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g} \bigg) \tag{73}$$

$$> 0, \tag{74}$$

where (73) follows because (i) $\frac{\partial^2 \overline{x}_0}{\partial \alpha \partial \hat{x}_g} > 0$ and (ii) $\hat{x}_g \geq \overline{x}_0$ implies $\frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0} \geq 0$; and (74) follows because $\hat{x}_\ell < \hat{y} < \hat{x}_g$ implies $\frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g} < \frac{\partial u_g(y)}{\partial \hat{x}_g}$. It follows that $\psi_0^\ell(\hat{x}_g, \theta)$ is increasing in $\hat{x}_g$ in this case.

Third, assume $\hat{x}_g \geq 2\overline{x}_0 - \hat{x}_\ell$, which implies $y = \overline{x}_0$. For $\alpha \in [0, 1]$, if $y = \overline{x}_\alpha$ and

$z_\ell = \hat{x}_\ell$, then $\overline{x}_\alpha$ solves

$$0 = (1-\delta)u_M(q) + \delta\Big(\rho_M\, u_M(\hat{x}_M) + \rho_\ell(1-\alpha)\, u_M(\hat{x}_\ell)\Big) - \Big(1 - \delta[\rho_R + \alpha\,\rho_\ell]\Big)u_M(\overline{x}_\alpha). \tag{75}$$

Applying the implicit function theorem to (75) yields $\frac{\partial \overline{x}_\alpha}{\partial \alpha} = \frac{\delta\rho_\ell[u_M(\overline{x}_\alpha) - u_M(\hat{x}_\ell)]}{(1-\delta[\rho_R+\alpha\rho_\ell])\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}}$, $\frac{\partial \overline{x}_\alpha}{\partial \hat{x}_g} = 0$, and $\frac{\partial^2 \overline{x}_\alpha}{\partial\alpha\partial\hat{x}_g} = 0$. Therefore we have

$$\begin{aligned} \frac{\partial \psi_0^\ell(\hat{x}_g,\theta)}{\partial \hat{x}_g} &= \rho_\ell\left(\frac{\partial u_g(y)}{\partial \hat{x}_g} - \frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g}\right) + \rho_R\left(\frac{\partial u_g(\overline{x}_0)}{\partial \overline{x}_0}\frac{\partial^2 \overline{x}_0}{\partial\alpha\partial\hat{x}_g}\right) && (76)\\ &= \rho_\ell\left(\frac{\partial u_g(y)}{\partial \hat{x}_g} - \frac{\partial u_g(\hat{x}_\ell)}{\partial \hat{x}_g}\right) && (77)\\ &> 0, && (78) \end{aligned}$$

where (78) follows as in the preceding subcase. It follows that $\psi_0^\ell(\hat{x}_g,\theta)$ is increasing in $\hat{x}_g$ in this case.

The two cases establish that g's willingness to acquire access to ℓ is weakly increasing in $\hat{x}_g$, as desired. □

Lemma 2. *Assume majority party control and that legislator ℓ is majority-leaning. If g is majority-leaning and more extreme than ℓ, then g buys access only if it is sufficiently more extreme than ℓ.*

Proof. Without loss of generality, assume right-party majority control and $\hat{x}_\ell \geq \hat{x}_M$. For convenience, normalize $\hat{x}_M = 0$. There are two cases.

Case 1: Consider $\hat{x}_\ell \geq \overline{x}_0$. As in the proof of Proposition 6, $\psi_\alpha^\ell(\hat{x}_g,\theta) = 0$ for all $\alpha \in [0,1]$ in this case. Thus, g does not buy access.

Case 2: Consider $\hat{x}_\ell < \overline{x}_0$. Because g's willingness to acquire access weakly increases in $\hat{x}_g$, it suffices to show that (i) $\psi_0^\ell(\hat{x}_g,\theta) \leq 0$ if $\hat{x}_g$ is sufficiently close to $\hat{x}_\ell$ and (ii) $\psi_\alpha^\ell(\hat{x}_g,\theta)$ decreases in α for these $\hat{x}_g$.

First, an argument analogous to part 1 of Proposition 4 establishes that there exists $x' > \hat{x}_\ell$ such that $\psi_0^\ell(\hat{x}_g,\theta) \leq 0$ if $\hat{x}_g \in [\hat{x}_\ell, x']$. Also, $\psi_0^\ell(\hat{x}_g,\theta) > 0$ for $\hat{x}_g \geq \overline{x}_0$ under right-party control, which implies $x' \in (\hat{x}_\ell, \overline{x}_0)$.

Consider $\hat{x}_g \in [\hat{x}_\ell, x']$. I show that $\psi_\alpha^\ell(\hat{x}_g,\theta)$ is strictly decreasing in α, which implies

$\psi^\ell_\alpha(\hat{x}_g,\theta) \leq 0$ for all $\alpha \in [0,1]$. Applying the implicit function theorem to (61) yields

$$\frac{\partial^2 \overline{x}_\alpha}{\partial \alpha^2} = -\frac{\frac{\partial^2 u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2}\left(\frac{\partial \overline{x}_\alpha}{\partial \alpha}\right)^2}{\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}} < 0, \tag{79}$$

where the inequality follows because (i) $\frac{\partial^2 u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2} < 0$ and (ii) $\hat{x}_g < \overline{x}_\alpha$ implies $\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha} < 0$.

