

STRATEGIC ENDORSEMENTS

Charles M. Cameron
Department of Political Science
Columbia University
New York, NY 10027

Joon Pyo Jung
Department of International Relations
Seoul National University
Kwanak-Ku, Seoul
Korea

Version 2.0
March 14, 1994

Send comments to Cameron at cmc1@columbia.edu or 212-854-4302

Revision as of 03/14/94

Abstract

We model low information reasoning in political settings. We examine the situation in which a decision maker faces a hidden offer from a monopoly agenda setter, with interested third parties offering costless signals in the form of endorsements. Strategies and outcomes depend on the locations of proposer, endorsers, chooser, and status quo, as well as uncertainty about preferences. Broadly speaking, though, the presence of an endorser often allows the proposer and the chooser to strike efficient bargains they could not otherwise reach. Surprisingly, the chooser is often better off relying on endorsements than becoming fully informed. These findings help explain why decision makers often rely on endorsements and why, perhaps, the institution of take-it-or-leave-it bargaining is common in politics. They also suggest that the presence or absence of appropriately located cue-givers can affect how well democratic institutions operate.

Introduction

Strategic situations in politics frequently involve a "pig in a poke," a choice that must be accepted or rejected sight unseen. Prominent examples include:

- *Popular referenda.* The meaning or true consequences of complex bond proposals or highly technical changes in state constitutions may be opaque to voters, who also may have little knowledge of the interests of the proposer.

- *Legislative policy making under a closed rule.* A non-amendable budget bill may be very difficult for non-specialists to understand, and the preferences of the committee members responsible for different parts of the bill may not be fully known to the floor members.

- *Congressional oversight of the bureaucracy.* The true import of a proposed regulation may be difficult for a Congressional oversight committee to understand and the preferences of agency decision makers may not be completely clear.

- *Elections between a well-known incumbent and an unknown challenger.* In many political races, the position of the incumbent is reasonably well understood by voters. However, that of the challenger may be a cipher to most voters.

- *Decision-making in hierarchies.* A manager may have only a tenuous understanding of the implications of an alternative placed before her by subordinates.

In each of these settings, a poorly informed decision maker must make a choice between the status quo and an alternative posed by a much better informed actor with monopoly agenda setting power. Such examples raise two questions. First, how can decision makers make efficacious choices in such a situation? Second, why would rational decision makers allow the institution of monopoly agenda setting to arise? For it seems folly to concede so much power to agenda setters.

Endorsements provide a possible answer to both questions. In all the settings described, interested third parties supply the decision maker with simple information in the form of endorsements. For example, editorialists or well-known groups like the Sierra

Club or the National Rifle Association offer voters recommendations on how to vote on referenda and in elections; knowledgeable members of Congress offer their colleagues "cues" before a floor vote; trade associations or interest groups testify before oversight committees; and, outside consultants, lower level bureaucrats, or in-house auditors evaluate options for the manager.

We study endorsements in such situations by analyzing take-it-or-leave-it (TILI) bargaining games with hidden offers -- pig-in-a-poke games -- with strategic signaling by interested third parties. The games we consider have a common structure. A monopoly agenda setter, the *proposer*, makes an offer that a *chooser* must take or leave; the chooser receives a common-knowledge status quo if she refuses the offer and the offer if she accepts. The content of the offer and the preferences of the proposer are unclear to the chooser. However, the offer is perfectly understood by one or more third parties, the *endorsers*, whose preferences are well known to the chooser. The endorsers costlessly endorse the proposal or the status quo.

The questions we address are: when will endorsements be truthful and informative? What offers will be made in equilibrium? When will the presence of third party signalers lead the proposer to alter the proposal he would otherwise make? When will offers be accepted and when rejected? When does reliance on endorsements lead to better and when to worse decisions than being fully informed? Collectively, these questions address the efficacy of decision making in this setting.

Perhaps our most surprising finding is the following. Under a wide range of circumstances in TILI bargaining, *relying on endorsements leads to better outcomes for the chooser than becoming fully informed*. By relying on endorsements, the chooser can change the game between herself and the monopoly agenda setter -- a game she plays at a considerable disadvantage -- into a game between the setter and the endorser. The outcome of this game can be much better for the chooser. The power of endorsements suggests why decision makers in TILI bargaining situations often are uninformed about

their policy choices and rely on endorsements, and helps explain why TILI bargaining is common in politics.

In studying hidden offer bargaining we extend a line of analysis initiated by McKelvey and Ordeshook (1985), Grofman and Norrander (1990), and especially Lupia (1992). McKelvey and Ordeshook 1985 and Grofman and Norrander 1990 examine elections, while Lupia 1992 focuses on referenda-like situations, as we do.¹ However, Lupia 1992 assumes that any information received from third parties is completely reliable so that endorsers are not strategic actors. In our model proposals are endogenous and all actors are strategic. Hence, the proposer must take the interests of the endorsers into consideration when deciding what to offer, and the chooser must consider the interests of the endorsers and the likely preferences of the proposer when deciding what to do.

Gilligan and Krehbiel (1987, 1989) and Austen-Smith (1990, 1993) model situations that are substantively similar to the examples given above -- e.g., legislative decision making under a closed rule -- but strategically quite distinct. The information asymmetry in these models concerns the technical relationship between a nominal offer and real outcomes. The nominal offer is observed perfectly by the chooser and serves as a signal of the proposer's hidden information about the link between means and end. The information asymmetry in the model we study is the offer itself -- the chooser sees *nothing*, not even the nominal policy offered by the chooser. Under these circumstances, the offer cannot serve as a signal. Instead, signals come from a knowledgeable third party. This approach is meant to capture situations in which the ignorance of the decision maker is extreme. We see the two approaches as complementary. For example, the means-end approach seems particularly suited to studying decision making in moderately high information environments like bureaucracies and relatively simple issue arenas in legislatures, while the hidden offer approach seems better suited for studying decision making in very low information environments like most mass elections and arcane issue arenas in legislatures.

(insert Table 1 about here)

Table 1 provides an overview of the models analyzed in the paper. We discuss models 1-3 in the next section, briefly reviewing several well-known results that provide bench mark cases against which we evaluate our main results. The following section examines model 4, the basic endorsement model. We present our main result in the succeeding section, detailing equilibria in the incomplete information endorsement game (model 5). Then we extend the model to multiple endorsers (model 6), developing much of the analysis in the simple setting of two endorsers. The penultimate section analyzes the quality of decision making with strategic endorsements. The final section concludes. An appendix contains most of the technical apparatus.

Bench Mark Cases Without Endorsements

We briefly recapitulate two important results about monopoly agenda setting without endorsers. These cases provide an important baseline for evaluating later results.

Assume two actors, a proposer and a chooser (reference to Figure 1 may be helpful). Let the two actors have symmetric single-peaked utility functions defined over a unidimensional policy space $X = [a, b] \subset \mathfrak{R}$ (we assume the interval is large enough so that the endpoints play no role in the analysis in this section). Call the ideal point of the proposer t and that of the chooser c . Assume a status quo q , arbitrarily scaled so that $q = 0$. Assume for convenience that the chooser has an ideal point greater than zero. The proposer offers a proposal p . Let the strategy for the proposer be denoted $w(t)$, indicating the proposal p offered by proposer with ideal point t . Let r be the strategy for the chooser, indicating the probability with which she accepts the proposal p .

(insert Figure 1 about here)

The following device is helpful in understanding the logic of the analysis and in stating results. Define \wp_i , actor i 's *preferred set*, as the set of all points the actor weakly prefers to the status quo. Because the status quo is normalized to zero and utility

functions are assumed to be symmetrical, the proposer's preferred set \mathcal{P}_t is the interval $[0, 2t]$. Similarly for the chooser, $\mathcal{P}_c = [0, 2c]$.

To aid in exposition, we follow the standard game-theoretic convention of assigning the players gender. Arbitrarily, we refer to the proposer as "he," the chooser as "she" and, later in the paper, the endorser as "it."

Full Information

Consider the situation in which the proposal is observed perfectly by the chooser. Such games have been extensively investigated, beginning with Romer and Rosenthal 1978, 1979; Banks 1991 provides an excellent review.

We state the following proposition without proof.²

PROPOSITION 1. With full information, the following strategy profile constitutes the equilibrium. Unless t lies above the chooser's preferred set, the proposer always offers his ideal point t as the proposal. If t lies above the chooser's preferred set, the proposer offers $2c$. If the proposal lies outside the chooser's preferred set, the chooser rejects it. If the proposal lies strictly within the chooser's preferred set or at the upper boundary of the preferred set (i.e., at $2c$), the chooser accepts it. If the proposal equals zero, the chooser is free to randomize in any fashion between accepting and rejecting.

An important implication of Proposition 1 is that the proposer has *monopoly agenda setting power*. Consider the intersection of the two players' preferred sets, which is sometimes referred to as a win set. The intersection of the two preferred sets contains all the points that both players find as good or better than the status quo. Given a bargaining game between two players with full information, it seems reasonable to seek outcomes within the win set, since the proposer has no incentive to make an offer he prefers less than the status quo and the chooser has no incentive to accept an offer she prefers less than the status quo. Proposition 1 indicates the proposer can use the take-it-or-leave-it offer to force the outcome to that element of the win set he most prefers.

Hidden Offers

Now consider hidden offers without endorsers. The proposer makes an offer that the chooser must accept or reject *sight unseen*. Suppose the chooser knows t ; then the appropriate game form is shown in Figure 2.

(insert Figure 2 about here)

Lupia 1992 shows that the unique equilibrium to this hidden offer game is the following: the proposer always proposes his ideal point, the chooser rejects the proposal if t lies strictly outside her preferred set, accepts the proposal if t lies strictly within her preferred set, and is free to randomize between accepting and rejecting if t lies at a boundary of her preferred set. (That is, $w(t) = t$ for all t ; $r = 1$ if $0 < t < 2c$, $r \in [0, 1]$ if $t = 0$ or $t = 2c$, and $r = 0$ if $t > 2c$ or $t < 0$). This result is easy to understand: if the chooser is playing a strategy that puts positive weight on acceptance, the proposer should certainly offer his ideal point. If the chooser will definitely reject the offer, the proposer might as well offer his ideal point. The proposer therefore has a weakly dominant strategy in which he offers his ideal point. The chooser's strategy follows immediately.

More generally, assume the chooser is uncertain about the proposer's ideal point, so that the proposer's ideal point (his "type"), $t \in T$, is a random variable with cumulative distribution $F(\cdot)$ and density $f(\cdot)$. Hence, the game is an incomplete information version of the basic hidden offer game. Let $u_c(p)$ be the payoff to the chooser if she accepts the proposal p and $u_c(0)$ be the payoff if she rejects p and retains the status quo. Then, Proposition 2 generalizes the above result (see Lemma 2 in Lupia 1992):

PROPOSITION 2 (Pig-in-a-Poke Theorem). With no endorser, a hidden offer, and uncertainty about the preferences of the proposer, the following constitutes the equilibrium strategy profile: the proposer offers his ideal point t as the proposal, and the chooser accepts, rejects, or randomizes between accepting and rejecting the proposal as the expected utility of accepting t is greater than, less than, or equal to the utility of the status quo (i.e., as $\int_T u_c(t) f(t) dt \gtrless \geq u_c(0)$).

