Information and International Institutions Revisited

Mark Fey*    Jinhee Jo†    Brenton Kenkel‡

July 6, 2011

Abstract

Chapman (2007) presents a formal model of the informational role played by international institutions. Unfortunately, the equilibria given in the paper are incorrect. In this paper we identify the errors in the analysis of Chapman (2007) and solve for correct equilibria to the model. Our results show little support for the empirical implications derived in the original paper. Contrary to these original findings, we find that there may be no relationship between an institution’s policy position and its effect on domestic public opinion or the likelihood that leaders will consult the institution.

*Associate Professor, Department of Political Science, 109E Harkness Hall, University of Rochester, Rochester, NY 14627. phone: 585.275.5810, email: mark.fey@rochester.edu.
†Ph.D. candidate, Department of Political Science, University of Rochester. email: jjio2@mail.rochester.edu.
‡Ph.D. candidate, Department of Political Science, 315A Harkness Hall, University of Rochester, Rochester, NY 14627. email: bkenkel@mail.rochester.edu.
1 Introduction

The recent paper “International Security Institutions, Domestic Politics, and Institutional Legitimacy” (Chapman, 2007) presents a formal model of the informational role played by international institutions. In the model, a state leader chooses whether to consult an international institution before seeking domestic support for a foreign policy proposal. The leader and the institution have private information about the location of the proposal relative to the status quo, so their actions affect the domestic audience’s beliefs. Chapman (2007) uses this model to argue that leaders should be more likely to consult conservative institutions, because the support of such institutions offers more convincing evidence to less informed domestic audiences.\(^1\)

Unfortunately, the analysis of the equilibria in Chapman (2007) is incorrect. We show that in this analysis, the domestic audience does not update its beliefs correctly, which in turn leads to a mischaracterization of the equilibria in the model. We demonstrate this by identifying some profitable deviations from the strategies given as equilibria in the original paper. We then discuss the correct equilibria of the model. Although this model has many possible equilibria, we identify one in which the leader always proposes the policy unilaterally when the audience is revisionist and always consults with the institution when the audience is conservative.

Our findings are substantively important for the literature on institutional information transmission. In his discussion of the model’s empirical implications, Chapman (2007) focuses on the relative preferences of the leader and the institution’s pivotal member. He claims that as the pivotal actor’s ideal point moves closer to the status quo, institutional support is more credible and the leader becomes more likely to consult the organization. We find that this is not necessarily the case: there exist equilibria in which the institutional position has no effect on the leader’s choice of venue or the audience’s support for the proposal. Thus, the empirical implications derived in the original paper lack support under our corrected equilibria.

In the next section we briefly review the model presented in Chapman (2007). Section 3 shows that the solution proposed in the original paper is not an equilibrium of the game. We present corrected equilibria in Section 4 and discuss their substan-

\(^1\)For similar arguments, see Thompson (2006) and Fang (2008).
tive implications in Section 5. We conclude in Section 6. The Appendix provides additional proofs not given in the text.

2 Summary of the Model

In this section, we sketch the model presented in Chapman (2007). We will closely follow the notation used there. Interested readers should consult the original paper for more details.

There are three players in the model, the leader $L$, the pivotal member of the international organization $V$, and the domestic audience $D$. The sequence of moves in the model is given in Figure 1 of Chapman (2007, 141-142). Nature chooses the outcome of a foreign policy $x \in [0,1]$, with the status quo normalized to 0. The leader $L$ and the pivotal member $V$ know the value of $x$ while the domestic audience $D$ does not. Instead, $D$ has a prior belief about the value of $x$ that is uniformly distributed on $[0,1]$. After learning the value of $x$, the leader either proposes $x$ unilaterally, proposes $x$ multilaterally (i.e., through the international institution), or accepts the status quo.

If the leader proposes $x$ unilaterally, then, as illustrated in Figure 1a of Chapman (2007, 141), the domestic audience $D$ chooses whether to support or oppose the proposal. After observing the choice of $D$, the leader decides whether to implement the proposal. If the proposal is implemented, the pivotal member $V$ decides whether to accept or obstruct the proposal.

If the leader proposes $x$ multilaterally, the sequence of moves is similar, as illustrated in Figure 1b of Chapman (2007, 142). The only difference is that the subgame begins with the pivotal member $V$ signaling either support or opposition to the proposal. The domestic audience $D$ observes this signal before choosing whether or not to support or oppose.

All players have a policy payoff given by $U_i = -(x - x_i)^2$, where $x_i$ is player $i$’s ideal point, $i \in \{V, D, L\}$,\(^2\) As in the original paper, we assume that $x_D < x_L$, meaning the domestic audience favors the status quo more than the leader does. In addition to the policy payoff, certain actions by the players entail costs. First, the leader pays a cost $\sigma$ if he implements the proposal despite opposition by the public.\(^2\)

\(^2\)Each player’s utility for the status quo is thus $U_i = -(x_i)^2$. 

3
Second, if the proposed policy is implemented, the pivotal member pays a cost $\gamma$ if it obstructs the proposal and a cost $\delta$ if it accepts a proposal that it had earlier signaled opposition to. Finally, the domestic audience suffers a cost $\lambda$ if the pivotal member obstructs the proposal.

3 Chapman’s Equilibrium

Given that this model is one in which two of the players have private information about $x$, the appropriate solution concept is perfect Bayesian equilibrium. Chapman presents his solution in his “Statement of Equilibrium Conditions” (p. 146), reproduced below:

Statement of Equilibrium Conditions

For all $x_V, x_D,$ and $x_L$,

1-1. If $x \leq 2x_L$ and $\sigma \leq \sigma^*$, the leader proposes $x$, is indifferent about consulting the institution and implements $x$ regardless of the audience’s decision. The audience is indifferent between supporting and opposing $x$.

1-2. If $x > 2x_L$, the leader does not propose $x$.

Where $\sigma^* = x_L^2 - (x - x_L)^2$.