In this case, we have $y = \hat{y}$ and $z_\ell = \hat{x}_\ell$, so the partial derivative of (49) with respect to α is

$$\begin{aligned}
\frac{\partial \psi^\ell_\alpha(\hat{x}_g,\theta)}{\partial \alpha} &= \rho_R\left(\frac{\partial^2 u_g(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2}\left(\frac{\partial \overline{x}_\alpha}{\partial \alpha}\right)^2 + \frac{\partial u_g(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}\frac{\partial^2 \overline{x}_\alpha}{\partial \alpha^2}\right) && (80)\\
&= \rho_R\left(\frac{\partial^2 u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2}\left(\frac{\partial \overline{x}_\alpha}{\partial \alpha}\right)^2 + \frac{\partial u_g(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}\frac{\partial^2 \overline{x}_\alpha}{\partial \alpha^2}\right) && (81)\\
&< \rho_R\left(\frac{\partial^2 u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2}\left(\frac{\partial \overline{x}_\alpha}{\partial \alpha}\right)^2 + \frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}\frac{\partial^2 \overline{x}_\alpha}{\partial \alpha^2}\right) && (82)\\
&= 0, && (83)
\end{aligned}$$

where (81) follows from $\frac{\partial^2 u_g(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2} = \frac{\partial^2 u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha^2}$ because u is quadratic; (82) follows because (i) $\frac{\partial^2 \overline{x}_\alpha}{\partial \alpha^2} < 0$ and (ii) $\hat{x}_M < \hat{x}_g < \overline{x}_\alpha$ implies $\frac{\partial u_M(\overline{x}_\alpha)}{\partial \overline{x}_\alpha} < \frac{\partial u_g(\overline{x}_\alpha)}{\partial \overline{x}_\alpha} < 0$; and (83) follows from rearranging (79). This implies that $\psi^\ell_\alpha(\hat{x}_g,\theta) \leq 0$ for all $\alpha \in [0,1]$.

It follows from Proposition 6 that g buys access only if it is sufficiently more extreme than ℓ, as desired. □

Proposition 7. *Consider the modified baseline model with legislators ℓ_1 and ℓ_2 who share the same ideal point, and identical interest groups g_1 and g_2. If ℓ_2 has greater proposal power than ℓ_1, then g_2's willingness to pay for α access to ℓ_2 is weakly greater than g_1's willingness to pay for α access to ℓ_1. A symmetric result holds if ℓ_1 has greater proposal power than ℓ_2.*

Proof. Consider the modified baseline model with legislators ℓ_1 and ℓ_2 such that $\hat{x}_{\ell_1} = \hat{x}_{\ell_2}$, and interest groups g_1 and g_2 such that $\hat{x}_{g_1} = \hat{x}_{g_2} = \hat{x}_g$. Assume $\rho_{\ell_1} < \rho_{\ell_2}$. For interest group g_1, let $\psi^1_\alpha(\rho_{\ell_1},\theta)$ denote the partial derivative of g_1's ex ante expected utility with respect to access to ℓ_1, evaluated at access level α. Define $\psi^2_\alpha(\rho_{\ell_1},\theta)$ analogously for g_2 and ℓ_2. It suffices to show that $\psi^1_\alpha(\rho_{\ell_1},\theta) \geq 0$ implies $\psi^2_\alpha(\rho_{\ell_1},\theta) \geq \psi^1_\alpha(\rho_{\ell_1},\theta)$.

Notice that $\hat{x}_{\ell_1} = \hat{x}_{\ell_2}$ and $\hat{x}_{g_1} = \hat{x}_{g_2}$ together imply $y_{g_1} = y_{g_2}$ and $z_{\ell_1} = z_{\ell_2}$. Thus, $m_{g_1} = m_{g_2}$. For convenience, let $y = y_{g_1}$, $z = z_{\ell_1}$, and $m = m_{g_1}$.

There are five cases.

Case 1: Consider $\hat{x}_\ell$ and $\hat{x}_g$ such that $z = \hat{x}_\ell$ and $y = \hat{y}$. Assume $\psi^1_\alpha(\rho_{\ell_1}, \theta) \geq 0$. Then, we have

$$\psi^1_\alpha(\rho_{\ell_1}, \theta) = \rho_{\ell_1}\Bigg(u_{g_1}(\hat{y}) + u_{\ell_1}(\hat{y}) - u_{g_1}(\hat{x}_\ell) - u_{\ell_1}(\hat{x}_\ell)\Bigg) + \frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_1}}\Bigg(\rho_L \frac{\partial u_{g_1}(\underline{x}_\alpha)}{\partial \underline{x}_\alpha} - \rho_R \frac{\partial u_{g_1}(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}\Bigg) \tag{84}$$

$$= \rho_{\ell_1}\Bigg(u_{g_1}(\hat{y}) + u_{\ell_1}(\hat{y}) - u_{g_1}(\hat{x}_\ell) - u_{\ell_1}(\hat{x}_\ell)\Bigg) + \frac{\delta \rho_{\ell_1}[u_M(\hat{y}) - u_M(\hat{x}_\ell)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}[1 - \delta(\rho_L + \rho_R)]}\Bigg(\rho_L \frac{\partial u_{g_1}(\underline{x}_\alpha)}{\partial \underline{x}_\alpha} - \rho_R \frac{\partial u_{g_1}(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}\Bigg) \tag{85}$$

$$= \rho_{\ell_1}\Bigg\{u_{g_1}(\hat{y}) + u_{\ell_1}(\hat{y}) - u_{g_1}(\hat{x}_\ell) - u_{\ell_1}(\hat{x}_\ell) + \frac{\delta[u_M(\hat{y}) - u_M(\hat{x}_\ell)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}[1 - \delta(\rho_L + \rho_R)]}\Bigg(\rho_L \frac{\partial u_{g_1}(\underline{x}_\alpha)}{\partial \underline{x}_\alpha} - \rho_R \frac{\partial u_{g_1}(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}\Bigg)\Bigg\} \tag{86}$$

$$\leq \rho_{\ell_2}\Bigg\{u_{g_1}(\hat{y}) + u_{\ell_1}(\hat{y}) - u_{g_1}(\hat{x}_\ell) - u_{\ell_1}(\hat{x}_\ell) + \frac{\delta[u_M(\hat{y}) - u_M(\hat{x}_\ell)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}[1 - \delta(\rho_L + \rho_R)]}\Bigg(\rho_L \frac{\partial u_{g_1}(\underline{x}_\alpha)}{\partial \underline{x}_\alpha} - \rho_R \frac{\partial u_{g_1}(\overline{x}_\alpha)}{\partial \overline{x}_\alpha}\Bigg)\Bigg\} \tag{87}$$

