Policy Bargaining and Militarized Conflict

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Abstract

Studies of bargaining and war generally focus on two sources of incomplete information: uncertainty over the probability of victory and uncertainty over the costs of fighting. We introduce uncertainty over preferences of a spatial policy and argue for its relevance in crisis bargaining. Under these conditions, standard results from the bargaining model of war break down: peace can be Pareto inefficient and it may be impossible to avoid war. We then extend the model to allow for cheap talk pre-play communication. Whereas incentives to misrepresent normally render cheap talk irrelevant, here communication can cause peace and ensure that agreements are efficient. Moreover, peace can become more likely as (1) the variance in the proposer's belief about its opponent's type increases and (2) the costs of war decrease. Our results indicate that one major purpose of diplomacy is simply to communicate preferences and that such communications can be credible.

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1 Introduction

On the eve of the fall of the Berlin Wall, the political climate in Moscow worried reformers in East Germany. The Brezhnev Doctrine warned countries in the Eastern Bloc that any move toward democracy and capitalism represented an unacceptable threat to the socialist countries surrounding it. Although Soviet non-intervention in Poland during Solidarity's rise was a promising signal, the threat of war remained a hurdle to reform. However, Moscow eliminated any uncertainty about its intentions on October 25, 1989. In an interview on *Good Morning America*, Soviet Foreign Ministry spokesperson Gennadi Gerasimov introduced the "Sinatra Doctrine"—Eastern Bloc countries could freely choose their own way. The Wall fell fifteen days later, without protest from Moscow.

This is puzzling. According to the crisis bargaining literature (e.g., Fearon (1995)), states have an incentive to misrepresent their private information to obtain a larger share of a peaceful settlement. But the East German case breaks from standard crisis bargaining models in a key way. Normally, each state's ideal point is common knowledge. On a unit interval, one state most prefers shifting the status quo to 0, the other most prefers shifting the status quo to 1, and settlements can only occur within the interval. With the Soviet Union, however, East German reformers wondered whether Moscow had expansionist aims or preferred self-determination. This runs in stark contrast with existing models, in which uncertainty is over the probability of victory or the costs of war.[1] Although some international relations scholars have highlighted this type of uncertainty before (Wendt (1999, 107-108), Kydd (2005), Glaser (2010, 46-50)), no one has yet integrated it into a crisis bargaining framework. We do.

Overall, we find six results that fundamentally differ from standard crisis bargaining models. First, peaceful settlements can be inefficient. Imagine that the set of policies a moderate type prefers to war overlaps with the set of policies a more extreme type prefers to war. If the proposer wishes to avoid war, it can offer just enough to appease the extreme type. Such an offer also satisfies the moderate, but that offer can *overshoot* the moderate's ideal point under some conditions. Thus, both the proposer and moderate would prefer implementing the moderate's ideal point to the equilibrium outcome. This is in contrast to the standard model, in which all equilibrium peaceful settlements must be Pareto efficient.

Second, with uncertainty over ideal points and sufficiently divergent preferences, we show that proposers cannot appease all of their possible opponents simultaneously. Unlike the first result, this occurs when the set of policies that a moderate type prefers to war does not overlap the set of policies a more extreme type prefers to war. Consequently, any offer entails some chance of fighting. Such a dilemma does not appear in the standard model. There, proposers face the risk-return tradeoff when confronting a range of possible opponents. Safer offers increase the probability of peace but come at the cost of increased concessions — in fact, the safest offer guarantees a peaceful resolution.

Third, in these cases where no offer can simultaneously satisfy all possible types of opponents, cheap talk provides a solution. Just prior to the fall of the Berlin Wall, Moscow genuinely did not want to interfere so deeply in East Berlin's domestic affairs. Thus, the types of policies acceptable to the actual Moscow were completely different from the types of policies acceptable to a counterfactual, hardline Moscow. When possible types have fundamentally different preferences, there is no incentive to misrepresent. In turn, cheap talk can decrease the probability of war. This stands in contrast with the standard model (in which cheap talk is ineffective). It also leads to the downstream consequences below that give researchers new empirical leverage on the prospects for peace.

Fourth, we show that increasing the variance in the distribution of an opposing type changes the probability of war nonmonotonically. When the universe of possible opposing ideal points is sufficiently small, the proposer makes the "safe" offer that all types accept; the marginal gains from more aggressive offers fail to offset the increased probability of war and destruction of surplus. When the ideal points of possible opponents are sufficiently disparate, cheap talk reveals information and allows the parties to reach mutually preferable settlements. Yet when the domain of potential opponents falls in a middle range, bargaining fails. Here, the proposer prefers making aggressive offers that more extreme types will reject. Unfortunately, cheap talk cannot resolve the underlying dilemma in this situation.

Fifth, the model demonstrates that increasing the costs of war can increase the probability of conflict. This is because cheap talk allows for credible communication when the sets of acceptable policies for each type do not overlap. Decreasing the costs of war correspondingly shrinks those sets, minimizing the possibility of their intersection. In turn, previously incredible communication becomes credible. This stands in contrast with the standard model, where making war costlier normally has a pacifying effect because the parties wish to avoid growing inefficiencies.

Sixth, the distribution of power similarly determines whether cheap talk can reduce the probability of conflict. The range of proposals a state is willing to accept shrinks as it becomes more powerful—an extremely powerful state, for example, is only willing to accept policies very close to their ideal point. Thus, more powerful states are more capable of credibly revealing information about their preferences.

Overall, we show that the current literature underestimates the importance of communication because it inadvertently assumes the conditions least favorable to diplomacy. Our model demonstrates that many crises would exist in the absence of cheap talk diplomacy but disappear thanks to simple diplomatic overtures. As a result, from an empirical perspective, militarized interstate disputes miss an important phase of crisis bargaining. Yet because this communication does not always work, we can identify the conditions under which incentives to misrepresent prohibit effective information transmission.

The success of communication in this paper relates to previous findings in the cheap talk literature. The pioneering work of Crawford and Sobel (1982) showed that informative communication can occur with one-sided incomplete information when players' preferences are not too dissimilar. Others have extended cheap talk's welfare improvement to different environments (Farrell and Gibbons (1989), Battaglini (2002), Krishna (2001)). This research comports with our result that cheap talk is most useful when there is some probability that the countries' ideal points are close. However, we also show that cheap talk is effective if all types of the second player are distant from the first player and the two possible types of the second player are sufficiently distant. Furthermore, we show that information transmission is still possible with two-sided uncertainty.[2]

In the crisis bargaining literature, incentives to misrepresent normally cloud the bargaining environment when the underlying uncertainty is over power or resolve (Fearon (1995); Fey and Ramsay (2010)). We are not the first to show that cheap talk can affect the bargaining environment to some degree; other scholars have shown that mechanisms such as domestic politics (Fearon (1994); Schultz (2001); Kurizaki (2007)), coordination problems (Ramsay (2011)), repeated play (Sartori (2002); Kurizaki (2011)), fear that threats will lead to a breach in diplomatic relations and military countermeasures (Trager (2010)), a multidimensional issue space (Trager (2011)), or third-parties (Trager (2015)) can lead to credible communication.[3] We show that cheap talk works without these additions with uncertainty over preferences. This indicates that private information about power or resolve is comparatively more difficult to communicate.

Our model thus generates empirical implications for when conflicts are more likely. Although our opening anecdote concerned interstate conflict, policy disputes may be more common in the shadow of *civil* war. Given the communication results below, we predict fewer of these disputes will turn to militarized conflict. With research suggesting the difficulty in solving civil wars, this is a rare instance where civil conflict seems more tractable than interstate wars.

Outside the conflict literature, Matthews's (1989) model of presidential vetoes is closest to ours. An important difference arises in the disagreement point. If the president vetoes the policy, each player obtains a known status quo payoff. In our model of crisis bargaining, however, the payoff from the second state rejecting depends on both players' ideal points. Thus, our model features feature interdependent values. Independent and interdependent values have differing implications in bargaining (Fey and Ramsay (2011)), and so we explore communication in this context.

2 Policy and Uncertainty

Policy conflicts are more common than one might initially suspect. Figure 1 plots the portion of militarized interstate disputes that are primarily policy-motivated as a ten-year moving average. Over the last 60 years, policy disputes have become increasingly frequent, and they represent the plurality of all crises.

Both interstate and intrastate negotiations frequently include discussions about preferred policies. For example, following the fall of Viktor Yanukovych, the United States and Russia discussed how much influence their respective alliances should have in Ukraine. During the Cold War, the United States contested foreign governments' nationalization of businesses, leading to a coup in Iran in 1953 and various operations in Cuba. On the eve of World War I, adversaries negotiated the appropriate level of punishment Austria-Hungary could level on Serbia. And many civil conflicts are explicitly over policies. These issues can range from political rights, citizenship, the tradeoff between taxation and public goods, and environmental protection versus economic growth. This final issue area is growing in prominence, with pollution becoming a major source of political discontent in China (Ding (2017)).

The notion that "less is more" can extend to non-policy areas as well. With logistical issues a real problem (Van Creveld (2004)), states might find governing particular territories a net negative. Meanwhile, even if a state aims to extract everything it can from an opponent, excessive demands can lead to footdragging (Scott (2008)) or cause economic disruptions

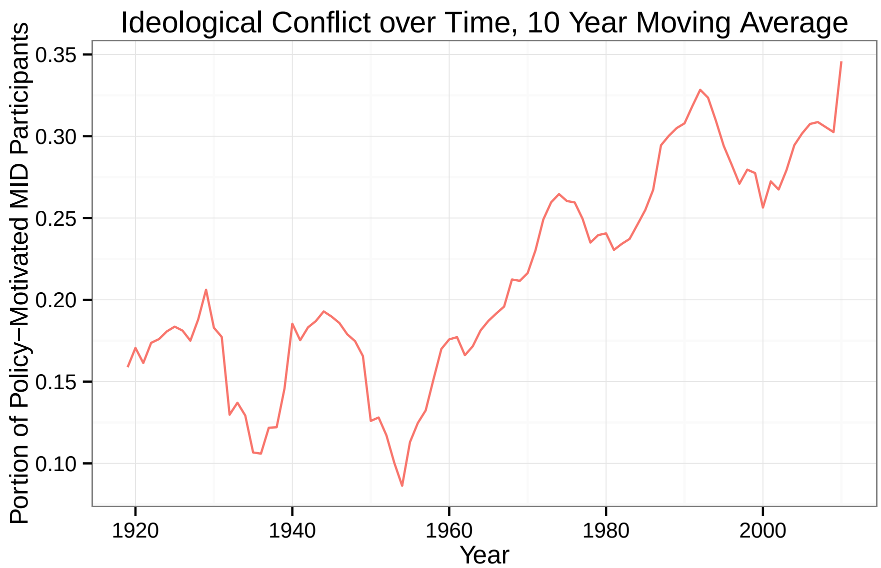

Figure 1: Proportion of militarized interstate disputes with policy issues as the primary motivation, ten year moving average.

that are ultimately counterproductive (Coe (2015)). Other states may wish to respect a norm for territorial boundaries (Zacher (2001)), have humanitarian concerns that limit the attractiveness of extraction (Liberman (1998)), or be generally isolationist.