$x_V < x_D < x_L$ (conservative pivotal member)

2-1. If $\sigma > \sigma^*$ and $x \leq 2x_V \leq 2x_L$, the leader always proposes $x$ through the institution, the pivotal member signals support, the audience supports $x$, and the pivotal member does not implement opposition.

2-2. (a) If $\sigma > \sigma^*$, $2x_V < x \leq 2x_L$ and $\delta < \gamma$, there exists a $x_D^*$ such that if $x_D \geq x_D^*$, the leader is indifferent between proposing $x$ unilaterally or multilaterally, the audience supports $x$, and the pivotal member opposes $x$ but does not implement opposition. (b) If $x_D < x_D^*$, the leader accepts the status quo, anticipating public and institutional opposition.

2-3. (a) If $\sigma > \sigma^*$, $2x_V < x \leq 2x_L$ and $\delta \geq \gamma$, there exists a $x_D^+$ such that if $x_D \geq x_D^+$, the leader is indifferent between proposing $x$ unilaterally or multilaterally, the audience supports $x$, and the pivotal member opposes $x$ and implements opposition. (b) If $x_D < x_D^+$, the leader accepts the status quo, anticipating public and institutional opposition.
To understand these conditions, notice that in them, Chapman delineates five regions in the parameter space of the model and describes the behavior of the players in each region. For convenience, we have listed these regions in Table 1 and given the inequalities that delineate each region, as well as the conditions that describe the behavior of the players as a function of $x$ in each region.

<table>
<thead>
<tr>
<th>Region</th>
<th>Inequalities</th>
<th>Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>$x_V &lt; x_D &lt; x_L$, $\delta &lt; \gamma$, $x_D \geq x_D^*$</td>
<td>1-1, 1-2, 2-1, 2-2(a)</td>
</tr>
<tr>
<td>B</td>
<td>$x_V &lt; x_D &lt; x_L$, $\delta &lt; \gamma$, $x_D &lt; x_D^*$</td>
<td>1-1, 1-2, 2-1, 2-2(b)</td>
</tr>
<tr>
<td>C</td>
<td>$x_V &lt; x_D &lt; x_L$, $\delta \geq \gamma$, $x_D \geq x_D^*$</td>
<td>1-1, 1-2, 2-1, 2-3(a)</td>
</tr>
<tr>
<td>D</td>
<td>$x_V &lt; x_D &lt; x_L$, $\delta \geq \gamma$, $x_D &lt; x_D^*$</td>
<td>1-1, 1-2, 2-1, 2-3(b)</td>
</tr>
<tr>
<td>E</td>
<td>$x_D &lt; x_V &lt; x_L$, $x_D \geq x_D^*$</td>
<td>1-1, 1-2, 3-1, 3-2</td>
</tr>
</tbody>
</table>

Table 1: Regions in the parameter space.

2-4. If $\sigma > \sigma^*$, $2x_V < x \leq 2x_L$ and $\delta \geq \gamma$, and $\lambda \geq 4x_V(x_V - x_D)$, the leader does not propose $x$, anticipating institutional opposition, which will induce public opposition.

$x_D < x_V < x_L$ (revisionist pivotal member)

3-1. When $\sigma > \sigma^*$ and $x \leq 2x_V$, there exists a $x_D^*$ such that if $x_D \geq x_D^*$, the leader proposes $x$ multilaterally, the pivotal member signals support, and the audience support $x$.

3-2. When $\sigma > \sigma^*$ and $x > 2x_V$, the leader accepts the status quo, anticipating that institutional opposition will induce public opposition.

Note that the conditions $\sigma \leq \sigma^*$ and $\sigma > \sigma^*$ are included as defining behavior because these conditions specify ranges on $x$, as $\sigma^*$ is a function of $x$. Specifically, $\sigma \leq \sigma^*$ is equivalent to $x_L - \sqrt{x_L^2 - \sigma} \leq x \leq x_L + \sqrt{x_L^2 - \sigma}$.
Unfortunately, this statement of equilibrium conditions is incorrect, for two reasons. First, in each case, there is at least one player who can increase his payoff by deviating from the proposed strategy. Second, the audience does not update its beliefs correctly. Each of these errors is explained in more detail in the next sections.

### 3.1 Profitable Deviations

In a perfect Bayesian equilibrium, it must be the case that at every information set in the game, no player has an incentive to deviate from their equilibrium strategy, given their beliefs and the strategies of the other players. However, this is not true for the behavior identified in Chapman (2007). In fact, a profitable deviation exists in each of the regions identified in Table 1, as we now show.

Our first example of this is region A in Table 1. The behavior of the players in this region is given by conditions 1-1, 1-2, 2-1, and 2-2(a). Specifically, in condition 2-2(a), when \( x \) satisfies \( \sigma > \sigma^* \) and \( 2x_V < x \leq 2x_L \), in the multilateral subgame “the audience supports \( x \) and the pivotal member opposes \( x \) but does not implement opposition.” Therefore, the pivotal member \( V \) will get a payoff of \( -(x-x_V)^2 - \delta \) in this subgame.\(^6\) However, if in this subgame the pivotal member \( V \) deviates to a strategy of signaling support and accepting the proposal, then it will get either \( -(0-x_V)^2 \) or \( -(x-x_V)^2 \). Since \( x > 2x_V \), we have \( -(0-x_V)^2 > -(x-x_V)^2 \). Therefore, the pivotal member has a positive incentive to deviate in this region.

A similar profitable deviation exists in region C of Table 1. Specifically, in condition 2-3(a), in the multilateral subgame “the audience supports \( x \), and the pivotal member opposes \( x \) and implements opposition.” Hence, the pivotal member will get a payoff of \( -(x-x_V)^2 - \gamma \) in this subgame.\(^7\) However, if the pivotal member \( V \) deviates to a strategy of signaling support and accepting the proposal, then it will get either \( -(0-x_V)^2 \) or \( -(x-x_V)^2 \). As before, since \( x > 2x_V \), we have \( -(0-x_V)^2 > -(x-x_V)^2 \). Therefore, the pivotal member can gain by such a deviation in this region.

