Stall Wars: When Do States Fight to Hold onto the Status Quo?*

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Abstract

In many wars, fighting allows states to hold onto some of the disputed good until the conflict is over. Indeed, war may look attractive to some actors for that purpose even if they will likely lose and incur substantial costs in the process. How does this incentive to stall alter the likelihood of conflict onset? We develop a model in which a delay exists between war's initiation and termination. During that time, states maintain a division of the disputed good. If states value the future at different rates, no mutually preferable settlement may exist. War is more likely when a more patient state is powerful but holds a smaller share during the dispute. In addition, we show the parameters for war are non-monotonic in the length of conflict: fighting only occurs when the delay falls in a middle range.

*We thank Hein Goemans, Laura Paler, Michael Poznansky, Kris Ramsay, and Brad Smith, the anonymous reviewers, and the editors of *International Studies Quarterly* for helpful comments and suggestions.

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The Sri Lankan Civil War began in 1983 when the Tamil Tigers tried to create a breakaway state. Conflict raged for a quarter century. From one perspective, the Tamil Tigers failed—the Sri Lankan government eventually defeated the uprising. But from another perspective, the war was a success. For more than two decades, the Tigers held territorial sovereignty over Tamil Eelam. At its peak, the *de facto* state had a capital in Kilinochchi, a functioning court system, and ran the Bank of Tiger Eelam. The Tamil Tigers achieved—at least temporarily—some of their aims by fighting. Conflict may have been costly, and defeat likely, but the Tamil Tigers nevertheless enjoyed their *intrabellum* circumstances.

The Tamil Tigers' experience is not unique. Throughout history, wars have featured one side stalling to maintain some benefit. This goes back to Rome's surrounding of Carthage during the Third Punic War, and sieges became commonplace during the Medieval era. To this day, civil wars often extend decades. The United States in particular has participated in many protracted conflicts since the September 11th attacks.

What makes a state willing to fight a war to stall? To answer this question, we analyze a model of bargaining and conflict. We find that two key features of the dyadic relationship make states more inclined to stall: (i) conflict is not expected to resolve immediately nor drag on indeterminately, and (ii) the wartime distribution of goods differs substantially from the expected post-war distribution. If either condition fails, however, then states settle peacefully for reasons analogous to standard crisis bargaining. Indeed, as point (i) suggests, if a side can maintain the *intrabellum* share indefinitely, then states would peacefully resolve the dispute. Thus, explaining stalling wars requires more than simply arguing that such conflicts arise from one side fighting to maintain a favorable distribution.

To generate these insights, we build on the standard bargaining model in two ways. First, we assume there is delay between conflict initiation and resolution. The aforementioned *intrabellum* distribution therefore plays an important role: during war, each state enjoys a share of the disputed good. Second, we allow actors to have different discount factors. Relaxing either assumption in isolation results in peace, but war is possible when they are combined.

The intuition is as follows. Consider a militarily weak and impatient state that holds a disproportionate share of the disputed good during conflict. Peaceful settlements must give this state a large share of the good, despite its weakness, because it can fight to stall and enjoy its wartime share. Although the state will likely lose in the long run, it does not care because it is impatient.

Now, consider the more patient state. It also requires a large share of any peaceful settlement. This state's small *intrabellum* share does not dissuade it from pursuing war. It will likely prevail and places high value on those future payoffs.

Combining the two preceding observations, each state's minimum share of a peaceful settlement exceeds what the other is willing to offer. War ensues.

Essentially, our mechanism is a commitment problem. Mutually preferable settlements exist. Suppose states could peacefully divide the stakes to match *intrabellum* shares for the duration of a hypothetical conflict and then reallocate according to the military balance thereafter. This arrangement improves welfare by matching intertemporal war payoffs and avoiding the cost of fighting. However, such deals are incredible. When reallocating, the impatient state would not want to follow through. Instead, it would fight to maintain its share. Recognizing this, the patient state rejects the deal in the first place. This problem is endemic to the strategic situation—in an extension, we show war can still be inevitable even if states can freely renegotiate over time.

Although stalling is a commitment problem, it is a part of a unique subclass warranting its own analysis. According to the standard commitment problem mechanism, large and rapid shifts in power render deals incredible over time (Powell 2006). Power remains static in our setup, and thus our mechanism is also distinct from wars due to imperfect information about arming (Debs and Monteiro 2014; Spaniel 2019) or war debt to produce military power (Slantchev 2012). In addition, war payoffs need not be a function of previous offers to obtain conflict (Chadefaux 2011; Kydd and McManus 2017). This suggests a close connection to issue indivisibility (Powell 2006). States could resolve the problem with an *ex ante* cost-free mechanism (a weighted coin flip in the case of issue indivisibility, a defined transition point in ours) but these solutions are not credible.

We show that our baseline model is equivalent to placing greater structure on states' war payoffs in the standard crisis bargaining setting. At a technical level, war can occur in our model because the sum of the players' war payoffs can exceed the sum of their payoffs from peace. Although this technical reason for war in our setting is well-known from previous work, their more general formulation of war payoffs obscures our substantively important insights about stalling. In particular, by microfounding states' war payoffs, we uncover why stalling can create conditions for war. Furthermore, our microfoundations facilitate comparative statics and generate empirical predictions on the effects of time, power, and patience on states' willingness to stall. Key predictions would be difficult to deduce from either previous work or without writing down a model. Indeed, one of our main comparative statics is that the probability of stalling wars is non-monotonic in the expected conflict duration.

Substantively, our comparative statics produce three important implications for the existing conflict literature. First, our mechanism is more likely to cause war when the disparity between military power and the *intrabellum* distribution is large. Wars of independence—like the Sri Lankan Civil War—often follow this pattern. While it may seem odd for an actor to

rebel when it is doomed to fail, we show that a state in our model may fight even when it is guaranteed to lose.[1] Second, stalling wars are more likely to begin when there is a greater disparity between the parties' levels of patience. As such, two states with competing time horizons are more likely to go to war. This runs contrary to the idea that mutual patience causes bargaining failure (Toft 2006, 56). Finally, peace is certain when wars are fast or persist endlessly. Thus, circumstances for war are ripest when conflict takes a middling length of time, contrasting with offense-defense theories (Jervis 1978; Fearon 1997).

Motivation

Our paper departs in two ways from standard assumptions in the bargaining model of war literature. Both changes are necessary for our key result. However, the assumptions we relax are typically used for mathematical convenience rather than empirical accuracy. We now outline the substantive relevance of our assumptions.