Formal models of conflict have largely ignored the importance of limited aims for interstate bargaining.[4] Moreover, and critical for the cheap talk model we develop below, these preferences are not always clear to coercive bargaining opponents. Such preferences form through the domestic political process ((Iklé, 1967, 122-123), Bueno De Mesquita et al. (2005)). Studies of domestic politics, including inter-branch negotiations (e.g., Matthews (1989), McCarty (1997)), legislative bargaining (e.g., Tsai and Yang (2010), Chen and Eraslan (2013)), and elections (e.g., Barro (1973), Maskin and Tirole (2004)), indicate that internal actors face uncertainty about the preferences of other internal actors. This creates *ex ante* uncertainty about how the conflict bargaining process will conclude. International actors—who conceivably face greater informational barriers—thus face this policy uncertainty as well.

Given the asymmetry, opponents appear to have incentives to misrepresent their position. After all, if deep opposition would yield deep concessions from the opponent to avoid war, moderates might wish to mimic that position (Iklé (1967)). Consequently, intelligence organizations expend vast resources to learn an opposing leader's views of the world. Yet information is not easy to acquire; even sophisticated analysis of United Nations General Assembly voting data (Strezhnev and Voeten (2013)) places large confidence bounds on estimates of ideal points.

Nevertheless, and contrary to the standard bargaining model narrative, simple diplomacy sometimes resolves these issues entirely. Indeed, in standard diplomatic protocol, countries begin by asking whether they share a common interest (Iklé, 1967, 1-3). These communications can reduce overt conflict, even if the answer is negative. For example, in the 1870s, Russia faced uncertainty over whether Germany would intervene in a conflict against Austria-Hungary. When asked, Chancellor Otto von Bismark claimed he would. Russia became convinced of German intentions and altered its foreign policy (Rupp, 1941, 297).

The takeaways here are three-fold. First, policy matters, and sometimes more might be less. Second, states face varying degrees of uncertainty about these preferences. And third, cheap talk can produce meaningful communication. With the bargaining model of war literature silent on how policy preferences affect negotiating patterns, we build a model of the phenomenon below.

3 The Model

Suppose two states, denoted 1 and 2, bargain over some policy on the real line. State 1 offers a policy position $x \in \mathbb{R}$. State 2 sees the offer and chooses whether to accept or reject. Accepting locks in that settlement. Rejecting leads to war. State 1 wins with probability $p \in [0, 1]$ and 2 prevails with complementary probability; each pays its respective cost $c_1, c_2 > 0$. The victor then unilaterally sets the policy position.

Unlike the standard model, the players have spatial payoffs. In particular, states 1 and 2 have respective ideal points $\hat{x}_1$ and $\hat{x}_2$, with $\hat{x}_1 < \hat{x}_2$ without loss of generality. The payoff for a peaceful resolution is the negative Euclidean distance between the player's ideal point and the implemented policy, or $-|x - \hat{x}_i|$ for state i. The payoffs are analogous for policies implemented through war except we subtract c_i from state i's payoff.

Note that this model is nearly isomorphic to the standard bargaining model of war. Indeed, substituting $\hat{x}_1 = 0$ and $\hat{x}_2 = 1$ into the model yields the traditional setup. The lone difference is that the model permits offers to be below 0 and above 1. However, with complete information, both states know these endpoints and would therefore never select a value outside of them. This leads to our first result.

Proposition 1. *In every subgame perfect Nash equilibrium, state 1 offers* $x = \max\{\hat{x}_1, \hat{x}_2 - (\hat{x}_2 - \hat{x}_1)p - c_2\}$ *and state 2 accepts if* $x \in [\hat{x}_2 - (\hat{x}_2 - \hat{x}_1)p - c_2, \hat{x}_2 + (\hat{x}_2 - \hat{x}_1)p + c_2)$. *On the equilibrium path, the dispute ends peacefully. Off the path, both states select their ideal points if they win a war.*

However, concluding that the standard model covers policy preferences based on this is a mistake. Indeed, as the introduction previewed, the standard model cannot fit spatial policy preferences if the players have uncertainty about the other's ideal point.

With that in mind, consider the following extension. Nature begins the interaction by selecting state 2's ideal point; it picks $\underline{\theta}_2$ with probability q and $\overline{\theta}_2 > \underline{\theta}_2$ with complementary probability.[5] To avoid analyzing cases where state 1 is uncertain which side of the issue state 2 is on, we also assume that $\underline{\theta}_2 > \hat{x}_1 = 0$. State 2 observes its ideal point but state 1 only knows the prior distribution.[6]

Before listing our key results, some notation will prove useful. As the complete information proof showed, the set of policies the "low" type prefers to war is $[\underline{\theta}_2 - (\underline{\theta}_2 - x_1)p - c_2, \underline{\theta}_2 + (\underline{\theta}_2 - x_1)p + c_2]$. By analogous argument, the set of policies the "high" type prefers is $[\overline{\theta}_2 - (\overline{\theta}_2 - x_1)p - c_2, \overline{\theta}_2 + (\overline{\theta}_2 - x_1)p + c_2]$. To suppress notation, we refer the low type's acceptance set as $A(\underline{\theta}_2)$ and the high type's as $A(\overline{\theta}_2)$. Note that the acceptance set of a type further away from state 1's ideal point is larger than a type closer. This is because more extreme types suffer a comparatively worse fate if they lose a war and are thus willing to tolerate more peaceful settlements.

Since we are now looking at an extensive form game with incomplete information, we use perfect Bayesian equilibrium (PBE) as our solution concept. Proofs are given in the appendix.

4 When Preferences Are Possibly Aligned

We begin by studying a case in which state 1 believes there is some probability that state 2's objectives are relatively aligned with its own. Formally, this requires

$$\begin{aligned} &\hat{x}_1 \in A(\underline{\theta}_2), \\ &\hat{x}_1 \notin A(\overline{\theta}_2). \end{aligned} \quad (1)$$

The first line asserts that the moderate type of state 2 prefers state 1's ideal policy over engaging in a conflict with state 1. However, this does not mean that the countries are necessarily friendly with one another. In fact, the second line means that the more extreme type of state 2 prefers entering into a conflict with state 1 over accepting state 1's ideal policy.[7]

For now, we also limit our discussion to cases where the potential difference in state 2's ideology is not too large, i.e.,

$$A(\underline{\theta}_2) \cap A(\overline{\theta}_2) \neq \emptyset. \tag{2}$$

As such, policies exist that both types of state 2 prefer to conflict with state 1.[8] Furthermore, Condition 1 implies that state 1's ideal point is not one of these policies. This leads to our first proposition for this set of parameters:

Proposition 2. *Suppose that the possible types of state 2 satisfy Conditions 1 and 2. In equilibrium state 1 offers $x = 0$ if $q > \frac{c_1+c_2}{(1-p)\underline{\theta}_2+c_1}$ and offers $x = \overline{\theta}_2(1-p) - c_2$ if $q < \frac{c_1+c_2}{(1-p)\underline{\theta}_2+c_1}$. In the latter case, peace can be Pareto inefficient.*

Figures 2 and 3 illustrate parameters satisfying the conditions of Proposition 2. State 1 must weigh the risk for demanding its ideal point versus the potential reward for succeeding. As the cutpoint in Proposition 2 shows, the probability that state 2 is the low type and the costs of war determine state 1's choice.

While the risk-return tradeoff is well-known to crisis bargaining researchers, this model breaks from standard results because peace is not always Pareto efficient. Consider the outcome when $q < \frac{c_1+c_2}{(1-p)\underline{\theta}_2+c_1}$ and $\underline{\theta}_2 \notin A(\overline{\theta}_2)$, as in Figure 2. State 1's equilibrium offer is the leftmost point of the high type's acceptance set. The low type accepts this offer. Yet, in a counterfactual world where all information has been revealed, both the low type and state 1 prefer shifting the implemented policy to the left. In other words, peace is inefficient. The issue is that such settlements cannot simultaneously induce the high type's compliance, forcing state 1 to accept inefficient peace to avoid war.

Fortunately, cheap talk can alleviate these problems in this parameter space. Specifically, suppose state 2 can send a message $m \in \{\underline{\theta}_2, \overline{\theta}_2\}$ to state 1 after it observes its type. Consistent with the concept of cheap talk, the message that state 2 sends does not directly affect either player's payoff. Rather, any effect must be an indirect result of the inference state 1 draws from the particular message.

Before continuing to the cheap talk results, we introduce another condition:

$$\underline{\theta}_2 \leq \frac{\overline{\theta}_2(1-p)-c_2}{2}. \tag{3}$$

Condition 3 says that the ideal point of the moderate type of state 2 is closer to state 1's ideal point than it is to the leftmost point of the extreme type's acceptance set.

Proposition 3. *Assume that the types of state 2 satisfy Conditions 1 and 2. If 3 also holds, then a separating equilibrium exists. Upon receiving the message of the low type, state 1 offers $x = 0$; upon receiving the message of the high type, state 1 offers $x = \overline{\theta}_2(1-p) - c_2$. Peace prevails with certainty. If Condition 3 fails, no separating equilibrium exists.*

Figure 2 provides the intuition for when cheap talk succeeds. With the types revealed, state 1 proposes its ideal point against the low type and proposes the leftmost point in the high type's acceptance set against the high type. If the low type deviates to sending the high type's message, state 1 still makes an acceptable offer. However, this new offer is further away from the low type's ideal point than state 1's original proposal. Thus, it is incentive compatible for the low type to reveal its preference. The high type, meanwhile, would receive an unacceptable offer if it mimicked the low type's message, which in turn yields its war payoff. By separating, however, it already receives its reservation value for war. Consequently, the high type has no profitable deviation either.