Next, we show that a profitable deviation exists for the remaining regions in

---

\(^6\)Given these choices by \( D \) and \( V \) and the fact that \( 2x_V < x \leq 2x_L \), it is easily verified that \( L \) will implement \( x \) in the multilateral subgame.

\(^7\)Once again, it is easily verified that \( L \) will implement \( x \) in this subgame.
Table 1, namely regions B, D, and E. This is made more complicated because it is not clear what the actions of the players are off the equilibrium path. To deal with this, it will be important to remember that the action of the domestic audience can only depend on the previous behavior of the leader and the pivotal member, as it is not informed about $x$.

We begin by considering region B. The behavior of the players in this region is given by conditions 1-1, 1-2, 2-1, and 2-2(b). Condition 2-1 states “the leader always proposes $x$ through the institution, the pivotal member signals support, the audience supports $x$, and the pivotal member does not implement opposition” and condition 2-2(b) states “the leader accepts the status quo, anticipating public and institutional opposition.” From these two statements, it follows that in the multilateral subgame, the domestic audience $D$ is playing a strategy of supporting $x$ if the pivotal member signals support and opposing $x$ if the pivotal member signals opposition. What is not clear from the statements is what strategy the domestic audience is playing in the unilateral subgame. But we can deduce what this strategy must be in the following way. Condition 1-1 states that when $\sigma \leq \sigma^*$, “the leader is indifferent about consulting the institution and implements $x$ regardless of the audience’s decision.” Given that the leader always implements $x$, it is easily verified that in the multilateral subgame under condition 1-1, the pivotal member must play a strategy of signaling support and accepting the proposal. Combining this with the strategy of the domestic audience given above, we see that the leader’s utility for choosing a multilateral proposal is $-(x - x_L)^2$. As the leader is indifferent between a unilateral and multilateral proposal in condition 1-1, this must also be the payoff of a unilateral proposal. But by consulting the game tree, we see that this payoff is possible for the leader only if the domestic audience supports a proposal $x$ made unilaterally. This, then, must be the strategy played by the domestic audience in the unilateral subgame. We can now use this fact to identify a profitable deviation for the leader. Specifically, in condition 2-2(b), the leader accepts the status quo, which gives a payoff of $-(0 - x_L)^2$. On the other hand, if he deviates to a strategy of proposing $x$ unilaterally and implementing the proposal, then since the domestic audience supports such a unilateral proposal, the leader will receive a payoff of $-(x - x_L)^2$, no matter what the pivotal member chooses. When $x < 2x_L$ in this condition, this is a profitable deviation for the leader.
Precisely this same argument can be made for regions D and E as well, showing that the leader prefers to deviate from the status quo to a unilateral proposal in conditions 2-3(b) and 3-2, respectively.

3.2 Information and Updating

The most important assumption of this model is that the audience is uninformed about the outcome of a foreign policy while the leader and the institution both know it. In a perfect Bayesian equilibrium, the audience updates its beliefs about the policy after observing the leader’s initial choice and the pivotal member’s signal. Part of the reason that the profitable deviations identified above exist is that, unfortunately, the paper does not perform this updating correctly.

First, the audience does not update its beliefs correctly following the leader’s initial choice. The appendix of Chapman (2007) states that “if \( L \) has proposed \( x \), \( D \) knows that \( L \) prefers \( x \) to the status quo, or \( x \leq 2x_L \).” But the domestic audience \( D \) observes more than this. Specifically, it observes if the proposal \( x \) has been made unilaterally or multilaterally. If the leader chooses different kinds of proposals based on his knowledge of \( x \), the audience should incorporate this into its updated belief. But this is absent in the analysis in the paper. For example, consider region A in Table 1 and suppose that \( x_V < x_L - \sqrt{x_L^2 - \sigma} \). The behavior of the players in this region is given by conditions 1-1, 1-2, 2-1, and 2-2(a). In condition 1-2, when \( x > 2x_L \), “the leader does not propose \( x \)” and in condition 2-1, when \( \sigma > \sigma^* \) and \( x \leq 2x_V \leq 2x_L \), “the leader always proposes \( x \) through the institution.” In conditions 1-1 and 2-2, “the leader is indifferent between proposing \( x \) unilaterally or multilaterally.” Suppose that in both cases, the leader proposes \( x \) unilaterally. It follows that the leader will propose \( x \) unilaterally only when \( 2x_V < x \leq 2x_L \) and therefore when the audience observes a unilateral proposal, it should update its belief to be that \( x \) is uniformly distributed on the interval \([2x_V, 2x_L]\). On the other hand, suppose that the leader proposes unilaterally in condition 1-1 and multilaterally in condition 2-2. In this case, when the audience observes a unilateral proposal, it will update its belief to be that \( x \) is uniformly distributed on the interval \([x_L - \sqrt{x_L^2 - \sigma}, x_L + \sqrt{x_L^2 - \sigma}]\). Thus, even if the leader is indifferent between two actions, his actual action must influence the
Second, the updating of the audience’s beliefs due to the pivotal member’s choice is also incorrect. The appendix of Chapman (2007) states that “V will not signal support if it does not sincerely support x” and, in the expected utility calculations on pages 158 and 159, it is clear that when \(2x_V < x_L + \sqrt{x_L^2 - \sigma}\), the domestic audience’s belief after observing a signal of support from the domestic audience is uniform on the interval \([0, 2x_V]\). However, when \(x_L - \sqrt{x_L^2 - \sigma} < x < x_L + \sqrt{x_L^2 - \sigma}\) (i.e., if \(\sigma < \sigma^*\)), as mentioned above, it is easy to verify that the pivotal member always signals support of \(x\), regardless of the location of his ideal point \(x_V\). In particular, when \(2x_V < x_L + \sqrt{x_L^2 - \sigma}\), the pivotal member will signal support for all proposals \(x\) between \(2x_V\) and \(x_L + \sqrt{x_L^2 - \sigma}\). Therefore, whatever the pivotal member’s strategy for \(x\) outside this range, the domestic audience’s updated belief after a supportive signal should put positive probability on \(x\) being in the interval \([2x_V, x_L + \sqrt{x_L^2 - \sigma}]\). But this is not true for the updated belief given above (uniform on \([0, 2x_V]\)). Thus, the domestic audience is not updating correctly based on the signal of the pivotal member.