First, we allow states to have different discount factors. Discount factors represent how an actor values today versus future periods—perhaps due to pure impatience or because they are unsure of how long the interaction will continue. Models in the conflict literature typically assume equal discount factors, which increases parsimony. Yet, it is an edge case without much empirical grounding. Moreover, bargaining models dating to Rubinstein (1982) show that patience asymmetries matter for empirical predictions.[2]

Indeed, a large literature in comparative politics claims that discount factors vary across states and regimes. Haggard and Kaufman (1995) argue that autocratic leaders generally have longer time horizons than democracies. Intuitively, stable autocratic leaders face less competition and no term limits. Nor can a domestic population punish them at the polls for short-term costs of war (Levy 2011, 92-93). Of course, these timing concerns are not universal. Autocrats also sometimes face immediate threats, producing policies seeking short-term benefits at a long-term cost (Chiozza and Goemans 2011).

Variation also exists within regime types. Countries with longer tenured leaders (Bienen and Van de Walle 1992), better economic growth (Londregan and Poole 1990), and without ongoing sanctions episodes (Marinov 2005) are more likely to maintain their current regimes into the next year. Beyond that, governments formed in the wake of a coup survive longer when well-received by the international audience (Thyne et al. 2018), while potential coup

[1] This distinguishes our work from Walter (1997). That is, we explain the *initiation* of long civil wars, not just their termination.

[2] In Rubinstein (1982), players are identical except for their (i) proposal power and (ii) discount factor. Thus, our model contributes by describing how power imbalances and the cost of breakdown interrelate to patience. Beyond that, asymmetric discount factors produce bargaining breakdown in our model.

targets are less likely to face a plot in the first place if challengers cannot easily obtain funds from the international community afterward (Marinov and Goemans 2014).

Although these mechanisms are diverse, discount factors usefully capture their common incentives.[3] Correspondingly, we are not the first to incorporate noncommon discount factors in crisis bargaining and war. In Slantchev (2003*a*), the balance of patience affects the lowest equilibrium payoff states can impose on opponents. Our goal is different. We study how discount factors matter relative to the probability of victory. Additional differences are that our model features a generically unique equilibrium outcome and war arises from a commitment problem.

Meanwhile, Edelstein (2017) notes that preventive war incentives are greatest when the declining state is patient and the rising state is impatient. Asymmetry is key for us as well, but our mechanism is different, as our model does not feature shifting power. Moreover, we show that asymmetry is a *necessary* condition for stalling wars in our setting. Peace prevails if states are equally patient.

Closer is Chadefaux (2011), where asymmetric patience can produce war when the object negotiated today affects the probability of victory tomorrow. Again, our mechanism is distinct. Conflict occurs only if we also include an *intrabellum* distribution. Chadefaux's framework abstracts from intrabellum payoffs. And as we detail while describing the model, if anything, bargaining over objects that influence future bargaining power likely has a pacifying effect under these conditions.

Second, we relax the assumption that war immediately produces an end outcome. In most models, players receive war payoffs following rejection. States instantaneously pay their costs of fighting, and Nature determines the distribution of benefits. The *intrabellum* distribution does not play a role.

In practice, this is not the case. Civil wars are notoriously long affairs. Prominent interstate conflicts have also lingered: World War II lasted six years, World War I more than four years, and the Iran-Iraq War almost eight. The U.S. War in Afghanistan, begun in 2001, continues in some form at the time of this writing.

Even an over-matched side can benefit from stalling. During war, a breakaway region can continue administering its claimed territory. The opening case of the Tamil Tigers illustrates this. Countries repressing a minority group can maintain discriminatory laws until outside intervention facilitates regime change. Citizens can stay in disputed territories until expelled. In the Carthaginian extreme, a political body can maintain its existence for years until eradicated. Shorter wars can sometimes prove helpful—Saddam Hussein faced coup and

[3]We lose some nuance by doing this—e.g., not having a full model of domestic politics causing leadership turnover—but capturing a more general incentive structure justifies that price.

assassination attempts on the eve of the Gulf War (Freedman and Karsh 1993, 19–29), and his capture of Kuwait forestalled further challenges.

Relaxing the instantaneous war assumption has proven fruitful in models with incomplete information, as parties can learn and adjust their bargaining strategies (Filson and Werner 2002; Slantchev 2003*b*; Powell 2004; Spaniel and Bils 2018; Smith and Spaniel 2019). In contrast, we study a complete information environment. Delay here appears to only devalue war for the actor disadvantaged by the *intrabellum* distribution. The ability to stall may shift the terms of settlement—the disadvantaged actor would accept less given the time delay—but it ought not cause bargaining breakdown given standard utility functions.[4] Indeed, some existing models include an *intrabellum* distribution and do not find the effect.[5]

However, no existing work simultaneously examines the consequences both noncommon discount factors and delayed war outcomes. We support this practice, as more parsimonious models make mechanisms more transparent. But it is still important for researchers to understand how more accurate assumptions interact with one another, as mixing common features of conflict can yield new results (Wolford, Reiter and Carrubba 2011; Tarar 2013). Our model shows that delay and noncommon discount factors combine to create a pernicious effect.

Model

Suppose two states, A and B, are in a dispute. The states bargain, and the dispute may end in conflict or peaceful settlement. Bargaining begins with A proposing settlement $x \in [0, 1]$. Next, B chooses to accept or reject A's demand. If B accepts, then the good is divided according to x and peace prevails forever after. If B rejects, then war occurs.

In our model, war does not resolve immediately. Instead, conflict lasts for $0 \leq T < \infty$ periods. Meanwhile, A enjoys $q \in [0, 1]$ of the good and B enjoys $1 - q$. After T periods, A wins with probability $p \in [0, 1]$ and B wins with probability $1 - p$.

Throughout conflict, the *intrabellum* division q persists and states enjoy their share during each period $t = 0, \ldots, T - 1$. Once conflict resolves, the winner controls the entire good and

[4] Butler (2007) shows that, under prospect theory, including reference points can render agreements impossible. Our mechanism is different because we obtain war with risk-neutral expected utility functions.

[5] These models commonly refer to what call the *intrabellum* distribution as the "status quo". Our model defines the *intrabellum* distribution as the division each state receives during a war. This division could match the status quo, or could reflect a different share because the act of fighting itself changes what the parties enjoy in the interim. The status quo is also critical in the preventive war literature (e.g., Kim and Morrow (1992)). Our mechanism is distinct from these works because there is no shifting power. Outside of international relations, Banks and Duggan (2006) demonstrates that delay can arise in a general model of multilateral bargaining if the status quo policy is particularly favorable to a player with veto power.

states accrue utility in each subsequent period $t = T, \ldots, \infty$ according to the new division. Each state $i \in \{A, B\}$ incurs costs $c_i > 0$ in each period of conflict.[6] Dynamic payoffs are the sum of per-period payoffs and state i discounts future periods by $\delta_i \in [0, 1)$. All parameters are common knowledge.