$$= \psi^2_\alpha(\rho_{\ell_2}, \theta), \tag{88}$$

where (84) follows because $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_1}} = -\frac{\partial \overline{x}_\alpha}{\partial \alpha_1}$ by symmetry; (85) follows from $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_1}} = \frac{\delta \rho_{\ell_1}[u_M(\hat{y}) - u_M(\hat{x}_\ell)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}[1-\delta(\rho_L+\rho_R)]}$; (87) follows because (i) $\rho_{\ell_2} > \rho_{\ell_1}$ and (ii) $\psi^1_\alpha(\rho_{\ell_1}, \theta) \geq 0$ implies that the bracketed expression in (86) is positive; and (88) follows because $\hat{x}_{\ell_1} = \hat{x}_{\ell_2}$, $\hat{x}_{g_1} = \hat{x}_{g_2}$, and $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_2}} = \frac{\delta \rho_{\ell_2}[u_M(\hat{y}) - u_M(\hat{x}_\ell)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}[1-\delta(\rho_L+\rho_R)]}$. Therefore $\psi^2_\alpha(\rho_{\ell_2}, \theta) \geq \psi^1_\alpha(\rho_{\ell_1}, \theta)$, as desired.

Case 2: Consider $\hat{x}_\ell$ and $\hat{x}_g$ such that $z = \overline{x}_\alpha$ and $y = \hat{y}$. Assume $\psi^1_\alpha(\rho_{\ell_1}, \theta) \geq 0$. In this case, $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_1}} = \frac{\delta \rho_{\ell_1}[u_M(\hat{y}) - u_M(\overline{x}_\alpha)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}\{1-\delta[\rho_L+\rho_R+(1-\alpha)(\rho_{\ell_1}+\rho_{\ell_2})]\}}$ and $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_2}} = \frac{\delta \rho_{\ell_2}[u_M(\hat{y}) - u_M(\overline{x}_\alpha)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}\{1-\delta[\rho_L+\rho_R+(1-\alpha)(\rho_{\ell_1}+\rho_{\ell_2})]\}}$. An argument analogous to that of Case 1 establishes $\psi^2_\alpha(\rho_{\ell_2}, \theta) \geq \psi^1_\alpha(\rho_{\ell_1}, \theta)$. The case in which $z = \underline{x}_\alpha$ and $y = \hat{y}$ is symmetric.

Case 3: Consider $\hat{x}_\ell$ and $\hat{x}_g$ such that $z = \hat{x}_\ell$ and $y = \overline{x}_\alpha$. Assume $\psi^1_\alpha(\rho_{\ell_1}, \theta) \geq 0$. In this case, $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_1}} = \frac{\delta \rho_{\ell_1}[u_M(\overline{x}_\alpha) - u_M(\hat{x}_\ell)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}\{1-\delta[\rho_L+\rho_R+\alpha(\rho_{\ell_1}+\rho_{\ell_2})]\}}$ and $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_2}} = \frac{\delta \rho_{\ell_2}[u_M(\overline{x}_\alpha) - u_M(\hat{x}_\ell)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}\{1-\delta[\rho_L+\rho_R+\alpha(\rho_{\ell_1}+\rho_{\ell_2})]\}}$. An argument analogous to that of Case 1 establishes $\psi_\alpha^2(\rho_{\ell_2},\theta) \geq \psi_\alpha^1(\rho_{\ell_1},\theta)$. The case in which $z = \hat{x}_\ell$ and $y = \underline{x}_\alpha$ is symmetric.

Case 4: Consider $\hat{x}_\ell$ and $\hat{x}_g$ such that $z = \overline{x}_\alpha$ and $y = \underline{x}_\alpha$. Assume $\psi_\alpha^1(\rho_{\ell_1},\theta) \geq 0$. In this case, $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_1}} = \frac{\delta\rho_{\ell_1}[u_M(\underline{x}_\alpha)-u_M(\overline{x}_\alpha)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}[1-\delta(\rho_L+\rho_R+\rho_{\ell_1}+\rho_{\ell_2})]}$ and $\frac{\partial \underline{x}_\alpha}{\partial \alpha_{\ell_2}} = \frac{\delta\rho_{\ell_2}[u_M(\underline{x}_\alpha)-u_M(\overline{x}_\alpha)]}{\frac{\partial u_M(\underline{x}_\alpha)}{\partial \underline{x}_\alpha}[1-\delta(\rho_L+\rho_R+\rho_{\ell_1}+\rho_{\ell_2})]}$. An argument analogous to that of Case 1 establishes $\psi_\alpha^2(\rho_{\ell_2},\theta) \geq \psi_\alpha^1(\rho_{\ell_1},\theta)$. The case in which $z = \underline{x}_\alpha$ and $y = \overline{x}_\alpha$ is symmetric.

Case 5: Consider $\hat{x}_\ell$ and $\hat{x}_g$ such that $z = \overline{x}_\alpha$ and $y = \overline{x}_\alpha$. In this case, $\psi_\alpha^2(\rho_{\ell_2},\theta) = \psi_\alpha^1(\rho_{\ell_1},\theta) = 0$. The case in which $z = \underline{x}_\alpha$ and $y = \underline{x}_\alpha$ is symmetric.

In each case, $\psi_\alpha^2(\rho_{\ell_2},\theta) \geq \psi_\alpha^1(\rho_{\ell_1},\theta)$, as desired. □

Appendix B

Lemma B.1 establishes that interest groups never offer committee members a surplus lobby payment in any equilibrium.