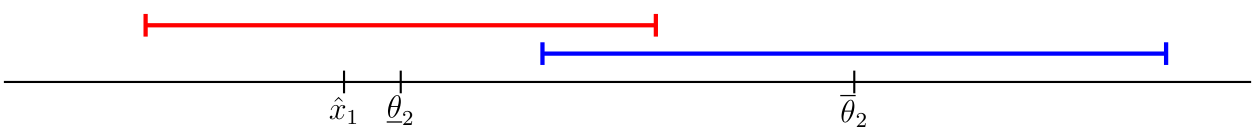

Figure 2: An illustration of Proposition 3's parameter space when Condition 3 holds. The intervals centered over a type indicate the set of policies that type prefers to war.

It is hard to overstate the usefulness of cheap talk in this parameter space. According to Proposition 2, when q is high, state 1 gambles that state 2 is the low type and demands its own ideal point. War occurs with positive probability because the high type rejects. However, with cheap talk, peace always prevails—the high type can signal that it requires more, and the low type has no incentive to mimic because the high type is comparatively extreme.

Meanwhile, when q is low, state 1 makes the safe offer of $x = \overline{\theta}_2(1-p) - c_2$ without cheap talk. Both types accept. Yet this also results in inefficiency because both state 1 and the low type prefer shifting to the left. Cheap talk again comes to the rescue. Revealing itself as the low type allows state 1 and the low type to reach one of the Pareto improving settlements. The high type has no desire to interfere in the information transmission process here because it wants state 1 to provide more extreme offers. Thus, cheap talk improves efficiency regardless of state 1's initial belief, either by reducing costs or allowing for better bargains.

This formalizes Glaser's explanation for the most recent period of peace among Western European countries. Glaser (2010, 212-216) argues that these countries have benign motives and beliefs about such preferences are well understood. How can states be certain about this? Proposition 3 provides an explanation. Here, one type has its acceptance set overlapping state 1's ideal point. It is benign in the sense that state 1 can demand its ideal point without objection. But Proposition 3 also says that if another type with more antagonistic preferences could exist, these types would want to reveal their true preferences. Thus, peace is not just a function of having relatively friendly preferences—it is also that such a possibility opens up communication lines from less friendly opponents.

What happens if Condition 3 fails? In this case, the low type prefers the high type's leftmost point in the acceptance set to state 1's ideal point. This subtle change leads to bargaining breakdown and positive probability of war that cheap talk cannot prevent.

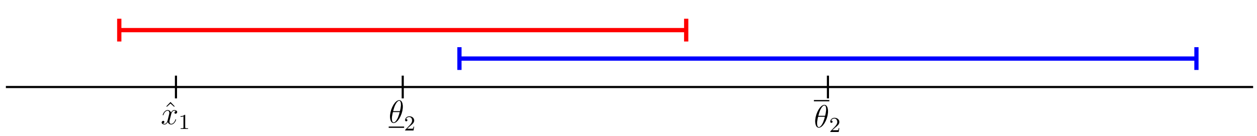

Figure 3: An illustration of Proposition 3's problem when Condition 3 does not hold.

Figure 3 illustrates the problem. If the types separate, state 1 implements its ideal point against the low type and offers $x = \overline{\theta}_2(1 - p) - c_2$ versus the high type. Thus, if the low type reports dishonestly, it instead receives the high type's reservation value for war. This was inadvisable before. However, now the high type's reservation value is close to the low type's ideal point whereas state 1's ideal point is far away. Consequently, the low type prefers mimicking the high type's behavior. In turn, the equilibrium outcome matches that of Proposition 2.

5 When Preferences Are Divergent

We now turn to situations where both types of state 2 are relatively antagonist towards state 1. We operationalize this idea by assuming both types of state 2 prefer war over state 1's ideal point. Formally,

$$\begin{aligned} \hat{x}_1 &\notin A(\underline{\theta}_2), \\ \hat{x}_1 &\notin A(\overline{\theta}_2). \end{aligned} \tag{4}$$

As in the previous section, we assume that both types of state 2 are not too dissimilar. That is, the parameters satisfy Condition 2, so an offer exists that would appease both types. Figure 4 visualizes this parameter space.

Proposition 4 begins the analysis without the cheap talk segment, providing a baseline result:

Proposition 4. *Suppose that the possible types of state 2 satisfy Conditions 2 and 4. State 1 offers* $x = \underline{\theta}_2(1-p) - c_2$ *if* $q > \frac{c_1+c_2}{(1-p)\underline{\theta}_2+c_1+c_2}$ *and offers* $x = \overline{\theta}_2(1-p) - c_2$ *if* $q < \frac{c_1+c_2}{(1-p)\underline{\theta}_2+c_1+c_2}$. *In the latter case, peace can be Pareto inefficient.*

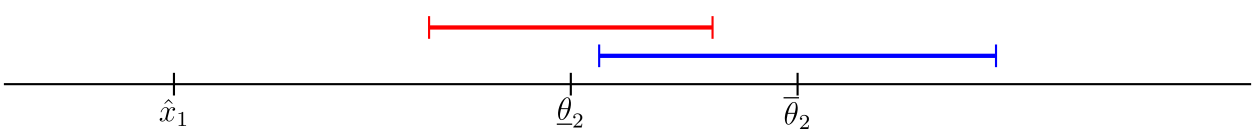

Figure 4: An illustration of Section 5's parameter space.

The intuition is identical to that of Proposition 2. The key difference here is that state 1's ideal point falls outside of both types' acceptance sets. Thus, state 1 must now decide whether to appease just the low type by offering the point in the low type's acceptance set closest to state 1's ideal point or the analogous point for the high type. If it offers just enough to induce the low type to accept, the high type rejects. But if it offers enough to buy off both types, it pays a premium to the low type. As a result, state 1 is more likely to make the aggressive offer if the probability it is facing the low type is high or if the costs of war are low. Further, as long as the high type's minimal demand falls to the right of the low type's ideal point (as is the case in Figure 4), peace is inefficient in the second case.

Given Proposition 2's similarity to Proposition 4, a careful reader may wonder why we present both results. However, the difference in the parameter spaces is non-trivial: cheap talk never works under Proposition 4's parameter space.

Proposition 5. *Suppose that the two types of state 2 satisfy Conditions 2 and 4. No separating equilibrium exists.*

Although this parameter space is similar to that of Proposition 3, the critical insight here is that truth telling now ensures that both parties receive their reservation values. But because the set of policies that both types prefer to war is non-empty, the low type strictly prefers the leftmost point of the high type's acceptance set. As a result, the low type's incentive to misrepresent overrides any possibility of effective cheap talk.

6 When Preference Uncertainty Is Great

The last case checks situations where the acceptance sets of the two types do not overlap. As in Section 5, we investigate parameters in which both types of state 2 are antagonistic toward state 1. Unlike Sections 4 and 5, we do not assume that both potential types of state 2 are overly similar. This imposes the condition:

$$A(\underline{\theta}_2) \cap A(\overline{\theta}_2) = \emptyset. \tag{5}$$

That is, no policies exist that both types of state 2 find agreeable. Proposition 6 characterizes equilibria for this parameter space:

Proposition 6. *Suppose that the possible types of state 2 satisfy Conditions 4 and 5. State 1 offers* $x = \underline{\theta}_2(1-p) - c_2$ *if* $q > \frac{c_1+c_2-(1-p)(\overline{\theta}_2-\underline{\theta}_2)}{2c_1+2c_2-(1-p)(\overline{\theta}_2-\underline{\theta}_2)}$ *and offers* $x = \overline{\theta}_2(1-p) - c_2$ *if* $q < \frac{c_1+c_2-(1-p)(\overline{\theta}_2-\underline{\theta}_2)}{2c_1+2c_2-(1-p)(\overline{\theta}_2-\underline{\theta}_2)}$.

The critical finding here is that state 1 cannot guarantee peace no matter what offer it makes. This is in stark contrast to the standard risk-return tradeoff seen in the previous two propositions. Here, state 1 does not trade off risk for more advantageous settlements. Rather, if it makes the first kind of offer, one type will accept and the other type will reject. But if it makes the second kind of offer, the other type accepts but the original type now rejects.

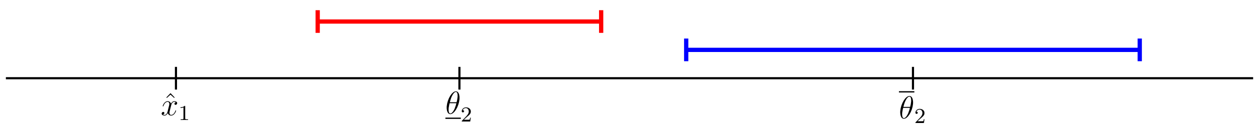

Figure 5: An illustration of the parameter space for Section 6. Because the acceptance sets of the two types of state 2 do not overlap, any offer state 1 proposes leads to war with positive probability.

Figure 5 illustrates the problem. If state 1 appeases the low type, its optimal offer is the leftmost point of the low type's acceptance set; if it appeases the high type, its optimal offer is the leftmost point of the high type's acceptance set. But because the acceptance sets do not overlap, neither of these offers can simultaneously satisfy both types.[9]

Next, we amend the model to include cheap talk. The following proposition shows that diplomacy alleviates the difficulties associated with this parameter space:

Proposition 7. *Suppose the possible ideal points of state 2 satisfy Conditions 4 and 5. A separating equilibrium exists.*

Figure 5 illustrates the fundamental logic. When the types have sufficiently disparate ideal points, state 1 can only appease one with its offer. Both types anticipate this ahead of time, so one knows it will go to war without communication. However, the high type can declare its ideological position without fear of manipulation from the low type because a low type mimicking receives an extreme (and intolerable) offer as a result. Meanwhile, the low type can also declare its ideological position without fear of manipulation from the high type since low types prefer relatively moderate offers.

Consequently, peace succeeds with probability 1. This is in direct contrast to the outcome without cheap talk, which guaranteed some probability of war no matter the proposal state 1 made. In other words, cheap talk succeeds when the bargaining problem is at its worst.

One may wonder how we would encounter the conditions of Proposition 6 empirically. After all, the parameters require state 2's possible preferences to be especially divergent. Proposition 7 helps explain why Proposition 6 strains credulity—we would rarely encounter such circumstances in salient cases because the parties would quickly resolve uncertainty about policy preferences through diplomatic exchanges. Nevertheless, this communication is invaluable—if such a cheap talk mechanism failed, we would see many more disputes than we do.