We now formalize expected payoffs. First, A's dynamic payoff if B accepts x is $\sum_{t=0}^{\infty} \delta_A^t x = \frac{x}{1-\delta_A}$. If B rejects, then A's expected payoff is

$$\sum_{t=0}^{T-1} \delta_A^t (q - c_A) + \sum_{t=T}^{\infty} \delta_A^t \, p.$$

B's payoffs for peace and conflict are analogous. If B accepts x, then it enjoys a per-period payoff of $1 - x$, which yields dynamic payoff $\sum_{t=0}^{\infty} \delta_B^t (1 - x) = \frac{1-x}{1-\delta_B}$. If B rejects, then its expected payoff is

$$\sum_{t=0}^{T-1} \delta_B^t (1 - q - c_B) + \sum_{t=T}^{\infty} \delta_B^t (1 - \, p).$$

To recap, A makes a demand that B accepts or rejects. If B rejects, then war breaks out. War lasts a finite number of periods before being resolved via a lottery. Thus, our baseline model uses the standard ultimatum structure from the crisis bargaining literature.[7] A difference is that, although bargaining is one-shot, payoffs accrue dynamically.[8]

Our setup adopts the "experimental" approach to building a formal model (Paine and Tyson 2019). The parsimonious assumptions clarify and isolate the mechanism preventing settlement. In the appendix, we explore a variety of more complicated models addressing substantive concerns. First, we present a model allowing many of the game's parameters—the *intrabellum* distribution, discount factors, costs of war, and balance of power—to vary during conflict. We also allow states to share uncertainty over conflict duration. Second, we allow states to renegotiate during conflict. Third, we permit states to renegotiate peaceful settlements, with yesterday's agreement being today's *intrabellum* distribution. Our core

[6] In extensions, we show that our results also hold under alternative assumptions on costs or uncertainty about conflict duration.

[7] If conflict resolves immediately, our model is identical to canonical crisis bargaining models. If conflict lasts indefinitely, however, the model is equivalent to agenda setter models where the status quo policy prevails should bargaining fail (Romer and Rosenthal 1978). Thus, our model incorporates both of these standard bargaining frameworks. Actors can always find a successful bargain in either extreme. However, bargaining failures exist outside these cases.

[8] As discussed in the introduction, because our baseline model has one-shot bargaining, we can define payoffs so that the model is equivalent to the standard crisis bargaining model with complete information and general war payoffs w_i. Specifically, let $w_A = \sum_{t=0}^{T-1} \delta_A^t (q - c_A) + \sum_{t=T}^{\infty} \delta_A^t \, p$ and $w_B = \sum_{t=0}^{T-1} \delta_B^t (1 - q - C_B) + \sum_{t=T}^{\infty} \delta_B^t (1 - \, p)$. Normalizing by $1 - \delta_i$ for each player yields the usual set-up.

result holds across all of these extensions. In particular, the assumptions driving our results in the baseline model, non-common discount factors and intermediate war duration, are necessary for conflict.

Analysis

We study subgame perfect equilibria (SPE). First, we characterize each state's equilibrium behavior. This step yields scope conditions for conflict and insight into which features generate it. Then, we explore how changing these features makes conditions more or less favorable for conflict. Specifically, we show that longer conflicts initially make conditions more favorable for conflict, but then less favorable beyond a certain point. Moreover, we characterize the most war prone conflict duration and explore how it varies with states' patience.

To characterize SPE behavior, we work backwards from B's decision to accept or reject a given proposal x. If B accepts, it receives $1-x$ in each period, which accrues a dynamic payoff of $\frac{1-x}{1-\delta_B}$. Rejecting leads to conflict, where B receives its *intrabellum* division $1-q$ at cost c_B for T periods and then with probability $1-p$ wins the prize to enjoy thereafter. Consequently, B accepts x only if

$$\sum_{t=0}^{\infty} \delta_B^t (1-x) \geq \sum_{t=0}^{T-1} \delta_B^t (1-q-c_B) + \sum_{t=T}^{\infty} \delta_B^t (1-p). \tag{1}$$

Rearranging yields

$$x \leq (1-\delta_B^T) q + (1-\delta_B^T) c_B + \delta_B^T \, p \equiv x^*. \tag{2}$$

Inspecting (2) reveals that B's reservation value, $1-x^*$, depends on the *intrabellum* division, q, and B's cost of conflict, c_B, each weighted by B's present value of payoffs during T periods of conflict, $1-\delta_B^T$; and A's power, p, weighted by B's present value of payoffs after T periods of conflict, δ_B^T.

Working backwards, A anticipates B's acceptance behavior and structures its proposal accordingly. Any accepted proposal x provides A with x every period. Alternatively, rejected proposals provide A with q at cost c_A for T periods and then probability p of winning the prize to enjoy thereafter. Thus, all conflict inducing offers are payoff equivalent for A.

In equilibrium, A compares its optimal acceptable proposal against its expected dynamic payoff from conflict. State A has a uniquely optimal acceptable proposal, which provides B its reservation value, $1-x^*$. As usual, B must accept this proposal with probability one in equilibrium because A has a best response problem otherwise. Thus, A makes a peaceful

proposal in a SPE only if

$$\sum_{t=0}^{\infty} \delta_A^t x^* \geq \sum_{t=0}^{T-1} \delta_A^t (q - c_A) + \sum_{t=T}^{\infty} \delta_A^t \, p. \tag{3}$$

Using (2) to substitute for x^* and rearranging,

$$(1 - \delta_A^T) c_A + (1 - \delta_B^T) c_B \geq (\delta_A^T - \delta_B^T)(p - q). \tag{4}$$

We say A has *unrealized potential* if $p > q$, reflecting that its relative power is larger than its share of the *intrabellum* division. Conversely, B has unrealized potential under the opposite inequality. Notably, (2) indicates that B accepts less favorable proposals if A has unrealized potential. This effect is more pronounced for higher δ_B.

Proposition 1 collects preceding observations and characterizes equilibrium behavior.

Proposition 1. *In every SPE,*

(i) B accepts a proposal x only if $x \leq q + c_B + \delta_B^T (p - q - c_B) \equiv x^*$; and

(ii) A makes the peaceful proposal x^* if and only if

$$(1 - \delta_A^T) c_A + (1 - \delta_B^T) c_B \geq (\delta_A^T - \delta_B^T)(p - q),$$

and otherwise proposes $x > x^*$, which leads to conflict.

The condition for war is not an artifact of the ultimatum bargaining protocol. The inequality in (3) compares A's minimum proposal against B's maximal acceptable concession. If that minimum exceeds that maximum, then any bargaining protocol that satisfies voluntary agreements (Fey and Ramsay 2011) would also feature war.[9]

Regardless, comparing our result to the canonical crisis bargaining model highlights key mechanisms:

Corollary 1.1. *If any of the following are true, then there are no parameters under which war occurs in every SPE: (i) conflicts resolve immediately, (ii) conflicts are interminable, (iii) states are equally patient, or (iv) neither state has unrealized potential.*

[9]For example, giving B ultimatum bargaining power does not resolve the problem. The voluntary agreements axiom is necessary to eliminate trivial extensive forms—e.g., A gets everything in a dictator game. The condition is not necessary for war in other protocols—e.g., war equilibria exist in the Nash demand game if both players have positive values for fighting.

