Why Conference Committees?: A Policy Explanation for the Use of Conference*

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Abstract

Little scholarly literature has examined why the chambers of the U.S. congress use conference committees to reconcile inter-cameral legislative differences. Conference committees occur frequently and handle the most important legislation. Why would the chambers be willing to delegate conciliation authority to a subset of the membership that is then granted wide leverage in shaping the policy choices on legislation with such broad implications for the membership? It would seem that existing theoretical models addressing this matter are somewhat incomplete in their handling of formal procedures and/or the motivations of involved actors. In this paper, we argue that certain conditions on preferences and information yield the chambers, who must be complicit in the decision to go to conference, higher expected policy returns to delegating this authority to utility-maximizing conferees.

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1 Introduction

Conference committees – the ad hoc joint committees used to resolve legislative differences between the chambers – have been a central part of the legislative process in the U.S. congress since the early 1850s (McCown, 1927). They are used frequently and for the most important legislation (Sinclair, 2007). While researchers have increasingly turned their attention toward conference committees in recent years, little scholarly work has been dedicated to the question of why congress employs conference committees to resolve inter-cameral legislative differences. It is well understood that delegation of this variety has consequences (Miller, 1992), and scholars have demonstrated that conference committees have the capacity to independently influence policy (Nagler, 1989; Vander Wielen, 2009).

This raises the question: why would the parent chambers permit a subset of the membership, with considerable autonomy, to structure legislative outcomes? After all, going to conference requires the consent of the parent bodies. If conferees are able to interject policy influence and often deal with most salient legislation, why do the chambers rely upon conference as a means of reconciling differences between the chambers? And why would we ever see the parent bodies delegate this responsibility to conferences that are comprised of preference outliers?

We address these questions below by developing a theoretical model of two-sided incomplete information. We find that when chambers have even minimal levels of uncertainty regarding the preferences of the opposing chamber, there are preference arrangements in which conference committees produce higher expected policy returns to both chambers than bargaining between the entire bodies through exchange of amendments. A primary, but intuitive, result of this model is that centrally located conferences are most likely to satisfy this condition. That said, we find that arrangements exist in which conferences that are not located between the chambers can likewise yield higher expected returns to the chambers.

This study offers an alternative perspective of conference committees that builds upon the extant literature. While existing theories stress deference by the conference committee to the chamber,
or vise versa, this project suggests that utility-maximing conference committees can provide the chambers with policy advantages. Therefore, we offer a policy rationale for the use of conference committees, squaring the fact that the chambers must be complicit in the use of conference with the observation that conferences frequently handle the most important legislation with the broadest consequences for electoral fortunes. Moreover, we do this in the context of conference committees with well-defined policy motivations.

2 Competing Perspectives

Few scholars have addressed these questions in any theoretical detail. Two notable exceptions include Shepsle and Weingast (1987a) and Krehbiel (1991). Shepsle and Weingast seek to offer a theoretical basis for the observation that standing committees have disproportionate influence over policy outcomes. They suggest that deference to standing committees can be attributed to the ability of standing committee members to exact their will at the penultimate stage of the legislative process – conference. Floor members, having perfect foresight of conference outcomes, then choose not to challenge committee proposals given the ex post adjustment powers the committees possess at the conference stage.

Our major concern with this perspective is the portrayal of conference as a virtual certainty in the legislative process, a criticism expressed by Krehbiel (1987). Krehbiel, in our view correctly, argues that Shepsle and Weingast do not adequately address the powers of the floor to circumvent conference. Quite simply, the chambers must acquiesce to conference. In fact, in each chamber a minimum of a majority must be complicit in the decision to go to conference. Therefore, the chamber is pivotal to the determination of this stage in the legislative process. Trivializing the chambers’ role in the decision to go to conference becomes particularly problematic when considering the fact that conference committees typically handle the most salient legislation. It seems unlikely, then, that the chambers would “rubber stamp” a stage with such broad implications for the membership. Surely, the chambers must weigh the expected policy outcomes of conference.

1 Typically conference is agreed to by unanimous consent in both chambers. However, should there be objection to conference, alternative methods of agreeing to conference are available. In the Senate, a motion to go to conference can be offered and is debatable under the regular rules of the Senate. In the House, conference can also be agreed to by suspension of rules, by a special rule from the Rules committee, or by motion.
against alternative methods of reconciliation before agreeing to conference. We seek to address this matter below.

Moreover, conference will occur only by error in the model developed by Shepsle and Weingast (1987a), as they assume that all actors operate with complete and perfect information. Members, with no uncertainty, can infer the outcome of conference through backward induction, and thereby select this position at an earlier stage in the legislative process. The assumption of complete and perfect information leads to model predictions that are inconsistent with reality, a shortcoming Shepsle and Weingast (1987b) acknowledge. We build upon this model by permitting incomplete information for both chambers.

Krehbiel (1991) offers yet another rationale for conference committees. In Krehbiel’s account, conference committees exist to generate information and apply expertise that serves the decision-making needs of the chamber medians. Information theory offers a noteworthy departure from Shepsle and Weingast in that it inserts the chambers as more active constraints on conference. Specifically, the chambers can curtail the rights of, or circumvent entirely those conferences that are unlikely to effectively relate legislative choices to policy outcomes. Therefore, unlike Shepsle and Weingast, Krehbiel offers an distinct explanation for why the chambers are willing to delegate authority to conferees – to gain information.

Krehbiel deserves credit for tackling this important and difficult problem. Still, we have concerns about information theory as applied to conference. First, it remains unclear how conference specifically facilitates the translation of policy choices to policy outcomes. While this linkage is more evident at the level of standing committees, the theory’s relevance to conference – an institution charged with reconciling legislative differences between the chambers – is far less apparent. Krehbiel does not address this matter in detail.

Second, information theory does not provide explicit motivation for conference work. Krehbiel hints that there are special incentives for acquiring committee assignments, gaining seniority, and acquiring restrictions on floor amendments, but the nature of those incentives remains ambiguous. What motivates members to engage in the resource-intensive process of providing the chamber with information? Krehbiel, in one instance, mentions a “distributional commission” as an incentive for restrictive rules (Krehbiel, 1991, 92), but later contends that chambers constrain “inherently nonmajoritarian” distributive practices (Krehbiel, 1991, 99). If the incentive is some increment of
policy advantage, which we believe it is in reality, then Krehbiel’s theory must allow conferees to move policy away from the ideal point of the median legislator at least to some degree.

Thus, we are inclined to adopt Shepsle and Weingast’s characterization of conferees as independent, utility-maximizers, as this perspective provides an explicit incentive for conference work and is consistent with the considerable autonomy granted to conferees. That said, conferees are not without constraints. We follow Krehbiel’s lead in the model below by inserting the chambers as the pivotal players in the decision to go to conference and the subsequent evaluation of the conference proposal. And while we agree with Krehbiel that chambers suffer from some degree of uncertainty, we would contend that the operative uncertainty surrounding conference is that of policy choices (i.e., the distance of the conference proposal/bargaining outcome from the chamber ideal point) and less the policy outcomes (i.e., the manifestation of policy in implementation), which would seem to be a greater consideration at earlier stages in the legislative process.

Before proceeding to a discussion of the theoretical model, we wish to emphasize that we are not proposing that policy maximization is the sole determinant of the use of conference. Surely conferences offer other advantages, such as division of labor and efficiency. However, we believe that the chambers’ policy considerations have been overlooked in this discussion, as chambers stand to make sizable policy concessions on legislation critical to electoral fortunes by going to conference. Moreover, institutions other than conference could certainly be used by the chambers to overcome the non-policy dilemmas (e.g., transaction costs) that conferences help to alleviate. In this paper we focus on policy considerations alone, despite acknowledging that conferences offer other benefits. Therefore, the reader should consider this model to present a conservative criterion for the use of conference, as other advantages can only make conference more attractive to the chambers (perhaps even offsetting comparative policy disadvantages of conference). And simple adjustments can be made to the following model to account for these other advantages.

3 Model

We develop a model that, for both chambers, compares the expected utility of going to conference to the expected utility of bargaining without use of conference. The basis of the model below is a
unidimensional policy space. We consider all actors (e.g., chambers and conference committee) to be unitary. This assumption can be operationalized for the chambers as the median member of each body (Black 1948, Downs 1957), although the model is flexible in this regard and provides for other alternatives (e.g., the filibuster pivot). The unitary actor assumption is clearly a simplification of conference preferences, as formal rules require that a majority of House and Senate conferees separately approve of the report. This assumption does make the model more tractable, and can effectively be operationalized as the mid-point of the interval between the conference delegation medians.

The game begins with each chamber making a decision whether to go to conference or to bargain based upon the expected utility of both. In selecting a method of reconciling inter-cameral differences, each actor independently chooses the alternative that yields the higher expected utility. We assume throughout that indifference in the expected utility between the methods of resolution is cause for the chambers to select bargaining. We also assume that both chambers must prefer conference to bargaining in order for conference to be the chosen conciliation method. These assumptions are put in place strictly to disadvantage the choice of going to conference.

Should at least one of the chambers prefer bargaining to conference, then the game progresses to the bargaining subgame in which the first acting chamber makes a policy proposal and the second acting chamber has the ability to either accept or reject the proposal. An acceptance of the proposal by the second acting chamber results in that policy outcome and a rejection in the status quo. If both chambers select conference, then the game enters the conference subgame in which the conference committee selects a policy proposal and each chamber has a up-or-down vote on the proposal. Both chambers must approve of the proposal in order for the conference proposal to be

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2 Since Poole finds that 85 percent of votes can be explained in a single dimension, this seems a plausible assumption. Moreover, conference tends to deal with legislation of broad salience that corresponds strongly to the left-right dimension (Vander Wielen, 2009).

3 This operationalization of conference preferences generates virtually identical predictions to a model that separately accounts for the two conference delegations in the context of complete and perfect information (Vander Wielen, 2009). In the context of two-sided incomplete information, considering the delegations separately adds significant, and we believe unnecessary, complications.

4 There is no written rule on this in either chamber, but it is a precedent that is rooted in Jefferson’s Manual (Jefferson’s Manual, Sec. XLVI; 4th Cong., 1st sess., S. Jour., p. 270). This, however, did not become definitive practice until 1850 (Tiefer, 1989).
the outcome. Should at least one of the chambers reject the proposal, the result is the status quo. Each of these subgames are discussed in detail below, and Figure 1 graphically depicts the game tree.

Central to the game to follow is the assumption that each chamber has the potential for some degree of uncertainty regarding the policy preferences of the opposing chamber. It seems that this is a far more realistic assumption than one in which the chambers have complete information regarding the preferences of the opposing chamber. If it was true that the chambers knew with certainty the ideal point of the opposing chamber, then there would be little reason for this conciliation mechanism. The first acting chamber would simply select the policy that maximizes its utility within the chambers’ winset, and the second acting chamber would accept it. This is clearly not a reality, which suggests that perhaps the chambers do not have perfect knowledge of the opposing chamber’s policy preferences. Models of two-sided incomplete information, while broadly applicable, have been used infrequently in political science research. We find that even under circumstances of miniscule amounts of uncertainty, conference committees can yield higher expected utility than bargaining between chambers.