Proposition 2 says, if given the chance to make a hidden offer and third parties will not give away anything informative about your proposal, you should offer your most preferred proposal. If presented with a hidden TILI offer and no endorser is available to consult, you should assume the offer is the most desirable one possible from the perspective of the proposer and act accordingly, taking into account the likely interests of the proposer.

Proposition 2 is the game theoretic foundation for the old saw, "never buy a pig in a poke." When the chooser is literally buying a pig hidden in bag she should assume the worst: the seller has put the least desirable pig in the bag. Hence, she probably should reject the offer. More generally though the chooser may decide to accept a hidden offer even assuming the worst, for the worst might still be acceptable.

An important consequence of Proposition 2 is that bargaining may end inefficiently: alternatives may exist that both actors prefer to the status quo (i.e, the win set may contain elements other than the status quo), but the actors will not be able to strike a bargain because the chooser cannot trust the proposer to offer anything but his most preferred alternative.

(insert Figure 3 about here)

A Simple Endorsement Game

Now consider the game shown in Figure 3, the basic endorsement game. Again the proposer makes an offer that is hidden from the chooser. But now a third party, the endorser, sees the proposal perfectly. The endorser has preferences just like the other players (let e denote the endorser's ideal point). Before the chooser makes her choice, the endorser offers the chooser advice, sending a message (either 0 or 1). The act of sending a message costs the endorser nothing, so technically the message is "cheap talk" in a signaling game (Banks, 1991). However, even though the message is costless it may

affect the chooser's beliefs about what the proposal is. After hearing the message, the chooser opts for either the status quo or the hidden offer.

We assume throughout the paper that the endorser's preferences are common knowledge; this captures the idea of an endorser with a well-known policy reputation. In the basic endorsement game, we assume the proposer's preferences also are common knowledge (as they were in the basic hidden offer game but not the incomplete information version of the basic hidden offer game). This assumption is questionable for most situations that are reasonable to model as a hidden offer game, and we weaken it in the next section. However, the basic game provides a useful introduction to the logic of endorsements in TILI bargaining situations. We define and analyze this game carefully in the Appendix; we present the bare bones here.

Endorsement Equilibria

A strategy for the proposer is a function that selects a proposal p , given the proposer's ideal point. A strategy for the endorser is a function $s(m; p)$ that selects a message m from $M = \{0, 1\}$, given the endorser's ideal point and *given the proposer's offer* p . (The proposer's ideal point is payoff-irrelevant to the other players, who are concerned only about the proposal). A strategy for the chooser is a function that determines the probability of accepting the proposal, given ideal points of the other players and *given the message* m . We denote the chooser's beliefs about the proposal p by $\mu(p; m)$.

To determine solutions to the basic endorsement game we use a modified version of perfect Bayesian equilibrium (PBE) as an equilibrium concept. (A PBE is a Nash equilibrium in which each player's strategy maximizes the player's expected payoff given the strategies of the other players and, in the case of the chooser, her beliefs about the proposal. The beliefs of the chooser must be consistent with her prior information (*e.g.*, the ideal points of the proposer and endorser) and the equilibrium strategies of the other players, including the endorser's message strategy.) In addition, we impose a restriction on

the PBEs in this game, based on Farrell's concept of a neologism proof equilibrium (1988). This refinement places restrictions on the chooser's beliefs following the receipt of an out-of-equilibrium message. This restriction plays only a minor role in the basic endorsement game; we impose it only to maintain consistency with the later analysis, where it plays an important role in games with multiple endorsers. Additional details are supplied in the Appendix. We call the refined set of PBEs *endorsement equilibria*.

There are multiple endorsement equilibria in the game, due largely to the endorsements being cheap talk. Some of these equilibria are essentially identical to each other in that they differ only according to the labeling convention of whether "0" or "1" denotes an endorsement of the proposal. To ease exposition we adopt the convention that "1" means an endorsement of the proposal and refrain from stating the mirror equilibria; nothing of importance or interest is lost. More important, in many configurations of preferences there are equilibria in which messages convey no information (or no useful information); these equilibria may co-exist with equilibria in which endorsements convey useful information. These uninformative equilibria may be supported two ways. First, the endorser may use a pooling strategy (*i.e.*, it always sends the same message regardless of the proposal ("droning") or randomly uses both messages with a strictly positive probability of usage that is unaffected by the proposal ("babbling")). Second, the endorser may use a separating strategy, but only one message is sent in equilibrium while the chooser's beliefs following the receipt of the out-of-equilibrium message would lead her to act in the same way as following the equilibrium message (we provide an example in the Appendix in "Example of Refinement.") In this case, an endorsement does convey information but the information is not useful for the chooser. Uninformative equilibria specify the least value of endorsements that might be observed. Of much more interest is the situation in which endorsements do convey useful information. We provide more detail on uninformative equilibria in the Appendix but highlight these equilibria in the text only when they seem to deserve special comment, such as the case when no more

informative equilibrium is possible. This practice is standard in the analysis of cheap talk games and economizes on space (not to mention the reader's patience). Whenever there is no ambiguity we state an "equilibrium" but take the specification of the chooser's beliefs as understood.

Proposals and Outcomes

It is useful to distinguish between two classes of endorsement equilibria based on the strategy of the proposer. The first class is " t -equilibria" in which the proposer always offers his ideal point. The second class is " $2e$ -equilibria" in which the proposer offers a policy that the endorser is just willing to endorse. The following proposition indicates endorsement equilibria in the basic endorsement game; a formal description of strategies is given in the Appendix.

PROPOSITION 3 (Basic endorsement game). There are three cases based on the common knowledge locations of t and e .

Case 1 -- t -equilibria ($t < 2c$; $t \geq 2c$ and $e < 0$; or $t \geq 2c$ and $e \geq c$): Proposer offers t , and the chooser accepts or rejects as t lies inside or outside the chooser's preferred set. Many strategies are possible for the endorser but endorsements never affect the chooser's behavior in this case (see Appendix).

Case 2 -- $2e$ -equilibria ($t \geq 2c$ and $0 < e < c$): Proposer offers $2e$, the endorser endorses proposals lying within its preferred set, and the chooser accepts endorsed proposals and rejects unendorsed ones. Beliefs about the proposal following receipt of the out-of-equilibrium message $m = 0$ sufficiently concentrated outside the chooser's preferred set so that the expected utility of the proposal is less than the utility of the status quo.

Case 3 -- $2e$ -equilibria ($2e < t < 2c$ and $0 < e < c$): Same strategies and beliefs as Case 2.

Figure 4 illustrates the proposition when $e < c$. The figure highlights one of the two basic points emerging from the proposition: in some configurations endorsements allow the proposer and chooser to strike efficient bargains that would not be possible

absent the endorser. In particular note proposals and outcomes when $t > 2c$. The Pig-in-the-Poke Theorem indicates the chooser would reject offers from such a proposer, absent an endorser. This is true even though the two players have a non-empty win set ($\varphi_c = [0, 2c]$ and $\varphi_t = [0, 2t]$ so $\varphi_c \cap \varphi_t = [0, 2c]$). The problem arises because the chooser cannot *prove* he is offering a proposal in the win set rather than $p = t$. In contrast, the presence of the endorser creates an opportunity for the proposer to prove he has committed to a proposal in the win set, allowing an agreement to be struck. Critical to this situation is the fact that all the proposals the endorser is willing to endorse also lie within the win set, so the chooser is willing to accept any endorsed proposal.

(insert Figure 4 about here)

The second important point emerging from the proposition is that in some configurations endorsements cannot convey useful information (the " t -equilibria"). Consider $e < 0$, so the endorser lies on the flip-side of the status quo from the chooser. In this case, the chooser prefers the status quo over any proposal the endorser prefers to the status quo ($\varphi_c \cap \varphi_e = [0]$). The chooser knows that heeding the endorser's advice can only hurt her; conversely, the endorser knows the chooser will be trying to use its advice in a way that hurts it. The interests of the chooser and endorser are so far out of alignment that transmission of information is impossible: the endorser is a preference outlier, in the language of legislative signaling games (Krehbiel 1991).³ In the case when $e \geq c$ and $t \geq 2c$, an endorsement cannot assure the chooser that the proposer has committed to an offer within the win set. The problem is that there is a range of offers outside the win set (i.e., $(2c, 2e]$) that the endorser will endorse, and the proposer prefers these offers to those in the win set. Given any positive probability of acceptance following an endorsement, the proposer has an incentive to deviate to these proposals. In essence, the endorser will act collusively with a proposer whose interests are too far from those of the chooser.

Incomplete Information

When a chooser faces a hidden offer she will often be uncertain about the proposer's preferences. This section analyzes this important case. We assume the chooser's prior beliefs about the proposer's ideal point are characterized by a uniform density function $f(\cdot)$ defined over $[a, b]$ and we continue to assume a single endorser. (The chooser's posterior beliefs $\mu(t; m)$ now concern the proposer's *type* rather than the proposal directly). To avoid an unmanageably lengthy proposition we describe equilibria in three parts; proofs and formal details are given in the Appendix.

Endorser is a Status Quo Defender

The first set of equilibria occur when $0 \leq e \leq c$. In this configuration the endorser can be called a "status quo defender." The critical point about a status quo defender is that its preferred set is a subset of the chooser's preferred set. Hence, the interests of the two actors are in perfect accord with respect to proposals *inside* the endorser's preferred set. However, the interests of the two actors may diverge over proposals *outside* the endorser's preferred set, for the chooser would prefer to accept some of these proposals.

It is useful to define a point θ on X such that

$$\frac{\int_a^0 U_c(t) f(t) dt + \int_\theta^b U_c(t) f(t) dt}{\int_a^0 f(t) dt + \int_\theta^b f(t) dt} = U_c(0)$$

When $\int_a^0 U_c(t) f(t) dt \geq U_c(0)$ such a θ always uniquely exists and $0 \leq \theta < 2c$ (see the

Appendix).

Although this expression may appear formidable, it has a simple interpretation. The left hand side is an expected utility for the chooser when her beliefs about the proposer's type are concentrated outside an interval $[0, \theta]$ and the proposer offers his

ideal point as the proposal. Moreover, θ is set so that this expected utility is exactly equal to the utility of accepting the status quo. To see the significance of θ , consider an equilibrium in which the endorser uses a separating strategy, the proposer offers t , and the chooser accepts all proposals even if not endorsed -- an "always accept" equilibrium. If $0 \leq \theta \leq 2e$ (or θ does not exist) then such an equilibrium cannot exist: if the proposal is not endorsed then the chooser is sufficiently "pessimistic" about the likely proposer (since posterior beliefs must be concentrated below zero and above $2e$) that she prefers the status quo. But suppose $2e < \theta < 2c$. If the proposal is not endorsed beliefs are concentrated below 0 and above $2e$, but they need only be concentrated below 0 and above θ to make the expected utility of the proposal greater than that of the status quo. In this case the chooser's beliefs about the proposer are sufficiently "optimistic" to support the "always accept" equilibrium. Whether posterior beliefs are pessimistic or optimistic (in this sense) depends on the size of the policy space (i.e., on the locations of a and b), the locations of c and e , and the shape of prior beliefs $f(\cdot)$.