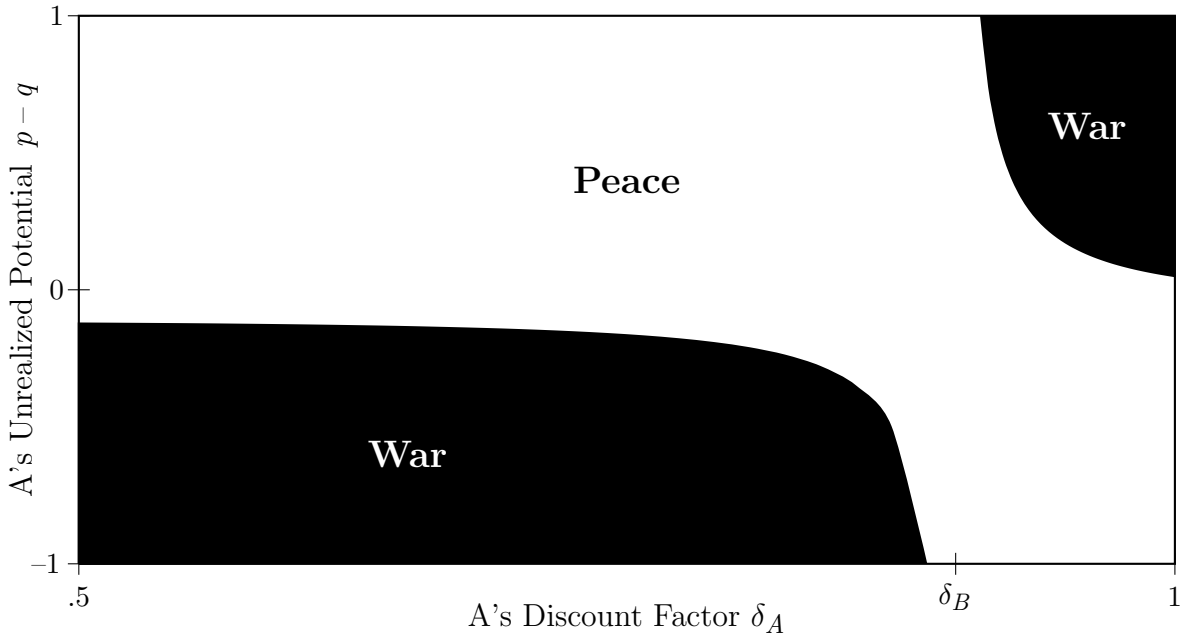


Figure 1. Equilibrium plot depicting the game's outcome. Remaining parameter set at $\delta_B = .9$, $T = 5$, and $c_A = c_B = .05$.

The four conditions of Corollary 1.1 are knife-edge cases. If none hold, then A makes an unacceptable proposal if the cumulative costs of conflict are small enough.[10] Specifically, conflict occurs from stalling incentives in an open set of parameters if conflict is temporary and the relatively more patient state has unrealized potential.[11] Figure 1 illustrates this, with peace occurring in parameter regions near where there is no unrealized potential and where the states are equally patient. It also helps guide the comparative statics we later examine.

Corollary 1.1's conditions help make sense out of some observed conflicts. Take Vietnam. Simply by fighting, the United States could prolong South Vietnam's existence. Yet, despite the United States' superior military capacity, it failed to make strategic progress toward dispatching the Viet Cong and winning outright (Ahern 2009). Meanwhile, the patience imbalance meant that North Vietnam wanted to pursue the corresponding unrealized potential. General Omar Bradley captured the main problem: "100 years means nothing to a [Viet Cong]" (Berman 1991, 99). Moreover, North Vietnam's inability to achieve battlefield victories—and thus enjoy a better share of the *intrabellum* distribution—was "irrelevant" according to a North Vietnamese colonel (Summers 2009, 1). In contrast, maintaining South Vietnamese

[10]It is straightforward to show that the condition identified in part 1 of Proposition 1 implies that if war occurs, then the war payoffs defined in footnote 8 satisfy $w_A + w_B > 1$ (after being normalized). Although $w_A + w_B < 1$ is commonly maintained when analyzing crisis bargaining models, we provide a microfoundation for why this assumption may be violated for some forms of conflict.

[11]In the appendix, we show that these conditions can be further weakened.

sovereignty was critical for the Johnson administration's short-term political goals. Our model indicates that such situations can produce war because no deal satisfies both parties' temporal preferences.

A similar patience gap exists in the War in Afghanistan. The Mujahideen see jihad as a long-term struggle meant to secure Afghanistan for generations. Thus, they have fought since the Soviet incursion beginning in 1979. It is also why Osama Bin Laden would motivate the fight as over hundreds of years (Toft 2006, 55). In contrast, Afghanistan is a short-term problem for United States politicians, who do not want to suffer the consequences of pulling out on their watch. Combined with the United States' ability to secure a reasonable status quo simply by fighting, our model suggests the absence of a common negotiating ground.

Comparative Statics on Conditions for Conflict

In a certain sense, Proposition 1 has implications for conflict propensity. We say the dyad is *more bellicose* as the set of parameters exhibiting conflict expands and *less bellicose* as this set shrinks. Next, we characterize how bellicosity depends on unrealized potential, patience, and conflict duration. Throughout the rest of the analysis, we assume one state has unrealized potential, $|\,p-q|>0$.

By Proposition 1, war occurs if and only if $(1-\delta_A^T)c_A+(1-\delta_B^T)c_B<(\delta_A^T-\delta_B^T)(\,p-q)$. Thus, greater unrealized potential expands the conditions producing war.

Corollary 1.2. *Bellicosity weakly increases in unrealized potential,* $|\,p-q|$.

In general, bellicosity increases with the more patient state's unrealized potential. For example, if $\delta_A>\delta_B$ and A has unrealized potential, then bellicosity strictly increases with A's unrealized potential. Under these conditions, A's current share is low relative to its expected success from conflict. As this discrepancy grows, A requires greater concessions. In the canonical conflict bargaining framework—equivalent to $T=0$— states reach a peace commensurate with A's power. If $0<T<\infty$, then B disproportionately discounts A's power because it places relatively less weight on the future. Consequently, B fights to, at worst, temporarily preserve the *intrabellum* distribution. Similar logic applies if B is more patient and has unrealized potential.

By part 2 of Proposition 1, peace prevails if the more patient state lacks significant unrealized potential. The state with unrealized potential is unwilling to wait out conflict and a peaceful settlement prevails.

Our second comparative static analyzes the effect of varying the difference in how states value the future.

Corollary 1.3. *Bellicosity weakly increases in* $|\delta_A - \delta_B|$.

Corollary 1.3 arises because bellicosity increases as the patience of the state with unrealized potential increases relative to the other state. If A has unrealized potential then bellicosity increases with δ_A. Furthermore, once A is more patient than B bellicosity strictly increases if A has sufficient unrealized potential, $p - q > c_B$. Increasing δ_A causes A to value the conflict outcome more heavily when formulating its proposal, whereas B places relatively more weight on receiving the *intrabellum* distribution during conflict. Thus, A is more willing to incite conflict and B is more willing to endure it, making the dyad more bellicose.