Lemma B.1. *In every stationary legislative lobbying equilibrium, for all* $\ell \in N^L$ *every* $(y, m) \in supp(\lambda_g^\ell)$ *satisfies*

$$\overline{\nu}(y)u_\ell(y) + [1 - \overline{\nu}(y)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)] + m$$
$$=$$
$$\int_X \left[\overline{\nu}(x)u_\ell(x) + [1 - \overline{\nu}(x)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)]\right]\pi_\ell(dx). \tag{89}$$

Proof. Fix an equilibrium σ. Consider $\ell \in N^L$ with associated legislator g_ℓ. To show a contradiction, assume there exists $(y, m) \in \text{supp}(\lambda_g^\ell)$ such that

$$\overline{\nu}(y)u_\ell(y) + [1 - \overline{\nu}(y)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)] + m \tag{90}$$
$$>$$
$$\int_X \left[\overline{\nu}(x)u_\ell(x) + [1 - \overline{\nu}(x)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)]\right]\pi_\ell(dx). \tag{91}$$

The preceding inequality requires $m > 0$ because (10) implies that π_ℓ puts probability one on $\arg\max_{x \in X} \overline{\nu}(x)u_\ell(x) + [1 - \overline{\nu}(x)]\left((1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)\right)$. Next, (90) is continuous and strictly increasing in m, and (91) is constant in m. Thus, there exists $m' < m$ such that the offer (y, m') satisfies the constraint in (8). It follows that (y, m) does not solve (8), a contradiction. □

Deferential Voting and Acceptance

Given a stationary strategy profile σ, define

$$\tilde{U}_\ell(\pi_\ell; \sigma) = \frac{\int_X \left[\overline{\nu}(x)u_\ell(x) + [1 - \overline{\nu}(x)][(1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)]\right]\pi_\ell(dx)}{1 - \delta\int_X [1 - \overline{\nu}(x)]\pi_\ell(dx)}, \tag{92}$$

for committee member ℓ with associated interest group g_ℓ. Notice that (92) is ℓ's expected dynamic payoff under σ, conditional on being recognized as the proposer and rejecting g_ℓ's offer.

Recall $\xi_\ell(\alpha,\sigma)$ as defined in (4), which is the probability that ℓ makes an independent policy proposal under strategy profile σ in each period that ℓ is recognized to propose before policy passes. Next, define

$$\hat{\chi}(Y) = \sum_{\ell \in N^L} \rho_\ell \left\{ \xi_\ell(\alpha,\sigma) \int_Z \overline{\nu}(x)\pi_\ell(dx) + \alpha_\ell \int_{Z\times\mathbb{R}_+} \varphi_\ell(y,m)\overline{\nu}(y)\lambda_g^\ell(dw) \right\}, \tag{93}$$

which is the probability that some policy in Y is passed in a given period under σ. Then, let

$$\check{\chi} = \sum_{\ell \in N^L} \rho_\ell \left\{ \xi_\ell(\alpha,\sigma) \int_X [1-\overline{\nu}(x)]\pi_\ell(dx) + \alpha_\ell \int_W \varphi_\ell(y,m)[1-\overline{\nu}(y)]\lambda_g^\ell(dw) \right\}, \tag{94}$$

which is the probability that the policy proposal is not passed in a given legislative period under σ.

We now express each player's continuation value as a function of a common lottery over policy, χ^σ. Using (93) and (94), define χ^σ so that for all measurable $Y \subseteq X$, if $q \notin Y$, then

$$\chi^\sigma(Y) = \frac{\hat{\chi}(Y)}{1-\delta\check{\chi}}, \tag{95}$$

and if $q \in Y$, then

$$\chi^\sigma(Y) = \frac{\hat{\chi}(Y) + (1-\delta)\check{\chi}}{1-\delta\check{\chi}}. \tag{96}$$

For convenience, define

$$V^{den}(\sigma) = 1 - \delta\check{\chi}. \tag{97}$$

Then, for each voter $i \in N^V$, we can express i's continuation value defined in (5) as

$$V_i(\sigma) = \frac{V_i^{num}(\sigma)}{V^{den}(\sigma)}, \tag{98}$$

where

$$V_i^{num}(\sigma) = \sum_{\ell \in N^L} \rho_\ell \Bigg\{ \xi_\ell(\alpha, \sigma) \int_X \Big[\overline{\nu}(x) u_i(x) + [1 - \overline{\nu}(x)](1-\delta) u_i(q) \Big] \pi_\ell(dx)$$

$$+ \alpha_\ell \int_W \varphi(y, m) \Big[\overline{\nu}(y) u_i(x) + [1 - \overline{\nu}(x)](1-\delta) u_i(q) \Big] \lambda_g^\ell(dw) \Bigg\}, \tag{99}$$

and $V^{den}(\sigma)$ is defined as in (97). Consequently, we can use (98) to express $V_i(\sigma)$ explicitly as a lottery over policy. In particular,

$$V_i(\sigma) = \int_X u_i(x) \chi^\sigma(dx). \tag{100}$$

The policy lottery χ^σ is common to all players, but committee members may receive payment and interest groups may make payments. For convenience, define

$$\hat{m}_\ell(\sigma) = \rho_\ell \, \alpha_\ell \int_W m \; \varphi_\ell(y, m) \lambda_g^\ell(dw), \tag{101}$$

which is g_ℓ's expected lobby payment to ℓ under σ in each period before policy is passed. Re-arranging (6) for each $\ell \in N^L$ yields

$$\tilde{V}_\ell(\sigma) = \frac{V_\ell^{num}(\sigma) + \hat{m}_\ell(\sigma)}{V^{den}(\sigma)} \tag{102}$$

$$= \int_X u_\ell(x) \chi^\sigma(dx) + \frac{\hat{m}_\ell(\sigma)}{V^{den}(\sigma)} \tag{103}$$

where (103) follows from (98) and (100).

Similarly, we can rearrange (7) for each $g \in N^G$ as

$$\hat{V}_g(\sigma) = \frac{V_g^{num}(\sigma) - \sum_{\ell \in N_g^L} \hat{m}_\ell(\sigma)}{V^{den}(\sigma)} \tag{104}$$

$$= \int_X u_g(x) \chi^\sigma(dx) - \sum_{\ell \in N_g^L} \frac{\hat{m}_\ell(\sigma)}{V^{den}(\sigma)}. \tag{105}$$

We now establish that there does not exist an equilibrium that induces a policy lottery that is degenerate on q.

Lemma B.2. *There does not exist a stationary legislative lobbying equilibrium σ such that χ^σ is degenerate on q.*

Proof. Let σ denote an equilibrium. To show a contradiction, assume χ^σ is degenerate on q. Thus, $V_M(\sigma) = u_M(q)$. Therefore $u_M(q) \geq (1-\delta)u_M(q) + \delta V_M(\sigma)$, so $q \in A(\sigma)$. Without loss of generality, assume $q > \hat{x}_M$.