4 Expected Utility of Bargaining Without Use of Conference

In order to calculate the expected utility of Bargaining for both chambers, we must begin by identifying the optimal strategies for both players in the bargaining subgame. In the bargaining subgame (identified in Figure 1), the first acting chamber makes a proposal and the second acting chamber has the option to accept or reject that proposal. Both chambers have common knowledge of the structure of the game, including the utility function of the opposing chamber. In addition, both chambers know the location of the status quo, $Q$, and have prior distributions on the location of the other chamber’s ideal point. Given that the bargaining subgame allows only one chamber to make an offer and constrains the other to a mere dichotomous choice of accepting or rejecting, it

\footnote{A notable exception to this is the conflict literature (see Powell, 1988; Carlson, 1995; Bueno de Mesquita, Morrow and Zorick, 1997).}
is clearly a simplification of the bargaining process. Observers of congress will note that there are numerous variations on inter-cameral bargaining. Here we develop a stylized version. This portrayal not only makes the two-sided incomplete information component of the model more manageable, but we argue that it is also a reasonable abstraction of reality. After all, amendment exchanges lasting more than a single round are rare. This abridged version may also be conceptualized as the final move in a more iterative bargaining process, reflecting the updated knowledge that would have resulted from multiple formal or informal exchanges.

Let \( h \) be the proposal made by \( H_1 \), the first acting chamber. Denote \( H_1 \)'s true policy position in the unidimensional space as \( \delta \). The second acting chamber, \( H_2 \), with the the true policy position \( \pi \) receives the following payoff for her decision following the offer \( h \) made by \( H_1 \).

\[
 u_2(\pi, h, Q) = \begin{cases} 
 -(h - \pi)^2 & \text{if } H_2 \text{ accepts} \\
 -(Q - \pi)^2 & \text{if } H_2 \text{ rejects.} 
\end{cases}
\] (1)

Therefore, if \( H_2 \) accepts the proposal, it receives a payoff of \(-(h - \pi)^2\), while if it rejects the proposal its payoff is \(-(Q - \pi)^2\). To maximize \( u_2 \), \( H_2 \) accepts \( H_1 \)'s policy proposal if and only if \(-(h - \pi)^2 \geq -(Q - \pi)^2\), making indifference a cause for acceptance.

\( G \) is \( H_1 \)'s cumulative prior distribution for \( \pi \in (-\infty, \infty) \), and is known to both actors. Since there is no possibility that \( H_1 \) will offer a proposal on the opposite side of \( Q \) from \( \delta \), making \( H_1 \) worse off than \( Q \), the policy space must be partitioned into two scenarios contingent upon whether \( \delta > Q \) or \( \delta < Q \). Given that \( H_1 \) exclusively offers an \( h \) on the same side of \( Q \) as \( \delta \), it follows that \( Pr(h \text{ is accepted}) = 1 - G [(h + Q)/2] \) for \( \delta > Q \) (see Equation (2)) and \( Pr(h \text{ is accepted}) = G [(h + Q)/2] \) for \( \delta < Q \) (see Equation (3)). Stated another way, the probability \( h \) is a successful proposal is equal to the probability that \( \pi \) is nearer the location of the proposal than the status quo. There is no need to explore the scenario in which \( \delta = Q \) given that \( H_1 \) is not expected to make any policy amendment on the opposite side of \( Q \) from \( \delta \).

\( ^6 \)Formally, the exchange of amendments permits two degrees of amending. The second acting chamber’s amendment to the original measure is the text subject to amendment, and each chamber is allowed one opportunity to amend the opposing chamber’s amendment.

\( ^7 \)If one were to model multiple exchanges of offers with information being updated each round, the process by which the chambers update information would be largely an arbitrary decision made by the modeler. This decision is also likely to have a significant influence on the resulting expected utility of bargaining. The modeling choice made in here avoids this pitfall.
proposals under such circumstances.

For $\delta > Q$

$$Pr(Y) = \int_{h+Q}^{\infty} g(\pi) d\pi = 1 - G\left(\frac{h+Q}{2}\right)$$ (2)

$$Pr(N) = \int_{-\infty}^{h+Q} g(\pi) d\pi = G\left(\frac{h+Q}{2}\right)$$

For $\delta < Q$

$$Pr(Y) = \int_{h+Q}^{\infty} g(\pi) d\pi = G\left(\frac{h+Q}{2}\right)$$ (3)

$$Pr(N) = \int_{-\infty}^{h+Q} g(\pi) d\pi = 1 - G\left(\frac{h+Q}{2}\right)$$

The expected utility of $H_1$ of type $\delta > Q$ for any $h$ is shown in equation (4), where $u_a(x) = -(x - b)^2$ for policy $x \in (-\infty, \infty)$, actor $a \in \{1, 2\}$, and ideal point $b = \{\delta$ if $a = 1, \pi$ if $a = 2\}$. $H_1$'s optimal strategy is to offer an $h$ that maximizes its expected utility. The optimal $h$ for a given $\delta > Q$ satisfies Equation (5). For $\delta > Q$, the optimal offer is denoted $h_{R}^*$, and will be located to the right of $Q$ (same side of $Q$ as $\delta$). The analogous steps are taken for $\delta < Q$, with the optimal $h$ denoted $h_{L}^*$. The equations for the two scenarios ($\delta > Q$ and $\delta < Q$) are mirror images of one another.

For $\delta > Q$

$$E(u_1) = u_1(h) \left[1 - G\left(\frac{h+Q}{2}\right)\right] + u_1(Q)G\left(\frac{h+Q}{2}\right)$$ (4)

$h_{R}^*$ is defined as the value of $h$ that satisfies

$$\frac{\frac{1}{2} g\left(\frac{h+Q}{2}\right)}{1 - G\left(\frac{h+Q}{2}\right)} = \frac{-2 (h - \delta)}{(Q - \delta)^2 - (h - \delta)^2}$$ (5)

See Appendix A for second order conditions and Appendix B for derivation.

For presentation sake, we will focus on the scenario in which the actors are located to the right of the status quo (i.e., $\delta > Q$). The results are always the mirror image when actors are located to the left of $Q$. 

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8 See Appendix A for second order conditions and Appendix B for derivation.

9 For presentation sake, we will focus on the scenario in which the actors are located to the right of the status quo (i.e., $\delta > Q$). The results are always the mirror image when actors are located to the left of $Q$. 

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For $\delta < Q$

$$E(u_1) = u_1(h)G\left(\frac{h + Q}{2}\right) + u_1(Q)\left[1 - G\left(\frac{h + Q}{2}\right)\right]$$

$h^*_L$ is defined as the value of $h$ that satisfies

$$\frac{1}{2}g\left(\frac{h+Q}{2}\right) = \frac{2(h - \delta)}{G\left(\frac{h+Q}{2}\right)}(Q - \delta)^2 - (h - \delta)^2$$

Therefore, the Nash equilibrium of the bargaining subgame is $H_1$ offers an optimal $h$ that satisfies the above equations, and $H_2$ selects “Yea” if and only if $-(h - \pi)^2 \geq -(Q - \pi)^2$, and “Nay” otherwise.

Next we turn our attention to deriving the expected utility of bargaining for both $H_1$ and $H_2$. In order to determine which action $H_1$ and $H_2$ will select at their initial move, we will need to compare the expected utility of bargaining to conference (derived in the following section) for both actors. To derive $H_1$’s expected utility for selecting “Bargain,” we simply insert $h^*$ into the general expected utility equation (shown in Equation (4) for $\delta > Q$). By doing so, we arrive at the highest expected utility that $H_1$ can receive given the location of $\delta$ and the distribution $G$ (see Equation (6)).

For $\delta > Q$

$$E(u_1) = u_1(h_R^*)\left[1 - G\left(\frac{h_R^* + Q}{2}\right)\right] + u_1(Q)G\left(\frac{h_R^* + Q}{2}\right)$$

(6)

For $\delta < Q$

$$E(u_1) = u_1(h_L^*)G\left(\frac{h_L^* + Q}{2}\right) + u_1(Q)\left[1 - G\left(\frac{h_L^* + Q}{2}\right)\right]$$

Deriving the expected utility of selecting “Bargain” for $H_2$ is a more complicated undertaking, seeing as though $H_2$ must impute $H_1$’s optimal offer $h^*$ having some uncertainty as to $H_1$’s ideal point $\delta$. It is important to note that $H_2$ is capable of deriving the optimal offer from $H_1$ given that $H_1$’s prior distribution $G$ is common knowledge. Under conditions of complete information,
would know with certainty the location of this offer. However, \( H_2 \) has a prior distribution on \( \delta \), providing for the possibility that \( H_2 \) does not have complete information. If \( F \) is \( H_2 \)'s cumulative prior distribution for \( \delta \in (-\infty, \infty) \), then the general structure of \( H_2 \)'s expected utility is shown in Equation (7).

\[
E(u_2) = \int_A u_2(h^*(\delta))f(\delta)d\delta + \int_B u_2(Q)f(\delta)d\delta + \int_C u_2(Q)f(\delta)d\delta \tag{7}
\]

Region A in equation (7) refers to the set of \( \delta \) locations in which \( H_1 \) makes an offer, \( h^* \), that is acceptable to \( H_2 \), whereas regions B and C represent the set of \( \delta \) locations that yield \( h^* \)'s that are unacceptable offers to \( H_2 \). There are two such regions because there are potentially values of \( \delta \) on both sides of region A that result in unacceptable \( h^* \)'s – one that occurs when \( h^* \) is on the opposite side of \( Q \) from \( \pi \) and another that occurs when \( |h^*| > |2\pi - Q| \). It is not, however, always the case that there are two such regions, as will be discussed below.

Any \( h^* \) that is acceptable to \( H_2 \) must come from a \( \delta \) that is on the same side of the status quo as \( \pi \), given that \( H_1 \) will make no offer on the opposite side of the status quo from its ideal point. Because \( H_2 \) can be located on either side of \( Q \), in conjunction with the fact that the optimal offer, \( h^* \), is contingent on which side of the status quo \( H_1 \) is located, it is necessary to parse equation (7) into two separate scenarios. The scenario \( \pi > Q \) and \( \pi < Q \) must be considered separately, as was done in calculating the expected utility of \( H_1 \). For the scenario in which \( \pi > Q \), an offer falling in region A must be of type \( h^*_R \). Conversely, for scenario \( \pi < Q \), only \( h^*_L \) can fall in \( H_2 \)'s acceptable region.\(^{10}\)

Given that Equation (7) is in terms of \( \delta \), the limits of the integrals must be transformed to correspond to the regions in which \( \delta \) must fall for an acceptable offer to exist. When \( \delta = Q, h^* = Q \), and therefore it is only the upper limit of region A when \( \pi > Q \), denoted \( \delta_U \), and the lower limit of region A when \( \pi < Q \), denoted \( \delta_L \), that must be transformed.\(^{11}\) Specifically, the value \( 2\pi - Q \)

\(^{10}\)See Appendix B for deriving for \( h^*(\delta) \).