Thus far, we have fixed conflict duration, T, and studied how bellicosity depends on unrealized potential and the patience gap. Next, we analyze how T affects bellicosity. Throughout this section, to focus on cases where conflict can occur, we assume the more patient state has sufficient unrealized potential.

By Corollary 1.1, conflict does not occur if it resolves immediately or lasts interminably. This observation implies that T has a non-monotonic effect on bellicosity. We can be more precise, however, and show that bellicosity is single-peaked with respect to T. Specifically, Proposition 2 shows that bellicosity increases with T up to a certain point, and then decreases afterward.

Proposition 2. *If the more patient state has sufficient unrealized potential, then bellicosity is non-monotonic and single-peaked in the duration of conflict,* T. *That is, there exists a* $T^* \geq 1$ *such that (i) bellicosity increases as* T *increases towards* T^* *and (ii) decreases as* T *increases above* T^*.

By Proposition 1, $(\delta_A^T - \delta_B^T)(p - q) > 0$ is necessary for conflict, which requires the more patient state to have unrealized potential. Changing T alters bellicosity only through the difference in patience, $|\delta_A^T - \delta_B^T|$. For example, if A has unrealized potential, i.e., $p > q$, then conflict requires $\delta_A > \delta_B$. Under this ordering, Proposition 2 shows that $\delta_A^T - \delta_B^T$ increases in T up to T^* and then diminishes. Thus, shifting T towards T^* increases A's willingness to fight and B's willingness to temporarily preserve the *intrabellum* distribution. Bellicosity therefore increases.

Having shown that bellicosity is single-peaked in T, we now characterize the conflict duration that maximizes bellicosity. For fixed duration N, conflict is *protracted* if $T \geq N$ and *brief* if $T < N$. Proposition 3 shows that protracted conflict maximizes bellicosity if and only if the state with unrealized potential is sufficiently patient.

Proposition 3. *Protracted conflict maximizes bellicosity if and only if the state with unrealized potential is sufficiently patient.*

To illustrate, suppose A has unrealized potential. Then war requires $\delta_A > \delta_B$ and $p - q > c_B$. Because bellicosity is single-peaked in T, comparing T^* to N reveals that brief conflict is maximally bellicose if and only if

$$\delta_A^{N-1}(1-\delta_A) < \Big(\frac{p-q-c_B}{p-q+c_A}\Big)\delta_B^{N-1}(1-\delta_B).$$

Specifically, there exists $\overline{\delta}_A \in (\frac{N-1}{N}, 1)$ such that $\delta_A > \overline{\delta}_A$ implies $T^* > N$. If δ_A is low, then protracted conflicts shrink the difference between each state's value on the conflict outcome. Shrinking this wedge smooths the bargaining friction from unrealized potential. For high δ_A, however, this wedge grows as conflict becomes protracted. In that case, brief conflicts do not maximize bellicosity. Moreover, $\overline{\delta}_A$ goes to 1 as N goes to infinity. Thus, if the definition of a protracted conflict is significantly long, then δ_A must be close to one for protracted conflict to maximize bellicosity. Overall, the prospect of unrealized potential generating conflict is strongest for short conflicts in impatient dyads and longer conflicts if the state with unrealized potential is patient.

Robustness

We have noted that the key result is not sensitive to the simple extensive form we used to illustrate the mechanism. In particular, conflict can occur with complete information, and obtaining that result requires that war not resolve immediately and that states have different discount factors. Having developed the model's main intuition, we now elaborate why the result holds in richer settings.

An extension in the appendix generalizes the path of war. Rather than model war as having a fixed ending, we instead allow the duration to be stochastic. The general setting also allows the following to change throughout conflict: *intrabellum* distribution, balance of power, costs of war, and discount factors. The baseline model's recipe for conflict endures. If the more impatient actor expects to hold onto enough of the good over the expected duration of the fighting, there may be no common ground to negotiate.

Second, we allow bargaining while fighting. That is, if parties fail to agree in a period, they battle. With some probability, A wins, with some probability B wins, and with remaining probability the dispute continues. This process repeats until agreement or one side wins. Like the generalized setting, repeated rounds of bargaining produce stochastic conflict duration. But the central results still hold. If the party more likely to vanquish the other in any given period is patient but does not enjoy much of the benefits during fighting, we can obtain stalling wars.

Finally, we develop a more dynamic setting where states can renegotiate over an infinite time horizon and agreement today defines the *intrabellum* distribution should states fight next period. For example, the transfer of Alsace-Lorraine following World War I meant that France could control the area until Germany achieved military victory. This may appear to give states an opportunity to smooth transfers and mitigate the commitment problem. However, the appendix demonstrates that this is illusory—no series of credible offers can simultaneously appease both parties under conditions analogous to those described in the baseline model.

Conclusion

In the standard bargaining model of war, fighting ends immediately and states discount the future at a common rate. This paper shows that when we relax both of these simultaneously—but not in isolation—war occurs with complete information. We describe such conflicts as wars of stalling because a weak but impatient actor fights to hold onto a *intrabellum* distribution. A commitment problem underlies the mechanism. If states could agree to reallocate after a set period of time, both would benefit. However, once states reach that previously agreed end date, the state enjoying the advantageous *intrabellum* distribution prefers to fight and hold the object for longer. Renegotiating over time does not necessarily solve the underlying problem.

Our results suggest scholars should take care in applying theoretical mechanisms to substantive expectations and policy recommendations. Some of our comparative statics run in opposite directions depending on other parameters. For example, increasing a state's power expands the conditions producing war if that state is relatively patient, but shrinks those conditions if that state is relatively impatient. Meanwhile, many of our results are inconsistent with empirical implications of models featuring other mechanisms.

On one hand, these results are negative in that we argue against making blanket, unconditional recommendations to policymakers. Nevertheless, they highlight the value of formalization of arguments. We can still make useful recommendations to policymakers using our results, and others from the bargaining model of war. However, as Fey and Ramsay (2011) note, mechanisms causing war are not identical. Recommendations need to take the form of conditional statements, requiring policymakers to identify the current incentives at play that then help point to correct policy conclusions.

Finally, although we focus on war initiation, our model also makes predictions about war duration. Existing empirical work on bargaining and war duration tends to focus on asymmetric information and learning (Slantchev 2004). However, the length of conflicts

caused by our mechanism should cluster around T^*. Future research ought to consider how empirical models of stalling could generate different expectations.

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Online Appendix

Proofs of Main Results

Proposition 1. *In every SPE,*

(i) state B accepts a proposal x only if $x \leq q + c_B + \delta_B^T(p - q - c_B) \equiv x^*$; and

(ii) state A makes the peaceful proposal x^* iff

$$(1-\delta_A^T)c_A + (1-\delta_B^T)c_B \geq (\delta_A^T - \delta_B^T)(p-q),$$

and otherwise proposes $x > x^*$, which leads to conflict.