By assumption, there exists a committee member $\ell \in N^L$ who is on the same side of q as M, and is not influenced by some group on the opposite side of q. Note that $u_{g_\ell}(y) + u_\ell(y) - \tilde{U}_\ell(\pi_\ell; \sigma)$ is g_ℓ's expected dynamic payoff from any offer (y, m) such that: (i) $\overline{\nu}(y) = 1$, (ii) ℓ is indifferent between accepting and rejecting, and (iii) $\varphi_\ell(y, m) = 1$. Furthermore, $\hat{y}_\ell = \operatorname*{argmax}_{y \in X} u_{g_\ell}(y) + u_\ell(y) - \tilde{U}_\ell(\pi_\ell; \sigma)$ because $\tilde{U}_\ell(\pi_\ell; \sigma)$ does not depend on y. Under the maintained assumptions, $\hat{y}_\ell < q$. Strict concavity then implies that for sufficiently small $\varepsilon > 0$ there exists $y \in A(\sigma)$ such that

$$u_{g_\ell}(y) + u_\ell(y) - \tilde{U}_\ell(\pi_\ell; \sigma) + \varepsilon > u_{g_\ell}(q) + u_\ell(q) - \tilde{U}_\ell(\pi_\ell; \sigma) \tag{106}$$

$$\geq u_{g_\ell}(q) + u_\ell(q) - \tilde{U}_\ell(\pi_\ell; \sigma) + \delta \left(\frac{m_\ell(\sigma)}{V^{den}(\sigma)} - \sum_{j \in L_{g_\ell}} \frac{m_j(\sigma)}{V^{den}(\sigma)} \right), \tag{107}$$

where (107) follows from $\frac{m_\ell(\sigma)}{V^{den}(\sigma)} < \sum_{j \in N_g^L} \frac{m_j(\sigma)}{V^{den}(\sigma)}$. Notice that (107) is g_ℓ's expected dynamic payoff from any offer (y, m) such that $\overline{\nu}(y) = 0$, ℓ is indifferent between accepting and rejecting, and ℓ accepts. Thus, g_ℓ strictly prefers to offer (y, m) such that $\varphi_\ell(y, m) = 1$, $\overline{\nu}(y) = 1$, and $y \neq q$. This contradicts our assumption that χ^σ is degenerate on q. □

Lemma B.3 establishes that in every equilibrium for which the policy lottery is not degenerate on q, every interest group strictly prefers to lobby their associated committee members to a policy that passes with probability one rather than lobby to a policy that is rejected with probability one.

Lemma B.3. *Let σ denote an stationary legislative lobbying equilibrium. For all $\ell \in N^L$ there is an offer $(y, m) \in X \times \mathbb{R}_+$ such that $\overline{\nu}(y) = 1$ and g_ℓ strictly prefers to offer (y, m) to ℓ rather than offer any (y', m') such that $\overline{\nu}(y') = 0$.*

Proof. Fix an equilibrium σ. Lemma B.2 implies χ^σ is not degenerate on q. Let χ^q denote the probability distribution that puts probability one on q, and define the continuation distribution generated by σ as $\chi = (1-\delta)\chi^q + \delta\chi^\sigma$. Note that χ is non-degenerate because χ^σ is not degenerate on q and $\delta \in (0, 1)$.

For all $k \in N$, the expected dynamic policy payoff from a rejected policy proposal satisfies

$$(1-\delta)u_k(q) + \delta V_k(\sigma) = \int_X u_k(x)\chi(dx). \tag{108}$$

Let x^σ denote the mean of χ. Since u is strictly concave and χ is non-degenerate, Jensen's Inequality implies

$$u_k(x^\sigma) > \int_X u_k(x)\chi(dx) = (1-\delta)u_k(q) + \delta V_k(\sigma) \tag{109}$$

for all players $k \in N$.

Consider $\ell \in N^L$. First, assume $\varphi_\ell(y,m) = 1$ for all $(y,m) \in X \times \mathbb{R}_+$ such that ℓ is indifferent between accepting (y,m) and rejecting. The condition for g_ℓ to strictly prefer to offer (y,m) such that $\overline{\nu}(y) = 1$, rather than offer (y',m') such that $\overline{\nu}(y') = 0$, is

$$u_{g_\ell}(y) + u_\ell(y) - \tilde{U}_\ell(\pi_\ell;\sigma) > (1-\delta)u_{g_\ell}(q) + \delta\hat{V}_{g_\ell}(\sigma) + (1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma) - \tilde{U}_\ell(\pi_\ell;\sigma), \tag{110}$$

which is equivalent to

$$u_{g_\ell}(y) + u_\ell(y) > (1-\delta)u_{g_\ell}(q) + \delta\hat{V}_{g_\ell}(\sigma) + (1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma). \tag{111}$$

Notice that

$$\hat{V}_{g_\ell}(\sigma) + \tilde{V}_\ell(\sigma) = V_{g_\ell}(\sigma) - \sum_{\ell' \in N_g^L} \frac{\hat{m}_{\ell'}(\sigma)}{V^{den}(\sigma)} + \left(V_\ell(\sigma) + \frac{\hat{m}_\ell(\sigma)}{V^{den}(\sigma)}\right) \tag{112}$$

$$\leq V_{g_\ell}(\sigma) - \frac{\hat{m}_\ell(\sigma)}{V^{den}(\sigma)} + \left(V_\ell(\sigma) + \frac{\hat{m}_\ell(\sigma)}{V^{den}(\sigma)}\right) \tag{113}$$

$$= V_{g_\ell}(\sigma) + V_\ell(\sigma), \tag{114}$$

where (112) follows from substituting for $\tilde{V}_\ell(\sigma)$ and $\hat{V}_g(\sigma)$ using (103) and (105), respectively, and (113) follows from $\sum_{\ell' \in N_g^L} \frac{\hat{m}_{\ell'}(\sigma)}{V^{den}(\sigma)} \geq \frac{\hat{m}_{\ell'}(\sigma)}{V^{den}(\sigma)}$ because $\frac{\hat{m}_{\ell'}(\sigma)}{V^{den}(\sigma)} \geq 0$ for all $\ell' \in N_g^L$.