\(^{11}\)See Appendix E for proof that \( h^* = \delta \) when \( \delta = Q \).
must be put into terms of \( \delta \).

Another consideration is that \( h^*_R \) and \( h^*_L \) each reach a finite limit as \( \delta \) goes to infinity or negative infinity, respectively. The value of \( h^*_R \) corresponding to \( \delta = \infty \) is denoted \( h^*_{\infty R} \), and the value of \( h^*_L \) corresponding to \( \delta = -\infty \) is denoted \( h^*_{\infty L} \). If the limits of \( h^* \) fall within the range \([2\pi - Q, Q]\) (for either \( \pi > Q \) or \( \pi < Q \)), only two integrals are needed in calculating \( H_2 \)'s expected utility, rather than the three depicted in equation (7). For example, when \( h^*_{\infty} \) is located within \( H_2 \)'s region of acceptance, than any value of \( \delta > Q \) will yield an acceptable offer and any value of \( \delta < Q \) will result in an unacceptable offer for \( \pi > Q \). Thus, the equation collapses to two terms.

For both \( \pi > Q \) and \( \pi < Q \), there are two scenarios that must be specified – the limit of \( h^* \) is within \( H_2 \)'s acceptance range and the limit of \( h^* \) is outside the acceptance range. To facilitate the determination of this specification, we construct a cutpoint, \( \pi_c \), that represents the midpoint between the limit of \( h^* \) and \( Q \). If \( \pi \) is at least as distant from \( Q \) as \( \pi_c \), then any \( \delta \) on the same side of \( Q \) as \( \pi \) will propose an \( h^* \) that is acceptable to \( H_2 \). The \( \pi_c \) corresponding to \( h^*_{\infty} \) is denoted \( \pi_{c_{\infty}} \), and the \( \pi_c \) corresponding to \( h^*_{-\infty} \) is denoted \( \pi_{c_{-\infty}} \). For \( \pi > Q \), if \( \pi < \pi_{c_{\infty}} \), where \( \pi_{c_{\infty}} = \frac{1}{2} (h^*_{\infty} + Q) \), then there are three terms in the calculation of the expected utility, whereas only two terms are needed for \( \pi \geq \pi_{c_{\infty}} \). For \( \pi < Q \), if \( \pi > \pi_{c_{-\infty}} \), where \( \pi_{c_{-\infty}} = \frac{1}{2} (h^*_{-\infty} + Q) \), there are three terms in the expected utility equation, and only two when \( \pi \leq \pi_{c_{-\infty}} \). Equation (10) shows the equality that \( \pi_{c_{\infty}} \) must satisfy.

Equation (8) is the expected utility for \( \pi \geq \pi_{c_{\infty}} > Q \). Since \( h^*_{\infty} \) falls within \( H_2 \)'s acceptance range, there are only two terms in the calculation. The first term is simply the expected utility associated with rejecting the offer. Since any value of \( \delta > Q \) yields an acceptable offer, a rejection only occurs when \( \delta < Q \). Therefore, the likelihood of this occurrence is the probability that \( \delta < Q \). The second term is the expected utility of accepting \( H_1 \)'s offer. Recall that \( H_2 \) knows

\(^{12}\text{See Appendix F for transformation of the limits on the integrals for calculating } H_2 \text{'s expected utility.}\)

\(^{13}\text{See Appendix C for limits of } h^*. \text{ We find that } h^* \text{ reaches a finite limit when } g \text{ is a distribution with a defined mean and variance (see Appendix D for proof). This is not to say that all distributions without a definite and finite first and second moment do not produce a finite } h^*_{\infty} \text{ or } h^*_{-\infty}, \text{ as some distributions (e.g., Cauchy) without defined mean and variance do yield a finite } h^*_{\infty} \text{ or } h^*_{-\infty}. \text{ This, however, is strong evidence that for well-behaved distributions, } h^*_{\infty} \text{ and } h^*_{-\infty} \text{ are finite.}\)

\(^{14}\text{See Appendix C for derivation.}\)
the function $h^*_R(\delta)$ (see Equation (11)) and therefore can determine $u_2(h^*_R(\delta))$, given that $G$ is common knowledge. However, $H_1$ may not have complete information regarding the location of $\delta$, and therefore $u_2(h^*_R(\delta))$ must be weighted by $H_2$'s prior distribution on $\delta$.

Equation (9) is the condition in which $h^*_\infty$ does not fall within $H_2$’s acceptance range (or $\pi_c > \pi > Q$). The first two terms are similar to those in equation (8). The additional term, however, provides for the possibility of $\delta$ locations that produce $h^*_R$’s that are greater than $H_2$’s acceptance range. An important additional difference between Equations (8) and (9) is the transformed upper limit on the integral of the second term in Equation (9). This is merely the upper bound of $H_2$’s acceptance range transformed to terms of $\delta$, which is necessary since the distribution $F$ is over $\delta$ (Equation (12)). There is no need to transform the limits of the integrals in Equation (8), however, since $h^* = Q$ when $\delta = Q$ and all other limits are not finite (since any value of $\delta < Q$ is rejected and any value of $\delta > Q$ is accepted). The analogous steps are then taken for the scenario $\pi < Q$.

For $\pi > Q$

If $\pi \geq \pi_c$

$$E(u_2) = F(Q)u_2(Q) + \int_{Q}^{\infty} u_2(h^*_R(\delta)) f(\delta) d\delta$$ (8)

If $\pi < \pi_c$

$$E(u_2) = F(Q)u_2(Q) + \int_{Q}^{\delta_U} u_2(h^*_R(\delta)) f(\delta) d\delta + [1 - F(\delta_U)] u_2(Q)$$ (9)

where

$\pi_c$ satisfies

$$Q = \pi_c - \frac{1 - G(\pi_c)}{g(\pi_c)}$$ (10)

$h^*_R(\delta)$ satisfies

$$\frac{\frac{1}{2}g\left(h_R^* + Q\right)}{1 - G\left(h_R^* + Q\right)} = \frac{-2(h^*_R - \delta)}{(Q - \delta)^2 - (h^*_R - \delta)^2}$$ (11)

$\delta_U$ equals

$$\delta_U = \pi + \frac{(\pi - Q)[1 - G(\pi)]}{[1 - G(\pi)] + (Q - \pi)g(\pi)}$$ (12)

For $\pi < Q$

If $\pi \leq \pi_c$

$$E(u_2) = \int_{-\infty}^{Q} u_2(h^*_L(\delta)) f(\delta) d\delta + [1 - F(Q)] u_2(Q)$$
If \( \pi > \pi_c \)

\[
E(u_2) = F(\delta_L) u_2(Q) + \int_{\delta_L}^{Q} u_2(h^*_L(\delta)) f(\delta) d\delta + [1 - F(Q)] u_2(Q)
\]

where

\( \pi_c \) satisfies

\[
Q = \pi_c - \frac{G(\pi_c)}{g(\pi_c)}
\]

\( h^*_L(\delta) \) satisfies

\[
\frac{1}{2} g\left(\frac{h^*_L + Q}{2}\right) = \frac{2(h^*_L - \delta)}{G\left(\frac{h^*_L + Q}{2}\right)} = \frac{(Q - \delta)^2 - (h^*_L - \delta)^2}{(Q - \delta)^2 - (h^*_L - \delta)^2}
\]

\( \delta_L \) equals

\[
\delta_L = \pi + \frac{(\pi - Q)G(\pi)}{G(\pi) + (\pi - Q)g(\pi)}
\]

5 Expected Utility of Going to Conference

As in the previous section, we will derive the expected utility of going to conference by first solving the conference subgame. In the conference subgame, the conference committee, denoted \( C \) in Figure 1, selects a policy, \( c \). Each chamber then independently decides to accept or reject the offer made by the conference committee. If both chambers vote in favor the conference proposal, then \( c \) replaces the status quo. If at least one chamber rejects the proposal offered by conference, then \( Q \) remains. It is assumed that the conference committee has complete information as to the ideal point locations of the chambers, and likewise the chambers have complete information regarding the ideal point location of the conference, denoted \( \theta \) (although both chambers may still have incomplete information regarding the opposing chamber’s ideal point). These informational assumptions seem reasonable given that conference committees are subsets of the parent bodies. Therefore, the conferees are likely to know the preferences of the parent body from which they are drawn, having been a part of the legislative process leading up to conference. And the strong norm in both chambers of appointing members from the committee of jurisdiction to serve on the conference committee (Longley and Oleszek, 1989), along with the congruence in committee preferences across chambers (Smith, Roberts and Vander Wielen, 2009) and the (substantially) smaller subset of member preferences to take into consideration, suggests that the parent bodies
are well informed as to the preferences of the conferees even in circumstances in which the decision
to go to conference is made before knowing who will serve on the conference committee.\textsuperscript{15}

The Nash equilibrium of the conference subgame is trivial. Each chamber will select \textquotedblleft Yea\textquotedblright
if and only if its ideal point is at least as close to \( c \) as it is to \( Q \). This implies that \( H_1 \) votes
in favor of the conference proposal when \( -(c - \delta)^2 \geq -(Q - \delta)^2 \), and \( H_2 \) does likewise when
\( -(c - \pi)^2 \geq -(Q - \pi)^2 \).\textsuperscript{16} The conference committee selects the policy location that maximizes
its utility within the winset of the chambers.\textsuperscript{17} If, for instance, the conference committee’s ideal
point, \( \theta \), is nearer the status quo than the chambers’ indifference points, the conference committee
will select policy \( c = \theta \). If not, it will select a \( c \) that represents the policy location that is closest
to it’s ideal point that will be accepted by both chambers.\textsuperscript{18}

As done earlier with respect to the bargaining subgame, we are now interested in determining
the expected utility of proceeding to the conference subgame for both chambers. This expected
utility will then be compared to the expected utility of inter-cameral bargaining to evaluate each
chamber’s optimal strategy at their initial move. As a reminder to the reader, we must consider
expected utilities for conference due to the fact that the model permits the chambers to have
uncertainty regarding the opposing chamber. It should be noted that, unlike bargaining, the general

\textsuperscript{15}It bears notice that this construction does treat conference composition as exogenous to the
parent bodies, which is surely an imperfect representation. Rather, research suggests that conferee
selection is, in part, a function of endogenous institutions (e.g., political parties, majoritarian
structures) (Krehbiel, 1991; Lazarus and Monroe, 2007). This consideration would add a level of
complexity to the model that I leave for future research. However, it warrants mention that this
treatment likely underestimates the conditions leading to conference since we do not assume that the
chambers can (favorably) manipulate conference composition.

\textsuperscript{16}One could incorporate into the model non-policy-related advantages to conference by adding a
parameter to the conference payoff.