PROOF. First, B's payoff from accepting a proposal x is $\frac{1-x}{1-\delta_B}$. Next, B's payoff from rejecting a proposal and starting conflict is

$$\frac{(1-\delta_B^T)(1-q) + \delta_B^T(1-p) - (1-\delta_B^T)c_B}{1-\delta_B}. \tag{A.1}$$

Therefore B accepts a proposal x only if

$$1 - x \geq (1-\delta_B^T)(1-q) + \delta_B^T(1-p) - (1-\delta_B^T)c_B \tag{A.2}$$

$$x \leq x^* \equiv q + c_B + \delta_B^T(p - q - c_B). \tag{A.3}$$

This proves part (i).

By (A.3), A proposes either x^* or policy leading to war. First, A's payoff from proposing x^* is

$$u_A(x^*) = \frac{q + c_B + \delta_B^T(p - q - c_B)}{1-\delta_A}. \tag{A.4}$$

Next, A's payoff from proposing any war-inducing policy is

$$u_A(\text{war}) = \frac{(1-\delta_A^T)q + \delta_A^T p - (1-\delta_A^T)c_A}{1-\delta_A}. \tag{A.5}$$

Thus, A strictly prefers to propose war-inducing policy iff

$$u_A(x^*) < u_A(\text{war}) \tag{A.6}$$

$$q + c_B + \delta_B^T(p - q - c_B) < (1 - \delta_A^T)q + \delta_A^T p - (1 - \delta_A^T)c_A \tag{A.7}$$

$$(1 - \delta_A^T)c_A + (1 - \delta_B^T)c_B < (\delta_A^T - \delta_B^T)(p - q). \tag{A.8}$$

If (A.8) is reversed, then A strictly prefers to propose x^*. □

Corollary 1.1. *If any of the following are true, then there are no parameters under which war occurs in every SPE: (i) conflicts resolve immediately, (ii) conflicts are interminable, (iii) states are equally patient, or (iv) neither state has unrealized potential.*

PROOF. By Proposition 1, war occurs in all SPE only if (A.8) holds. For (iii), note that $\delta_A = \delta_B = \delta$ implies that (A.8) reduces to $(1 - \delta)(c_A + c_B) < 0$, a contradiction. Parts (i) and (ii) then follow similarly because $\delta_A^0 = 1 = \delta_B^0$ and if $\lim_{T\to\infty} \delta_A^T = 0 = \lim_{T\to\infty} \delta_B^T$. To see (iv), note that $p = q$ implies the same contradiction.

□

Corollary 1.3. *If either (i) $\delta_A > \delta_B$ and $p - q > c_B$, or (ii) $\delta_B > \delta_A$ and $q - p > c_A$, then bellicosity weakly increases in the patience gap, $|\delta_A - \delta_B|$.*

PROOF. Note that (A.8) rearranges to

$$c_A + c_B < \delta_A^T(p - q + c_A) - \delta_B^T(p - q - c_B). \tag{A.9}$$

The derivative of the RHS of (A.9) with respect to δ_A is

$$\frac{\partial RHS(A.9)}{\partial \delta_A} = (p - q + c_A)T\delta_A^{T-1}, \tag{A.10}$$

and the derivative with respect to δ_B is

$$\frac{\partial RHS(A.9)}{\partial \delta_B} = -(p - q - c_B)T\delta_B^{T-1}. \tag{A.11}$$

First, assume $p - q > c_B$ and $\delta_A > \delta_B$. Then (A.10) and (A.11) imply $\frac{\partial RHS(A.9)}{\partial \delta_A} > 0$ and $\frac{\partial RHS(A.9)}{\partial \delta_B} < 0$. Thus, bellicosity increases with δ_A and decreases with δ_B. An analogous argument holds if $p - q < -c_A$ and $\delta_A < \delta_B$. Consequently, bellicosity weakly increases in $|\delta_A - \delta_B|$. □

Proposition 2. *War does not occur in any SPE if either $T = 0$ or $T \to \infty$. If $p - q > c_B$ and $\delta_A > \delta_B$, then there exists a finite $T^* > 1$ such that bellicosity increases over $T < T^*$ and decreases over $T > T^*$. An analogous result holds if $p - q < -c_A$ and $\delta_A < \delta_B$.*

PROOF. By Proposition 1, conflict occurs in a SPE iff

$$c_A + c_B < \delta_A^T(p - q + c_A) - \delta_B^T(p - q - c_B). \tag{A.12}$$

Suppose $p > q$ and $\delta_A > \delta_B$.

Part 1. If $T = 0$, then (A.12) simplifies to $0 < 0$, so war cannot occur in any SPE. Similarly, (A.12) simplifies to $0 < 0$ as $T \to \infty$. Thus, war does not occur in any SPE in the limit.

Part 2. We show existence of $T^* > 1$ such that the right-hand side of (A.12) strictly increases over $T < T^*$ and strictly decreases over $T > T^*$.

First, define

$$T^* = 1 + \frac{\ln(1-\delta_A) - \ln(1-\delta_B) + \ln(\frac{p-q+c_A}{p-q-c_B})}{\ln(\delta_B) - \ln(\delta_A)}. \tag{A.13}$$

We show that $T < T^*$ implies $\delta_A^T(p-q+c_A) - \delta_B^T(p-q-c_B) > \delta_A^{T-1}(p-q+c_A) - \delta_B^{T-1}(p-q-c_B)$ and $T > T^*$ implies the opposite strict inequality.

Simplifying the RHS of (A.12) and rearranging,

$$\delta_A^T(p - q + c_A) - \delta_B^T(p - q - c_B) > \delta_A^{T-1}(p - q + c_A) - \delta_B^{T-1}(p - q - c_B) \tag{A.14}$$

$$\delta_B^{T-1}(1-\delta_B)(p - q - c_B) > \delta_A^{T-1}(1-\delta_A)(p - q + c_A) \tag{A.15}$$

$$\left(\frac{\delta_B}{\delta_A}\right)^{T-1} > \frac{(1-\delta_A)(p - q + c_A)}{(1-\delta_B)(p - q - c_B)}. \tag{A.16}$$

Taking logs yields

$$(T-1)\Big(\ln(\delta_B) - \ln(\delta_A)\Big) > \ln(1-\delta_A) - \ln(1-\delta_B) + \ln(\frac{p - q + c_A}{p - q - c_B}) \tag{A.17}$$

$$T < 1 + \frac{\ln(1-\delta_A) - \ln(1-\delta_B) + \ln(\frac{p-q+c_A}{p-q-c_B})}{\ln(\delta_B) - \ln(\delta_A)} = T^*, \tag{A.18}$$

where (A.18) follows because $\delta_B < \delta_A$ implies $\ln(\delta_B) < \ln(\delta_A)$.