From (109), it follows that $\overline{\nu}(x^\sigma) = 1$ because $u_{g_\ell}(x^\sigma) > (1-\delta)u_M(q) + \delta V_M(\sigma)$. Furthermore, (109) implies $u_{g_\ell}(x^\sigma) > (1-\delta)u_{g_\ell}(q) + \delta V_{g_\ell}(\sigma)$ and $u_\ell(x^\sigma) > (1-\delta)u_\ell(q) + \delta V_\ell(\sigma)$. It follows from (114) that g_ℓ's expected dynamic payoff from offering x^σ satisfies

$$u_{g_\ell}(x^\sigma) + u_\ell(x^\sigma) > (1-\delta)u_{g_\ell}(q) + \delta V_{g_\ell}(\sigma) + (1-\delta)u_\ell(q) + \delta V_{g_\ell}(\sigma) \tag{115}$$

$$\geq (1-\delta)u_{g_\ell}(q) + \delta\hat{V}_{g_\ell}(\sigma) + (1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma), \tag{116}$$

so that (111) is satisfied.

Next, assume $\varphi_\ell(x^\sigma, m) < 1$ for m such that ℓ is indifferent between accepting (x^σ, m) and rejecting. Thus, $\varphi_\ell(x^\sigma, m+\varepsilon) = 1$ for $\varepsilon > 0$. If $\varepsilon > 0$ is sufficiently small, then (111) implies that g_ℓ strictly prefers to offer $(x^\sigma, m+\varepsilon)$ over any offer (y', m') such that $\overline{\nu}(y') = 0$.

□

Lemma B.4 shows that every stationary legislative lobbying equilibrium is equivalent to an equilibrium with deferential voting.

Lemma B.4. *Every stationary legislative lobbying equilibrium is equivalent in outcome distribution to an equilibrium with deferential voting.*

Proof. Let σ be an equilibrium. By Duggan (2014), M is decisive. Thus, strict concavity of u_M and $\hat{x}_M \neq q$ together imply that $A(\sigma) = \{x \in X | u_M(x) \geq (1-\delta)u_M(q) + \delta V_M(\sigma)\}$ is a closed, non-empty interval. Let $A(\sigma) = [\underline{x}, \overline{x}]$. It follows that $\overline{\nu}(x) = 1$ if $x \in (\underline{x}, \overline{x})$.

Lemma B.2 implies χ^σ is not degenerate on q. Fix $\ell \in N^L$. Then Lemma B.3 implies that there exists an offer (y, m) such that $\overline{\nu}(y) = 1$ and g_ℓ strictly prefers (y, m) over any offer (y', m') such that $\overline{\nu}(y') = 0$. Therefore $y \in A(\sigma)$ for all $(y, m) \in \text{supp}(\lambda_{g_\ell})$. Without loss of generality, assume $\overline{\nu}(\underline{x}) < 1$. There are two cases.

Case 1: If $\hat{x}_\ell \leq \underline{x}$ and $u_\ell(\underline{x}) > (1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma)$, then $x \in A(\sigma)$ for all $x \in \text{supp}(\pi_\ell)$. Then strict concavity of u_ℓ and $\overline{\nu}(\underline{x}) < 1$ together imply that there exists $\varepsilon > 0$ such that ℓ has a profitable deviation to $\underline{x} + \varepsilon$, a contradiction.

Case 2: Assume $\underline{x} = \arg\max_{y \in A(\sigma)} u_{g_\ell}(y) + u_\ell(y) - \tilde{U}_\ell(\pi_\ell; \sigma)$, which is uniquely defined because $A(\sigma)$ is compact and nonempty, and the objective function is concave. Then continuity, Lemma B.3, and $\overline{\nu}(\underline{x}) < 1$ together imply that there exist $\varepsilon, \varepsilon' > 0$ such that g_ℓ has a profitable deviation to $(y', m') = (\underline{x}+\varepsilon, \tilde{U}_\ell(\pi_\ell; \sigma) - u_\ell(\underline{x}+\varepsilon) + \varepsilon')$, a contradiction.

Arguments for $\overline{\nu}(\overline{x}) < 1$, are symmetric. Altogether, this establishes that either σ must involve deferential voting, or σ is equivalent in outcome disribution to an equilibrium with deferential voting. □

We next show that every stationary legislative lobbying equilibrium is equivalent to an equilibrium with deferential acceptance strategies.

Lemma B.5. *Every stationary legislative lobbying equilibrium is equivalent in outcome distribution to an equilibrium with deferential acceptance strategies.*

Proof. Let σ denote an equilibrium. By Lemma B.4, it is without loss of generality to assume that voting strategies are deferential under σ, that is $\overline{\nu}(x) = 1$ if and only if $x \in A(\sigma)$. Fix $\ell \in N^L$ and define $y^*_{g_\ell} = \arg\max_{y \in A(\sigma)} u_{g_\ell}(y) + u_\ell(y) - \tilde{U}_\ell(\pi_\ell; \sigma)$, which is uniquely defined, and $m^*_{g_\ell} = \tilde{U}_\ell(\pi_\ell; \sigma) - u_\ell(\tilde{y}_{g_\ell})$.

By Lemma B.2, the policy lottery associated with σ is not degenerate on q. Lemma B.3 then implies that g strictly prefers $(y^*_{g_\ell}, m^*_{g_\ell})$ over any (y', m') such that $y' \notin A(\sigma)$. Thus, if π_ℓ is not degenerate on $y^*_{g_\ell}$ and $\varphi_\ell(y^*_{g_\ell}, m^*_{g_\ell}) < 1$, then continuity implies that there exists $\varepsilon > 0$ such that g_ℓ has a profitable deviation to offer $(y^*_{g_\ell}, m^*_{g_\ell} + \varepsilon)$ which is accepted with probability one. This contradicts that σ is an equilibrium. Consequently, σ must be such that either (i) $\pi_\ell(y^*_{g_\ell}) = 1$, or (ii) $\varphi_\ell(y^*_{g_\ell}, m^*_{g_\ell}) = 1$. Therefore, σ is equivalent in outcome distribution to an equilibrium with deferential acceptance strategies. □

Say that a strategy profile σ is *no-delay* if legislative proposals pass with probability one along the path of play. Specifically, σ is no-delay if, for all $\ell \in N^L$ legislative proposals always pass with probability one. Formally, $\overline{\nu}(x) = 1$ for all $x \in \text{supp}(\pi_\ell)$ and $\overline{\nu}(y) = 1$ for all $(y, m) \in \text{supp}(\lambda^\ell_g)$.[50] Lemma B.6 establishes that every equilibrium is no-delay. This result plays an important role in establishing equilibrium existence and characterizing behavior.