In both of these cases, the problems arise because the beliefs of the domestic audience are incorrectly determined by the preferences of the leader and pivotal member, rather than the actual strategy employed by these players. However, it is a fundamental requirement of perfect Bayesian equilibrium that the beliefs of players are determined by the actual strategies of the other players—this is why different perfect Bayesian equilibria of the same game can involve different beliefs.

## 4 Correct Equilibrium

Having identified the problems in the solution given by Chapman (2007), in this section we analyze the correct equilibria of the model. The model is a signaling game with two signalers and continuous private information and therefore, as is usually the case with such games, there are a large number of perfect Bayesian equilibria. Focusing just on the action of the leader, we find a range of parameters such that it is an equilibrium for the leader to always propose \(x\) unilaterally, and another range in which it is an equilibrium for the leader to always propose \(x\) multilaterally. Importantly, in
In order to cut down on the parameter space, in what follows we assume that \( \delta < \gamma \). For ease of exposition, we also assume throughout the rest of this section that \( 2x_L \leq 1 \). With these assumptions, the equilibrium actions at the last two nodes of both the multilateral and unilateral subgames can be solved for using sequential rationality as follows. First, the pivotal member never obstructs the proposal \( x \). Second, given this, if the domestic audience supports \( x \), the leader implements \( x \) if \( x < 2x_L \) and does not implement it if \( x \geq 2x_L \). If the domestic audience opposes \( x \), the leader implements \( x \) if \( x_L - \sqrt{x_L^2 - \sigma} < x < x_L + \sqrt{x_L^2 - \sigma} \), and does not implement it otherwise. In order to state this result formally, we introduce the following notation. Let \( y_1 = x_L - \sqrt{x_L^2 - \sigma} \) and \( y_2 = x_L + \sqrt{x_L^2 - \sigma} \), and let \( I_1 = [0, y_1] \), \( I_2 = (y_1, y_2) \), \( I_3 = [y_2, 2x_L] \), and \( I_4 = [2x_L, 1] \). We can now state the following lemma:

**Lemma 1.** Suppose \( \delta < \gamma \). In any perfect Bayesian equilibrium,

- in both the unilateral and multilateral subgames, if \( D \) supports \( x \), then \( L \) implements \( x < 2x_L \) and does not implement \( x \geq 2x_L \).

- in both the unilateral and multilateral subgames, if \( D \) opposes \( x \), then \( L \) implements \( x \in I_2 \) and does not implement \( x \notin I_2 \).

- in the multilateral subgame, \( V \) accepts all \( x \in [0, 1] \).

Given this lemma, we can reduce the game tree by replacing the actions covered by the lemma with their payoffs, as in Figure 1. As indicated in the figure, the payoffs depend on which region the value of \( x \) belongs to.

We now describe two kinds of equilibrium behavior in this game: one in which the leader never consults the institution and another in which he always consults it. We do not claim that these are the only equilibria. There are others with more complex behavior, where the leader sometimes accepts the status quo and sometimes proposes

---

8In the Appendix, we relax the assumption that \( 2x_L \leq 1 \) and show that equilibria closely resembling those presented in this section still exist.
the policy.\(^9\) We have chosen to focus on the two cases presented below because they most clearly illustrate our substantive points.

In our first proposition, we show that if the domestic audience is revisionist, then it is an equilibrium for the leader to always propose \(x\) unilaterally and receive domestic support. In the multilateral subgame, which is off the equilibrium path, the institution supports the proposal if and only if \(x \in I_2\), while the domestic audience implements opposition regardless of the institution’s signal. The equilibrium is stated formally in the following proposition.

**Proposition 1.** Suppose \(\delta < \gamma\) and \(x_D \geq x_D^* = \frac{5x_L + \sqrt{x_L^2 - \sigma}}{6} - \frac{\sigma}{6x_L}\). A perfect Bayesian equilibrium is given by

- \(L\) unilaterally proposes all \(x \in [0, 1]\). In both the unilateral and multilateral subgames, if \(D\) supports \(x\), then \(L\) implements \(x < 2x_L\) and does not implement \(x \geq 2x_L\), and if \(D\) opposes \(x\), then \(L\) implements \(x \in I_2\) and does not implement

\(^9\)Descriptions of such equilibria are available upon request from the authors.
$x \notin I_2$.

- $V$ signals support if $x \in I_2$ and signals opposition if $x \notin I_2$. $V$ accepts all $x \in [0, 1]$.

- $D$ supports a unilateral proposal. In the multilateral subgame, $D$ opposes the proposal regardless of whether $V$ signals support or opposition.

- In the unilateral subgame, $D$’s belief about $x$ is uniformly distributed on $[0, 1]$. In the multilateral subgame, if $V$ signals support, then $D$’s belief about $x$ is uniformly distributed on $I_2$ and if $V$ signals opposition, then $D$’s belief about $x$ is uniformly distributed on $[\max\{y_2, 2x_D\}, 1]$.

Proof. We must show that the strategies given in the statement of the proposition form a perfect Bayesian equilibrium. In particular, we need to show that no player has an incentive to deviate from their equilibrium strategy given the other players’ strategy and their beliefs, and that the beliefs are consistent with all players’ strategies on the equilibrium path.

By Lemma 1, the actions of $L$ and $V$ at the last two nodes of the game are sequentially rational. The remaining parts of the equilibrium strategies are examined in what follows.

For the leader, the equilibrium path of play gives $L$ a payoff of $-(x - x_L)^2$ for $x < 2x_L$ and $-(0 - x_L)^2$ for $x \geq 2x_L$. Note that for both $x < 2x_L$ and $x \geq 2x_L$, the equilibrium payoff of $L$ is the largest possible value among the payoffs to $L$ in the game tree. Clearly, then there is no possible deviation for $L$ that would result in a higher payoff.