\textsuperscript{17}This is a basic monopoly agenda-setter model (Romer and Rosenthal, 1978) in which the
conference (setter), operating with complete information, offers the parent chambers (choosers) a
proposal in the form of a conference report. The chambers then vote up-or-down on the report,
voting in favor of any proposal that is at least as preferred as the status quo.

\textsuperscript{18}This Nash equilibrium, along with the assumption that the conference committee has complete
information regarding the policy preferences of the chambers, are quite realistic as evidenced by
the rarity with which conference reports – the policy proposal from conference – are rejected.
Longley and Oleszek (1989, 252), for example, report that between the 80th and 97th Congresses
(1947-1982) only 28 conference reports were rejected and 28 recommitted among the 2,495 reports
filed.
form of the expected utility equations for conference are identical for both chambers (although the input parameter values may, of course, differ). This is due to the fact that there is no meaningful sequential movement between the chambers as was the case in the bargaining subgame (i.e., the decisions are functionally independent). For sake of presentation, the discussion and notation to follow are from the perspective of $H_1$. Since $H_2$ has structurally the identical expected utilities as $H_1$ for conference, the equations to follow can be adjusted to reflect $H_2$’s perspective by substituting where necessary $\delta$ for $\pi$, $\pi$ for $\delta$, $u_2$ for $u_1$, and $F(\cdot)/f(\cdot)$ for $G(\cdot)/g(\cdot)$.

Similar to the expected utility of bargaining, it is essential to consider two separate scenarios in which $\theta < Q$ and $\theta > Q$, since successful conference proposals require that all actors be located on the same side of the status quo. The following discussion focuses on the scenario of $\theta > Q$, although analogous logic can be applied to $\theta < Q$. Within these two scenarios there exist three conditions on the location of the chamber of interest relative to the status quo and the midpoint between the conference committee and the status quo (hereafter referred to as the conference midpoint). Each condition yields a different expected utility equation, since the winsets of the chambers vary across the conditions. Figure 2 illustrates the different outcomes predicted by the three conditions of $\theta > Q$.

- When $\delta \leq Q$ (denoted $\delta'$ in Figure 2), the status quo prevails for all values of $\pi$, since the winset is empty.

- Conversely, when $Q < \delta < (\theta + Q)/2$ (denoted $\delta''$ in Figure 2), the status quo is the result for all $\pi \leq Q$, the conference committee will select a $c$ at $H_2$’s indifference point, or $2\pi - Q$, for all $Q < \pi < \delta$, and it will select $H_1$’s indifference point, or $2\delta - Q$, for all $\pi \geq \delta$.

- Finally, when $\delta \geq (\theta + Q)/2$ (denoted $\delta'''$ in Figure 2), the status quo will prevail for all $\pi \leq Q$, the conference committee will select a $c$ at $2\pi - Q$ for all $Q < \pi < (\theta + Q)/2$, and it will select it’s own ideal point, $\theta$, for all $\pi \geq (\theta + Q)/2$.\[19\]

\[\text{[Insert Figure 2 Here.]}\]

\[19\text{In Figure 2, } \delta''' \text{ need not be located between } (\theta + Q)/2 \text{ and } \theta \text{ as any value of } \delta \geq (\theta + Q)/2 \text{ will follow the outcomes shown in the figure for } \delta'''.\]
The expected utility equations for each of the conditions are below. For $\theta > Q$, the expected utility for $\delta \leq Q$ is simply the utility of $Q$ (Equation (13)). When $Q < \delta < (\theta + Q)/2$, the expected utility equation is comprised of three terms (Equation (14)). The first is the product of the utility of the status quo and the probability that $\pi \leq Q$. The middle term is the expected utility of receiving $H_2$’s indifference point, $2\pi - Q$, over the values of $\pi$ located between $Q$ and $\delta$. The final term is $H_1$’s utility of receiving it’s indifference point, $2\delta - Q$, multiplied by the probability that $\pi \geq \delta$.

When $\delta \geq (\theta + Q)/2$, the expected utility equation consists of three terms as well (Equation (15)). The first term is identical to that in Equation (14). The middle term multiplies the utility of receiving $H_2$’s indifference point, $2\pi - Q$, by the probability that $\pi$ is located between $Q$ and $(\theta + Q)/2$. This is similar to the middle term in Equation (14), however, the upper limit on the integral is the conference midpoint rather than $\delta$. The final term in Equation (15) is the product of the utility of receiving the conference committee’s ideal point, $\theta$, interacted with the probability that $\pi \geq (\theta + Q)/2$. The expected utility equations for $\theta < Q$ are also listed below.

For $\theta > Q$

If $\delta \leq Q$

\[ E(u_1) = u_1(Q) \] (13)

If $Q < \delta < \frac{\theta + Q}{2}$

\[ E(u_1) = G(Q)u_1(Q) + \int_Q^\delta u_1(2\pi - Q)g(\pi)d\pi + [1 - G(\delta)]u_1(2\delta - Q) \] (14)

If $\delta \geq \frac{\theta + Q}{2}$

\[ E(u_1) = G(Q)u_1(Q) + \int_Q^{\frac{\theta + Q}{2}} u_1(2\pi - Q)g(\pi)d\pi + \left[1 - G\left(\frac{\theta + Q}{2}\right)\right]u_1(\theta) \] (15)

For $\theta < Q$

If $\delta \geq Q$

\[ E(u_1) = u_1(Q) \]

\[ \text{This is apparent in Figure 2 from the three separate line segments that comprise the best response correspondence for } \delta''. \]
If $\frac{\theta + Q}{2} < \delta < Q$

$$E(u_1) = G(\delta)u_1(2\delta - Q) + \int_{\delta}^{Q} u_1(2\pi - Q)g(\pi)d\pi + [1 - G(\delta)]u_1(Q)$$

If $\delta \leq \frac{\theta + Q}{2}$

$$E(u_1) = G\left(\frac{\theta + Q}{2}\right)u_1(\theta) + \int_{\frac{\theta + Q}{2}}^{Q} u_1(2\pi - Q)g(\pi)d\pi + [1 - G(Q)]u_1(Q)$$

6 Equilibrium

This section summarizes the Subgame Perfect Nash Equilibrium (SPNE) of the game. For sake of presentation, the discussion concentrates on the condition in which all actors are located to the right of the status quo. That is, $\delta, \pi, \theta > Q$. A similar SPNE holds for the condition in which all actors are located to the left of the status quo. Less attention is given to arrangements in which the status quo separates actors since there are no policy positions in most arrangements that offer a Pareto improvement over the status quo. The SPNE is as follows, where again $u_a(x) = -(x - b)^2$ for policy $x \in (-\infty, \infty)$, actor $a \in \{1, 2\}$, and ideal point $b = \{\delta$ if $a = 1, \pi$ if $a = 2\}$:

- $H_1$ of type $Q < \delta < \frac{\theta + Q}{2}$ selects “Conference” if and only if:

$$G(Q)u_1(Q) + \int_{\frac{\theta + Q}{2}}^{\delta} u_1(2\pi - Q)g(\pi)d\pi + [1 - G(\delta)]u_1(2\delta - Q) >$$

$$u_1(h^*_R)\left[1 - G\left(\frac{h^*_R + Q}{2}\right)\right] + u_1(Q)G\left(\frac{h^*_R + Q}{2}\right)$$

(16)

$H_1$ of type $\delta \geq \frac{\theta + Q}{2}$ selects “Conference” if and only if:

$$G(Q)u_1(Q) + \int_{\frac{\theta + Q}{2}}^{Q} u_1(2\pi - Q)g(\pi)d\pi + \left[1 - G\left(\frac{\theta + Q}{2}\right)\right]u_1(\theta) >$$

$$u_1(h^*_R)\left[1 - G\left(\frac{h^*_R + Q}{2}\right)\right] + u_1(Q)G\left(\frac{h^*_R + Q}{2}\right)$$

(17)

$H_1$ selects “Bargain” otherwise (see Equation (5) for definition of $h^*_R$).

---

$^{21}$It may be useful to note as a reminder that while we have imposed this condition for the sake of presentation, it still remains that the chambers do not necessarily possess this information regarding the location of the other actors. Therefore, the chambers’ prior distributions on the location of the opposing chamber may still place a positive probability on the opposing chamber being located to the left of the status quo.
• \( H_2 \) of type \( Q < \pi < \frac{\theta + Q}{2} \) selects “Conference” if and only if:

\[
F(Q)u_2(Q) + \int_{\delta}^{\pi} u_2(2\delta - Q) f(\delta)d\delta + \left[1 - F(\pi)\right] u_2(2\pi - Q) > \\
F(Q)u_2(Q) + \int_{Q}^{\delta_U} u_2(h^*_R(\delta)) f(\delta)d\delta + \left[1 - F(\delta_U)\right] u_2(Q)
\]  

(18)

\( H_2 \) of type \( \pi \geq \frac{\theta + Q}{2} \) selects “Conference” if and only if:

\[
F(Q)u_2(Q) + \int_{Q}^{\theta + Q} u_2(2\delta - Q) f(\delta)d\delta + \left[1 - F\left(\frac{\theta + Q}{2}\right)\right] u_2(\theta) > \\
F(Q)u_2(Q) + \int_{Q}^{\delta_U} u_2(h^*_R(\delta)) f(\delta)d\delta + \left[1 - F(\delta_U)\right] u_2(Q)
\]  

(19)

Where \( \delta_U = \infty \) when \( \pi \geq \pi_c \) (see Equation (10) for definition of \( \pi_c \)). \( H_2 \) selects “Bargain” otherwise.

• If the action history is \( \text{(Conference,Conference)} \), then the game proceeds to the conference subgame. Within the conference subgame:

– The conference committee offers a policy proposal, \( c \), such that:

\[
c = \begin{cases} 
2\pi - Q, & \text{if } \pi < \delta \quad \text{and} \quad 2\pi - Q < \theta \\
2\delta - Q, & \text{if } \delta \leq \pi \quad \text{and} \quad 2\delta - Q < \theta \\
\theta, & \text{if } 2\pi - Q \geq \theta \quad \text{and} \quad 2\delta - Q \geq \theta
\end{cases}
\]

– \( H_1 \) selects “Yea” if and only if \(-(c - \delta)^2 \geq -(Q - \delta)^2\), and “Nay” otherwise.

– \( H_2 \) selects “Yea” if and only if \(-(c - \pi)^2 \geq -(Q - \pi)^2\), and “Nay” otherwise.

• If the action history is \( \text{(Bargain,Bargain)}, \text{(Bargain,Conference)}, \text{or} \text{(Conference,Bargain)} \), then the game proceeds to the bargaining subgame. Within the bargaining subgame:

– \( H_1 \) offers a policy proposal, \( h \), that satisfies:

\[
\frac{1}{2} g\left(\frac{h + Q}{2}\right) - \frac{2(h - \delta)}{(Q - \delta)^2 - (h - \delta)^2}
\]

– \( H_2 \) selects “Yea” if and only if \(-(h - \pi)^2 \geq -(Q - \pi)^2\), and “Nay” otherwise.
7 Comparative Statics

Of particular interest to this project are the conditions under which conference yields a higher expected utility for both chambers than bargaining between the bodies. Given that the structure of the game requires both chambers to prefer conference to bargaining, thus disadvantaging an arrival at the conference subgame, inequalities (16/17) for $H_1$ and (18/19) for $H_2$ must simultaneously hold. This section will demonstrate (a) that conditions do exist in which conference is preferred by both chambers, and (b) will speak generally to those conditions.