PROPOSITION 4A ($0 \leq e \leq c$ -- endorser is a status quo defender). There are two cases depending whether beliefs are "pessimistic" or "optimistic" (as defined using θ).

Case i -- "pessimistic" beliefs ($0 \leq \theta \leq 2e$ or θ does not exist): Proposer offers $2e$ if $t > 2e$ and t otherwise; endorser endorses proposals in its preferred set; chooser accepts endorsed proposals and rejects unendorsed ones.

Case ii -- "optimistic" beliefs ($2e < \theta < 2c$)

a) *"always accept" equilibrium:* Proposer always offers t ; endorser endorses proposals in its preferred set; chooser always accepts the proposal.

b) *2e-equilibrium:* same strategies as pessimistic beliefs.

c) *mixed strategy equilibrium:* Proposer offers $2e$ if $2e < t < \theta$ and t otherwise; endorser endorses proposals in its preferred set; chooser accepts endorsed proposals and probabilistically accepts unendorsed ones (see Appendix).

The proposition indicates that "pessimistic" beliefs (defined using θ) can support only a " $2e$ " separating equilibrium. However, "optimistic" beliefs support three types of separating equilibria. The first is an "always accept" separating equilibrium, whose existence is intuitively obvious given optimistic beliefs. The second is a " $2e$ " equilibrium. This equilibrium exists because endorsements can create a kind of social convention. Given the existence of the convention, an unendorsed proposal is interpreted by the chooser as a very bad proposal -- despite the fact that absent the convention the chooser would optimistically accept such a proposal. Finally, there is a mixed strategy equilibrium that turns on two knife-edge conditions. First, the chooser must be exactly indifferent between accepting and rejecting an unendorsed proposal. Second, the chooser must randomize between accepting and rejecting unendorsed proposals in just such a way that proposer types falling between $2e$ and θ are better off proposing $2e$ and receiving it for sure than offering t and possibly receiving the status quo, while proposers above θ are better off offering t and facing a lottery between t and the status quo.

Equilibrium refinements based on restricting out-of-equilibrium beliefs cannot eliminate any of the multiple equilibria in Case ii for there are no unreached information sets in these equilibria.

Endorser is A Relative Extremist

The second broad case occurs when $0 < c < e$, so the endorser is more extreme (relative to the status quo) than the chooser. The critical feature of this case is that the chooser's preferred set is a subset of the endorser's preferred set. Hence, the interests of the two actors are in perfect accord with respect to proposals *outside* the endorser's preferred-to set. However, proposals within the endorser's preferred-to set could lie

either inside or outside the chooser's preferred set. Implicit collusion between the endorser and an extremist proposer (i.e., $t > 2c$) becomes a possibility.

Given the possible divergence of interests between endorser and chooser, the following intuition seems sensible. If the chooser is "optimistic" -- that is, following an endorsement she places sufficient weight on the possibility that the proposer's ideal point lies within her preferred set rather than above $2c$ -- she will accept an endorsed proposal. In this case, a "2e" equilibrium is sustainable. But if she is "pessimistic" about the proposer, so even following an endorsement in a "2e" equilibrium she would place a great deal of weight on the possibility the proposer lies above $2c$, the "2e" equilibrium cannot be sustained.

The following device sharpens this intuition. Let ω to be the expected utility of accepting a proposal after hearing an endorsement in a "2e" equilibrium. That is,

$$\omega \equiv \frac{\int_0^{2e} U_c(t) f(t) dt + \int_{2e}^b U_c(2e) f(t) dt}{\int_0^b f(t) dt}$$

assuming $b > 2e$.⁴ If $\omega \geq u_c(0)$ the chooser is "optimistic"; if $\omega < u_c(0)$ the chooser is "pessimistic." Whether beliefs are optimistic or pessimistic depends on the locations of b , c , and e , and the shape of prior beliefs $f(\cdot)$.

PROPOSITION 4B ($0 < c < e$). There are two cases, depending on whether the chooser is "optimistic" or "pessimistic."

Case i -- optimistic beliefs ($\omega \geq u_c(0)$): Proposer offers $2e$ if $t > 2e$ and t otherwise; endorser endorses proposals in its preferred set; chooser accepts endorsed proposals and rejects unendorsed ones.

Case ii -- pessimistic beliefs ($\omega < u_c(0)$): Proposer always offers t ; endorser endorses proposals in its preferred set; chooser always rejects the proposal.

Flip Side Endorser

When $e < 0 < c$ the endorser lies on the flip side of the status quo from the chooser. Critically, their preferred sets do not overlap except at the status quo. Hence, the two actors' interests are completely opposed and no information transmission can occur: the endorser is preference outlier. Only a pooling equilibrium is possible. The chooser's decision to accept or reject the proposal then reflects her initial judgment about the likely preferences of the proposer.

PROPOSITION 4C ($e < 0 < c$ -- flip-side endorser). Only a pooling equilibrium is possible.

Proposer offers t ; endorser pools; chooser accepts the proposal if the expected utility of the proposal is greater than the utility of the status quo, and rejects otherwise.

Multiple Endorsers

In this section we extend the analysis to multiple endorsers, focusing on the two endorser game; extensions to more endorsers follow easily.

In the two endorser game, there are two endorsers with ideal points at l and h , $l < h$. After observing the proposal p made by the proposer, each endorser simultaneously selects a message $m_j \in M = \{0,1\}$, where as before the message 0 is interpreted as endorsing the status quo and the message 1 the proposal p . Together the two messages form the message vector $\mathbf{m} = (m_l, m_h)$. The chooser, after seeing the message vector, either accepts or rejects the unobserved proposal p .

Equilibria in the Two Endorser Game

The earlier analysis established that an endorser whose ideal point lies below the status quo cannot send useful information; consequently her message is completely

ignored by the chooser (see Proposition 4c). This analysis is directly applicable in cases when one or both endorsers lie below zero (see Lemma 2 and Proposition 4).

In the Appendix we provide a lemma that characterizes proposer strategies when both endorsers lie above zero (Lemma 4). Two important points stand out from this lemma. First, unless the endorsers straddle the chooser, the proposer's strategy depends only on the ideal point of at most one endorser and at most one endorser sends useful information (excepting a special case when $p = 0$, discussed in Remark 3 following Lemma 4). Consequently, *these cases can be analyzed as if there were but one endorser, using Proposition 4*. Second, when the endorsers straddle the chooser's ideal point, both endorsers can send useful information with the proposer's strategy depending on the ideal points of both endorsers (case d.1 in Lemma 4; Remark 2 following the lemma supplies additional detail).

Since all cases except when $0 < l < c < h$ can be analyzed as if there were but one endorser, we concentrate on that case. A formal and more careful description of strategies is given in the Appendix.

PROPOSITION 5. If $0 < l < c < h$, there are three cases with non-pooling strategies by endorsers.

Case 1 -- $2l$ equilibria (for all configurations of ideal points): Proposer offers t if $t \leq 2l$ and $2l$ otherwise; endorsers endorse proposals within their preferred set; chooser accepts or rejects as lower endorser endorses or not.

Case 2 -- $2h$ equilibria ("optimistic" beliefs only -- see text and Appendix): Proposer offers t if $t \leq 2h$ and $2h$ otherwise; endorsers endorse proposals within their preferred set; chooser accepts or rejects as higher endorser endorses or not.

Case 3 -- mixed strategy equilibrium (requires a knife-edge condition on beliefs detailed in the Appendix): proposer offers t if $t < 2l$ and otherwise chooses between $2l$ or $2h$ depending on probability of a turndown if only the high endorser endorses; the endorsers endorse proposals in their preferred sets; chooser accepts the proposal if both endorse it, rejects if neither do, and probabilistically accepts if only the high endorser endorses (see Appendix

for details).

There are some simple intuitions for Proposition 5 involving what Gilligan and Krehbiel call "confirmatory signaling" (1989). First note that when two endorsers straddle the chooser the proposal space divides naturally into three regions. The first region lies between 0 and $2l$, the second above $2l$ but below $2h$, and the third below 0 and above $2h$. Except in pooling equilibria, both endorsers endorse proposals in the first region, so $\mathbf{m} = (1,1)$. Only the high endorser endorses proposals in the second, so $\mathbf{m} = (0,1)$. Neither endorser endorses proposals in the third region, so $\mathbf{m} = (0,0)$. (We discuss the relatively unilluminating case of $\mathbf{m} = (1,0)$ in the Appendix).

The messages $(0,0)$ and $(1,1)$ involve confirmatory signaling since both signalers send the same signal. Moreover, in the first case the chooser should definitely accept the proposal since it must lie with her preferred set, while in the second she should definitely reject it since it must lie outside her preferred set. All the equilibria in Proposition 5 reflect this simple logic of confirmatory signaling.

More difficult is the case when the endorsers send "conflicting" advice, i.e., the message $(0,1)$, meaning the proposal lies above $2l$ but below $2h$. If the proposal lies between $2l$ and $2c$ the chooser would like to accept it, but if it lies above $2c$ and below $2h$ she would like to reject it. Given this fact, one can interpret the three non-pooling equilibria in the following way. In the first equilibrium, the " $2l$ " equilibrium, the chooser implicitly threatens to reject the proposal unless the low endorser endorses it. This threat forces a proposer with positive ideal point to make an offer in the region between 0 and $2l$, eliciting endorsements from both endorsers. Sustaining the implicit threat are beliefs following receipt of the out-of-equilibrium message $(0,1)$ that place sufficient weight on t 's greater than $2c$ to make rejecting the proposal more attractive than accepting it. In the second equilibrium, the " $2h$ " equilibrium, the chooser implicitly threatens to reject the proposal unless the high endorser endorses it. This threat forces proposers with positive ideal points to make an offer in the region between 0 and $2h$, sometimes eliciting

endorsements from both endorsers and sometimes from only the high endorser. This equilibrium can hold only if the chooser is “optimistic” about the proposer following the receipt of the message $(0,1)$ (which is an equilibrium message in this equilibrium). That is, the chooser must believe it sufficiently likely that t lies below $2c$ so that an endorsement from only the high endorser probably connotes a proposal between $2l$ and $2c$ rather than one between $2c$ and $2h$ (an exact expression for the relevant expected utility calculation is given in the Appendix). In the third equilibrium, the mixed strategy equilibrium, the chooser implicitly threatens to reject the proposal for sure unless the high endorser endorses it, and possibly to reject it unless the low endorser endorses it. None of these equilibria can be eliminated with standard equilibrium refinements.

Multiple Endorsers

The presence of multiple endorsers allows the construction of many implausible equilibria. For example, consider the case when many endorsers lie between zero and c , with the leftmost endorser being l . The following is a perfect Bayesian equilibrium (though not an endorsement equilibrium): proposer offers t if $t \leq 2l$ and $2l$ otherwise; endorsers endorse proposals in their preferred sets; chooser accepts only if the leftmost endorser endorses. In this equilibrium the chooser heeds only l even though the other endorsers are closer. Equilibria of this kind do not survive the equilibrium refinement discussed earlier (details are given in the Appendix). Nor do similar equilibria involving many endorsers to the right of the chooser. Given this fact, Proposition 6 follows:

PROPOSITION 6. In any neologism-proof equilibrium with multiple endorsers, there are at most two endorsers, one closest from the left and the other closest from the right of the chooser, whom the chooser heeds.