For the pivotal member, we check his action in each of the four regions $I_1$, $I_2$, $I_3$ and $I_4$. Recall that $D$ opposes the proposal regardless of whether $V$ signals support or opposition. Therefore, if $x \in I_1 \cup I_3 \cup I_4$, then the payoff to $V$ is the same whether $V$ signals support or opposition. It follows the signaling opposition is optimal for $x$ in these ranges. On the other hand, if $x \in I_2$, then signaling support yields a payoff of $-(x - x_V)^2$ and signaling opposition yields a payoff of $-(x - x_V)^2 - \delta$. In this case, signaling support is clearly optimal. Therefore, the actions of $V$ are sequentially rational.
For the audience, we must show that its equilibrium action is optimal given its belief at each information set. If \( x \) is proposed unilaterally, then \( D \)'s belief about \( x \) is uniformly distributed on \([0, 1] \). Therefore, the expected utility of supporting the proposal is

\[
Eu_D(S) = \int_0^{2x_L} -(x - x_D)^2 \, dx + \int_{2x_L}^1 -(0 - x_D)^2 \, dx
\]

and the expected utility of opposing the proposal is

\[
Eu_D(O) = \int_0^{y_1} -(0 - x_D)^2 \, dx + \int_{y_1}^{y_2} -(x - x_D)^2 \, dx + \int_{y_2}^1 -(0 - x_D)^2 \, dx.
\]

Evaluating these integrals and solving shows that \( Eu_D(S) \geq Eu_D(O) \) when \( x_D \geq x_D^* \). Therefore, supporting a unilateral proposal is sequentially rational for \( D \).

In the multilateral subgame, there are two cases to consider. If \( V \) signals support, then \( D \)'s belief about \( x \) is uniformly distributed on \( I_2 \). As \( D \) is indifferent between supporting and opposing \( x \in I_2 \), it is sequentially rational to oppose in this case. On the other hand, if \( V \) signals opposition, then \( D \)'s belief about \( x \) is uniformly distributed on \([\max\{y_2, 2x_D\}, 1] \). As \(-(x - x_D)^2 \leq -(0 - x_D)^2 \) for all \( x \geq 2x_D \), it follows that the expected utility of opposing \( x \) is at least as large as the expected utility of supporting \( x \). Therefore it is sequentially rational to oppose \( x \) in this case.

Finally, we note that the belief of \( D \) in the unilateral subgame is given by Bayes’ Rule and the strategy of \( L \). In the multilateral subgame, we assume that \( D \)'s updated belief about \( x \) before \( V \) makes its announcement—which is unrestricted because it is off the equilibrium path—is uniform on \( I_2 \cup [2x_D, 1] \). The given beliefs are then consistent with the conditional Bayesian updating requirement of perfect Bayesian equilibrium for multi-stage games (Fudenberg and Tirole, 1991, pp. 331–333).

In this equilibrium, the leader’s choice to propose the policy unilaterally is uninformative to the audience, since the leader does so for all \( x \in [0, 1] \). The requirement that \( x_D \geq x_D^* \) ensures that the audience is better off supporting a randomly chosen policy than opposing it. Therefore, since the leader’s choice to propose unilaterally gives the audience no information, it is rational for \( D \) to support the policy. With guaranteed support for any proposal, the leader is free to implement any policy that he prefers over the status quo, meaning he gets his highest possible payoff for any
policy $x$. Note that the institution could be conservative or revisionist in Proposition 1. In either case, the leader does not have an incentive to consult the institution because he gets his highest possible payoff from a unilateral proposal.

As is well-known, perfect Bayesian equilibrium places no restrictions on the beliefs of players for actions that are off the equilibrium path. In this proposition, we have chosen the beliefs of the audience in order to make the proof as simple as possible. However, this same equilibrium path of play can be supported by other, more natural, beliefs at the expense of additional complication in the presentation.

In our second proposition, we show that if the domestic audience is conservative, then it is an equilibrium for the leader to always propose $x$ multilaterally. The institution supports the proposal if $x \in I_2$ and opposes it otherwise. The domestic audience opposes the proposal in all cases, including the unilateral subgame, which is off the equilibrium path. We state this result formally in the following proposition.

**Proposition 2.** Suppose $\delta < \gamma$ and $x_D \leq x^*_D = \frac{5x_L + \sqrt{x_L^2 - \sigma}}{6} - \frac{\sigma}{6x_L}$. A perfect Bayesian equilibrium is given by

- $L$ proposes all $x \in [0, 1]$ through the institution. In both the unilateral and multilateral subgames, if $D$ supports $x$, then $L$ implements $x < 2x_L$ and does not implement $x \geq 2x_L$, and if $D$ opposes $x$, then $L$ implements $x \in I_2$ and does not implement $x \notin I_2$.

- $V$ signals support if $x \in I_2$ and signals opposition if $x \notin I_2$. $V$ accepts all $x \in [0, 1]$.

- $D$ opposes a unilateral proposal. In the multilateral subgame, $D$ opposes the proposal regardless of whether $V$ signals support or opposition.

- In the unilateral subgame, $D$’s belief about $x$ is uniformly distributed on $[0, 1]$. In the multilateral subgame, if $V$ signals support, then $D$’s belief about $x$ is uniformly distributed on $I_2$; if $V$ signals opposition, then $D$’s belief about $x$ is uniformly distributed on $I_1 \cup I_3 \cup I_4$.

**Proof.** As in the proof of Proposition 1, we must show that no player has a profitable deviation available and that the beliefs are consistent with equilibrium strategies.
Once again, by Lemma 1, the actions of $L$ and $V$ at the last two nodes of the game are sequentially rational.