Lemma B.6. *Every stationary legislative lobbying equilibrium is no-delay.*

Proof. Fix an equilibrium σ. By Lemma B.2, χ^σ is not degenerate on q. Thus, Lemma B.3 implies that g strictly prefers some (y, m) such that $\overline{\nu}(y) = 1$. Lemma B.4 implies that it is without loss of generality to assume $\overline{\nu}(x) = 1$ if and only if $x \in A(\sigma)$. Also, Lemma B.5 implies that it is without loss of generality to assume all $\ell \in N^L$ use deferential acceptance strategies under σ.

Fix $\ell \in N^L$. The preceding argument and Lemma B.1 together imply that λ^ℓ_g puts probability one on (y^*, m^*) such that $y^* = \arg\max_{y \in A(\sigma)} u_{g_\ell}(y) + u_\ell(y) - u_\ell(z_\ell; \sigma)$, which is uniquely defined. Lemmas B.4 and B.5 imply that it is without loss of generality to assume that $\overline{\nu}(y^*) = 1$ and $\varphi_\ell(y^*, m^*) = 1$.

The proof consists of verifying that ℓ strictly prefers to propose $z_\ell \in A(\sigma)$. To show a contradiction, assume that proposing $z_\ell \notin A(\sigma)$ is optimal for some $\ell \in N^L$. Let $z^* = \max_{x \in A(\sigma)} u_\ell(x)$. There are two steps. First, I establish useful properties of ℓ's preferences over lotteries. Second, I use these properties to show a contradiction.

[50] This definition has the same spirit as the definition of no-delay strategy profiles in Banks and Duggan (2006b).

Step 1: Recall that χ^σ denotes the continuation distribution induced by σ and define the lottery $\chi = (1-\delta) + \delta\chi^\sigma$. Let x^σ to be the mean of χ. Jensen's inequality implies that

$$u_i(x^\sigma) > \int_X u_i(x)\,\chi(dx) = (1-\delta)u_i(q) + \delta V_i(\sigma) \tag{117}$$

is satisfied for all $i \in N$. It follows that $x^\sigma \in \mathrm{int}A(\sigma)$.

Next, let χ^{z^*} denote the policy lottery that is nearly equivalent to χ, but transfers probability $\frac{\delta\,\rho_\ell\,\alpha_\ell}{V^{den}(\sigma)}$ from y^* to z^*. Let x^{z^*} denote the mean of χ^{z^*}. For all $i \in N$, Jensen's inequality implies

$$u_i(x^{z^*}) > \int_X u_i(x)\,\chi^{z^*}(dx) = (1-\delta)u_i(q) + \delta V_i(\sigma) - \frac{\delta\,\rho_\ell\,\alpha_\ell u_i(y^*)}{V^{den}(\sigma)} + \frac{\delta\,\rho_\ell\,\alpha_\ell u_i(z^*)}{V^{den}(\sigma)}. \tag{118}$$

Moreover, x^{z^*} is located weakly between x^σ and z^*, which implies that $x^{z^*} \in A(\sigma)$.

Step 2: Since $z_\ell \notin A(\sigma)$ is optimal, Lemma B.1 implies that

$$m^* = (1-\delta)u_\ell(q) + \delta\tilde{V}_\ell(\sigma) - u_\ell(y^*) \tag{119}$$

$$= (1-\delta)u_\ell(q) + \delta V_\ell(\sigma) + \frac{\delta\hat{m}_\ell(\sigma)}{V^{den}(\sigma)} - u_\ell(y^*). \tag{120}$$

Accordingly, $\hat{m}_\ell(\sigma)$ is recursively defined as

$$\hat{m}_\ell(\sigma) = \rho_\ell\,\alpha_\ell\left((1-\delta)u_\ell(q) + \delta V_\ell(\sigma) + \frac{\delta\hat{m}_\ell(\sigma)}{V^{den}(\sigma)} - u_\ell(y^*)\right), \tag{121}$$

which yields

$$\hat{m}_\ell(\sigma) = \frac{\rho_\ell\,\alpha_\ell V^{den}(\sigma)[(1-\delta)u_\ell(q) + \delta V_\ell(\sigma) - u_\ell(y^*)]}{V^{den}(\sigma) - \delta\rho_\ell\,\alpha_\ell}. \tag{122}$$

Since $z_\ell \notin A(\sigma)$ is optimal, it follows that

$$u_\ell(z^*) \le (1-\delta)u_\ell(q) + \delta\tilde{V}(\sigma) \tag{123}$$

$$= (1-\delta)u_\ell(q) + \delta V_\ell(\sigma) + \frac{\delta\hat{m}_\ell(\sigma)}{V^{den}(\sigma)} \tag{124}$$

$$= (1-\delta)u_\ell(q) + \delta V_\ell(\sigma) + \frac{\delta\rho_\ell\,\alpha_\ell[(1-\delta)u_\ell(q) + \delta V_\ell(\sigma) - u_\ell(y^*)]}{V^{den}(\sigma) - \delta\rho_\ell\,\alpha_\ell}, \tag{125}$$

where (124) follows from the definition of $\tilde{V}_\ell(\sigma)$; and (125) follows from using (122) to substitute for $\hat{m}_\ell(\sigma)$ and simplifying. Next, notice that