Given Proposition 6, cases with many endorsers can be analyzed simply using Propositions 4 and 5.

The Quality of Decision Making

Can a poorly informed decision maker make good decisions by relying on strategic endorsements? In this section we analyze the quality of the chooser's decisions by compare the chooser's utility across three TILI bargaining regimes: hidden offer TILI bargaining without endorsements, hidden offer TILI bargaining with endorsements, and TILI bargaining without hidden offers (i.e., full information). In these comparisons, we assume a " $2e$ " equilibrium prevails in the endorsement regime whenever parameters allow this possibility; otherwise the comparison is uninteresting.⁵ We focus on the one endorser game because, as shown in the previous section, equilibria in the two endorser game can always be treated as if only one endorser existed (excluding the mixed strategy equilibrium).⁶ For the sake of simplicity we utilize pure rather than mixed strategy equilibria, and implicitly assume $b > \max\{2e, 2c\}$.

Ex post Perspective

First consider the chooser's utility ex post, that is, after play of the game. We begin with the case when $2e \geq c$. Figure 5 compares the chooser's utility outcomes under the full information and endorsement regimes for a typical example of this case. If the proposer type lies below $2e$, the two regimes produce the same utility. As shown by the horizontal hatching in the figure, if the proposer type lies above $2e$ *the endorsement regime is superior to the full information regime*. The reason for the superiority of endorsements over full information is simple: in order to secure an endorsement, the proposer must modify his offer in a way that advantages the chooser. From the chooser's perspective, the best location for an endorser is $2e = c$, i.e., $e = \frac{c}{2}$. When $c = e$ (so $2c = 2e$) the two regimes are completely equivalent in terms of ex post utility.

(Figures 5, 6, and 7 about here)

Now consider the case when $2e < c$. As shown in Figure 6, the two regimes produce the same utility if the proposer's type lies below $2e$. If the proposer's type lies

between $2e$ and $\delta = 2c - 2e$, the full information regime yields better outcomes for the chooser (shown by vertical hatching). If the proposer's type lies above δ the endorsement regime is superior to the full information regime (horizontal hatching). The closer e lies to the status quo, the broader the range of proposer types in which the full information regime yields the chooser better outcome -- not surprisingly, for as e approaches the status quo an endorsement conveys less information.

The third case occurs when $0 < c < e$. Figure 7 shows the two information regimes produce the same utility for proposer types less than $2c$. For proposer types greater than $2c$, the full information regime yields better outcomes for the chooser.

Suppose there were many endorsers, so that the chooser is straddled by two very close endorsers. As the location of the closest endorsers converges with the chooser's ideal point, the two regimes become equivalent for the chooser.⁷

Comparisons with hidden offers without endorsements is straight forward. If the chooser always rejects the offer, she receives utility of $-c$; if she always accepts then she receives utility of $-|t - c|$. Hence, both the full information and the endorsement regimes are never worse and often better than hidden offers without endorsements.

Ex ante Perspective

More useful than the ex post perspective is an ex ante perspective, comparing the *expected* utility of the chooser under the different informational regimes, given a probability distribution over the types of proposers. An ex ante perspective suggests that relying on strategic endorsements is good only if the advantage of doing so is robust across likely realizations of proposer types.

Calculating ex ante expected utility is straight forward; for example, the expected utility under the endorsement regime in Figure 5 is simply the area above the endorsement line divided by $(b - a)$. When $2c > 2e \geq c$, expected utility in the endorsement regime must be greater than that in the full information regime for any probability distribution of

proposer types whose support extends above $2e$.

The case when $0 \leq 2e < c$ is somewhat more complicated. Referring to Figure 6, if $2e = c$ then the endorsement regime necessarily dominates the other regime. On the other hand, if $2e = 0$, the full information regime dominates the endorsement regime. Clearly, given a support for proposer types extending above $2c$, it must be case that for some value τ of $2e$ lying between 0 and c , the two regimes will have the same expected utility. Some algebra indicates that if proposer types are uniformly distributed over $[a, b]$, $\tau = b - \sqrt{b^2 - 2c^2}$. For a fixed c , the value of τ becomes smaller as b becomes bigger. Therefore, the endorsement regime is more likely to dominate the full information regime as b increases. When $e > c$, the full information regime is obviously better than the endorsement regime.

Given $a < 0$ and $b > 2c$, the no-endorsement regime cannot be better than the full information or endorsement regimes and is sometimes worse (ex post); hence, it must be inferior ex ante.

Implications

The preceding analysis indicates that low levels of information need not be a liability for decision making in take-it-or-leave-it bargaining. In fact, reliance on endorsements can be better than full information provided the endorser lies within a fairly wide range. Interestingly, the best placed endorser does not have the same ideal point as the chooser but is closer to the status quo than the chooser ($e = \frac{c}{2}$.)

Why can reliance on endorsements result in better outcomes than full information under TILI bargaining? Under full information the ability to make a take-it-or-leave-it offer confers a powerful first mover advantage on the proposer -- this is the essence of Proposition 1. Relying on the advice of an interested third party attacks the informational foundation of the proposer's first mover advantage, effectively transforming the game between the proposer and chooser into one between the proposer and endorser. With an

appropriately situated endorser, the outcome of the transformed game is much better for the chooser. We should not be surprised, therefore, to see choosers in TILI situations relying on endorsements.

An important question, however, is the following: why should a decision maker choosing among different procedures use any of the take-it-or-leave-it regimes? Why not use a procedure in which she can easily modify proposals (like the open rule in Congress)? The problem in making this comparison is information costs. The fundamental assumption in the hidden offer model is that the information costs for understanding proposals are extremely high. A procedure like the open rule may simply be infeasible, or entail onerous information costs. Pursuing this point is beyond the scope of this paper, but it is worth noting that when $t > c$ and $e = \frac{c}{2}$, no alternative decision making procedure can give a superior result for the chooser than TILI bargaining with endorsements. This is a special case but it suggests to us that high information costs can make TILI bargaining with endorsements an attractive procedure, provided an appropriate endorser is available.

Conclusion

An old question in the study of American politics is, "How, and how well, does American representative democracy function in light of limited and badly fragmented political information?" (Kuklinski 1991). Recent research has shown how poorly informed individuals can make decisions almost as if they were perfectly informed, by relying on easily acquired information.⁸ For example, McKelvey and Ordeshook's experimental studies of low information reasoning lead them to conclude that "lack of information, by itself, does not necessarily preclude the democratic process from being attracted to full information outcomes" (1990 p. 312). Summarizing broadly, the lesson from this recent work is: analysts should direct more attention to information environments and less to the knowledge of decision makers *per se*. If decision makers

have access to cues, it may not matter that they know little themselves. This lesson applies not only to mass electorates but to decision makers in institutions as well.

This shift in analytical focus raises as many questions as it settles. One question is, how does reliance on cues by uninformed decision makers affect the behavior of the elites who shape policy alternatives? Our research addresses this question in the special but common setting of take-it-or-leave-it bargaining. We uncover a tendency to converge to full information outcomes in settings with many endorsers. But we uncover an even more intriguing finding when endorsers do not closely bracket the chooser. We show that reliance on endorsements can then help the chooser to undercut the proposer's monopoly agenda setting power, often forcing more attractive offers from the proposer. In its most extreme form this effect can be so strong that no alternative procedure could yield a superior outcome for the chooser. In light of these findings, we no longer find it surprising that choosers in take-it-or-leave-it bargaining often rely on strategic endorsements, nor that take-it-or-leave-it bargaining is relatively common in politics.

We stress that "ignorance is bliss" is *not* the lesson of the model. Rather, the real lesson is the critical importance of the ideological or policy orientation of available cue givers. The key issue for those who would ask Kuklinski's question may be, under what circumstances will decision makers have *appropriate* cues? In the context of mass decision making this perspective suggests focusing on the distribution of vocal interest groups, the incentives of the mass media to cultivate political identities, and the willingness of political leaders to take public stands on the issues. It also suggests analyzing political entry barriers for endorsers.

Similar issues arise in institutions. For example, the ideological orientation of a potential watch dog is likely to affect how much control Congress can exert over the bureaucracy and thus how much authority Congress will delegate (O'Epstein 1993). The presence of appropriately placed cue-givers on a committee may determine Congress's willingness to delegate to its own committees, as emphasized in recent work by Gilligan

and Krehbiel (1990). This perspective also suggests that lobbying need not have the pejorative connotations associated with it.

In short, this line of inquiry offers new insights into old questions in democratic theory. Formal models of low information reasoning re-direct attention to the design of political institutions, the appropriate role of interest groups in society, the importance of the media, and the capacity of political leaders to mold opinion.

Appendix

Simple Endorsement Game

Strategies. We denote a strategy for the proposer as $w(t)$, a proposal given t . A signaling strategy s for the endorser is a function $s: X \rightarrow \Delta(M)$, where for a finite set D , $\Delta(D)$ denotes the set of probability distributions over D . We write $s(m; p)$ for the probability that the endorser sends message m given she observes proposal p . For example, $s(1; p)$ is the probability that endorser endorses the proposal p . A response strategy for the chooser is a function $r: M \rightarrow \Delta(A)$. Let $r(m) = r(a_1; m)$ denote the probability that the chooser accepts the proposal p given message m .

Utility. We assume each player i has a "tent" utility function on X with ideal point at i : $u_i(x) = -|x - i|$. Given beliefs $\mu(p; m)$ and the strategy of the proposer $w(t)$, if the chooser accepts p her payoff is equal to $u_c(\mu, m, a_1) = \int_X u_c(w(t)) \mu(p; m) dp$. If she rejects p , her payoff is $u_c(\mu, m, a_0) = u_c(0)$. Therefore, the chooser's expected payoff from using strategy r given her beliefs μ and the message m is

$$u_c(\mu, m, r) = r \int_X u_c(w(t)) \mu(p; m) dp + (1 - r) u_c(0)$$

Given the proposal p and the strategy of the chooser r , the payoff to the endorser of sending message m is $u_e(p, m, r) = r(m) u_e(p) + (1 - r(m)) u_e(0)$. Therefore, the endorser's expected utility from using strategy $s(p)$ is

$$u_e(p, s, r) = \sum_{m \in M} s(m; p) \{r(m) u_e(p) + (1 - r(m)) u_e(0)\}$$

The payoff to the proposer of offering p is

$$u_i(p, s, r) = \sum_{m \in M} s(m; p) \{r(m) u_i(p) + (1-r(m)) u_i(0)\}$$

Solution concept. A perfect Bayesian equilibrium (PBE) of the basic endorsement game is a set of strategies w^* , s^* , r^* , and posterior beliefs μ^* that together satisfy:

- (i) $w^*(t) = p'$ only if $\forall p \in X$, $u_i(p', s^*, r^*) \geq u_i(p, s^*, r^*)$;
- (ii) $\forall p \in X$, $s^*(m'; p) > 0$ only if $\forall m \in M$, $u_e(p, m', r^*) \geq u_e(p, m, r^*)$;
- (iii) $\forall m \in M$, $r^*(a'; m) > 0$ only if $\forall a \in A$, $u_c(\mu^*(p, m), m, a') \geq u_c(\mu^*(p, m), m, a)$;
- (iv) $\mu^*(p; m)$ satisfies Bayes' rule whenever possible.