For the leader, the equilibrium path of play gives payoffs of $-(x - x_L)^2 - \sigma$ for $x \in I_2$ and $-(0 - x_L)^2$ for $x \notin I_2$. If $L$ instead made a unilateral proposal, the payoffs would be the same in all cases; if he accepted the status quo, the payoffs would be the same for $x \notin I_2$ and strictly less for $x \in I_2$. Therefore, $L$’s proposed actions are sequentially rational.

For the pivotal member, the argument from the proof of Proposition 1 carries over, since $D$ again opposes the proposal regardless of $V$’s action.

For the domestic audience, there are three cases to consider. First, in the multilateral subgame, if $V$ announces support for the policy, then $D$’s belief about $x$ is uniformly distributed on $I_2$. The audience is indifferent between support and opposition for all $x \in I_2$, so its opposition in this case is sequentially rational. Second, in the multilateral subgame, if $V$ announces opposition, $D$’s belief about $x$ is uniformly distributed on $I_1 \cup I_3 \cup I_4$. The expected utility of supporting the proposal is

$$E u_D(S) = \frac{1}{1 + y_1 - y_2} \left[ \int_{y_1}^{y_2} -(x - x_D)^2 \, dx + \int_{y_2}^{2x_L} -(x - x_D)^2 \, dx + \int_{2x_L}^{x_2} -(0 - x_D)^2 \, dx \right].$$

and the expected utility of opposing the proposal is

$$E u_D(O) = \frac{1}{1 + y_1 - y_2} \left[ \int_{y_1}^{y_2} -(0 - x_D)^2 \, dx + \int_{y_2}^{1} -(0 - x_D)^2 \, dx \right].$$

Evaluating these integrals and solving shows that $E u_D(O) \geq E u_D(S)$ when $x_D \leq x_D^*$. Therefore, $D$’s opposition in this case is sequentially rational. Last, if $x$ is proposed unilaterally, then $D$’s belief about $x$ is uniformly distributed on $[0, 1]$. Using the same calculations as in the proof of Proposition 1, we see that $D$’s payoff from opposing the proposal is at least as great as that of supporting it when $x_D \leq x_D^*$. Therefore, $D$’s opposition in this case is sequentially rational.

Finally, note that $D$’s beliefs in the multilateral subgame are given by Bayes’ Rule and the strategies of $L$ and $V$. Its belief in the unilateral subgame is off the equilibrium path of play and is therefore unrestricted.
In this equilibrium, the condition on the audience’s ideal point means that it opposes a randomly chosen \( x \in [0, 1] \). If the institution announces support, \( D \) infers that \( x \in I_2 \), which means its support or opposition makes no difference—the leader will implement the policy no matter what. If the institution announces opposition, the requirement that \( x_D \leq x'_D \) ensures that \( D \) on average prefers opposition over support for \( x \notin I_2 \). In either case, it is rational for the audience to announce opposition. Since the institution’s announcement has no effect on the audience’s behavior, and hence no effect on the final policy, it has no incentive to deviate from the proposed strategy, regardless of its own ideal point. Lastly, the leader faces public opposition no matter how he chooses to propose the policy, so he has no incentive not to propose multilaterally.

It is worth emphasizing that no matter what the preferences of the audience are, the leader’s choice of venue does not depend on the policy position or whether the international institution is conservative or revisionist. In the next section, we consider the implications of these results for the substantive conclusions drawn in Chapman (2007).

## 5 Implication

We have shown that Chapman’s original statement of equilibrium conditions was incorrect and described some correct equilibria. In this section, we show that these equilibria do not support the empirical implications described in the original paper. Chapman (2007, 149–150) summarizes the substantive importance of the original findings in a list of four observations, mainly about the effects of the institution’s policy position on leader behavior and public opinion. We find that each claim is contradicted by the results described above. In particular, the players’ behavior in these equilibria does not depend at all on whether the institution’s pivotal member is conservative or revisionist.

The first two observations concern the effect of international institutions’ signals on domestic public opinion (p. 149):

**Observation 1:** Support for foreign policies is likely to be higher when a leader consults an international institution and gains the institution’s
support than when a leader does not consult an international institution.

Observation 2: Given that a leader has gone to an institution for authorization and the institution signals its support, the public is more likely to support as the preferences of the pivotal member of the institution become more conservative. Likewise, failure to obtain support is less likely to affect public opinion as the pivotal member of the institution becomes more conservative.

Neither of these statements is consistent with the equilibrium behavior characterized in Propositions 1 and 2. In both cases, $D$ always opposes the proposal in the multilateral subgame, even if $V$ signals support. In fact, in Proposition 1, the domestic audience is more likely to support a unilateral proposal than a multilateral proposal that receives institutional support. These results do not depend on any particular assumptions about the institution’s conservatism or revisionism. If $\delta < \gamma$, then for any arrangement of the players’ ideal points, at least one of the propositions’ conditions are satisfied—meaning there is an equilibrium in which international institutions have no effect on domestic opinion.

The next observation is about the relationship between the pivotal member’s ideal point and the leader’s initial decision (p. 150):

Observation 3: Leaders are more likely to consult international institutions the more they desire public support for policies and as the preferences of the pivotal member of a given institution become more conservative.

The basis for the observation is that acquiring support from a conservative institution “guarantees public support” for the leader’s proposal—which, as we have already seen, is not true. Consequently, the observation does not hold. We have identified two kinds of equilibrium behavior: one where the leader always proposes unilaterally and another in which he always goes through the institution. Neither of these places any conditions on the pivotal member’s ideal point, so there exists an always-consult equilibrium with a maximally conservative institution and, conversely, an never-consult equilibrium with a maximally revisionist institution. If the institution’s support has no effect on public opinion, as in our equilibria, then the pivotal member’s ideal point
is irrelevant for both its own announcement and the leader’s decision of proposal venue.

The final observation concerns the conditions under which institutions can effectively constrain leaders’ policy choices.

Observation 4: Institutions whose pivotal member is relatively revisionist will constrain policy makers via anticipated opposition regardless of their members’ enforcement power. Institutions whose pivotal member is relatively conservative are less equipped to constrain leaders through a threat of opposition but may force leaders to be selective in proposing policies that will garner institutional support.