To facilitate the comparative statics analysis, we first offer a simplified, general (not distribution-specific) closed-form statement of the inequalities (16-19) that underly the chambers’ initial decision. These expressions will allow the reader to easily compare the expected utilities of bargaining and conference for both chambers for a desired distribution and input values. To illustrate the implications of variation in distribution parameters, we take the additional step of making a distributional assumption and offering conditions on the distribution parameters for which conference is preferred to bargaining.

In doing so, we vary the distribution parameters, and evaluate the resulting expected utility for all possible chamber ideal points along a specified interval. In most cases, analysis of ideal points along the unit interval will provide sufficient variation to convey behavior of interest, although it is sometimes necessary to use a slightly larger interval of analysis. As a reminder to the reader, however, although the analysis constrains the policy space for sake of presentation, the theoretical model does not have such constraints (i.e., ideal points can range from negative to positive infinity). Throughout we assume that the status quo is located at 0.2, given that the discussion above predominately emphasizes the region to the right of the status quo. This comes without loss of generality because the behavior of the expected utility curves is the same on both sides of the status quo for analogous specifications of the parameters.

When a distributional assumption is made, following the general expression, we use a Laplace, or double exponential, distribution (see Abramowitz and Stegun, 1972). Beyond having attractive mathematical properties, the Laplace distribution seems a plausible characterization of chamber information, since we might expect the chambers to have single-peaked, symmetric uncertainty.
surrounding an expectation.\textsuperscript{22} We defer to future research for the most appropriate distributional specification on information.

The conditions below are presented in terms of an increase/decrease in the region of ideal point locations in which conference yields a higher expected utility than bargaining for the chamber of interest. This allows us to speak to the conditions in which conference is more/less likely to be selected by the chambers. It bears notice that the propositions derived below hold for all locations of the conference committee, although the point(s) at which the expected utility curves intersect will surely vary according to location. Thus, the findings are generalizable.

7.1 Conditions for \( H_1 \)

The inequalities (16/17) that comprise \( H_1 \)'s initial decision can be compactly stated as follows:

\[
\begin{align*}
  u_1(Q) + \int_{Q}^{\min(t,\delta)} 4 (\pi - Q) (\delta - \pi) g(\pi) d\pi + H(\delta - t) [1 - G(t)] & \left[4 (t - Q) (\delta - t) > ight. \\
  & u_1(Q) + \left[1 - G\left(\frac{1}{2} (\delta + Q)\right)\right] \cdot (\delta - Q)^2
\end{align*}
\]

where

\[
t = (\theta + Q) / 2
\]

and \( H(x) \) is the unit step function defined by

\[
H(x) = \begin{cases} 
0 & \text{if } x < 0 \\
1 & \text{if } x \geq 0
\end{cases}
\]

To arrive at (20), a simplifying assumption is made that \( h^*_R \) is equal to \( \delta \). Appendix H demonstrates that \( h^*_R \approx \delta \) in the range of integration, therefore making this approximation a reasonable one. This assumption is particularly important to making inequalities (18) and (19) more tractable below.\textsuperscript{23}

\textsuperscript{22}The following conditions derived for the Laplace distribution are consistent with the conditions numerically derived for the normal distribution.

\textsuperscript{23}The author conducted extensive tests of this assumption, comparing the expected utility derived from the approximate form and the non-approximate form (for various distributions), and found that the results are virtually indistinguishable in most cases (often to the thousandth decimal place).
To further explore the implications of distribution parameter variation, we assume a Laplace distribution. The Laplace distribution, with mean \( \mu \) and variance \( 2\beta^2 \), has the pdf \( g(x) = (2\beta)^{-1}e^{-|x-\mu|/\beta} \) and the cdf \( G(x) = (1/2)\{1 + sgn(x - \mu)[1 - e^{-|x-\mu|/\beta}]\} \).\(^{24}\) We use these definitions of the pdf and cdf to obtain specific expectations for the Laplace distribution.

Figure 3 depicts the comparison of the conference and bargaining expected utility curves for \( H_1 \) for various values of the mean of \( G \). In Figure 4, the lines depict the ideal point value of the intersection of the curves for \( \mu \in [0.2, 1.0] \) and the shaded area indicates values of \( \delta \) for which the expected value of conference exceeds that of bargaining. For example, when the mean of \( G \) is equal to 0.4, there is a unique intersection of the curves at approximately 0.512. For all values of \( \delta \) greater than this point (i.e., to the right of this point in the figure), conference is strictly preferred to bargaining. The arrows show asymptotic behavior for the respective intersection lines. The standard deviation selected in these figures is done without loss of generality, as the behavior of the curves with respect to variation in the mean is consistent across all values of the standard deviation (although the precise locations of the intersection points will certainly vary).

Before proceeding, it is worthwhile to introduce some additional notation to facilitate discussion. There will be at most three points at which the conference and bargaining curves intersect. The intersection associated with the smallest ideal point value (i.e., the left-most intersection) is denoted \( I_L \), and is the operative intersection when the curves intersect only once. It is always the case that the conference curve lies strictly above the bargaining curve in the epsilon neighborhood to the right (hereafter denoted \( \epsilon^+ \)) of \( I_L \) and below in the epsilon neighborhood to the left (hereafter denoted \( \epsilon^- \)).\(^{25}\) The intersection immediately to the right of \( I_L \) is denoted \( I_M \). When there are only two intersection points (as potentially with \( H_2 \)), this is the right-most intersection, and it is the middle intersection when there are three intersection points (as potentially with \( H_1 \)). It is always the case that the conference curve lies strictly below the bargaining curve in \( \epsilon^+ \) of \( I_M \) and above in \( \epsilon^- \). When a third intersection exists, it will be located to the right of \( I_M \) and is denoted herein as \( I_R \). The conference curve always lies strictly above the bargaining curve for all ideal points to

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\(^{24}\)The scale parameter, \( \beta \), must satisfy \( \beta > 0 \).

\(^{25}\)The epsilon neighborhood is used here as part of the definition since there are instances where the intersection points are in extremely close proximity. Under most circumstances, though, there is some reasonable distance between intersections.
Given the bimodal nature of the conference curve throughout this analysis, we further define regions surrounding the right-most maximum. Let $\chi^+$ be the portion of the expected utility curve of conference for which $a > Q$ and $D_a [E (u_b)] > 0$, where $a \in \{\delta, \pi\}$ and $b = \{1$ if $a = \delta, 2$ if $a = \pi\}$ (i.e., $\chi^+$ is the portion of the right-most local maximum that is increasing). And let $\chi^-$ indicate the portion of the curve for which $a > (1/2) (\theta + Q)$ and $D_a [E (u_b)] < 0$, where again $a \in \{\delta, \pi\}$ and $b = \{1$ if $a = \delta, 2$ if $a = \pi\}$ (i.e. the portion of the right-most local maximum that is decreasing). The conference curve “mounds” become increasingly pronounced as the distance between $\mu$ and $Q$ increases. And $I^L$ will always occur in $\chi^+$ when it exists, and $I^M$ and $I^R$ in $\chi^-$.  

As the mean of $G$ shifts away from the status quo, $I^L$, likewise, shifts away from the status quo. As $\mu$ approaches infinity, $I^L$ approaches $\theta$. $I^L$ is represented by the left-most, (essentially) vertical intersection line in Figure 4 that asymptotically approaches $\theta$. The bargaining curve, with diminishing expected utility related to the indifference point associated with $\mu$, eventually intersects the conference curve in $\chi^-$. There is one policy location, depicted $x$ (at $\mu = .675$ and $\delta = .894$) in Figure 4, at which $\chi^-$ is tangent to the bargaining curve. As $\mu$ increases beyond this unique location, the bargaining curve always intersects $\chi^-$ twice, thus forming a secant through the conference curve (and three total intersection points). $I^M$ approaches $\theta$ and $I^R$ approaches infinity as $\mu$ approaches infinity. This is due to the fact that as $\mu$ increases, the downturn in the bargaining curve moves farther to the right, causing the bargaining curve to approach tangency with the right-most maximum of the conference curve (located at $\theta$) and pushing $I^R$ farther from the status quo.

Therefore, there is a monotonically increasing region of ideal point locations for $H_1$ for which conference is preferred to bargaining when the mean of $G$ approaches the status quo. This is apparent in Figure 4 in that the set of $\delta$ values greater than the $I^L$ line decreases as $\mu$ increases. Therefore, conference is increasingly likely to be selected as the distance between the status quo and the mean of $G$ decreases, ceteris paribus.

\[\text{26}\text{Operator notation is used here for the derivative, where } D \text{ is a differential operator and } D^n_a \text{ refers to the } n^{th} \text{ derivative with respect to } a. \text{ } n \text{ has a default value of 1 when not present.}\]

\[\text{27}\text{The rate at which this intersection takes place is related to both the mean and standard deviation of the distribution.}\]
Mean Condition for $H_1$: Holding the standard deviation of $G$ constant, there is a monotonically increasing region of $\delta$ locations at which $H_1$ prefers conference to bargaining as the mean of $G$ approaches the status quo.

Figure 5 depicts the comparison of the conference and bargaining expected utility curves for $H_1$ for various values of the standard deviation of $G$. Figure 6 shows the intersections of the curves for $\sigma \in (0,5]$ with the shaded area again indicating values of $\delta$ for which the expected value of conference exceeds that of bargaining. The selection of the mean value in these figures is done without loss of generality.

Unlike with the mean in the analysis above, $I^L$ does not move in a monotonic fashion as we increase the standard deviation. Initially, $I^L$ moves toward the status quo before changing directions and converging to $\theta$. The point at which $I^L$ changes direction (i.e., the value of $I^L$ nearest to $Q$ for a given $\mu$), is denoted in Figure 6 as $\sigma^t_{\mu}$, where the subscript takes the input value of $\mu$. Additional $\sigma^t_{\mu}$'s, corresponding to $\mu = 0.7$ and $\mu = 0.9$, are shown as well.

We find a linear relationship between $\sigma^t_{\mu}$ and $\mu$. Regressing $\sigma^t_{\mu}$ on $\mu$ arrives at the estimated equation $\hat{\sigma}^t_{\mu} = -0.556 + 1.774 \cdot \mu$, which has an $R^2$ of 0.996. The relationship between the $\delta$-value of the $I^L$ corresponding to $\sigma^t_{\mu}$ (hereafter denoted $I^L(\sigma^t_{\mu})$) and $\sigma^t_{\mu}$ itself is found to be logarithmic, having an estimated equation of $I^L(\sigma^t_{\mu}) = 0.604 + 0.0552 \cdot \ln(\sigma^t_{\mu})$ with an $R^2$ of 0.971. The exponential form of the logarithmic fitted equation is denoted $\sigma^t_{fitted}$ in Figure 6. Based upon this information, one is able to estimate with impressive accuracy $\sigma^t_{\mu}$ and $I^L(\sigma^t_{\mu})$ for any $\mu$, given the other input values as specified above.