To wit, the exchanges between South African President F.W. de Klerk and Nelson Mandela appear to follow Proposition 7's mechanism. Given Mandela's militant past, South African reformers wondered whether Mandela had expansive political aims or was, as history has shown, a moderate (Sampson (2012), 330-331). In negotiations, according to the standard incentives to misrepresent logic, the moderate type of Mandela should have bluffed extremism to prompt more concessions. In fact, Mandela rejected notions of "black domination" and nationalization of South African businesses (Sampson (2012), 393-394), which had concerned de Klerk. The parties subsequently agreed to a historic and peaceful transition.

As another example, Saideman and Ayres (2012) argue that spatial preferences can result from nationalists wishing to maintain ethnic similarity within their state. Proposition 7 explains why opponents believe those limited aims. If such an exclusionary state were to bluff more expansive preferences, the opponent may respond with territorial concessions that include a greater share of the out-group than nationalists might desire. In turn, cheap talk can reveal otherwise unknown information.

7 Empirical Implications: Uncertainty, Costs of War, and the Distribution of Power

The cheap talk model generates a number of interesting comparative statics on the prevalence of information transmission. We begin with the difference between $\overline{\theta}_2$ and $\underline{\theta}_2$, which measures the variance of state 1's information (Reed (2003)). When the variance is great, state 1 must consider a wider range of opposing preferences; state 2's ideal point could be very close to state 1's or state 2's preference could be extreme. On the other hand, as the difference between $\overline{\theta}_2$ and $\underline{\theta}_2$ grows smaller, state 1 has a narrower range of opposing possibilities; state 2 could be extreme or slightly more extreme, for example.

In the standard bargaining model of war and the spatial game without cheap talk, reducing variance in this manner monotonically reduces the probability of war. This is not the case with asymmetric information about ideal points and cheap talk, however:

Proposition 8. *The relationship between variance in the distribution of state 2's type (measured by $\overline{\theta}_2 - \underline{\theta}_2$) and probability of war is nonmonotonic, with the probability of war maximizing at middling levels of variance for some parameter spaces.*

We can illustrate the logic of Proposition 8 using Figure 6. When variance is especially

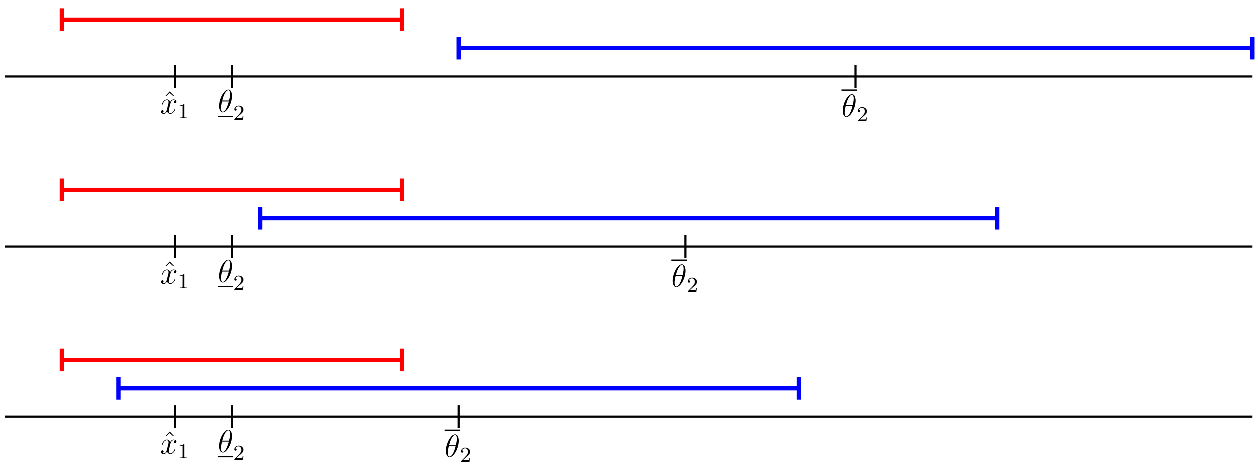

Figure 6: A progression of decreasing variance in the distribution of state 2's ideal point. With cheap talk, peace results in the first and last cases but can fail in the second.

high, as in the top of the figure, the states play the equilibrium from Proposition 7; both types of state 2 credibly reveal their ideal points, and state 1 implements a peaceful bargain in either case. Communication works because neither type wishes to receive a settlement geared toward the other. The probability of war is 0.

Variance decreases from the top part of the figure to the middle part of the figure, as the distance between $\overline{\theta}_2$ and $\underline{\theta}_2$ shrinks. However, these parameters call for the equilibrium strategies under Proposition 3; if q is sufficiently high, state 1 makes the aggressive demand that the high type rejects. Under these conditions, the probability of war is positive. Communication fails because the low type prefers the high type's reservation point to state 1's ideal point. Thus, lowering variance causes an increase in conflict.

Lastly, variance decreases again from the middle part of the figure to the bottom. Now $\overline{\theta}_2$ and $\underline{\theta}_2$ are close together, meaning that state 1 faces little noise about state 2's true preference. Note that the acceptance sets for both types include state 1's ideal point. As a result, state 1 demands its own ideal point and successfully resolves the crisis without war. Decreasing variance this time caused a decrease in the probability of conflict.

This result helps make sense of the Washington's relationship with Moscow over the last three decades. Recall that the political climate in Moscow worried reformers in East Germany. The Brezhnev Doctrine warned countries that moving toward democracy and capitalism represented an unacceptable threat to the socialist countries surrounding it. Yet Soviet non-intervention in Poland during Solidarity's rise to power was a promising signal.

In the language of our model, the range of possible types of the Soviet Union was great. Fortunately, as the top of Figure 6 illustrates, credible communication is possible here. Correspondingly, Moscow eliminated uncertainty about its intentions by introducing the Sinatra Doctrine. The Wall then fell.

Today, although Kiev and the West may not perfectly understand Russian preferences, their prior beliefs cover a much smaller domain than in the previous case. After all, Russia is not undergoing major revolutionary turmoil.[10] However, this can lead to a breakdown in communication and in turn prolong conflict.

Moving on, a similar nonmonotonic relationship holds between the costs of conflict and the probability of war:

Proposition 9. *The relationship between c_2 and probability of war is nonmonotonic, with the probability of war maximizing at middling levels of c_2 for some parameter spaces.*

Many prominent theories of conflict state that increasing the costs of war—whether though trade interdependence (Keohane and Nye (1977)), nuclear weapons (Waltz (1988, 627)), norms against violence (Mueller (1990, 9-13)), or peace subsidies (Arena and Pechenkina (2016))—decreases the prevalence of militarized conflict. Crisis bargaining models normally confirm this intuition. In sum, increasing the costs of conflict incentivizes safer offers in a risk-return tradeoff and makes shifts in power more tolerable than the alternative.

Here, however, increasing the costs of war can correspondingly *increases* the probability of conflict. Recall the parameter space in Figure 5, where the two types have non-overlapping acceptance sets and state 1's ideal point falls outside of them. By Proposition 7, the types reveal themselves, permitting state 1 to offer an acceptable amount in either case. No incentives to misrepresent exist here precisely because each type finds the other's acceptance set unacceptable.

Now suppose that the costs expanded. Visually, this means that the acceptance sets from Figure 5 grow larger. Eventually, increasing these costs means that the acceptance sets overlap, similar to Figure 4. Now the moderate type has incentive to bluff; if believed, state 1 would offer an amount in the interior of the moderate's acceptance set rather than an endpoint. Without full information revelation, state 1 must think through the risk-return tradeoff. By Proposition 4, state 1's offer leads to positive probability of war if it believes that state 2 is sufficiently likely to be the moderate type. Since the probability of war was 0 previously, increasing the costs of conflict causes an increase in the prevalence of war.[11]

Like the information story before, this effect is ultimately nonmonotonic. This is easy to see, as increasing costs high enough guarantees that both types' acceptance sets contain state 1's ideal point, allowing state 1 to peacefully demand that point.[12] Nevertheless, the takeaway here remains that the relationship between the costs of war and the probability of conflict is not as straightforward as it may appear.

Finally, the model generates an intriguing prediction about when communication is most likely to be effective:

Proposition 10. *The probability of influential communication is increasing in state 2's power.*

We offer a full explanation in the appendix, but the logic works as follows. Recall that a type's acceptance set is $[\hat{\theta}_2-(\hat{\theta}_2-\hat{x}_1)p-c_2, \hat{\theta}_2+(\hat{\theta}_2-\hat{x}_1)p+c_2]$. As state 2 becomes increasingly likely to prevail in war, p goes to 0, and the size of the acceptance set *decreases*. This means that the likelihood that the two types' acceptance sets overlap decreases. Correspondingly, Proposition 7 says that cheap talk works because neither type wants an offer geared toward the other. As a result, communication succeeds, and the parties settle.[13]

Put simply, Proposition 10 states that more powerful countries can more credibly reveal their policy preferences. This result gives an alternative explanation for why democratic governments are more transparent. Existing arguments suggest that the democratic political process (Bueno De Mesquita and Lalman (1992, 145-180); Schultz (1998)) or the ability to generate audience costs (Fearon (1994)) grant democracies inherent credibility. However, by some accounts, democratic institutions also make such countries more likely to prevail in conflict (Lake (1992); Reiter and Stam (2002)). Consequently, democracies may sometimes be better signalers simply due to their advantageous military positioning.

8 Conclusion

This paper relaxed a standard assumption in the bargaining model of war: that the state preferences over outcomes is common knowledge. In this case, regular results break down: peace may be inefficient, war may be inevitable, and cheap talk communications can be revelatory. Since diplomacy often entails a discussion of what states want, our theoretical results suggest that uncertainty about ideal points should stand on equal ground with uncertainty about power or resolve.

That said, our model was only a first pass at what ideal points and war have to offer. We have introduced the core mechanics and worked through cheap talk results. The literature on the bargaining model of war is comparatively vast, with work on bargaining and learning while fighting (Slantchev (2003); Powell (2004)), domestic policy considerations (Schultz (2001); Wolford (2007); Goemans and Fey (2009); Wolford (2012)), coalition building (Wolford (2014)), mechanism design (Fey and Ramsay (2007); Fey and Ramsay (2010); Fey and Ramsay (2011)), and more. Explicitly incorporating states' policy preferences may also lead to more tractable, yet also more realistic, models of multi-state interactions. Given the differences we discovered in this paper, it may be worth revisiting these findings to see if they are robust to this alternative specification.