In addition we impose the following equilibrium refinement, which we state in sufficient generality to cover the case of multiple endorsers. For any set $D \subseteq X$, define $\mu(D)$ be the set of beliefs (probability distributions over D) that puts positive weight on $p \in X$ only if p is in D : $\mu(D) = \{\mu(\cdot) \in \mu(X); u(p) > 0 \text{ only if } p \in D\}$. For any beliefs $\mu(\cdot)$, let $r(\mu)$ be the chooser's optimal response given her beliefs μ . Let $u_i(p, r(\mu))$ be the payoff to i when the proposal is p and the chooser uses r as her optimal response given her beliefs μ . Given a PBE (w^*, s^*, r^*, μ^*) in the endorsement game, we say the set D is *self-signaling* for endorser j if (1) endorser j strictly prefers for the chooser to believe that p is in D if p is indeed in D than to be treated according to r^* and (2) she has no positive incentive to let the chooser believe that proposal p is in D if p is not in fact in D . That is, for endorser j

$$1) \forall p \in D, u_i(p, r(\mu)) > u_i(p, r^*(\mu^*)) \text{ for all } \mu \in \mu(D)$$

and

$$2) \forall p \notin D, u_i(p, r(\mu)) > u_i(p, r^*(\mu)) \text{ for no } \mu \in \mu(D)$$

We say a PBE (w^*, s^*, r^*, μ^*) is *neologism-proof* if

- i) no endorser has a non-empty self-signaling set,

or

ii) for any nonempty self-signaling set D that exists,

$$\forall p \in D, w^*(t) \notin D \text{ and } u_t(w^*(t), r^*(\mu^*)) \geq u_t(p, r(\mu))$$

Part ii) allows an endorser to have a non-empty self-signaling set, but no equilibrium proposal belongs to that self-signaling set and the proposer type is not willing to deviate from the equilibrium to take advantage of the existence of the set. We define the set of neologism-proof PBE as *endorsement equilibria*. Note that this refinement assumes the existence of an available out-of-equilibrium message even in a babbling equilibrium; see Farrell 1988 or Austen-Smith 1992 Section 5.2 for a discussion.

Example of refinement. Consider the following PBE. Configurations are: $t > 2c$, $0 < e \leq c$. Strategies: $w^*(t) = t$; $s^*(p)$ babbling or droning; $r^*(m) = 0 \forall m$. If droning, $\mu(p, m')$ sufficiently concentrated outside $[0, 2c]$ to lead to rejection. This PBE is not neologism-proof, as $D = [0, 2e]$ is a self-signaling set, and any $\mu(p)$ concentrated on D leads to acceptance. This example shows how the refinement can eliminate uninformative equilibria. Conversely, consider the following PBE. Configuration: $0 < e < c$, and $0 < t < 2e$. Strategies: $w^*(t) = t$; $m = 1$ if $p \in [0, 2e]$ and 0 otherwise; $r^*(m) = 1 \forall m$; $\mu(p; 0)$ concentrated on $(2e, 2c]$. Endorsements convey information but the information is not useful to the chooser. This PBE is neologism proof, as there are some beliefs outside $[0, 2e]$ that lead to rejection.

Proposition 3. There are three cases based on the common-knowledge locations of t and e .

Case 1 -- t-equilibria ($t < 2c$; $t \geq 2c$ and $e < 0$; or $t \geq 2c$ and $e \geq c$):

$$w^*(t) = t$$

$$r^*(m) = \begin{cases} 0 & \text{if } t < 0 \text{ or } t > 2c \\ \alpha \in [0, 1] & \text{if } t = 0 \text{ or } 2c \\ 1 & \text{if } 0 < t < 2c \end{cases}$$

Case 2 -- 2e-equilibria ($t \geq 2c$ and $0 < e < c$)

$$w^*(t) = 2e$$

$$s^*(1; p) = \begin{cases} 1 & \text{if } 0 < p < 2e \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(m) = \begin{cases} 1 & \text{if } m = 1 \\ 0 & \text{otherwise} \end{cases}$$

Case 3 -- 2e-equilibria ($2e < t < 2c$ and $0 < e < c$)

Same strategies as Case 2

$\mu(p; 0)$ (beliefs about the proposal following receipt of the out-of-equilibrium message $m = 0$) sufficiently concentrated above $2c$ or below 0 so that $\int_x u_c(p) \mu(p, 0) dp < u_c(0)$.

Proof. Follows straightforwardly from the definition of an equilibrium given above. ♦

Pooling and uninformative equilibria in the basic endorsement game. If $e < 0$, only pooling equilibria are possible; hence, they are listed in Case 1. Because many readers may be skeptical about the "2e-equilibria" given in Case 3 (discussed immediately below), we highlight the alternative "t-equilibria" for this configuration (included in Case 1 under " $t < 2c$ "); these equilibria may be sustained either with endorser pooling or useless endorsements. When $t \geq 2c$ and $e \geq c$ only t-equilibria are possible. They may be sustained by babbling or droning, but also by useless endorsements. PBE in which the endorser pools are not neologism proof when $0 < e < c$ and $t < 0$ or $> 2c$; $e = c$ and $t = 0$ or $2c$; $0 < c < e$ and $0 < t < 2c$.

Comment on case 3. It can be argued that the endorsement equilibria in Case 3 are implausible on two grounds. First, on substantive grounds it is hard to see why an endorser should even exist in this configuration given the close convergence of interests between the proposer and chooser. The equilibrium is then seen as an artifact of imposing an endorser and forcing the chooser to pay attention to it. Second, the equilibrium is supported by odd beliefs following the receipt of the out-of-equilibrium message $m = 0$: given the message the chooser must believe that the proposer has (mistakenly?) offered a

proposal quite distant from that desired by any player in the game, including the proposer. This equilibrium cannot be eliminated by any standard equilibrium refinement (e.g., properness) because these refinements are defined only for finite games. We conjecture the equilibrium would not survive properness if the continuous policy space X were replaced by a finite set (say, a subset of the natural numbers). Nothing of any importance or interest in the paper hinges on elimination of this implausible equilibrium so we do not pursue this point any further.

One Endorser, Incomplete Information

Utility and solution concept. Definitions of expected utility and the solution concept are identical to that above, except i) the chooser's posterior beliefs concern proposer types rather than proposals, and ii) for the equilibrium refinement ...

Lemma 1. In any equilibrium where message 0 has the meaning of endorsing the status quo q (and 1 the proposal p) it is always the case that $r(1) \equiv r(a_1; 1) \geq r(a_1, 0) \equiv r(0)$

Proof. If $r(1) = r(0)$, then Lemma 1 is obviously true (this is the case where no useful information is transmitted from the endorser and Proposition 2 will hold in this kind of equilibrium). So suppose that the chooser's equilibrium strategy r is such that $r(m) > r(m')$, $m \neq m'$, then the endorser should select message m over m' if $u_e(p, m, r) > u_e(p, m', r)$, that is

$$s(m, p) = \begin{cases} 1 & \text{if } \{r(m) - r(m')\}\{u_e(p) - u_e(0)\} > 0 \\ a \in [0, 1] & \text{if } \{r(m) - r(m')\}\{u_e(p) - u_e(0)\} = 0 \\ 0 & \text{if } \{r(m) - r(m')\}\{u_e(p) - u_e(0)\} < 0 \end{cases}$$

Therefore, if $r(m) > r(m')$, the endorser chooses message m with probability 1 if $u_e(p) - u_e(0) > 0$, which is equivalent to the condition $p(2e - p) > 0$ (note the italicized part of the proof of Lemma 2 for a qualification). Since we are dealing only with equilibria where common sense meaning is attached to the messages, it follows that, in any equilibrium, $m = 1$ and $m' = 0$ if $r(m) > r(m')$. ♦

Lemma 2. In any equilibrium, $w(t) = t$ if $r(1) = r(0)$. And if $r(1) > r(0)$, then

$$w(t) = \begin{cases} t & \text{if } t \leq 2e \text{ or } t \geq 2e \frac{r(1)}{r(0)} \\ 2e & \text{if } 2e < t < 2e \frac{r(1)}{r(0)} \end{cases}$$

When $r(0) = 0$, then $w(t) = 2e$ for all $t > 2e$.

Proof. Suppose in equilibrium $r(1) = r(0)$. Then Proposition 2 (the Pig-in-the-Poke Theorem) holds and all types offer their ideal point. So suppose $r(1) > r(0)$. Then the proposer can elicit message 1 for sure if he offers a proposal p such that $p(2e - p) > 0$; doing so yields him the expected payoff $r(1)u_t(p) + (1 - r(0))u_t(0)$.

Consider first the case when $e > 0$. If the proposer is going to elicit message 1, then he will choose the proposal p that maximizes his payoffs among the proposals that elicits message 1 for sure. Therefore, he will propose 0 if $t < 0$; t if $0 \leq t \leq 2e$; and $2e$ if $t > 2e$. On the other hand, if he is going to elicit message 0, he will propose t if $t < 0$; 0 if $0 \leq t < e$; $2e$ if $e \leq t < 2e$; and t if $t \geq 2e$. Comparing the payoffs resulting from eliciting $m = 1$ versus $m = 0$ it will be seen that

$$w(t) = \begin{cases} t & \text{if } t \leq 2e \text{ or } t \geq 2e \frac{r(1)}{r(0)} \\ 2e & \text{if } 2e < t < 2e \frac{r(1)}{r(0)} \end{cases}$$

(If $r(m) = 0$, all the types $t > 2e$ propose $2e$.) Note that, if $r(1) > r(0)$, the endorser in any equilibrium must endorse the proposal p with probability 1 when $p = 2e$ (i.e., $s(1; 2e) = 1$). To see this, suppose that $s(1; 2e) < 1$. Then the "type $2e$ " proposer can propose a proposal $(2e - \delta)$ and elicit message 1 with probability 1, where δ is an arbitrarily small positive number such that

$$r(1)u_{2e}(2e - \delta) + (1 - r(1))u_{2e}(0) > \sum_{m \in \{0,1\}} s(m; 2e) \{r(m)u_{2e}(2e - \delta) + (1 - r(m))u_{2e}(0)\}$$

However, a type $2e$ proposer offering $(2e - \delta)$ cannot be part of the equilibrium, since for any δ the proposer can instead propose, for example, $\delta/2$. Therefore, in the equilibrium the endorser must endorse the proposal $2e$ with probability 1. Therefore, the endorser can

randomize between two messages only when $p = q (= 0)$.