With increasing standard deviation, the bargaining curve approaches the conference curve in $\chi^-$. As in the case with the mean above, there is one location, denoted $x$ (at $\sigma = 1.4284$ and $\delta = 1.8609$) in Figure 6, at which $\chi^-$ is tangent to the bargaining curve. As the standard deviation increases beyond the standard deviation at $x$ (hereafter denoted $\sigma(x)$), the bargaining curve intersects the conference curve twice in $\chi^-$. Again, as seen in the analysis of the mean, $I^M$ approaches $\theta$ and $I^R$

28Computed using the $\sigma^t_{\mu}$ values corresponding to $\mu$'s ranging from 0.2 to 2.0 by increments of 0.01 ($n = 181$).

29For instance, for a mean of $\mu = 0.5$ (as shown in Figure 6), $\sigma^t_{\mu}$ and $I^L(\sigma^t_{\mu})$ are predicted by the above equations to be 0.331 and 0.5428, respectively, whereas the observed values are $\sigma^t_{\mu} = 0.3168$ and $I^L(\sigma^t_{\mu}) = 0.5517$. 

23
approaches infinity as the standard deviation approaches infinity.

In Figure 6, $x$ is shown to be located at a higher standard deviation then $\sigma^t_\mu$, which need not be the case. It bears notice that as $\mu$ increases, $\sigma(x)$ decreases relative to $\sigma^t_\mu$. Therefore, as the standard deviation of $G$ increases, the region of ideal points for which $H_1$ prefers conference over bargaining increases up to $\min(\sigma(x), \sigma^t_\mu)$. Thus, we arrive at the standard deviation condition for $H_1$.

**Standard Deviation Condition for $H_1$:** Holding the mean of $G$ constant, there is a monotonically increasing region of $\delta$ locations at which $H_1$ prefers conference to bargaining as the standard deviation of $G$ increases to $\min(\sigma(x), \sigma^t_\mu)$, after which an increase in the standard deviation monotonically decreases the region of $\delta$ locations at which $H_1$ prefers conference to bargaining.

### 7.2 Conditions for $H_2$

Expressing inequalities (18) and (19) in a general, closed form is slightly more complex, in large part because the right-hand side of these equations (the expected utility of bargaining) contains the $G$ distribution as part of the term $h^*_R(\delta)$. Conveniently, over this integral $h^*_R$ is approximately equal to $\delta$, which allows us to avoid this complication (see Appendix H for details). With this approximation, we can rewrite (18) and (19) in the general closed form, such that conference is preferred when the following inequality is satisfied.

$$u_2(Q) + \int_Q^{\min(t, \pi)} 4(\delta - Q)(\pi - \delta) f(\delta) d\delta + H(\pi - t)[1 - F(t)] 4(t - Q)(\pi - t) >$$

$$u_2(Q) + \int_Q^{2\pi - Q} (\delta - Q)(2\pi - Q - \delta) f(\delta) d\delta \quad (21)$$

where again

---

$30$ When $\sigma^t_\mu \leq \sigma(x)$, it is obvious that for all $\sigma > \sigma^t_\mu$ there is a strictly decreasing region of $\delta$ locations where $H_1$ prefers conference to bargaining since the intersections in both $\chi^+$ and $\chi^-$ are reducing the locations for which the conference curve is located above the bargaining curve. Conversely, when $\sigma(x) < \sigma^t_\mu$ the intersection in $\chi^+$, $I^L$, continues to expand the region of $\delta$ locations where conference is preferred for $\sigma(x) < \sigma \leq \sigma^t_\mu$, whereas the intersections in $\chi^-$, $I^M$ and $I^R$, decrease the locations where conference is preferred for $\sigma > \sigma(x)$. However, the rate of reduction in locations caused by the intersections at $\chi^-$ vastly outweigh the expansion at $\chi^+$.  

24
$$t = \left( \theta + Q \right)/2$$

and $H(x)$ is the unit step function again defined by

$$H(x) = \begin{cases} 
0 & \text{if } x < 0 \\
1 & \text{if } x \geq 0 
\end{cases}$$

Figure 7 illustrates the relationship of the conference and bargaining curves to one another for various values of the mean of $F$, and Figure 8 shows the intersection points and locations of $\pi$ for which conference is preferred to bargaining.\(^{31}\) The Laplace distribution is again assumed with pdf $f(x) = (2\beta)^{-1} e^{-|x-\mu|/\beta}$ and the cdf $F(x) = (1/2) \{1 + sgn(x-\mu) \left[1 - e^{-|x-\mu|/\beta}\right]\}$. It is immediately apparent from Figure 7 that $H_2$’s expected utility curve for bargaining has more pronounced “mounds” as the mean of $F$ shifts away from the status quo. The same holds true, as seen above, for the expected utility curve for conference. Due to the bimodality of both curves, the relationship between the mean of $F$ and $H_2$’s relative valuation of conference is slightly more complicated than that for $H_1$.

With respect to $H_2$’s expected utility curve for bargaining, the right-most local maximum (hereafter denoted $\beta^0$) is centered on the $h^*$ corresponding to the expected $\delta$ (this $h^*$ will hereafter be denoted $h^*(\mu)$).\(^{32}\) Given that the simplifying approximation made above assumes that $h^*_R = \delta$ (see Appendix H), this suggests that $\beta^0$ will be located at $\mu$. As $h^*(\mu)$ approaches the ideal point of conference, $\theta$, the utility curves converge.\(^{33}\) This movement of $I^L$ initially decreases the region of $\pi$ locations for which $H_2$ prefers conference to bargaining until the bargaining curve intersects with $\chi^+$ at $\beta^0$. The associated value of $\pi$ is denoted as $b^+$ in Figure 8. As the mean increases

\(^{31}\)As a reminder to the reader, the closed form expression of inequality (21) does not entail specifications for $G$ as the approximation has removed the equation’s dependence on $G$.

\(^{32}\)As with the $\chi$ notation for the conference curve, we introduce $\beta^+$ for the portion of the bargaining curve to the left of $\beta^0$ with a positive first derivative (i.e., the increasing portion of the bargaining curve associated with the right-most local maximum), $\beta^0$ for the right-most local maximum, and $\beta^-$ for the portion of the bargaining curve to the right of $\beta^0$ with a negative first derivative (i.e., the decreasing portion of the bargaining curve associated with the right-most local maximum). An unadorned $\beta$ is the dispersion parameter of the Laplace distribution and is unrelated to $\beta^+$, $\beta^0$, and $\beta^-$.\(^{33}\)With decreasing standard deviations, the bargaining curve shifts upward to the conference curve.
beyond the mean at $b^+$ (hereafter denoted $\mu(b^+)$), $I^L$ changes directions and approaches $(\theta + Q)/2$. The change in direction of $I^L$ occurs because for $\mu < \mu(b^+)$ the intersection between the curves involves $\chi^+$ and $\beta^-$, causing the intersection point to move rightward with increasing $\mu$. As the mean increases beyond $\mu(b^+)$, $I^L$ then involves $\chi^+$ and $\beta^+$. The movement of $I^L$ is documented by the left intersection line in Figure 8.

As the mean of $F$ increases, a second intersection, $I^M$, occurs in $\chi^-$. $I^M$ initially occurs between $\chi^-$ and $\beta^-$ at infinity, and moves leftward with an increasing mean (i.e., reducing the region of $\pi$ locations for which $H_2$ prefers conference to bargaining) until $\chi^-$ intersects the bargaining curve at $\beta^0$. This value of $I^M$ is denoted $b^-$ in Figure 8. As the mean increases beyond $\mu(b^-)$, the movement of $I^M$ changes direction, as the intersection in $\chi^-$ is now with $\beta^+$. This causes an expansion of the region of $\pi$ locations for which $H_2$ prefers conference to bargaining. Since the $\pi$-value of $\beta^0$ occurs at $h^*(\mu)$, and $h^*_R$ reaches a finite limit at $h^*_\infty$ for distributions with a defined mean and variance (see Appendix D), $\beta^0$ ceases rightward movement when it reaches $h^*_\infty$. Thus $I^M$ reaches a finite limit, denoted $I^M(h^*_\infty)$ in Figure 8, when $\beta^0$ reaches $h^*_\infty$. $I^M$ is reported by the right intersection line in Figure 8. Thus, we arrive at our mean condition for $H_2$

**Mean Condition for $H_2$:** Holding the standard deviation of $F$ and all parameters of $G$ constant, there is a monotonically increasing region of $\pi$ locations at which $H_2$ prefers conference to bargaining as the mean of $F$ approaches the status quo for all $\mu \leq \mu(b^+)$. For all $\mu \geq \mu(b^-)$, the region of $\pi$ locations at which $H_2$ prefers conference to bargaining is monotonically increasing as the mean of $F$ diverges from the status quo, with the expansion of ideal points reaching a finite limit at $I^M(h^*_\infty)$ when $\beta^0$ reaches $h^*_\infty$. For $\mu(b^+) \leq \mu \leq \mu(b^-)$, an increase in the mean results in an initial increase in $\pi$ locations where $H_2$ prefers conference to bargaining until $\beta^-$ intersects with $\chi^-$, after which there is a decrease in such locations.

Figure 9 compares the expected utility curves of conference and bargaining for $H_2$ for various

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34 The smallest region of $\pi$ locations for which $H_2$ prefers conference to bargaining occurs at $\mu(b^-)$.

35 A limitation of the simplifying assumption that $h^*_R = \delta$ is that the $h^*_R$ does not achieve a finite limit in the simulation. However, the simulation examines a policy space that does not contain $h^*_\infty$ and therefore the results are unaffected.
values of the standard deviation of $F$. Figure 10 shows the intersection points for four different means of $F$ as the standard deviation of $F$ varies ($\sigma \in (0, 1.2]$). The area between intersection lines belonging to the same $\mu$ contains locations of $\pi$ in which $H_2$ prefers conference to bargaining. Unlike previous figures in which only one parameter was permitted to vary, Figure 10 varies both the mean and standard deviation since the behavior of the intersections with respect to the standard deviation is dependent upon the mean.