Both statements rest on the implicit assumption that the pivotal member makes a sincere announcement of its preferences, which we have shown is not necessarily true in equilibrium. The first part of the observation is contradicted by Proposition 1, in which the leader is effectively unconstrained, regardless of whether \( V \) is conservative or revisionist. Even if the leader anticipates opposition from a revisionist institution to a policy he favors, in equilibrium he will propose it unilaterally and receive public support. The second part is contradicted by Proposition 2, in which the leader proposes all policies through the institution, again regardless of \( V \)’s ideal point. In this case, there is no need for the leader to be selective even if the institution is conservative, because he faces public opposition no matter how he makes the proposal or what the institution announces.

We have shown that none of the original paper’s main substantive claims hold up under the equilibria we have found. To be clear, we do not claim that these observations are impossible to support as equilibrium behavior; the model has many more equilibria that we have not characterized here and we can not rule out the existence of equilibria consistent with these claims. However, our results show that there are reasonable equilibria in this model that do not reflect the systematic relationship between institutional preferences, public opinion, and venue choices that are posited in the original paper. This fact calls into question the originally claimed empirical implications of the model.
6 Conclusion

We have shown that Chapman’s (2007) statement of equilibrium conditions is erroneous and provided a corrected solution. Moreover, we have demonstrated that the empirical implications claimed in the original paper are not supported by the equilibria in Propositions 1 and 2. In particular, the role of institutional conservatism or revisionism has been overstated: there is not necessarily any relationship between an institution’s ideal point, its ability to affect domestic support for a policy, and the likelihood that a leader will consult the institution in the first place. Our results suggest that a promising direction for future research would be to consider the informational role of other institutional features that have been left out of this model.
Appendix

In this section, we demonstrate that equilibria resembling those of Propositions 1 and 2 exist even if $2x_L > 1$. The sequence of play on the equilibrium path is exactly the same as in the equilibria given in the text. The only differences are in beliefs and behavior off the equilibrium path, and in the condition on $x_D$ under which each type of equilibrium exists.

**Equilibria when $y_2 \leq 1 < 2x_L$**

If $y_2 \leq 1 < 2x_L$, there are only three segments of the type space to consider: $I_1 = [0, y_1]$, $I_2 = [y_1, y_2]$, and $I_3 = [y_2, 1]$. In this case, there exist equilibria with exactly the same behavior and beliefs (even off the equilibrium path) as in those given in the text.

**Proposition 1a.** Suppose $\delta < \gamma$, $y_2 \leq 1 < 2x_L$, and

$$\frac{1-2\sqrt{x_L^2-\sigma(4x_L^2-\sigma)}}{3-12x_L \sqrt{x_L^2-\sigma}} = x_D^+ \leq x_D \leq \frac{1}{2}.$$  

The strategies and beliefs in Proposition 1 constitute a perfect Bayesian equilibrium.\(^{10}\)

**Proof.** The proof of Proposition 1 carries over, except for the audience’s payoffs in the unilateral subgame. In this case, the expected utility of supporting the proposal is

$$Eu_D(S) = \int_0^1 -(x - x_D)^2 \, dx$$

and the expected utility of opposing the proposal is

$$Eu_D(O) = \int_0^{y_1} -(0 - x_D)^2 \, dx + \int_{y_1}^{y_2} -(x - x_D)^2 \, dx + \int_{y_2}^1 -(0 - x_D)^2 \, dx.$$

Evaluating these integrals and solving shows that $Eu_D(S) \geq Eu_D(O)$ when $x_D \geq x_D^+$. Therefore, supporting a unilateral proposal is sequentially rational for $D$. \( \square \)

\(^{10}\)If $y_2 = 1$, the audience’s belief in the multilateral subgame if $V$ signals opposition is a point mass on $y_2$. 

---

20
Proposition 2a. Suppose $\delta < \gamma$, $y_2 \leq 1 < 2x_L$, and $x_D \leq x_D^\dagger = \frac{1-\sqrt{x_L^2-\sigma}(4x_L^2-\sigma)}{3-12x_L\sqrt{x_L^2-\sigma}}$. The strategies and beliefs in Proposition 2 constitute a perfect Bayesian equilibrium.11

Proof. The proof of Proposition 2 carries over, except for the audience’s payoffs. In the multilateral subgame, if $V$ announces support, then $D$ is indifferent between support and opposition because its belief about $x$ is uniform on $I_2$. Therefore, opposition is sequentially rational. If $V$ announces opposition, then $D$’s belief about $x$ is uniformly distributed on $I_1 \cup I_3$. The expected utility of supporting the proposal is

$$Eu_D(S) = \frac{1}{1+y_1-y_2} \left[ \int_0^{y_1} -(x-x_D)^2 \, dx + \int_{y_2}^1 -(x-x_D)^2 \, dx \right]$$

and the expected utility of opposing the proposal is

$$Eu_D(O) = \frac{1}{1+y_1-y_2} \left[ \int_0^{y_1} -(0-x_D)^2 \, dx + \int_{y_2}^1 -(0-x_D)^2 \, dx \right].$$

Evaluating these integrals and solving shows that $Eu_D(O) \geq Eu_D(S)$ when $x_D \leq x_D^\dagger$. Therefore, $D$’s opposition in this case is sequentially rational. Finally, in the unilateral subgame, $D$’s belief about $x$ is uniformly distributed on $[0,1]$. In this case, the expected utility of supporting the proposal is

$$Eu_D(S) = \int_0^1 -(x-x_D)^2 \, dx$$

and the expected utility of opposing the proposal is

$$Eu_D(O) = \int_0^{y_1} -(0-x_D)^2 \, dx + \int_{y_1}^{y_2} -(x-x_D)^2 \, dx + \int_{y_2}^1 -(0-x_D)^2 \, dx.$$  

Once again, $Eu_D(O) \geq Eu_D(S)$ when $x_D \leq x_D^\dagger$. Therefore, $D$’s opposition in the unilateral subgame is sequentially rational.