Now consider the case when $r(1) > r(0)$ but $e < 0$. Similar reasoning yields

$$w(t) = \begin{cases} t & \text{if } t \geq 2e \text{ or } t \leq 2e \frac{r(1)}{r(0)} \\ 2e & \text{if } 2e \frac{r(1)}{r(0)} < t < 2e \end{cases}$$

(If $r(m) = 0$, then all the types $t < 2e$ propose $2e$.) However, the above strategy of the proposer and the specified endorser's strategy cannot be consistent with the assumption that $r(1) > r(0)$; given the posterior beliefs μ based on Bayes' rule, it is always the case that for any $r(1) > 0$,

$$u_c(\mu, 1, r) = \frac{\int_{2e \frac{r(1)}{r(0)}}^{2e} U_c(2e) f(t) dt + \int_{2e}^0 U_c(t) f(t) dt}{\int_{2e \frac{r(1)}{r(0)}}^0 f(t) dt} < u_c(0)$$

implying $r(1) = 0$ (recalling from Lemma 1 that in any equilibria $r(1) \geq r(0)$). (Note that this case applies to Case 3 in Theorem 2.) A contradiction. ♦

Existence of θ in proposition 4a. It is easily shown that if $a^2 < 4bc - b^2 - 3c^2$, then

$c < \theta = 2c - \sqrt{a^2 + b^2 + 4c^2 - 4bc} < 2c$. And if $4bc - b^2 - 3c^2 \leq a^2 < 4bc - b^2 - 2c^2$, then $0 \leq \theta = \sqrt{-a^2 - b^2 - 2c^2 + 4bc} \leq c$. Note that $\int_T u_c(t) f(t) dt \geq u_c(0)$ when

$a^2 \leq 4bc - b^2 - 2c^2$ and that θ does not exist if $a^2 > 4bc - b^2 - 2c^2$.

Proposition 4. Part A. ($0 \leq e \leq c$). There are two cases based on whether beliefs are "pessimistic" or "optimistic."

Case i) "pessimistic" beliefs ($0 \leq \theta \leq 2e$ or θ does not exist)⁹

$$w^*(t) = \begin{cases} t & \text{if } t \leq 2e \\ 2e & \text{otherwise} \end{cases}$$

$$s^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2e \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(m) = \begin{cases} 1 & \text{if } m = 1 \\ 0 & \text{otherwise} \end{cases}$$

Case ii) "optimistic" beliefs ($2e < \theta < 2c$)

a) "always accept" equilibrium

$$w^*(t) = t$$

$$s^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2e \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(m) = 1 \forall m \in M$$

b) "2e" equilibrium

$$w^*(t) = \begin{cases} t & \text{if } t \leq 2e \\ 2e & \text{otherwise} \end{cases}$$

$$s^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2e \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(m) = \begin{cases} 1 & \text{if } m = 1 \\ 0 & \text{otherwise} \end{cases}$$

c) mixed strategy equilibrium

$$w^*(t) = \begin{cases} 2e & \text{if } 2e < t < \theta \\ t & \text{otherwise} \end{cases}$$

$$s^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2e \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(m) = \begin{cases} 1 & \text{if } m = 1 \\ \frac{2e}{\theta} & \text{otherwise} \end{cases}$$

Part B ($0 < c < e$). There are two cases, depending on the value of ω (see text).

Case i -- $\omega \geq u_c(0)$:¹⁰

$$w^*(t) = \begin{cases} t & \text{if } t \leq 2e \\ 2e & \text{otherwise} \end{cases}$$

$$s^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2e \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(m) = \begin{cases} 1 & \text{if } m = 1 \\ 0 & \text{otherwise} \end{cases}$$

Case ii -- $\omega < u_c(0)$:

$$w^*(t) = t$$

$$s^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2e \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(m) = 0 \quad \forall m \in M$$

Part C ($e < 0 < c$). Only a pooling equilibrium is possible.

$$w^*(t) = t$$

$$s^*(m, p) = s^*(m, p') \quad \forall p, p' \in X$$

$$r^* = \begin{cases} 1 & \text{if } \int_T u_c(t) f(t) dt > u_c(0) \\ \alpha \in [0, 1] & \text{if } \int_T u_c(t) f(t) dt = u_c(0) \\ 0 & \text{if } \int_T u_c(t) f(t) dt < u_c(0) \end{cases}$$

Proof. By using Lemma 1 and Lemma 2, one finds the optimal strategies of the proposer and the endorser when the chooser uses the proposed equilibrium strategy. Then one checks whether the chooser's equilibrium strategy is indeed optimal given her beliefs derived from Bayes rule according to the specified equilibrium strategy of the proposer and the chooser. Details are omitted for the sake of brevity. ♦

Multiple Endorser Game

Modifications to previous game. Defining the players' utilities over $X \times M^2 \times A$ straight forwardly extends earlier definitions and is omitted for the sake of brevity, as is a

definition of endorsement equilibrium. As before, $r(\mathbf{m}) = r(a_1; \mathbf{m})$ denotes the probability that the chooser accepts the proposal p given message \mathbf{m} while s_l and s_h are the strategies of the two endorsers.

Lemma 3. In any equilibrium where message 0 (1) has an intrinsic meaning of endorsing the status quo q (the proposal p , respectively), it is always the case that:

$$\forall \mathbf{m} = (m_l, m_h) \in M^2, r(1,1) \geq r(0,1) \geq r(0,0) \text{ and } r(1,1) \geq r(1,0) \geq r(0,0).$$

Proof. For any fixed message m_h sent by endorser h , one can show that $r(1, m_h) \geq r(0, m_h)$ by the same logic as in Lemma 1. Similarly for any message m_l , it is the case that $r(m_l, 1) \geq r(m_l, 0)$. Combining the two cases, we get the conclusion. \blacklozenge

Lemma 4. In any equilibrium where $0 \leq l < h$,

a) if $r(\mathbf{m}) = r(\mathbf{m}') \quad \forall \mathbf{m}, \mathbf{m}' \in M^2$, then $w(t) = t$;

$$\text{b) if } r(1,1) = r(0,1) > r(0,0) \text{ then } w(t) = \begin{cases} t & \text{if } t \leq 2h \text{ or } t \geq 2h \frac{r(0,1)}{r(0,0)} \\ 2h & \text{if } 2h < t < 2h \frac{r(0,1)}{r(0,0)} \end{cases}$$

$$\text{c) if } r(1,1) > r(0,1) = r(0,0) \text{ then } w(t) = \begin{cases} t & \text{if } t \leq 2l \text{ or } t \geq 2l \frac{r(1,1)}{r(0,0)} \\ 2l & \text{if } 2l < t < 2l \frac{r(1,1)}{r(0,0)} \end{cases}$$

d) if $r(1,1) > r(0,1) > r(0,0)$ and

$$\text{(d.1) if } \frac{h}{l} \geq \frac{r(1,1)}{r(0,1)} \text{ then}$$

$$w(t) = \begin{cases} t & \text{if } t \leq 2l, 2l \frac{r(1,1)}{r(0,1)} < t \leq 2h, \text{ or } t \geq 2h \frac{r(0,1)}{r(0,0)} \\ 2l & \text{if } 2l < t \leq 2l \frac{r(1,1)}{r(0,1)} \\ 2h & \text{if } 2h < t < 2l \frac{r(0,1)}{r(0,0)} \end{cases}$$

$$\text{(d.2) if } \frac{h}{l} < \frac{r(1,1)}{r(0,1)} \text{ then } w(t) = \begin{cases} t & \text{if } t \leq 2l \text{ or } t > 2l \frac{r(1,1)}{r(0,0)} \\ 2l & \text{if } 2l < t \leq 2l \frac{r(1,1)}{r(0,0)} \end{cases}$$

Proof. Follows immediately from a comparison of expected payoffs of type t proposer when he elicits different messages. Note that if a denominator in the Lemma

involves division by zero then the second alternative should be understood to hold; *e.g.*, in Case b) if $r(0,0) = 0$, then the expression means that $w(t) = 2h$ for all $t > 2h$. ♦

Remarks on Lemma 4. Remark 1. In case (d.2) where $r(1,1) > r(0,1) > r(0,0)$ and $\frac{h}{l} < \frac{r(1,1)}{r(0,1)}$, message (0,1) is not sent in equilibrium if $p \neq 0$. Since no type of the proposer, in this supposed equilibrium, elicits message (0,1), the chooser can maintain her $r(0,1)$ strategy believing that she is indifferent between accepting the proposal and accepting the status quo. In particular, if $r(0,0) > 0$, $2h \frac{r(0,1)}{r(0,0)}$ must equal to the θ in Proposition 4, since the chooser must be indifferent between accepting the proposal and the status quo.

Remark 2. Consider the possible configuration of ideal points in Case d.1. Given that $\frac{h}{l} \geq \frac{r(1,1)}{r(0,1)}$, if $r(0,0) > 0$ then $2l < 2l \frac{r(1,1)}{r(0,1)} \leq 2h < 2l \frac{r(1,1)}{r(0,0)} < 2h \frac{r(0,1)}{r(0,0)}$. This implies that the chooser is indifferent between accepting the proposal and accepting the status quo when she received message (0,1) or (0,0). This is clearly impossible, since for *no* $c \in X$,

$$\frac{\int_{\frac{2lr(1,1)/r(0,1)}{2hr(0,1)/r(0,0)}}^{2h} U_c(t)f(t)dt + \frac{\int_{\frac{2hr(0,1)/r(0,0)}{2h}}^{2hr(0,1)/r(0,0)} U_c(2h)f(t)dt}{\int_{\frac{2lr(1,1)/r(0,1)}{2hr(0,1)/r(0,0)}}^{2h} f(t)dt} = \frac{\int_a^0 U_c(t)f(t)dt + \int_b^{2hr(0,1)/r(0,0)} U_c(t)dt}{\int_a^0 f(t)dt + \int_b^{2hr(0,1)/r(0,0)} f(t)dt} = U_c(0).$$

(Here, the assumption is that $b > 2h \frac{r(0,1)}{r(0,0)}$. If $b < 2h \frac{r(0,1)}{r(0,0)}$, $r(0,0)$ must obviously be 0, since the proposer will elicit message (0,0) only if $t \leq 0$.) So suppose $r(0,0) = 0$. In this case, $w(t) = t$ if $t \leq 2l$ or $\frac{r(1,1)}{r(0,1)} < t \leq 2h$; $2l$ if $2l < t \leq \frac{r(1,1)}{r(0,1)}$; and $2h$ if $t > 2h$. Since $1 \geq r(1,1) > r(0,1) > r(0,0) = 0$, the chooser must be indifferent between accepting the proposal and accepting the status quo when she receives message (0,1). This is possible only $l < c < h$; if $2c \leq 2l$, then the chooser must reject the proposal when she receives message (0,1), a contradiction. Similarly, if $2c \geq 2l$, $r(0,1) = 1$, a contradiction.