When $\mu < \theta$, $I^L$, which is represented by the left-most intersection line for a given $\mu$ in Figure 10, will be proximate to $\mu$ for low standard deviations, and will converge to $(\theta + Q)/2$ with increasing standard deviation. Thus, when $\mu$ is sufficiently less than $(\theta + Q)/2$ convergence involves a reduction in $\pi$ locations for which conference is preferred, and when $\mu > (\theta + Q)/2$ the opposite is true.\(^{36}\)

The movement of $I^M$ is more complicated than that for $I^L$ above. For $\mu \leq \theta$, there is a change in direction of $I^M$ similar to what we observed with $I^L$ in the analysis of the standard deviation for $H_1$. In fact, we can adopt a similar strategy to explaining the standard deviation at which the direction changes, again using the notation $\sigma^t_\mu$, and the $\pi$-value of the corresponding $I^M$, denoted $I^M(\sigma^t_\mu)$. We find that there is a polynomial relationship between $\sigma^t_\mu$ and $\mu$, where regressing $\sigma^t_\mu$ on $\mu$ results in the estimated equation $\hat{\sigma}^t_\mu = 0.6119 + 2.8475 \cdot \mu - 4.4346 \cdot \mu^2$, which has an $R^2$ of 0.9978.\(^{37}\) Furthermore, we find a linear relationship between the $I^M(\sigma^t_\mu)$ and $\sigma^t_\mu$, having an estimated equation of $I^M(\sigma^t_\mu) = 1.0239 + 0.4068 \cdot \mu$ with an $R^2$ of 0.9992. As with $H_1$, the researcher is able to predict with considerable accuracy $\sigma^t_\mu$ and $I^M(\sigma^t_\mu)$ for a given $\mu$ with analogous input values for other parameters.\(^{38}\)

For any $\mu > \theta$, $I^M$ is strictly increasing in $\sigma$, with the value of $I^M$ originating at $(\theta + \mu)/2$ for an infinitesimal standard deviation and approaching infinity as $\sigma$ increases without limit. Therefore, increasing standard deviation results in a monotonically increasing region of $\pi$ locations for which $H_2$ prefers conference to bargaining, since $I^L \approx (\theta + Q)/2$ and $I^M$ is strictly increasing for all $\sigma$.

\(^{36}\)The caveat “sufficiently less” is placed on $\mu < (\theta + Q)/2$ since $I^L$ will inevitably be located to the right of $\mu$ due to the intersection occurring in the tails.

\(^{37}\)Computed using the $\sigma^t_\mu$ values corresponding to $\mu$’s ranging from 0.2 to 0.7 by increments of 0.01 ($n = 51$).

\(^{38}\)For instance, for a mean of $\mu = 0.5$ (as shown in Figure 10), $\sigma^t_\mu$ and $I^M(\sigma^t_\mu)$ are predicted by the above equations to be 0.927 and 1.401, respectively, whereas the observed values are $\sigma^t_\mu = 0.9178$ and $I^M(\sigma^t_\mu) = 1.402$.  

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27
The reason that there is different behavior for \( \mu \leq \theta \) and \( \mu > \theta \) with respect to \( I^M \) is that when \( \mu \leq \theta \), \( I^M \) is the result of the intersection of \( \beta^- \) and \( \chi^- \) for all \( \sigma \) sufficiently large to produce \( I^M \). Conversely, when \( \mu > \theta \), \( I^M \) is the product of the intersection of \( \beta^+ \) and \( \chi^- \) for small standard deviations and then \( \beta^- \) and \( \chi^- \) for increasing standard deviations. We, therefore, arrive at the standard deviation condition for \( H_2 \) as follows.

**Standard Deviation Condition for \( H_2 \):** Holding the standard deviation of \( F \) and all parameters of \( G \) constant, when \( \mu \leq \theta \) there is a monotonically increasing region of \( \pi \) locations at which \( H_2 \) prefers conference to bargaining as the standard deviation of \( F \) decreases for all \( \sigma \leq \sigma_{\mu}^t \) or increases for all \( \sigma > \sigma_{\mu}^t \).\(^{39}\) Furthermore, when \( \mu > \theta \) there is a monotonically increasing region of \( \pi \) locations at which \( H_2 \) prefers conference to bargaining as the standard deviation of \( F \) increases.

8 The Conditions in a (Non-Mathematical) Nutshell

Here we briefly explore the scenarios that are likely to lead to conference. The analysis above finds that there are numerous different arrangements that result in both chambers selecting conference. Certainly, the number of arrangements that lead to conference when one or both chambers has a vastly inaccurate assessment of the preferences of the opposing chamber are too vast to explore here. Moreover, this scenario is unlikely to be a reality in the modern congress considering the pathways of communication and other sources of information that exist. Instead, we would expect the chambers to have reasonably sound assessments of the opposing chamber’s preferences, with the central tendency of the prior distributions closely aligned with the real parameter value and the dispersion relatively small. Here we will discuss the conditions in which both chambers select conference and the chambers’ beliefs regarding the opposing chamber are essentially correct, at least insomuch as its assessment of where the opposing chamber is relative to the location of conference and itself (when on the same side of conference).

An immediate conclusion from the conditions on the distribution means is that the most common arrangement that lends itself to conference occurs when the chambers are separated by conference.

\(^{39}\)There is a slight decrease in the region of \( \pi \) locations at which \( H_2 \) prefers conference to bargaining when \( (\theta + Q)/2 < \mu < \theta \) and \( \sigma \) is very small. We do not include this in the formal condition as the reduction in ideal points is trivial over a small range of \( \sigma \)'s.
The most possibilities exist when $H_1$ is on the opposite side of conference from the status quo (i.e., $\delta > \theta$) and (correctly) believes that $H_2$ is located on the same side of conference as the status quo, opposite conference from itself (i.e., $\pi < \theta$). Consider this scenario with conference located at $\theta = 0.7$ and a standard deviation $\sigma = 0.1$ for both $G$ and $F$. Region A in Figure 11 contains the values of $\delta$ (in left panel) and $\pi$ (in right panel) where conference is preferred to bargaining considering this arrangement for various means meeting the above conditions. Specifically, Region A in the left panel contains values of $\delta > \theta$ in which conference is preferred to bargaining by $H_1$ when it correctly believes that $\pi < \theta$, and the corresponding Region A in the right panel contains values of $\pi < \theta$ in which conference is preferred to bargaining by $H_2$ when it correctly believes that $\delta > \theta$. Fewer possibilities exist when the ordering of the chambers relative to conference and the status quo is reversed (i.e., $\delta < \theta$ and $\pi > \theta$), because $H_1$ has a bargaining advantage when it believes that its preferences are nearer the status quo then $H_2$ and is likely to prefer conference only when it benefits from conference’s information advantage when it believes that $h_R^*$ is likely to target the same policy locations as $c$ (e.g., $H_2$’s indifference point). However, such arrangements do exist and are represented by Region B in Figure 11.

While the most common occurring arrangement leading to conference is one in which the chambers are separated by conference, as evidenced by the size of Regions A and B relative to others, scenarios do exist in which both chambers prefer to reconcile differences by utilizing a conference that is not located between the chambers, even when the chambers correctly assess that the opposing chamber is (a) on the same side of conference as itself and (b) in a neighborhood that is closer to or farther from conference then itself. When both chambers are located on the opposite side of conference from the status quo (i.e., $\delta, \pi > \theta$), then arrangements exist in which conference is preferred when $\delta > \pi$ and $\pi > \delta$. For instance, Region C in the left panel contains values of $\delta > 0.8$ where conference is preferred to bargaining by $H_1$ and it correctly believes that $\theta < \pi < 0.8$, and the corresponding Region C in the right panel contains values of $\theta < \pi < 0.8$ in which conference is preferred to bargaining by $H_2$ and it correctly believes that $\delta > 0.8$. Similarly, arrangements exist.

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40 The right boundary of the figure is not closed, and therefore all ideal point values greater then the maximum ideal point value in the figure are to be included.

41 Here the threshold 0.8 was arbitrarily selected to delimit regions in which the chambers correctly assess the location of the opposing chamber relative to itself and conference. Any threshold will
in which conference is preferred to bargaining by both chambers when their relative position on the side opposite the status quo is reversed (i.e., δ, π > θ with π > δ). This scenario is represented by Region D in Figure 11.

When both chambers are located on the same side of conference as the status quo, conference can only be preferred by both chambers when \( H_1 \) is situated closer to conference than \( H_2 \). Again, this is a function of \( H_1 \)’s bargaining advantage when it believes it is closer in proximity to the status quo than \( H_2 \). Region E in Figure 11 illustrates a scenario in which conference is preferred by both chambers for δ, π < θ. Region E in the left panel contains values of 0.6 < δ < θ in which conference is preferred to bargaining by \( H_1 \) and it correctly believes that π < 0.6, and Region E in the right panel contains values of π < 0.6 in which \( H_2 \) prefers conference to bargaining and \( H_2 \) correctly believes that 0.6 < δ < θ.

The size of these regions will inevitably be affected by variation in the standard deviation as stated by the conditions. If we make the, seemingly reasonable, assumption that the chambers operate with a level of information that constrains the standard deviations of \( F \) and \( G \) to be near zero, then the \( H_1 \)’s regions will expand with increasing standard deviation, providing for more arrangements for which \( H_1 \) prefers conference to bargaining. This conclusion is based on the assumption that, for any given \( \mu \), the standard deviation of \( G \) will not exceed \( \min(\sigma(x), \sigma^l_\mu) \), which for most values of \( \mu \) is a sizable standard deviation. If this assumption is not satisfied, then the \( H_1 \)’s regions initially expand in size and then contract for \( \sigma > \min(\sigma(x), \sigma^l_\mu) \) (a direct result of the condition).

Applying the same logic to \( H_2 \), we might conclude that when \( \mu \leq \theta \), the regions will be stable across small standard deviations, and when \( \mu > \theta \), the regions will expand with increasing standard deviation. For \( \mu \leq \theta \), this conclusion is prefaced on the assumption that the standard deviation of \( F \) will not achieve a sufficiently high value to introduce \( I^M \), the right-most intersection of the conference and bargaining curves. Should this assumption not hold for \( \mu \leq \theta \), then the regions will be stable with increasing standard deviation until \( I^M \) occurs, will contract for standard deviations larger than this value, and then expand for standard deviations larger than \( \sigma^l_\mu \) (a direct result of the condition). No assumption is necessary to arrive at the conclusion that for \( \mu > \theta \) the regions produce arrangements where conference is preferred to bargaining by both chambers.
will expand with increasing standard deviation, as this relationship is monotonic for all standard
deviations (and therefore a direct result of the condition).

It is quite an intuitive finding that the arrangement most likely to result in conference when
the chambers have reasonably accurate beliefs of the location of the opposing chamber, occurs
when conference is located between the chambers. After all, this is the condition in which the
outcome of conference is Pareto optimal. That is, under this condition, conference must select
a policy location on the interval between the chambers. When conference is located outside this
interval, it can potentially select an outcome that is strictly Pareto dominated (depending on the
winset of the chambers). Even still, we do find arrangements in which a conference not located
between the chambers yields a higher expected return then bargaining. This is consistent with some
empirical findings (Vander Wielen and Smith, 2009; Vander Wielen, 2009), and the arrangements
that lead to such conferences are again quite intuitive. Quite simply, conference will be preferred
when bargaining, which results in the status quo when failure occurs, is unlikely to offer sufficient
policy improvement over the likely conference outcome to warrant the associated risk. And while
the conditions for the standard deviation in their entirety are complex, if we assume that the
chambers operate with minimal uncertainty we find that increasing the information advantages of
conference (i.e., increasing the standard deviation) makes conference a more attractive method of
reconciliation.