11Since $I_4$ is outside the type space in this case, $D$’s belief when $V$ signals opposition is now uniform on $I_1 \cup I_3$. 

21
Equilibria when \( y_2 > 1 \)

If \( y_2 > 1 \), there are only two relevant segments of the type space: \( I_1 = [0, y_1] \) and \( I_2 = [y_1, 1] \).

**Proposition 1b.** Suppose \( \delta < \gamma, \ y_2 > 1, \) and \( x_D \geq x_D^* = \frac{1}{3}y_1 \). A perfect Bayesian equilibrium is given by

- \( L \) unilaterally proposes all \( x \in [0, 1] \). In both the unilateral and multilateral subgames, if \( D \) supports \( x \), then \( L \) implements the proposal, and if \( D \) opposes \( x \), then \( L \) implements \( x \in I_2 \) and does not implement \( x \notin I_2 \).

- \( V \) signals support if \( x \in I_2 \) and signals opposition if \( x \notin I_2 \). \( V \) accepts all \( x \in [0, 1] \).

- \( D \) supports a unilateral proposal. In the multilateral subgame, \( D \) supports the proposal regardless of whether \( V \) signals support or opposition.

- In the unilateral subgame, \( D \)'s belief about \( x \) is uniformly distributed on \( [0, 1] \). In the multilateral subgame, if \( V \) signals support, then \( D \)'s belief about \( x \) is uniformly distributed on \( I_2 \) and if \( V \) signals opposition, then \( D \)'s belief about \( x \) is uniformly distributed on \( I_1 \).

**Proof.** Once again, by Lemma 1, the actions of \( L \) and \( V \) at the last two nodes of the game are sequentially rational.

For the leader, the equilibrium path of play gives \( L \) a payoff of \( -(x - x_L)^2 \) for all \( x \in [0, 1] \). Since \( 2x_L > 1 \), meaning the leader prefers all proposals over the status quo, the equilibrium payoff to \( L \) is its largest possible value in all cases. Therefore, there is no possible deviation for \( L \) that would result in a higher payoff.

For the pivotal member, there are two cases to check. Recall that \( D \) supports the proposal regardless of whether \( V \) announces support or opposition. Therefore, if \( x \in I_1 \), the pivotal member is indifferent between announcing support or opposition. It follows that an announcement of opposition is sequentially rational in this case. If \( x \in I_2 \), then signaling support is sequentially rational, for the same reasons as in Proposition 1.
For the audience, there are three cases to consider. First, if \( x \) is proposed unilaterally, then \( D \)'s belief about \( x \) is uniformly distributed on \([0, 1]\). The expected utility of supporting the proposal is

\[
Eu_D(S) = \int_0^1 -(x - x_D)^2 dx
\]

and the expected utility of opposing the proposal is

\[
Eu_D(O) = \int_0^{y_1} -(0 - x_D)^2 dx + \int_{y_1}^1 -(x - x_D)^2 dx.
\]

Evaluating these integrals and solving shows that \( Eu_D(S) \geq Eu_D(O) \) when \( x_D \geq x_D^\dagger \).

Second, in the multilateral subgame, if \( V \) signals support, then \( D \)'s belief about \( x \) is uniformly distributed on \( I_2 \), meaning \( D \) is indifferent. Therefore, it is sequentially rational to support the proposal in this case. Third, in the multilateral subgame, if \( V \) signals opposition, then \( D \)'s belief about \( x \) is uniformly distributed on \( I_1 \). In this case, \( D \)'s expected utility for supporting the proposal is \( \int_0^{y_1} -(x - x_D)^2 dx \) and its expected utility for opposing is \( \int_{y_1}^1 -(0 - x_D)^2 dx \). Therefore, \( D \)'s support is sequentially rational when \( x_D \geq x_D^\dagger \).

Finally, note that the belief of \( D \) in the unilateral subgame is given by Bayes’ rule and the strategy of \( L \). In the multilateral subgame, which is off the equilibrium path, we assume that \( D \)'s updated belief about \( x \) before \( V \) makes its announcement is uniform on \([0, 1]\); the given beliefs then satisfy conditional Bayesian updating.

**Proposition 2b.** Suppose \( \delta < \gamma \), \( y_2 > 1 \), and \( x_D \leq x_D^\dagger = \frac{1}{3} y_1 \). The strategies and beliefs in Proposition 2 constitute a perfect Bayesian equilibrium. \(^{12}\)

**Proof.** Once again, the proof of Proposition 2 carries over, except for the audience’s payoffs. In the multilateral subgame, if \( V \) announces support, then \( D \) is indifferent between support and opposition because its belief about \( x \) is uniform on \( I_2 \). Therefore, opposition is sequentially rational. If \( V \) announces opposition, then \( D \)'s belief about \( x \) is uniformly distributed on \( I_1 \). In this case, \( D \)'s expected utility for supporting

\(^{12}\)Since \( I_3 \) and \( I_4 \) are outside the type space in this case, \( D \)'s belief when \( V \) signals opposition is now uniform on \( I_1 \).
the proposal is \[ \int_{0}^{y_1} -(x - x_D)^2 \, dx \] and its expected utility for opposing is \[ \int_{0}^{y_1} -(0 - x_D)^2 \, dx. \] Therefore, \( D \)'s support is sequentially rational when \( x_D \leq x^*_D \). Finally, in the unilateral subgame, \( D \)'s belief about \( x \) is uniformly distributed on \([0, 1]\). In this case, the expected utility of supporting the proposal is

\[ Eu_D(S) = \int_{0}^{1} -(x - x_D)^2 \, dx \]

and the expected utility of opposing the proposal is

\[ Eu_D(O) = \int_{0}^{y_1} -(0 - x_D)^2 \, dx + \int_{y_1}^{1} -(x - x_D)^2 \, dx. \]

Once again, \( Eu_D(O) \geq Eu_D(S) \) when \( x_D \leq x^*_D \). Therefore, \( D \)'s opposition in the unilateral subgame is sequentially rational. \( \square \)
References