Our model also opens up the possibility of a new test of the bargaining model of war. Many theories of inefficient behavior in international relations, including ours, rely on asymmetric uncertainty about some fundamental underlying parameter. Unfortunately, clear measures of uncertainty over power and resolve are not forthcoming.[14] This is problematic because the absence of such factors in empirical models risks omitted variable bias. However, we now have useful measures of ideal points from the United Nations General Assembly (Strezhnev and Voeten (2013)). Researchers ought to consider using such similarity scores as the source of incomplete information in their empirical models. More generally, explicit consideration of policy preferences may lead to new empirical hypotheses, and new opportunities to build and test models of conflict.

Notes

[1]For a non-exhaustive list of such findings, see Fearon (1995), Powell (1999), Filson and Werner (2002), Slantchev (2003), Powell (2004), Smith and Stam (2004), Slantchev (2005), Fey and Ramsay (2011), Arena (2015).

[2]See Myerson and Satterthwaite (1983), Matthews and Postlewaite (1989), and Fey, Kim and Rothenberg (2007) for further work on the efficiency of cheap talk under two-sided incomplete information.

[3]See Trager (2016, 211-216) for an overview.

[4]See Schultz and Goemans (2014) and Spaniel and Bils (2017) for exceptions.

[5]One might argue that the costs of war and probability of victory depends on the opponent's type. While this creates a richer model, the central insight below is that how the acceptance sets overlap determines cheap talk's credibility. We could therefore obtain analogous results if types determined these parameters. Consequently, to keep the mechanism transparent, we stick to the more parsimonious model.

[6]In the appendix, we show that our main results are robust to a model in which State 2's ideal point is

drawn from a continuum of types or if there is two-sided incomplete information.

[7]If the status quo is state 1's ideal point, one may think of the $\overline{\theta}_2$ type as a revisionist state. The status quo is meanwhile satisfactory to the $\underline{\theta}_2$ type.

[8]The propositions below omit the knife-edge case where the intersection is a single point, i.e., when rightmost point of the low type's acceptance set equals the leftmost point of the high type's acceptance set.

[9]Also, note that Proposition 6 makes no assumptions about whether the low type's ideological position is to the right of state 1's (as pictured in Figure 5) or to the left. Thus, state 1 may be stuck fighting a war because it cannot discern which side of the policy aisle its opponent is on.

[10]President Vladimir Putin has held control for more than a decade, and scholars generally associate longer tenures with less uncertainty (Wolford (2007); Rider (2013); Spaniel and Smith (2015)).

[11]In the appendix we show that this non-monotonic effect still exists if state 2 can be one of three possible types.

[12]In less extreme cases where state 1's ideal point is not in both acceptance sets and cheap talk fails, the additional costs also incentivize safer offers in the risk-return tradeoff.

[13]As with Proposition 9, a similar effect occurs with three types. The logic is similar: when p is small, all types are able to truthfully communicate their preferences, when p is moderate one type can still credibly reveal its preferences, and when p is large there does not exist an equilibrium in which types can separate.

[14]Researchers have crafted some clever alternatives, including leader tenure as a proxy (Wolford (2007); Rider (2013); Spaniel and Smith (2015)), alliance complications (Huth, Bennett and Gelpi (1992)), and revised intelligence estimates (Kaplow and Gartzke (2013)).

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APPENDIX A: Proofs

Proof of Proposition 1. Post-war unilateral policy decisions are trivial—the winner only needs to maximize its own utility function and so it selects its own ideal point. This gives state 1 a war payoff of $-|\hat{x}_1 - \hat{x}_1|(p) - |\hat{x}_2 - \hat{x}_1|(1-p) - c_1 = -(\hat{x}_2 - \hat{x}_1)(1-p) - c_1$ and state 2 a war payoff of $-|\hat{x}_1 - \hat{x}_2|(p) - |\hat{x}_2 - \hat{x}_2|(1-p) - c_2 = -(\hat{x}_2 - \hat{x}_1)(p) - c_2$. Thus, state 2 is willing to accept any $x \in [\hat{x}_2 - (\hat{x}_2 - \hat{x}_1)(p) - c_2, \hat{x}_2 + (\hat{x}_2 - \hat{x}_1)(p) + c_2]$.[1] If $\hat{x}_1 \in [\hat{x}_2 - (\hat{x}_2 - \hat{x}_1)(p) - c_2, \hat{x}_2 + (\hat{x}_2 - \hat{x}_1)(p) + c_2]$, 1 chooses $x = \hat{x}_1$; any other offer leads to a peaceful settlement further from state 1's ideal point or war, both of which are strictly worse. If $\hat{x}_1 \notin [\hat{x}_2 - (\hat{x}_2 - \hat{x}_1)(p) - c_2, \hat{x}_2 + (\hat{x}_2 - \hat{x}_1)(p) + c_2]$, state 1's optimal acceptable offer equals $\hat{x}_2 - (\hat{x}_2 - \hat{x}_1)(p) - c_2$; anything else is an unnecessary concession. Offering anything outside that region leads to war. Thus, making the optimal acceptable offer yields a greater payoff if:

$$-|\hat{x}_2 - (\hat{x}_2 - \hat{x}_1)(p) - c_2 - \hat{x}_1| > (\hat{x}_1 - \hat{x}_2)(1-p) - c_1,$$

which reduces to

$$c_1 + c_2 > 0.$$

This is true since the costs are individually greater than 0. □

We now state a lemma about the potential equilibrium offers of state 1. We omit the proof since it follows similar logic as in the proof of Proposition **??**. For the remainder of the appendix, and without loss of generality, we set $\hat{x}_1 = 0$.

[1] For all our proofs, we assume that state 2 accepts with probability 1 when indifferent. However, in every equilibrium, state 2 must accept $\hat{x}_2 - (\hat{x}_2 - \hat{x}_1)(p) - c_2$; otherwise, consistent with standard ultimatum games, state 1 has no optimal strategy. If $x = \hat{x}_2 + (\hat{x}_2 - \hat{x}_1)(p) + c_2$, state 2 is indifferent between accepting and rejecting. Consequently, the game has infinitely many equilibria. That said, such an offer occurs off the path. In turn, the equilibrium outcome is unique.

Lemma 1. *There are two possible offers that could be optimal for state 1 to make*

$$\underline{x} = \begin{cases} \max\{0, \underline{\theta}_2(1-p) - c_2\} & \textit{if } 0 \leq \underline{\theta}_2 \leq \overline{\theta}_2 \\ \min\{0, \underline{\theta}_2(1-p) + c_2\} & \textit{if } \underline{\theta}_2 \leq 0 \leq \overline{\theta}_2 \end{cases}$$

$$\overline{x} = \overline{\theta}_2(1-p) - c_2.$$

The optimal acceptance strategy for state 2 given any offer x is discussed earlier, so to demonstrate that the propositions hold we focus on showing that the proposal strategy for state 1 in each proposition is optimal.

Proof of Proposition 2. We conjecture that state 1's optimal proposal strategy is:

$$x^* = \begin{cases} 0 & \text{if } q \geq \frac{c_1+c_2}{(1-p)\overline{\theta}_2+c_1}, \\ \overline{x} & \text{else.} \end{cases}$$

By Lemma 1 we know that $x^* \in \{\overline{x}, \underline{x}\}$. The expected utility to state 1 for each offer is:

$$U_1(\underline{x}) = (1-q)(-(1-p)\overline{\theta}_2 - c_1)$$

$$U_1(\overline{x}) = -(1-p)\overline{\theta}_2 + c_2.$$

We want to know when $U_1(\underline{x}) \geq U_1(\overline{x})$, i.e.:

$$(1-q)(-(1-p)\overline{\theta}_2 - c_1) \geq -(1-p)\overline{\theta}_2 + c_2.$$

Reducing and solving for q gives:

$$q \geq \frac{c_1 + c_2}{(1-p)\overline{\theta}_2 + c_1}.$$

Therefore, the proposal strategy is optimal and so the proposition holds. □

Proof of Propositions 3. If we have a separating equilibrium, then state 1's optimal offer is $x^* = 0$ after observing $m = \underline{\theta}_2$ and $x^* = \overline{\theta}_2(1-p) - c_2$ after observing $m = \overline{\theta}_2$. In turn, it is optimal for the $\overline{\theta}_2$ type of state 2 to play the separating strategy if its payoff from accepting $\overline{x}$ is greater than its war payoff from rejecting the offer $x = 0$. This is true when:

$$-p\overline{\theta}_2 - c_2 \leq -|\overline{\theta}_2(1-p) - c_2 - \overline{\theta}_2|.$$

Since $0 \notin A(\overline{\theta}_2)$, this condition always holds. (The inequality is, in fact, an equality.)

Next, we need to know when it is optimal for the $\underline{\theta}_2$ type to follow the separating strategy. It will be optimal for $\underline{\theta}_2$ to truthfully reveal its type if accepting $x^* = 0$ gives a higher payoff than accepting $x^* = \overline{x}$:

$$-|0 - \underline{\theta}_2| \geq -|\overline{\theta}_2(1-p) - c_2 - \underline{\theta}_2| \tag{1}$$

Rearranging (1) gives us that the $\underline{\theta}_2$ type of player 2 will play $m = \underline{\theta}_2$, and we will have a separating equilibrium, if

$$\underline{\theta}_2 \in \left[0, \frac{(1-p)\overline{\theta}_2 - c_2}{2}\right].$$

If $\underline{\theta}_2$ is not in the above interval then (1) will not hold and the $\underline{\theta}_2$ type will want to deviate and mimic the $\overline{\theta}_2$ type. So there will not be a separating equilibrium. □

Proof of Proposition 4. To show that the proposition holds we want to show that state

1's optimal proposal strategy is given by:

$$x^* = \begin{cases} \underline{x} & \text{if } q \geq \frac{c_1+c_2}{(1-p)(\overline{\theta}_2+\underline{\theta}_2)+c_1+c_2} \\ \overline{x} & \text{else} \end{cases}$$

By Lemma 1, the only possible offers in equilibrium are $\underline{x}$ or $\overline{x}$. The expected utility of each offer to state 1 is:

$$U(\underline{x}) = q(-(1-p)\underline{\theta}_2 + c_2) + (1-q)(-(1-p)\overline{\theta}_2 - c_1),$$
$$U(\overline{x}) = -(1-p)\overline{\theta}_2 + c_2.$$