$$\begin{aligned}
V^{den}(\sigma) - \delta\rho_\ell\,\alpha_\ell &\geq 1 - \delta \sum_{j\in N^L} \rho_j(1-\alpha_j) - \delta\rho_\ell\,\alpha_\ell && (126)\\
&= 1 - \delta\rho_\ell\,(1-\alpha_\ell) - \delta\rho_\ell\,\alpha_\ell - \delta\sum_{j\neq\ell}\rho_j(1-\alpha_j) && (127)\\
&= 1 - \delta\sum_{j\neq\ell}\rho_j(1-\alpha_j) - \delta\rho_\ell && (128)\\
&= 1 - \delta\Bigg(\rho_\ell + \sum_{j\neq\ell}\rho_j(1-\alpha_j)\Bigg) && (129)\\
&\geq 1-\delta && (130)\\
&> 0, && (131)
\end{aligned}$$

where (126) follows because Lemma B.3 implies that all lobby offers are accepted and passed under σ; (127) – (129) follow from rearranging and simplifying; (130) follows because $\rho_\ell + \sum_{j\neq\ell}\rho_j(1-\alpha_j) \leq 1$; and (131) follows because $\delta < 1$. Consequently, $V^{den}(\sigma) - \delta\rho_\ell\,\alpha_\ell > 0$. Therefore rearranging (125) and simplifying yields

$$\begin{aligned}
u_\ell(z^*)\Bigg(V^{den}(\sigma) - \delta\rho_\ell\,\alpha_\ell\Bigg) &\leq \Bigg((1-\delta)u_\ell(q) + \delta V_\ell(\sigma)\Bigg)\Bigg(V^{den}(\sigma) - \delta\rho_\ell\,\alpha_\ell\Bigg)\\
&\quad + \delta\rho_\ell\,\alpha_\ell\Bigg((1-\delta)u_\ell(q) + \delta V_\ell(\sigma) - u_\ell(y^*)\Bigg) && (132)\\
u_\ell(z^*)\Bigg(V^{den}(\sigma) - \delta\rho_\ell\,\alpha_\ell\Bigg) &\leq V^{den}(\sigma)\Bigg((1-\delta)u_\ell(q) + \delta V_\ell(\sigma)\Bigg) - \delta\rho_\ell\,\alpha_\ell u_\ell(y^*) && (133)\\
u_\ell(z^*) &\leq (1-\delta)u_\ell(q) + \delta V_\ell(\sigma) - \frac{\delta\rho_\ell\,\alpha_\ell[u_\ell(y^*) - u_\ell(z^*)]}{V^{den}(\sigma)} && (134)\\
&= \int_X u_\ell(x)\chi^{z^*}(dx), && (135)
\end{aligned}$$

which is a contradiction because $u_\ell(z^*) \geq u_\ell(x^{z^*}) > \int_X u_\ell(x)\chi^{z^*}(dx)$. It follows that ℓ strictly prefers to propose $z_\ell \in A(\sigma)$. Therefore π_ℓ places probability one on $z_\ell \in A(\sigma)$, which implies that $\overline{\nu}(x) = 1$ for all $x \in \text{supp}(\pi_\ell)$. This establishes that σ is no-delay.

□

Building upon Lemma B.6, we now show that all interest groups use pure offer strategies in every equilibrium. Lemma B.7 states the result formally.

Lemma B.7. *Every stationary legislative lobbying equilibrium is such that (i) λ_g is degenerate for all interest groups $g \in N^G$ and (ii) π_ℓ is degenerate for all committee members*

$\ell \in N^L$.

Proof. Let σ denote an stationary legislative lobbying equilibrium. By Duggan (2014), M is decisive over lotteries, which implies $A_M(\sigma) = A(\sigma)$. It follows that $A(\sigma)$ is a compact, nonempty interval.

Part 1: Consider $g \in N^g$ and $\ell \in N_g^L$. Recall $\tilde{U}_\ell(\pi_\ell; \sigma)$ as defined in (92). Lemma B.1 and Lemma B.6 together imply that λ_g^ℓ puts probability one on offers (y, m) such that

$$y = \arg \max_{y \in A(\sigma)} u_g(y) + u_\ell(y) - \tilde{U}_\ell(\pi_\ell; \sigma). \tag{136}$$

and

$$m = \tilde{U}_\ell(\pi_\ell; \sigma) - u_\ell(y). \tag{137}$$

There is a unique solution to (136) because the objective function is continuous and strictly concave in y, and $A(\sigma)$ is nonempty and compact. Thus, λ_g^ℓ puts probability one on the unique $y \in A(\sigma)$ that solves (136). It follows that λ_g^ℓ is degenerate because m is uniquely determined by (137). Since this is true for all $\ell \in N_g^L$, λ_g is degenerate.

Part 2: Consider $\ell \in N^L$. Lemma B.6 implies that π_ℓ puts probability one on $x = \arg\max_{x \in A(\sigma)} u_\ell(x)$, which is uniquely defined because u_ℓ is quadratic and $A(\sigma)$ is nonempty and compact. Therefore π_ℓ is degenerate. □

Altogether, we have shown that every stationary legislative lobbying equilibrium is equivalent in outcome distribution to a no-delay pure strategy stationary legislative lobbying equilibrium with deferential voting strategies and deferential acceptance strategies. Proposition 1.2 states the result, and corresponds to part 2 of Proposition 1 in the text.

Proposition 1.2 *Every stationary legislative lobbying equilibrium is equivalent in outcome distribution to a no-delay pure strategy stationary legislative lobbying equilibrium with deferential acceptance and deferential voting.*

Proof. Consider a stationary legislative lobbying equilibrium σ. Lemma B.7 implies that λ_g is degenerate for all $g \in N^G$ and π_ℓ is degenerate for all $\ell \in N^L$. Then, Lemma B.5 and (13) together imply that σ is equivalent in outcome distribution to an equilibrium in which all $\ell \in N^L$ use deferential acceptance strategies. Therefore Lemma B.6, Lemma B.5, and Lemma B.4 together imply that σ is equivalent in outcome distribution to a no-delay pure strategy stationary legislative lobbying equilibrium with deferential acceptance strategies and deferential voting strategies. □

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