The preceding observations imply that $T^* > 1$ iff

$$\ln(1-\delta_A) - \ln(1-\delta_B) + \ln\left(\frac{p-q+c_A}{p-q-c_B}\right) < 0 \tag{A.19}$$

$$\Leftrightarrow \ln\left(\frac{1-\delta_A}{1-\delta_B}\frac{p-q+c_A}{p-q-c_B}\right) < 0 \tag{A.20}$$

$$\Leftrightarrow \frac{1-\delta_A}{1-\delta_B}(p-q+c_A)(p-q-c_B) < 1 \tag{A.21}$$

$$\Leftrightarrow (1-\delta_A)(p-q+c_A) < (1-\delta_B)(p-q-c_B) \tag{A.22}$$

$$\Leftrightarrow c_A + c_B < \delta_A(p-q+c_A) - \delta_B(p-q-c_B), \tag{A.23}$$

which is equivalent to (A.12) for $T = 1$.

An analogous argument establishes the result for $p - q < -c_A$ and $\delta_A < \delta_B$. □

Proposition 3 *Suppose $p - q > c_B$ and $\delta_A > \delta_B$. For all $N \in \mathbb{N} \setminus \{0\}$, there exists $\overline{\delta}_A \in (\frac{N-1}{N}, 1)$ such that $T^* > N$ iff $\delta_A > \overline{\delta}_A$.An analogous result holds for B if $q - p > c_A$ and $\delta_B > \delta_A$.*

PROOF. Suppose $p - q > c_B$ and $\delta_A > \delta_B$. Fix $N \in \mathbb{N} \setminus \{0\}$. Then (A.18) implies that $T^* \geq N$ iff:

$$N \leq 1 + \frac{\ln(1-\delta_A) - \ln(1-\delta_B) + \ln(\frac{p-q+c_A}{p-q-c_B})}{\ln(\delta_B) - \ln(\delta_A)} \tag{A.24}$$

$$\Leftrightarrow \ln\left(\frac{1-\delta_A}{1-\delta_B}\frac{p-q+c_A}{p-q-c_B}\right) \leq (N-1)\ln\left(\frac{\delta_B}{\delta_A}\right) \tag{A.25}$$

$$\Leftrightarrow \frac{1-\delta_A}{1-\delta_B}\frac{p-q+c_A}{p-q-c_B} \leq \left(\frac{\delta_B}{\delta_A}\right)^{N-1} \tag{A.26}$$

$$\Leftrightarrow \delta_A^{N-1}(1-\delta_A) < \left(\frac{p-q-c_B}{p-q+c_A}\right)\delta_B^{N-1}(1-\delta_B). \tag{A.27}$$

Note that $\frac{p-q-c_B}{p-q+c_A} \in (0,1)$ implies that (A.27) does not hold at $\delta_A = \delta_B$. Moreover, (A.27) clearly holds at $\delta_A = 1$. Next, $\delta_A^{N-1}(1-\delta_A)$ is strictly decreasing in δ_A iff $\delta_A > \frac{N-1}{N}$. Thus, there exists $\overline{\delta}_A > \frac{N-1}{N}$ such that (A.27) holds iff $\delta_A > \overline{\delta}_A$. Therefore $T^* > N$ iff $\delta_A > \overline{\delta}_A$. □

A Generalized Model of Stalling

We generalize the baseline model by allowing for (i) an uncertain ending time for conflict, as well as variation over time in (ii) the *intrabellum* distribution, (iii) discount factors, (iv) each state's costs of war and (v) the balance of power.

First, assume that the length of conflict, T, is unknown prior to conflict. Let $\mathcal{T} = \{0, \ldots, N\}$ denote the space of possible conflict durations, where $N > 0$ is an integer, and let $\mu \in \Delta(\mathcal{T})$ denote the common belief over conflict duration, where $\Delta(\mathcal{T})$ is the space of probability measures over $\mathcal{T}$. Thus, $\mu(T)$ is the probability that a conflict lasts for T periods and $\sum_{T \in \mathcal{T}} \mu(T) = 1$.

Second, we allow the *intrabellum* distribution vary as a function of time, as represented by the mapping $q : \mathbb{N} \to [0, 1]$.

Third, we allow each player's discount factor to vary as a function of time. In particular, state $i \in \{A, B\}$ values its payoff in each period according to the function $\delta_i : \mathbb{N} \to [0, 1]$. To ensure that players do not discount the present, define $\delta_i(0) = 1$ for $i \in \{A, B\}$.

Fourth, each state accrues cost in each period. We allow these costs to possibly vary over time and depend on whether a conflict is ongoing. Formally, each state $i \in \{A, B\}$ has the cost function $c_i : \mathbb{N} \times \{0, 1\} \to \mathbb{R}$ that maps from time periods and conflict status to the positive reals.

Fifth, we also allow the relative power to vary as a function of the period that conflict ends. Specifically, state A's probability of winning the conflict is represented by the mapping $p : \mathbb{N} \to [0, 1]$.

Proposition A.1. *Consider the generalized model. If there is positive probability that conflict does not resolve immediately and in some period the states value the future differently, then there exists an open set of parameter for which conflict occurs in every SPE.*

Corollary A.1.1. *If $\delta_A(t) = \delta_B(t)$ for all t, or $\mu(0) = 1$, then every SPE of the generalized model is peaceful.*

PROOF. Consider the extension with uncertain conflict duration, varying *intrabellum* distribution, varying relative power, and varying costs of conflict. Assume that μ is not degenerate on $T = 0$.

For convenience, define $\tilde{\delta}_i(t) = \prod_{t'=0}^{t} \delta_i(t')$. State B's expected utility from conflict is

$$U_B(\text{war}) = \sum_{T=0}^{N} \mu(T) \left[\sum_{t=0}^{T} \tilde{\delta}_B(t) \Big[(1 - q_t) - c_B(t, 1) \Big] + \sum_{t=T+1}^{\infty} \tilde{\delta}_B(t) \Big[(1 - p(T)) - c_B(t, 0) \Big] \right], \tag{A.28}$$

and B's expected utility from accepting a proposal x is $\sum_{t=0}^{\infty} \tilde{\delta}_B(t)(1 - x)$. Define

$$\overline{W}_B = \sum_{T=0}^{N} \mu(T) \left[\sum_{t=0}^{T} \tilde{\delta}_B(t) \Big[(1 - q_t) \Big] + \sum_{t=T+1}^{\infty} \tilde{\delta}_B(t) \Big[(1 - p(T)) \Big] \right] \tag{A.29}$$

and

$$\overline{C}_B = \sum_{T=0}^{N} \mu(T) \left[\sum_{t=0}^{T} \tilde{\delta}_B(t) \Big[c_B(t,1) \Big] + \sum_{t=T+1}^{\infty} \tilde{\delta}_B(t) \Big[c_B(t,0) \Big] \right]. \tag{A.30}$$

Define $\overline{W}_A$ and $\overline{C}_A$ analogously.