Remark 3. Notice that Lemma 4 does not deal with the situation when the chooser received the message (1,0) except case (a) in which no useful information is transmitted by the two endorsers. This is because in those equilibria where at least one endorser's message provides useful information to the chooser,¹¹ $r(1,0)$ can be any number as long

as it satisfies the inequality $r(1,1) \geq r(1,0) \geq r(0,0)$. To see why, note that $r(1,1) \geq r(1,0) \geq r(0,0)$ from Lemma 3 and, from $0 \leq l < h$,

$$\rho_l(0) \equiv \{x \in X; u_l(x) > u_l(0)\} \subset \{x \in X; u_h(x) > u_h(0)\} \equiv \rho_h(0)$$

and

$$\rho_l^{-1}(0) \equiv \{x \in X; u_l(x) < u_l(0)\} \supset \{x \in X; u_h(x) < u_h(0)\} \equiv \rho_h^{-1}(0).$$

Then, we can see that if message (1,0) is sent in equilibrium, then either one of the endorsers pools or, if they both send information (i.e., both do not pool), the proposal is exactly equal to the status quo. To see this, first consider case (b) in Lemma 4. Both endorsers send useful information, by the definition of useful information, only if $r(1,0) > r(0,0)$. If $p \in \rho_h(0)$, h will send message 1 in equilibrium for sure. So if $r(1,0) > r(0,0)$, message 0 can be sent by h only if $p \notin \rho_h(0)$. Given the supposed equilibrium response $r(1,0) > r(0,0)$ of the chooser, when h sends message 0 in equilibrium (implying $p \notin \rho_h(0)$) message 1 can be sent by l only if $p \notin \rho_l^{-1}(0)$. Since $p \notin \rho_h(0)$ and $p \notin \rho_l^{-1}(0)$ only if $p = 0$, the information that the chooser gets when she receives the message vector (1,0) must be that the proposer proposed 0. So excluding the case when $p = 0$, case (b) in Lemma 4 depicts the situation where only h sends useful information. A similar argument shows that case (c) is the situation where only l sends useful information if $p \neq 0$. Now consider case (d) where the equilibrium strategy of the chooser is such that $r(1,1) > r(0,1) > r(0,0)$. In this case, endorser l will send message 1 only if $0 \leq p \leq 2l$ and endorser h can send message 0 only if $p \leq 0$ or $p \geq 2h$. Therefore, the chooser must believe that $p = 0$ if she received message (1,0).

Proposition 5. If $0 < l < c < h$, there are three cases with non-pooling strategies by endorsers.

Case 1 -- 2l equilibria (possible regardless of the distribution of ideal points):

$$w^*(t) = \begin{cases} t & \text{if } t \leq 2l \\ 2l & \text{otherwise} \end{cases}$$

$$s_j^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2j \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(\mathbf{m}) = \begin{cases} 1 & \text{if } m_1 = 1 \\ 0 & \text{otherwise} \end{cases}$$

Case 2 -- $2h$ equilibria. If
$$\frac{\int_{2l}^{2h} U_c(t) f(t) dt + \int_{2h}^b U_c(2h) f(t) dt}{\int_{2l}^b f(t) dt} \geq U_c(0)$$

the following constitutes an equilibrium:

$$w^*(t) = \begin{cases} t & \text{if } t < 2h \\ 2h & \text{otherwise} \end{cases}$$

$$s_j^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2j \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(\mathbf{m}) = \begin{cases} 1 & \text{if } \mathbf{m} = (1, 1) \text{ or } (0, 1) \\ \alpha \in [0, 1] & \text{if } \mathbf{m} = (1, 0) \\ 0 & \text{if } \mathbf{m} = (0, 0) \end{cases}$$

Case 3 -- mixed strategy equilibrium. If
$$\frac{\int_{\varphi}^{2h} U_c(t) f(t) dt + \int_{2h}^b U_c(2h) f(t) dt}{\int_{\varphi}^b f(t) dt} = U_c(0)$$

for some φ such that $2l < \varphi < 2c$, then the following constitutes an equilibrium.

$$w^*(t) = \begin{cases} t & \text{if } t \leq 2l \text{ or } \varphi < t \leq 2h \\ 2l & \text{if } 2l < t \leq \varphi \\ 2h & \text{otherwise} \end{cases}$$

$$s_j^*(1; p) = \begin{cases} 1 & \text{if } 0 \leq p \leq 2j \\ 0 & \text{otherwise} \end{cases}$$

$$r^*(\mathbf{m}) = \begin{cases} 1 & \text{if } \mathbf{m} = (1,1) \\ \alpha \in [0,1] & \text{if } \mathbf{m} = (1,0) \\ \beta = \frac{2l}{\varphi} & \text{if } \mathbf{m} = (0,1) \\ 0 & \text{if } \mathbf{m} = (0,0) \end{cases}$$

Proof. Follows straightforwardly from application of Lemmas 3 and 4 and use of Bayes rule. ♦

Remarks on Proposition 5. In Case 1, $r^*(\mathbf{m})$ for out-of-equilibrium messages can differ from the ones indicated so long as $r^*(\mathbf{m})$ gives no incentive for the chooser to deviate from the equilibrium strategy. As stated above, $r^*(1,0)$ can be any number between 0 and 1. Here only the simplest r^* supporting the given equilibrium is stated. In Case 2, even if the LHS = RHS in the condition, $r^*(0,1)$ must be exactly equal to 1. Otherwise, there will be some types of proposer (near $2l$) who will deviate from the equilibrium and elicit message $(1,1)$. Note again that $0 \leq r^*(1,0) \leq 1$. In Case 3, we assume $b > 2h$. In this case, such a φ uniquely exists if $c > 2l$ and $0 < 4b^2 - rh^2 - 4bh \leq c^2$; or if $4lc - 4l^2 < 4b^2 - 4h^2 - 4bh \leq c^2$. (Interested readers might instead consider the straightforward case when $b \leq 2h$.) Case 2 is the case when $\varphi = 2l$ in Case 3.

Sketch of proof of Proposition 6. Consider the case where $0 < l < h < c$. An example of an implausible equilibrium in this case is: $w(t) = t$ if $t \leq 2l$ and $2l$ if $t > 2l$; $r(\mathbf{m}) = 1$ if $\mathbf{m} = (1,1)$ and 0 otherwise. In equilibrium the chooser heeds only l even though h is closer. This implausible equilibrium is not neologism-proof -- the interval $(2l, 2h)$ is a self-signaling set for h and some proposer types, knowing this, have an incentive to deviate from the equilibrium. More generally, the interval $(2l, 2h)$ is a self-signaling set for h in all equilibria with this configuration in which $r(m_l, 1) \neq 1$. That is, the chooser must heed an endorsement from the *nearer* endorser. Consider now the case in which $0 < c < l < h$. The interval $(2l, 2h)$ is a self-signaling set for l in all equilibria in which $r(0, m_h) > 0$. That is, the chooser must heed an endorsement of the status quo by the nearer endorser.

Combining these arguments leads to the proposition. ♦

Notes

We thank David Austen-Smith, Jeff Banks, Susan Elmes, Bernie Grofman, Dan O'Flaherty, Eric Rasmusen, and Peter Rosendorff for helpful comments or suggestions, and an anonymous referee for directing our attention to implications concerning the creation of TILI regimes. The usual *caveat* applies.

¹ McKelvey and Ordeshook (1985) analyzes both "endorsements" and "polls." "Endorsements" are exogenous information about the relative location of candidates (e.g., Candidate A is leftmost). "Polls" are expressions of preferences by an informed group of voters. An uninformed voter is somewhat uncertain about the preferences of informed voters but has some idea of the relationship between her preferences and those of informed voters. In our model, an endorsement is an expression of preference by an informed actor whose preferences are common knowledge. Hence, our endorsements and McKelvey and Ordeshook's polls are fairly similar. The setting of the models is quite different, however (i.e., two candidate election vs. monopoly agenda setter). In Grofman and Norrander (1990), candidate positions are fixed and exogenous while endorsements (expressions of preference by an actor whose preferences are not known perfectly) are assumed to be truthful. Hence, the analysis is not strategic.

² Two minor subtleties are at work in Proposition 1. First, the proposition specifies the action $w(t) = t$ when $t < 0$. Many other actions could be part of a Nash equilibrium, because when $t < 0$ the chooser will reject any offer the proposer prefers to the *status quo*. We indicate the specified action for simplicity, which may be rationalized through an appeal to a "trembling-hand" argument in a finite game (Selten, 1975). Second, the proposition requires the chooser to accept the proposal $p = 2e$, when the chooser is in fact indifferent between accepting and rejecting such a proposal. We impose this action in Proposition 1 to ease comparisons with later propositions, where this action is necessary for purely technical reasons (interested readers will find the relevant issue discussed in the proof of Lemma 2).

³That communication breaks down when interests diverge too much is a well-known phenomenon in

games with costless signaling (Crawford and Sobel 1982).

⁴ When $2e \geq b$, the appropriate expression is

$$\omega \equiv \frac{\int_0^b U_c(t) f(t) dt}{\int_0^b f(t) dt}$$

⁵In Case A in Proposition 4 ($0 \leq e \leq c$), an endorsement equilibrium always exists. In Case B ($0 < c < e$), an endorsement equilibrium exists only if $2e < b - \sqrt{b^2 + 2c^2 - 4bc}$, assuming tent utility and uniform priors.

⁶Case 2 in Proposition 5 cannot be compared directly with a one endorser equilibrium (i.e., Case i in Proposition 4B), as the critical condition in Proposition 5 depends on both $2l$ and $2h$. However, if the condition holds, the chooser's welfare is exactly the same as if only the h endorser existed.

⁷The chooser may be worse off if she uses information from the closer endorser rather than from another endorser. It is the chooser's interest to rely on the information from the closer endorser if two endorsers are on her right side. However, in the case where the two endorsers are on her left side, the chooser may be worse off if she relies on the information from the closer endorser rather than the more distant one. To see why, recall that the chooser is best off when $e = c/2$ in Case i of Proposition 4A.

⁸ Carmines and Kuklinski 1990, Page, Shapiro and Dempsey 1987, and Lupia 1994, for example, all provide survey-based evidence supporting this view. An alternative and complementary line of research addresses questions of information aggregation, showing how democratic processes gather dispersed information so that a poorly informed electorate can behave in the aggregate as if it were very well informed (see, *inter alia*, Converse 1990, Stimson 1990, O'Flaherty 1990, and Page and Shapiro 1992).

⁹ When $p = 0$, the endorser can randomize between two messages. Here, we assume that the endorser endorses the bill.

¹⁰ If $\omega = u_c(0) r^*(1)$ can be any number as long as $0 < r^*(1) \leq 1$.

11 In the two endorser game, given a sequential equilibrium (w^*, s_l^*, s_h^*, r^*) , we say that endorser j sends useful information in the equilibrium if for some fixed $m_k \in \{0, 1\}$, $r^*(m_j, m_k) \neq r^*(m_j', m_k)$ for $m_j, m_j' \in \{0, 1\}$, $m_j \neq m_j'$ and $s_j^*(m_j; p) \neq s_j^*(m_j; p')$ for some $p, p' \in \{p \in X; w^*(t) = p \text{ for some } t \in T\}$.

References

- Austen-Smith, David and John Wright. 1990. "Competitive Lobbying for Legislators' Votes," Department of Political Science, University of Rochester (November).
- Banks, Jeffrey. 1991. *Signaling Games in Political Science*. New York: Harwood Academic Publishers.
- Carmines, Edward G. and James H. Kuklinski. 1990. "Incentives, Opportunities, and the Logic of Public Opinion in American Political Representation," pp. 240-268 in John Ferejohn and James Kuklinski (eds) *Information and Democratic Processes*. Urbana: University of Illinois Press.
- Converse, Philip E. 1990. "Popular Representation and the Distribution of Information," pp. 369-390 in John Ferejohn and James Kuklinski (eds) *Information and Democratic Processes*. Urbana: University of Illinois Press.
- Crawford, Vincent, and Joel Sobel. 1982. "Strategic Information Transmission," *Econometrica* 50: 1431-1451.
- Denzau, Arthur, and Robert Mackay. 1983. "Gatekeeping and Monopoly Power of Committees: An Analysis of Sincere and Sophisticated Behavior," *American Journal of Political Science* 27: 740-761.
- Farrell, Joseph. 1988. "Meaning and Credibility in Cheap-Talk Games," Manuscript, Depart of Economics, University of California at Berkeley (July).
- Ferejohn, John. 1990. "Information and the Electoral Process," pp. 3-19 in Ferejohn and Kuklinski (eds.) *Information and Democratic Processes*. Urbana: University of Illinois Press.
- Gilligan, Thomas and Keith Krehbiel. 1987. "Collective Decision-making and Standing Committees: An Informational Rationale for Restrictive Amendment Procedures," *Journal of Law, Economics, and Organization* 3: 287-335.