To determine when $\underline{x}$ is the optimal offer, we need to know when the inequality $U(\underline{x}) \geq U(\overline{x})$ holds:

$$q(-(1-p)\underline{\theta}_2 + c_2) + (1-q)(-(1-p)\overline{\theta}_2 - c_1) \geq$$
$$-(1-p)\overline{\theta}_2 + c_2.$$

Solving the above inequality for q yields:

$$q \geq \frac{c_1 + c_2}{(1-p)(\overline{\theta}_2 + \underline{\theta}_2) + c_1 + c_2}.$$

Therefore, the conjectured proposal strategy for state 1 is optimal. □

Proof of Proposition 5. Since $0 \notin A(\underline{\theta}_2)$ we have that $\underline{x}^* = (1-p)\underline{\theta}_2 - c_2$ if $m = \underline{\theta}_2$ and $\overline{x}^* = (1-p)\overline{\theta}_2 - c_2$ if $m = \overline{\theta}_2$. Because $A(\underline{\theta}_2) \cap A(\overline{\theta}_2) \neq \emptyset$, the utility from $\overline{x}^*$ is always greater than the utility from $\underline{x}^*$, i.e.,

$$-|(1-p)\overline{\theta}_2 - c_2 - \underline{\theta}_2| > -|(1-p)\underline{\theta}_2 - c_2 - \underline{\theta}_2|,$$

always holds. This means that the $\underline{\theta}_2$ type of state 2 will always want to deviate and mimic the extremist type, choosing $m = \overline{\theta}_2$. Therefore, there is no a separating equilibrium. □

Proof of Proposition 6. We will show that the following is state 1's optimal proposal strategy:

$$x^* = \begin{cases} \underline{x}, & \text{if } q \geq \frac{c_1+c_2-(1-p)(\overline{\theta}_2-\underline{\theta}_2)}{2c_1+2c_2-(1-p)(\overline{\theta}_2-\underline{\theta}_2)} \\ \overline{x}, & \text{else} \end{cases}$$

By Lemma 1, $x^* \in \{\overline{x}, \underline{x}\}$. Since $0 \notin A(\underline{\theta}_2)$, $\underline{x} = \underline{\theta}_2(1-p) - c_2$. Setting up the inequality $U(\underline{x}) \geq U(\overline{x})$ gives:

$$q(-(1-p)\underline{\theta}_2 + c_2) + (1-q)(-(1-p)\underline{\theta}_2 - c_1)$$
$$\geq$$
$$q(-(1-p)\underline{\theta}_2 - c_1) + (1-q)(-(1-p)\overline{\theta}_2 + c_2).$$

This reduces to

$$q[2c_2 + 2c_1 - (1-p)(\overline{\theta}_2 - \underline{\theta}_1)] \geq c_2 + c_1 - (1-p)(\overline{\theta}_2 - \underline{\theta}_1).$$

Since $c_1, c_2 > 0$ then this inequality holds if $q \geq \frac{c_1+c_2-(1-p)(\overline{\theta}_2-\underline{\theta}_2)}{2c_1+2c_2-(1-p)(\overline{\theta}_2-\underline{\theta}_2)}$, as required. □

Proof of Proposition 7. Assume that $m(\overline{\theta}_2) = \overline{\theta}_2$ and following this message state 1 chooses $x = \overline{x}$. Furthermore, assume that $m(\underline{\theta}_2) = \underline{\theta}_2$ and following this message state 1 chooses $x = \underline{x}$. Based on Proposition **??**, these are the optimal offers for state 1 to make after observing the messages and updating about state 2's type. Therefore, all that remains is to check that each type of state 2 does not want to deviate from these separating messages. If the $\underline{\theta}_2$ type deviates and sends the message $\overline{\theta}_2$ then state 1's offer will be $x = \overline{x}$, which the $\underline{\theta}_2$ type will reject. It receives its war payoff as a result. If the $\underline{\theta}_2$ type does not deviate and sends the truthful message, it will get the offer $x = \underline{x}$, which it will then accept. Since accepting the offer $\underline{x}$ gives the $\underline{\theta}_2$ type a higher utility than the war payoff, it will not deviate.

The argument is analogous for the $\overline{\theta}_2$ type of state 2. Therefore, neither type of state 2 wants to deviate from sending the truthful message. After observing the truthful message, it is always optimal for state 1 to choose an x which will be accepted. So the separating equilibrium is always peaceful. □

Proof of Proposition 10. Cheap talk is successful in the model if Conditions (1), (2), and (3) hold or if Conditions (4) and (5) hold. We begin by providing a generalized condition for a separating equilibrium to exist. Let $\overline{x}(p)$ denote the offer made in a separating equilibrium following the extremist message, as a function of p, and $\underline{x}(p)$ be the offer made following the moderate message. Define the distance between state 2's ideal point and a policy offer as $d(\theta_2, x(p)) = |\theta_2 - x(p)|$. A separating equilibrium exists if and only if $d(\underline{\theta}_2, \underline{x}(p)) \leq d(\underline{\theta}_2, \overline{x}(p))$. As players have Euclidean utilities over policy, this condition implies that the utility to the moderate type of state 2 for revealing its type truthfully is greater than its utility of mimicking the extremist type. If this does not hold then a separating equilibrium cannot exist as the moderate type would have a strict incentive to deviate and mimic the extremist type. We will show that if this condition holds for some $\overline{p}$, then this condition continues to hold for any $\underline{p} < \overline{p}$.

First, we prove that if $\overline{p} > \underline{p}$ then $d(\underline{\theta}_2, \underline{x}(\overline{p})) \geq d(\underline{\theta}_2, \underline{x}(\underline{p}))$. From our earlier analysis we have that

$$\overline{x}(p)\max\{0, \underline{\theta}_2(1-p)-c_2\}.$$

There are three relevant cases to consider. The first is that $\underline{x}(\underline{p}) = \underline{x}(\overline{p}) = 0$. This immediately implies $d(\underline{\theta}_2, \underline{x}(\overline{p})) = d(\underline{\theta}_2, \underline{x}(\underline{p}))$. The second case is that $\underline{x}(\overline{p}) = \underline{\theta}(1-\overline{p}) - c_2$ and $\underline{x}(\underline{p}) = \underline{\theta}(1-\underline{p}) - c_2$. This yields

$$d(\underline{\theta}_2, \underline{x}(\overline{p})) = \underline{\theta}_2\overline{p} - c_2 > \underline{\theta}_2\underline{p} - c_2 = d(\underline{\theta}_2, \underline{x}(\underline{p})),$$

as $\underline{p} < \overline{p}$. Finally, the third case occurs when $\underline{x}(\overline{p}) = 0$ and $\underline{x}(\underline{p}) = \underline{\theta}(1-\underline{p}) - c_2$. Comparing distances yields

$$d(\underline{\theta}_2, \underline{x}(\overline{p})) = \underline{\theta}_2 > \underline{\theta}_2\underline{p} - c_2 = d(\underline{\theta}_2, \underline{x}(\underline{p})),$$

as required.

Next, we prove that for $\overline{p} > \underline{p}$ we have $d(\underline{\theta}_2, \overline{x}(\overline{p})) \leq d(\underline{\theta}_2, \overline{x}(\underline{p}))$. In this case, we have that $\overline{x}(\overline{p}) > 0$.[2] As such, for all p

$$\overline{x}(p) = \overline{\theta}_2(1-p) - c_2.$$

Using this we want to show

$$d(\underline{\theta}_2, \overline{x}(\overline{p})) = \overline{\theta}_2(1-\overline{p}) - c_2 - \underline{\theta}_2 < \overline{\theta}_2(1-\underline{p}) - c_2 - \underline{\theta}_2 = d(\underline{\theta}_2, \overline{x}(\underline{p})),$$

which reduces simply to

$$\underline{p} < \overline{p}.$$

We have that $d(\underline{\theta}_2, \underline{x}(\underline{p})) \leq d(\underline{\theta}_2, \underline{x}(\overline{p})) \leq d(\underline{\theta}_2, \overline{x}(\overline{p})) < d(\underline{\theta}_2, \overline{x}(\underline{p}))$. Therefore, if the

[2] If not, the interaction would be trivial as the proposer could always choose its ideal point and have it accepted by both types.

middle inequality holds (i.e., a separating equilibrium exists), then for any $\underline{p} < \overline{p}$ we have $d(\underline{\theta}_2, \underline{x}(\underline{p})) < d(\underline{\theta}_2, \overline{x}(\underline{p}))$ and so a separating equilibrium continues to exist.

For a separating equilibrium to exist we need that $d(\underline{\theta}_2, \underline{x}(p)) \leq d(\underline{\theta}_2, \overline{x}(p))$. This condition can be manipulated to be stated as

$$p \leq \max\{\frac{\overline{\theta}_2 - \underline{\theta}_2 - 2c_2}{\overline{\theta}_2 + \underline{\theta}_2}, \frac{\overline{\theta}_2 - 2\underline{\theta}_2 - c_2}{\overline{\theta}_2}\},$$

implying that if a separating equilibrium can exist, given the parameters of the model, then it will for sufficiently small p.

Thus, decreasing p can never cause a separating equilibrium to fail to exist if one previously did, however, decreasing p can cause a separating equilibrium to exist when one previously did not. Thus, decreasing p can make it easier for state 2 to communicate its preferences.

APPENDIX B: Extensions

In this section we discuss the robustness of the cheap talk results for two possible extensions of the model. The first considers whether cheap talk diplomacy can be effective at revealing preferences when state 2 has a continuum of possible types. The second looks at whether cheap talk can work when state 2 is also uncertain about state 1's policy preferences.

Continuous Types

One may worry that the success of cheap talk in the model is dependent on the coarseness of the type space. This is, however, not the case. Assume that state 2's ideal point is drawn from a uniform distribution over $[0, 1]$. Additionally, before state 1 makes an offer, state 2 sends a message that it is either friendly (**F**) or antagonistic (**A**). There are (reasonable) parameters of the models such that equilibria exist that partition the type space into two intervals and types within the same interval send the same message. State 1 tailors its offer to State 2 depending on the message and the offer is always accepted. Therefore, the probability of war is zero with cheap talk. Under the same parameters, however, if cheap talk is not allowed then there exists a positive probability of conflict. Thus, cheap talk diplomacy is still effective at resolving disputes when there is a continuum of types. Note that policy outcomes can persist which are not Pareto optimal.