9 Preliminary Empirical Analysis

Here we offer a very tentative and elementary empirical examination of two key findings of the
theoretical model – that (1) conference is increasingly likely to occur when conference committees
are located between the chambers, and (2) for reasonable levels of variation in information, decreasing
chamber information regarding the opposing chamber’s preferences increases the likelihood of
conference. Again, the second statement is conditioned on the assumption that both chambers op-
erate with low (near zero) levels of uncertainty regarding the preferences of the opposing chamber.
To examine these propositions, we must analyze only those measures that had the possibility of
going to conference, and therefore the relevant population is the subset of measures passed by the
chambers in different forms. Ideally, we would be able to examine each of these cases individually.
Unfortunately, we do not have access to these data, and so must rely on available congress-level
data identifying the percent of public measures with differences resolved in conference.\textsuperscript{42}

In order to examine the statements above, we must also develop measures of both conference location relative to the chambers and the levels of chamber information regarding the policy preferences of the opposing chamber. Neither has an obvious instrument, and our solutions are certainly not without flaw. Since the dependent variable is measured at the level of a congress, both measures must be as well, which presents certain difficulties. For measuring the relative locations of conference to the chambers, for instance, we use the percent of parallel House and Senate standing committees that have a single-dimensional midpoint located between the chambers. That is, we first identify all House and Senate standing committees with analogous jurisdictions (e.g., House and Senate Appropriations). We then find the medians of the House and Senate floors, and the parallel House and Senate standing committees using first-dimension common space scores (Poole, 1998). Finally, we identify the midpoint between the parallel House and Senate standing committees on the first-dimension, and determine the percentage of parallel standing committees with a midpoint located between the chambers.

Standing committees are used as a proxy of conference position since they are the best predictors of conference composition, and their midpoint is used to represent the joint position of this decision-making unit.\textsuperscript{43} The basic logic here is that there is a positive relationship between the percentage of committees with centrally located midpoints and the percentage of measures with differences resolved using conference in a given congress. A particular shortcoming of this measure is that, since we do not have legislation-specific data, we cannot be certain which standing committees are relevant in a particular congress. For instance, certain jurisdictional areas may not yield measures that pass in different forms between the chambers, while others might produce many. Therefore, the committees with jurisdiction over the areas with many such measures are clearly more relevant to the chambers’ conciliation considerations than those committees that produce few or none. The measure used in this study gives equal weight to all parallel standing committees.

\textsuperscript{42}These data are available in Rybicki (2003) for every third congress.

\textsuperscript{43}Alternatively, we measured the percentage of parallel standing committees in which the medians of both committees were located between the chamber medians and arrived at substantively similar results. However, this alternative measurement is less consistent with the theoretical model, which uses a singular measure of the conference position. Moreover, the measure used here offers more variation.
Ascertaining levels of chamber information is perhaps an even more daunting task. There is simply no way to directly measure variation in the chambers’ uncertainty regarding the policy position of the opposing chamber. To measure this, we use the average of the percent of House and Senate continuity in membership from one congress to the next.\footnote{Members that have previously served in the body or move between the chambers are not considered new to the body, as they have legislative histories that provide information to the opposing chamber. In the congress of interest, we consider members who were initially elected or appointed to office in the latter half of the preceding congress’s second session to be new members, as are those members elected/appointed in the first half of the first session of the congress of interest.} When continuity in membership is relatively low (i.e., turnover is high), and there is comparatively fewer members with legislative histories, chambers surely have greater uncertainty regarding the pivotal voter in the opposing chamber. Of course, through repeated interaction in certain policy areas, the chambers acquire information and uncertainty diminishes. Therefore, this measure likely has most predictive capabilities early in a congress, assuming some repetition in policy areas over the course of a congress.

We examine every third congress between the 79th Congress (1945-1946) and the 106th Congress (1999-2000). We estimate a Bayesian linear regression model with noninformative priors for the parameters.\footnote{We ran 101,000 MCMC iterations, with the first 1,000 iterations discarded as burnin. Before drawing inference from the posterior density sample, we confirmed that the chain had converged using the Geweke diagnostic (1992) and visual assessment of the trace plots.} Posterior sample statistics of the parameters are shown in Table 1, and Figure 12 shows the density plots of the simulated posterior draws of the key regression coefficients.

The results are generally favorable to the propositions. The upper and lower bounds of the central 90 percent Bayesian credible interval for the Membership Continuity variable are negative, which is consistent with our expectations. That is, as membership continuity decreases, the probability that the chambers use conference to reconcile legislative differences increases. While the credible interval for the Central Committees variable contains zero, the bulk of the density of the distribution of simulated values is positive, as seen in Figure 12. This finding is likewise consistent with expectations.\footnote{We also estimate the model using OLS and find that Membership Continuity is statistically significant at the \( p = .10 \) level and the intercept at the \( p = .05 \) level. Therefore, the results are}
conclusions. This empirical analysis suffers from imperfect measures of the phenomena of interest, a small sample, and insufficient controls, and therefore an empirical analysis of the theoretical model developed above demands much more careful handling then can be provided here.

10 Conclusion

We seek to offer a rationale for the use of conference committees that builds upon the relatively small extant literature on the subject matter. Existing work, in our opinion, overlooks or underspecifies crucial aspects of the chamber-conference relationship. Namely, theories of committee deference, we believe, place too little emphasis on the chambers’ role in the decision to go to conference (Shepsle and Weingast, 1987a). This is particularly unsettling when one considers that conferences handle the most important legislation, with the broadest consequences for electoral fortunes. Krehbiel (1987) quite correctly criticizes this work for failing to give proper attention to the authority of the chambers in this relationship. On the other hand, information theory does not offer sufficient rationale for why conferees will serve the chambers at the conference stage with no promise of distributive return. This is especially problematic considering that information is a public good susceptible to the pitfalls of free-riding.

We develop a model of two-sided incomplete information that incorporates the formal requirements that the chambers be complicit in the decision to go to conference. In addition, we assume that conferees are utility maximizing agents that seek policy returns within the formal constraints imposed by the parent bodies. This characterization of the chamber-conference relationship is, in many ways, a unification of these competing theories, in that we concur with Krehbiel that the chambers ultimately constrain conference committees (rectifying a shortcoming of Shepsle and Weingast) and incorporate the incentive structures of conference theorized by Shepsle and Weingast (rectifying a shortcoming of Krehbiel).

We find that there are numerous conditions in which both chambers prefer conference to bargaining. This is true even when the chambers have reasonably accurate beliefs regarding the location of the opposing chamber. Quite intuitively, the arrangement most likely to result in both chambers preferring conference to amendment exchange occurs when conference is located between the substantively similar to those using the Bayesian framework, which is not surprising given the use of an noninformative prior.
chambers. This is a finding that will be comforting to information theorists, since it suggests that even when conferees pursue independent policy returns (as Krehbiel fleetingly refers to, but does not embrace) the results here are overwhelmingly aligned with the results of information theory models. That said, we do find that arrangements exist in which a conference not located between the chambers produces a higher expected policy return to the chambers than amendment exchange.

These findings, we hope, bridge the sparse existing literature, and offer a perspective more consistent with procedural requirements and empirical observations. We offer a slightly new perspective of conference committees as independent, but constrained, utility-maximizing institutions. This, we believe, is a marriage of existing theories that view conferences primarily as unconstrained or paralyzed entities. While we pursue a preliminary empirical analysis with generally favorable results, we intend to offer a more thorough examination in future research.
References


Figure 1: Game Tree
Figure 2: Best Response Correspondence For Conference
Figure 3: Comparing Expected Utility of Conference to Bargaining for \( H_1 \) for Various Values of the Mean of \( G \)

Notes: The standard deviation of \( G \) is set to 0.1, \( \theta \) is located at 0.7, and the status quo is located at 0.2.
Figure 4: Values of δ for which $H_1$'s Expected Utility of Conference Exceeds the Expected Utility of Bargaining for Various Values of the Mean of G
Notes: The standard deviation of G is set to 0.1, θ is located at 0.7, and the status quo is located at 0.2. Shaded area indicates values of δ for which the expected utility of conference exceeds bargaining, and lines indicate intersection points.
Figure 5: Comparing Expected Utility of Conference to Bargaining for $H_1$ for Various Values of the Standard Deviation of $G$

Notes: The mean of $G$ is set to 0.5, $\theta$ is located at 0.7, and the status quo is located at 0.2.
Figure 6: Values of $\delta$ for which $H_1$’s Expected Utility of Conference Exceeds the Expected Utility of Bargaining for Various Values of the Standard Deviation of $G$

Notes: The mean of $G$ is set to 0.5, $\theta$ is located at 0.7, and the status quo is located at 0.2. Shaded area indicates values of $\delta$ for which the expected utility of conference exceeds bargaining, and lines indicate intersection points. $\sigma_t$ and corresponding fitted line indicate the value of $\sigma$ for which the intersection curve changes direction for various values of $\mu$. 
Figure 7: Comparing Expected Utility of Conference to Bargaining for H₂ for Various Values of the Mean of F
Notes: The standard deviation of F is set to 0.1, θ is located at 0.7, and the status quo is located at 0.2.
Figure 8: Values of $\pi$ for which $H_2$’s Expected Utility of Conference Exceeds the Expected Utility of Bargaining for Various Values of the Mean of $F$

Notes: The standard deviation of $F$ is set to 0.1, $\theta$ is located at 0.7, and the status quo is located at 0.2. Shaded area indicates values of $\pi$ for which the expected utility of conference exceeds bargaining, and lines indicate intersection points.
Figure 9: Comparing Expected Utility of Conference to Bargaining for $H_2$ for Various Values of the Standard Deviation of $F$

Notes: The mean of $F$ is set to 0.5, $\theta$ is located at 0.7, and the status quo is located at 0.2.
Figure 10: Values of $\pi$ for which $H_2$’s Expected Utility of Conference Exceeds the Expected Utility of Bargaining for Various Values of the standard deviation of $F$

Notes: Four different means are displayed, $\theta$ is located at 0.7 and the status quo is located at 0.2. The area between intersection lines of like $\mu$ contains values of $\pi$ for which the expected utility of conference exceeds bargaining, and lines indicate intersection points.
Figure 11: Regions in which Both Chambers Select Conference
Notes: Left panel is for $H_1$ and the right panel for $H_2$. Regions of like name correspond between the panels. This figure demonstrates the regions in which both chambers correctly assess the relative position of the opposing chamber with respect to conference and itself (when both chambers are situated on the same side of conference).
Table 1: Empirical Analysis of Key Theoretical Propositions
Notes: Posterior summary for Bayesian linear regression fit using R code provided by Albert (2009). The dependent variable is the percent of public measures with differences resolved in conference for every third congress between the 79th Congress (1945-1946) and the 106th Congress (1999-2000).

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Figure 12: Density Plots of Simulated Draws from the Marginal Posterior Distributions of $\beta_1$ and $\beta_2$