- 1989. "Asymmetric Information and Legislative Rules with a Heterogeneous Committee," *American Journal of Political Science*, 33:459-490.
- 1990. "Organization of Informative Committees by a Rational Legislature," *American Journal of Political Science*, 34:531-564.
- Grofman, Bernard and Barbara Norrander. 1990. "Efficient Use of Reference Group Cues in a Single Dimension," *Public Choice* 64:213-217
- Kreps, David, and Robert Wilson. 1982. "Sequential equilibria," *Econometrica* 50: 863-894.
- Kuklinski, James H. 1990. "Information and the Study of Politics," pp. 391-395 in Ferejohn and Kuklinski (eds.) *Information and Democratic Processes*. Urbana: University of Illinois Press.
- Lupia, Arthur. 1992. "Agenda Control versus the Power of Information," *American Political Science Review* 86(2): 390-403.
- McKelvey, Richard and Peter Ordeshook. 1985. "Elections with Limited Information: A Fulfilled Expectations Model Using Contemporaneous Poll and Endorsement Data as Information Sources." *Journal of Economic Theory*, 36: 55-85.
- 1990. "Information and Elections: Retrospective Voting and Rational Expectations," pp. 281-312 in Ferejohn and Kuklinski (eds.) *Information and Democratic Processes*. Urbana: University of Illinois Press.
- O'Flaherty, Brendan. 1990. "Why Are There Democracies? A Principal Agent Answer," *Economics and Politics* 2(2):133-155.
- Page, Benjamin I., Robert Y. Shapiro, and Glenn R. Dempsey. 1987. "What Moves Public Opinion?" *American Political Science Review* 77:175-190.
- Rasmusen, Eric. 1991. "Lobbying When the Decisionmaker Can Acquire Independent Information," Manuscript, Yale Law School (December).
- Romer, Thomas and Howard Rosenthal. 1978. "Political Resources Allocation, Controlled Agendas, and the Status quo," *Public Choice* 33:27-44.

-----, 1979. "Bureaucrats vs. Voters: On the Political Economy of Resource Allocation by Direct Democracy," *Quarterly Journal of Economics* 93:563-587.

Rosenthal, Howard. 1989. "The Setter Model," in Enelow and Hinich (eds) *Advances in the Spatial Theory of Voting*, Cambridge University Press.

Selten, Reinhard. 1975. "Reexamination of Perfectness Concept for Equilibrium Points in Extensive Games," *International Journal of Game Theory*, 4: 25-55.

Stimson, James A. 1990. "A Macro Theory Information Flow," pp. 345-368 in Ferejohn and Kuklinski (eds.) *Information and Democratic Processes*. Urbana: University of Illinois Press.

GAME	HIDDEN OFFER	NUMBER OF ENDORSERS	PROPOSER'S PREFERENCES
1. Simple TILI	No	None	Common knowledge
2. Simple Hidden Offer	Yes	None	Common knowledge
3. Simple Hidden Offer with Incomplete Info.	Yes	None	Uncertain for chooser
4. Basic Endorsement	Yes	One	Common knowledge
5. Endorsement with Incomplete Information	Yes	One	Uncertain for chooser
6. Multiple Endorsers	Yes	More than one	Uncertain for chooser

Table 1. Overview of games discussed in the paper.

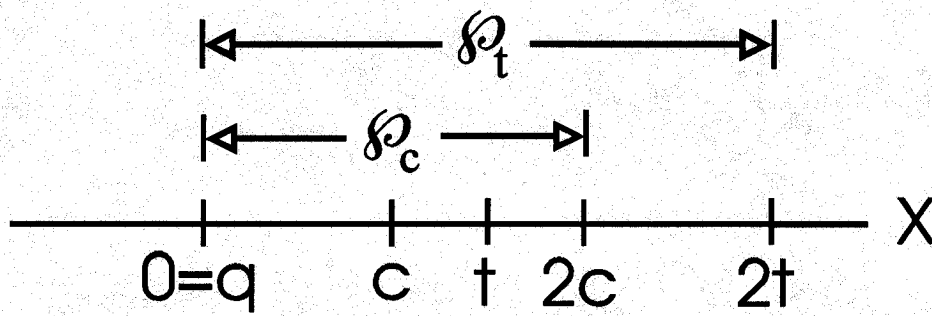


Figure 1. Basic setup. The status quo q is normalized to 0, c is the chooser's ideal point, t is the proposer's ideal point, and the intervals φ_c and φ_t are the respective preferred sets.

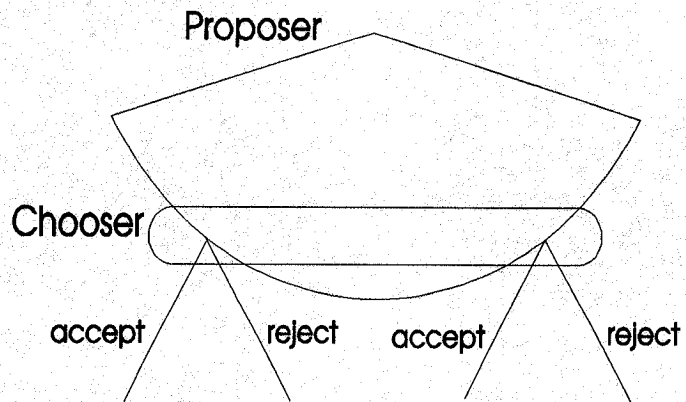


Figure 2. The basic hidden offer game. The chooser cannot see what the proposer offers, so her information set stretches across a continuum of proposals (only two are shown).

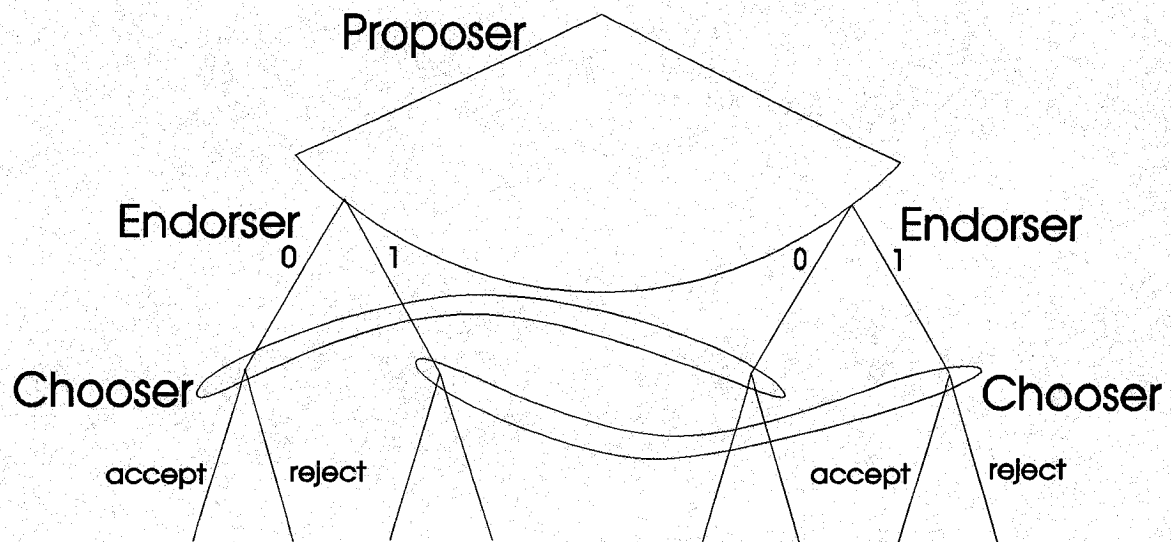


Figure 3. The basic endorsement game. The chooser cannot see the proposer's offer but she does hear an endorsement. The endorsement creates two information sets for the chooser, each stretching across a continuum of offers (only two offers in each information set are shown).

Outcomes, Proposals

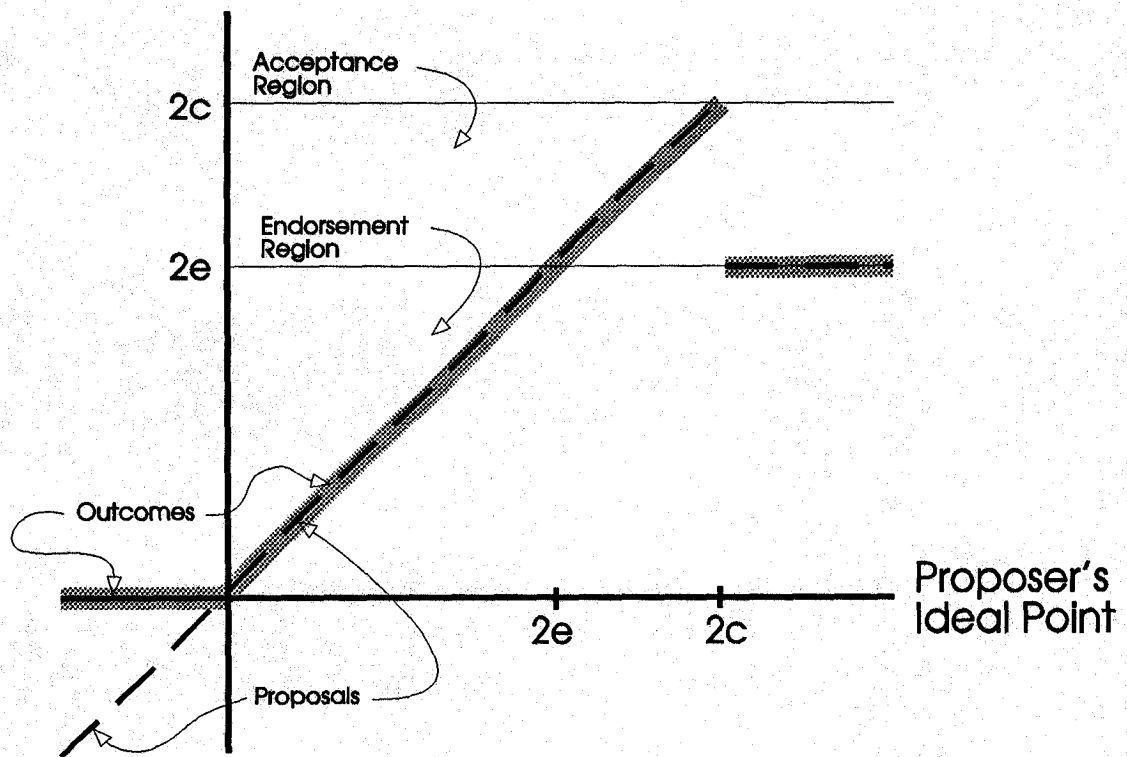


Figure 4. How endorsements affect proposals and outcomes in the basic endorsement game (Cases 1 and 2 in Proposition 3).