Proposition B.1. *Assume* $\frac{(1-p)^2}{3-p} \leq c_2 < \frac{1-p}{2}$ *and* $c_1 \geq \frac{2p(1-p)-c(3p-1)}{1+p}$. *Additionally, let* $\hat{x}_2 \sim U[0,1]$. *A perfect Bayesian equilibria exists in which types with ideal point* $\hat{x}_2 \in [0, \frac{1-p-c_2}{2}]$ *send the message* $\boldsymbol{F}$ *and those with ideal point* $\hat{x}_2 \in (\frac{1-p-c_2}{2}, 1]$ *send the message* $\boldsymbol{A}$. *After observing* $\boldsymbol{F}$ *state 1 offers* 0 *and after observing* $\boldsymbol{A}$ *state 1 offers* $1-p-c_2$. *All types accept the offer made to them. Additionally, the probability of conflict strictly decreases compared to the model in which state 2 cannot send a message.*

Proof of Proposition B.1: First, we show that the optimal offer in the game with no cheap talk is $x^* = 1-p-c_2$ and that this leads to a positive probability of war. As this offer is accepted by the most extreme type ($\hat{x}_2 = 1$), state 1 will never make a larger offer. Thus, we must check that it does not want to make a lower offer. Its expected utility of an offer that is less than x^* can be written as

$$\begin{aligned} V(x^* - \epsilon) = &\int_0^{\frac{1-p-2c_2-\epsilon}{1+p}} -(1-p)\hat{x}_2 - c_1 \, U(d\hat{x}_2) \\ &+ \int_{\frac{1-p-2c_2-\epsilon}{1+p}}^{\frac{1-p-\epsilon}{1-p}} p + c_1 - 1 + \epsilon \, U(d\hat{x}_2) \\ &+ \int_{\frac{1-p-\epsilon}{1-p}}^{1} -(1-p)\hat{x}_2 - c_1 \, U(d\hat{x}_2). \end{aligned}$$

The expression $V(x^* - \epsilon)$ as a function of ϵ has a unique maximizer given by

$$\epsilon^* = \max\{0, \frac{c_2(1-3p) - c_1(1+p) + p(2(1-p) + \sqrt{(c_1 - c_2 + (3c_2 + c_1 - 2)p + 2p^2)^2/p^2})}{2p}\}.$$

For $c_1 \geq \frac{2p(1-p)-c(3p-1)}{1+p}$ we have that $\epsilon^* = 0$. Thus, state 1's optimal offer is x^*.

Next, we show that this offer results in a positive probability of war. The type that is indifferent between war and x^* is $\hat{x}_2 = \frac{1-p-2c_2}{1+p}$. Therefore, any type of state 2 with ideal policy $\hat{x}_2 \in [0, \frac{1-p-2c_2}{1+p})$ will reject state 1's offer. For there to be a positive probability of war we need $\frac{1-p-2c_2}{1+p} > 0$, which holds by the assumption that $c_2 < \frac{1-p}{2}$.

We now analyze the game with cheap talk and show that the strategies described in the proposition constitute a PBE.

We begin by showing that all types in $(\frac{1-p-c_2}{2}, 1]$ accept the offer x^*. As we know that type $\hat{x}_2 = 1$ is willing to accept x^* what remains to be shown is that the type $\hat{x}_2 = \frac{1-p-c_2}{2}$ prefers x^* to war. From before we know that the type that is indifferent between accepting x^* and going to war is $\hat{x}_2 = \frac{1-p-2c_2}{1+p}$. Thus, for it to be optimal for type $\frac{1-p-c_2}{2}$ to accept x^* we need that

$$\frac{1-p-2c_2}{1+p} \leq \frac{1-p-c_2}{2}.$$

This inequality reduces to

$$\frac{(1-p)^2}{3-p} \leq c_2,$$

which holds by assumption.

Next, we show that all types who send the message **F** accept the offer $x = 0$. The type that sends the message **F** and is furthest from 0 is $\hat{x}_2 = \frac{1-p-c_2}{2}$. As such, we need to show that this type does not prefer war over accepting the offer $x = 0$. For this to be true we need that

$$-\left(\frac{1-p-c_2}{2} - 0\right) \geq -p\left(\frac{1-p-c_2}{2} - 0\right) - c_2.$$

This reduces to

$$c_2 \geq \frac{(1-p)^2}{3-p},$$

which, again, holds by assumption. Therefore, all types that send the message **A** accept the offer x^* and all types that send the message **F** accept the offer 0. We now use this to show that these are state 1's optimal offers following each message.

As x^* is state 1's optimal offer when it believes $\hat{x}_2 \in [0, 1]$, it must also be optimal to offer x^* after receives the message **A** and believes that $\hat{x}_2 \in (\frac{1-p-c_2}{2}, 1]$. After receiving the message **F**, state 1's strategy dictates that it offers $x = 0$. This is accepted by all types that send the message **F** and this policy gives state 1 its highest possible payoff. Thus, state 1 cannot have a profitable deviation.

Finally, we need the messaging strategy to be optimal for all types of state 2. By our earlier analysis no type prefers war over the offer it receives. Thus, we just need to show that no type prefers to the offer it can get by sending a different message to the offer it gets by sending the message dictated by the conjectured equilibrium.

Solving the equality

$$-|x^* - \hat{x}| = -|0 - \hat{x}|$$

reveals that the type $\hat{x}_2 = \frac{1-p-c_2}{2}$ is indifferent between accepting x^* and accepting 0. Thus, types to the left of $\frac{1-p-c_2}{2}$ prefer 0 to x^*. As such, they do not want to deviate. Additionally, this means that types to the right of $\frac{1-p-c_2}{2}$ prefer x^* to 0, and so these types do not want to deviate either.

Finally, as all types in the model with cheap talk accept the offer made to them, the probability of war is zero. Because the model without cheap talk has a positive probability of war, cheap talk strictly reduces the probability of conflict.

Two-sided Incomplete Information

We also investigate the effectiveness of cheap under two-sided incomplete information. The earlier propositions showed that states can effectively use cheap talk when uncertainty exists about ideal points. However, throughout, we assumed that the proposer's ideal point was known to everyone. This is a strong assumption; bargaining could conceivably fail if moderate types of state 1 would always wish to mimic extremist types to drive a better bargain; after all, state 2 would be more willing to settle on disadvantageous terms if it believes that a winning state 1 would implement a policy far away from state 2's ideal point. A natural question then is whether cheap talk diplomacy can still succeed in an environment with two-sided incomplete information.

We show that the answer is yes. Consider the same cheap talk game as before with the following modifications. Nature still begins the game by drawing state 2's type from the previous distribution but also draws state 1's type as $\underline{\theta}_1$ or $\bar{\theta}_1$ from some commonly known distribution. Both observe their own type but only have the prior about the other. As before, state 2 sends a message $m_2 \in \{\underline{\theta}_2, \bar{\theta}_2\}$.[3] They engage in the ultimatum bargaining game as usual.

Proposition B.2. *Suppose that the types are ordered such that both types of state 1 prefer*

[3]Note that state 1 does not send a message here. This is inconsequential—because state 1 immediately makes an offer after receiving state 2's message, the revelation principle implies that the offer choice absorbs any possible cheap talk.

policies to the left of both types of state 2, state 1's possible ideal points both fall in the acceptance sets for the low type of state two but not the high type, the leftmost point of the high type of state 2's acceptance set is sufficiently extreme, the intersection of the sets of outcomes mutually preferable to war for the high type of state 2 versus the low type and high type of state 1 is non-empty, and the low type of state 2 is sufficiently high (i.e., $\underline{\theta}_1 < \underline{\theta}_1 < \underline{\theta}_2 < \bar{\theta}_2$, $\underline{\theta}_1 \in A(\underline{\theta}_2|\underline{\theta}_1), \bar{\theta}_1 \in A(\underline{\theta}_2|\bar{\theta}_1)$, $\underline{\theta}_1 \notin (\bar{\theta}_2|\underline{\theta}_1), \bar{\theta}_1 \notin A(\bar{\theta}_2|\bar{\theta}_1)$, $\bar{\theta}_2 > \frac{2\underline{\theta}_2 - \theta_1(1+p)+c_2}{1-p}$, $p(\bar{\theta}_1 - \underline{\theta}_1) < c_1 + c_2$ *and* $q > \frac{c_1+c_2}{(1-p)(\bar{\theta}_2 - \underline{\theta}_1)+c_1}$*). Informative equilibria exist, and all such equilibria reduce the probability of war.*

Proof of Proposition B.2: We begin by describing the equilibrium of the game with no cheap talk. Consider state 1's proposal. If each type demands its ideal point, the low type of state 2 must accept because those ideal points fall in the corresponding acceptance sets. State 1 earns 0 in this case against the low type. Consequently, no other offer exists that delivers a greater payoff against the low type of state 2. The catch is that the high type of state 2 rejects these offers with certainty because they do not fall in its acceptance set. Thus, if any other offer is better, it must be because the high type of state 2 accepts with positive probability.

However, note that the best possible circumstance here is for the high type of state 2 accept with certainty if offered the leftmost point of its acceptance set versus the low type of state 1, or $\bar{\theta}_2 - (\bar{\theta}_2 - \underline{\theta}_1)(p) - c_2$. Because this value falls in both of the low type of state 2's acceptance sets, the low type of state 1 would earn $-(\bar{\theta}_2 - \underline{\theta}_1)(1-p) + c_2$ with certainty. Doing so is worse than simply demanding its own ideal point if:

$$q(0) + (1-q)[-(\bar{\theta}_2 - \underline{\theta}_1)(1-p) - c_1]] > -(\bar{\theta}_2 - \underline{\theta}_1)(1-p) + c_2$$

$$q > \frac{c_1 + c_2}{(1-p)(\bar{\theta}_2 - \underline{\theta}_1) + c_1}$$

This holds for the parameters. So both types of state 1 offer their ideal points in equilibrium without cheap talk.

We must now consider the equilibrium of a cheap talk game. Since we are searching for separating equilibria during the messaging stage, we can describe the equilibria of a one-sided game of incomplete information in which state 1 knows state 2's type but state 2 does not know state 1's type. Against the low type of state 2, state 1 offers its ideal point and induces the both types of state 2 to accept for the same reasons as before. So the equilibrium is peaceful and the low type receives a policy of the revealed type of state 1.

Two things must be true about the equilibrium against the high type. First, the high type must receive at least its war payoff in equilibrium. This is simple to prove by contradiction. If not, the high type of state 2 could deviate to rejecting as a pure strategy regardless of the history and its beliefs and earn a greater payoff. But this violates equilibrium's optimality conditions. Second, war cannot occur with certainty. Again, simple proof by contradiction reveals why. If war occurs with certainty, then it must also occur with certainty for the high type of state 1. State 1 receives its war payoff as a consequence. But by the results from the paper's Proposition 1, there exist offers that are mutually preferable to war for these two types. Moreover, the high type of state 2 would prefer such offers to war if they came from the low type of state 1 as well. As a result, the high type of state 2 must accept such offers. In turn, the high type of state 1 could profitably deviate to making a such a peaceful offer, again contradicting the optimality conditions of equilibrium.

Now consider the messaging stage. Suppose the types separate. If the high type of state 2 deviates to mimicking the low type, it receives an offer outside of its acceptance set. In turn, it rejects and receives its war payoff. But the above showed that the high type must receive at least its war payoff if it separates, so this is not a profitable deviation. If the low type of state 2 deviates to mimicking the high type, because state 1 cannot make an offer in equilibrium certain to be rejected[4], it receives an offer from inside of the high type of state

[4]This is because the acceptance for the low type and high type of state 1 versus the high type of state 2 overlap due to $p(\bar{\theta}_1 - \underline{\theta}_1) < c_1 + c_2$. Without this condition, trivial equilibria exist in which the low type state 1 makes an unacceptable offer and cannot profitably deviate because state 2 believes that it is the high type if it makes any other offer, and all acceptable offers versus the high type are unacceptable to the low type.

2's acceptance set. The most attractive of such offers is the leftmost point of the high type's acceptance set, which generates a payoff of $-|\bar{\theta}_2 - p(\bar{\theta}_2 - \theta_1) - c_2 - \underline{\theta}_2|$. In contrast, the worst it could receive by separating is $-|\underline{\theta}_1 - \underline{\theta}_2|$. This is not a profitable deviation if:

$$-|\underline{\theta}_1 - \underline{\theta}_2| > -|\bar{\theta}_2 - p(\bar{\theta}_2 - \underline{\theta}_1) - c_2 - \underline{\theta}_2|$$

$$\bar{\theta}_2 > \frac{2\underline{\theta}_2 - \underline{\theta}_1(1+p) + c_2}{1-p}$$

The inequality holds under the parameters of Proposition B.2. So the low type would not want to deviate from separating either.

Consequently, cheap talk reduces the probability of war. Peace is guaranteed if Nature draws the low type of state 2 regardless of a messaging phase. However, the probability of war is strictly lower for the high type of state 2 with cheap talk than without. Thus, the overall probability of war decreases. □

Power and Costs with Three Types

In this extension, we modify the model so that state 2 has three possible ideal policies and show that Propositions 9 and 10 still hold. Specifically, state 2's ideal policy is $\hat{x}_2 \in \{\theta_2^1, \theta_2^2, \theta_2^3\}$, with $0 < \theta_2^1 < \theta_2^2 < \theta_2^3$. Nature again begins the interaction by drawing $\hat{x}_2$. It picks θ_2^1 with probability q^1, θ_2^2 with probability q^2, θ_2^3 with probability q^3, and $q^1+q^2+q^3 = 1$. We assume $\frac{(\theta_2^2)^2}{\theta_2^3} < \theta_2^1$ to reduce the number of cases to consider. (The analysis allowing the other cases follows a similar pattern and yields similar results.)

Similar to the two type model, there are only three offers that state 1 will possibly make in equilibrium, denote these: x^1, x^2 and x^3, where $x^i = \max\{0, \theta_2^i(1-p) - c_2\}$. First, we show that a higher type always prefer the offer that corresponds to its ideal policy over the offer of a lower type.

Lemma B.1 *For* $\theta_2^i, \theta_2^j \in \{\theta_2^1, \theta_2^2, \theta_2^3\}$ *if* $\theta_2^i < \theta_2^j$ *then* $-|x^i - \theta_2^j| < -|x^j - \theta_2^j|$.

Proof. Assume $\theta_2^i < \theta_2^j$ then for the conclusion to hold we need that

$$-|x^i - \theta_2^j| < -|x^j - \theta_2^j|$$

$$-|\theta_2^i(1-p) - c_2 - \theta_2^j| < -|\theta_2^j(1-p) - c_2 - \theta_2^j|$$

$$\theta_2^j - \theta_2^j(1-p) + c_2 < \theta_2^j - \theta_2^i(1-p) + c_2$$

$$\theta_2^i < \theta_2^j,$$

which holds by assumption. □

Next, we show that increasing state 2's power makes it better able to communicate its preferences. To do so, we break up the parameter space of p into three regions.

1. $p \leq \frac{\theta_2^2 - \theta_2^1 - 2c_2}{\theta_2^2 + \theta_2^1}$. We show that in this region there exists an equilibrium in which every type of state 2 truthfully communicates its ideal policy.

   Thus, we need to find conditions under which θ_2^2 prefers x^2 over x^3 and θ_2^1 prefers x^1 over x^2 and x^3. This gives

$$-|x^2 - \theta_2^1| \leq -|x^1 - \theta_2^1| \tag{2}$$

$$-|x^3 - \theta_2^1| \leq -|x^1 - \theta_2^1| \tag{3}$$

$$-|x^3 - \theta_2^2| \leq -|x^2 - \theta_2^2| \tag{4}$$

   Note, that for $i, j \in \{1, 2, 3\}$ with $i < j$ a necessary condition for θ_2^i to not want to deviate is that $\theta_2^i < x^j$. Otherwise, we have $x^i < x^j \leq \theta_2^i$ and as x^j is closer to i's ideal policy the θ_2^i type would always want to deviate to the message m^j. Thus, we need that $p < \frac{\theta_2^j - \theta_2^i - c_2}{\theta_2^j}$ and this will be implied given the conditions we give below for a separating equilibrium to exist. Considering types θ_2^i and θ_2^j such that $i < j$ for i to not want to deviate we need

$$
\begin{aligned}
&- |x^j - \theta_2^i| \leq -|x^i - \theta_2^i| \\
&|(1-p)\theta_2^i - c_2 - \theta_2^i| \leq |(1-p)\theta_2^j - c_2 - \theta_2^i|,
\end{aligned}
$$

using the noted necessary condition we drop the absolute values and cancel terms as follows:

$$
\begin{aligned}
&p\theta_2^i + c_2 \leq (1-p)\theta_2^j - c_2 - \theta_2^i \\
&p \leq \frac{\theta_2^j - \theta_2^i - 2c_2}{\theta_2^j + \theta_2^i}.
\end{aligned}
$$

This needs to hold for inequalities (2), (3), and (4) which gives the condition

$$
p \leq \min\left\{\frac{\theta_2^2 - \theta_2^1 - 2c_2}{\theta_2^2 + \theta_2^1}, \frac{\theta_2^3 - \theta_2^1 - 2c_2}{\theta_2^3 + \theta_2^1}, \frac{\theta_2^3 - \theta_2^2 - 2c_2}{\theta_2^3 + \theta_2^2}\right\}.
$$

As we have assumed $\frac{(\theta_2^2)^2}{\theta_2^3} < \theta_2^1$ this condition is satisfied by $p < \frac{\theta_2^2 - \theta_2^1 - 2c_2}{\theta_2^2 + \theta_2^1}$. Thus, in this region there exists an equilibrium in which each type truthfully communicates its preferences.

2. $p \in (\frac{\theta_2^2 - \theta_2^1 - 2c_2}{\theta_2^2 + \theta_2^1}, \frac{\theta_2^3 - \theta_2^2 - 2c_2}{\theta_2^3 + \theta_2^2})$.

   It is easily verified that if these regions have positive measure then $\frac{\theta_2^3 - \theta_2^2 - 2c_2}{\theta_2^3 + \theta_2^2} < \frac{\theta_2^3 - \theta_2^1 - 2c_2}{\theta_2^3 + \theta_2^1}$. As $p < \frac{\theta_2^3 - \theta_2^2 - 2c_2}{\theta_2^3 + \theta_2^2}$ we know that neither the θ_2^1 or θ_2^2 type prefers x^3 over its own corresponding offer and from the lemma we know that θ_2^3 prefers x^3 over the other possible offers. Thus, the θ_2^3 type will be able to truthfully communicate its ideal point. The θ_2^1 type, however, prefers the offer x^2 over x^1, as such, in equilibrium, types

θ_2^1 and θ_2^2 will use the same messaging strategy.

3. $p \geq \frac{\theta_2^3-\theta_2^2-2c_2}{\theta_2^3+\theta_2^2}$. In this region, as type θ_2^1 will prefers x^2, and possibly x^3 over x^1 and θ_2^2 prefers x^3 over x^2 there cannot exist an equilibrium in which a type successfully communicates its preference. To see this, first assume θ_2^3 is able to reveal its ideal point but then θ_2^2 can profitably deviate by sending the same message. If θ_2^2 is revealing its ideal point then θ_2^1 can profitably deviate to sending the same message, and so this is not an equilibrium either. Finally, if θ_2^1 is revealing its type it gets the offer x^1, however, this implies that there is another message which results in the offer x^2 or x^3 and the θ_2^1 type would deviate to send this message.

As this analysis shows, increasing state 2's power (i.e., decreasing p) improves its ability to communicate its preferences.

Now we show that the probability of war can be nonmonotonic in state 2's costs of war. Assume $p < \frac{\theta_2^2-\theta_2^1}{\theta_2^2+\theta_2^1}$. If c_2 is less than $\frac{\theta_2^2-\theta_2^1-p(\theta_2^2+\theta_2^1)}{2}$ then from our earlier analysis an equilibrium exists in which all the types separate exists. If c_2 is greater than $(1-p)\theta_2^3$ then state 1's ideal policy, 0, is in the acceptance set of every type, state 1 will propose this policy, and war will never occur in equilibrium. Thus, war only occurs for moderate levels of c_2.

If $p \in (\frac{\theta_2^2-\theta_2^1}{\theta_2^2+\theta_2^1}, \frac{\theta_2^3-\theta_2^2}{\theta_2^3+\theta_2^2})$ then if c_2 is less than $\frac{\theta_2^3-\theta_2^2-p(\theta_2^3+\theta_2^2)}{2}$ there exists an equilibrium in which the θ_2^3 type is able to communicate its preferences, lowering the probability of war. Same as before, if c_2 is greater than $(1-p)\theta_2^3$, war will never occur in equilibrium. Thus, war is again most likely for moderate levels of c_2.

If $p > \frac{\theta_2^3-\theta_1^1}{\theta_2^3+\theta_2^1}$, then an equilibrium with any separation will never exist, and so in this case increasing c_2 actually does monotonically decrease the probability of war.