Thus, B accepts a proposal x only if $1 - x \geq U_B(\text{war})$, which is equivalent to

$$\sum_{t=0}^{\infty} \tilde{\delta}_B(t)(1-x) \geq \overline{W}_B - \overline{C}_B \tag{A.31}$$

$$x \leq 1 - \frac{\overline{W}_B - \overline{C}_B}{\sum_{t=0}^{\infty} \tilde{\delta}_B(t)} \equiv x^*. \tag{A.32}$$

Next, A's expected utility from conflict is

$$U_A(\text{war}) = \sum_{T=0}^{N} \mu(T) \left[\sum_{t=0}^{T} \tilde{\delta}_A(t) \Big[q_t - c_A(t,1) \Big] + \sum_{t=T+1}^{\infty} \tilde{\delta}_A(t) \Big[p(T) - c_A(t,0) \Big] \right] \tag{A.33}$$

$$= \overline{W}_A - \overline{C}_A. \tag{A.34}$$

Define $D_i = \sum_{t=0}^{\infty} \tilde{\delta}_i(t)$ for $i \in \{A, B\}$. Since A proposes either x^* or something that leads to conflict, it follows that A strictly prefers conflict if

$$D_A x^* < \overline{W}_A - \overline{C}_A \tag{A.35}$$

$$D_A - \frac{D_A}{D_B} \left(\overline{W}_B - \overline{C}_B \right) < \overline{W}_A - \overline{C}_A \tag{A.36}$$

If $\delta_A(t) = \delta_B(t)$ for all t then $D_A = D_B = D$, and using equation (A.36), we have that state A prefers conflict if

$$D - \frac{D}{D} \left(\overline{W}_B - \overline{C}_B \right) < \overline{W}_A - \overline{C}_A \tag{A.37}$$

$$D < \overline{W}_A + \overline{W}_B - \overline{C}_A - \overline{C}_B \tag{A.38}$$

$$D < D - \overline{C}_A - \overline{C}_B, \tag{A.39}$$

where equation (A.39) follows because $D_A = D_B$, and so, $\frac{\overline{W}_A + \overline{W}_B}{D} = 1$. As (A.39) can never hold, if the states have the same discount factors in all periods then state A always makes a peaceful proposal.

Next, assume that $\mu(0) = 1$. In this case, war terminates immediately, $\overline{W}_A = D_A\, p(0)$

and $\overline{W}_B = D_B(1-p(0))$, while $\overline{C}_A = D_A \sum_{t=0}^{\infty} c_A(t,0)$ and $\overline{C}_B = D_B \sum_{t=0}^{\infty} c_B(t,0)$ Using equation (A.35) and substituting we have that state A makes a conflict inducing proposal if

$$D_A\left[1-\frac{D_B[1-p(0)]-\overline{C}_B}{D_B}\right] < D_A\ p(0)-\overline{C}_A \tag{A.40}$$

$$p(0)+\sum_{t=0}^{\infty} c_B(t,0) < p(0)-\sum_{t=0}^{\infty} c_A(t,0). \tag{A.41}$$

$$\sum_{t=0}^{\infty}[c_A(t,0)+c_B(t,0)] < 0. \tag{A.42}$$

As equation (A.42) can never hold, indeed it is the same condition from the standard complete information crisis bargaining model but with a more complicated costs structure, if $\mu(0)=1$ then state A never makes the belligerent proposal. □

Bargaining while Fighting

In the baseline model, states are not allowed to renegotiate after conflict has started and the duration of conflict is known in advance. Consider the following alternative set-up. States repeatedly interact. In each period t, state A makes a proposal x_t which state B can accept or reject. If state B accepts, then peace prevails and division x_t is implemented in all future periods. On the other hand, if state B rejects the proposal, then conflict occurs. With probability λ the conflict resolves, in which case with probability p state A prevails and consumes the entire good for every period after, and with probability $1-p$, state B prevails and obtains the good. However, with probability $1-\lambda$, the game continues to period $t+1$. In the event of rejection, state B incurs costs $c_B > 0$ from conflict and state A incurs cost $c_A > 0$.

Proposition A.2. *Suppose $\delta_A > \delta_B$. In the bargaining while fighting extension, there exist thresholds $\underline{p} \in (0,1)$ and $\overline{q} \in (0,1)$ such that $(p,q) \in (\underline{p},1] \times [0,\overline{q})$ implies the existence of an open set of cost pairs (c_A, c_B) such that war occurs in every stationary SPE.*

PROOF. Let σ denote a stationary SPE. Under σ, B's continuation value from conflict is

$$V_B(war;\sigma) = \lambda\left(p\frac{0}{1-\delta_B}+\frac{1-p}{1-\delta_B}\right)+(1-\lambda)\left(1-q+\delta_B V_B(war;\sigma)\right)-c_B, \tag{A.43}$$

which rearranges to

$$V_B(war;\sigma) = \left(\frac{\lambda(1-p)}{1-\delta_B}+(1-\lambda)(1-q)-c_B\right)\left(\frac{1}{1-(1-\lambda)\delta_B}\right). \tag{A.44}$$

Thus, B accepts any proposal x satisfying

$$x \leq x^* \equiv 1 - \left(\frac{\lambda(1-p)}{1-\delta_B} + (1-\lambda)(1-q) - c_B \right) \left(\frac{1-\delta_B}{1-(1-\lambda)\delta_B} \right). \tag{A.45}$$

In turn, A must make a belligerent offer under σ if

$$\frac{x^*}{1-\delta_A} < V_A(war;\sigma) = \left(\frac{\lambda\, p}{1-\delta_A} + (1-\lambda)q - c_A \right) \left(\frac{1}{1-(1-\lambda)\delta_A} \right). \tag{A.46}$$

Using (A.45) to substitute for x^*, we express (A.46) as

$$1 - \frac{\lambda(1-p) + (1-\delta_B)\left((1-\lambda)(1-q) - c_B\right)}{1-(1-\lambda)\delta_B} < \frac{\lambda\, p + (1-\delta_A)((1-\lambda)q - c_A)}{1-(1-\lambda)\delta_A}. \tag{A.47}$$

The rest of the proof proceeds in four steps.

Step 1. We show that (A.46) does not hold at $p = 0$. Then (A.47) reduces to

$$1 - \frac{\lambda + (1-\delta_B)\left((1-\lambda)(1-q) - c_B\right)}{1-(1-\lambda)\delta_B} < \frac{(1-\delta_A)((1-\lambda)q - c_A)}{1-(1-\lambda)\delta_A}. \tag{A.48}$$

The LHS of (A.48) is increasing in c_B and the RHS is decreasing in c_A, so (A.48) holds only if

$$1 - \frac{\lambda + (1-\delta_B)\left((1-\lambda)(1-q)\right)}{1-(1-\lambda)\delta_B} < \frac{(1-\delta_A)((1-\lambda)q)}{1-(1-\lambda)\delta_A} \tag{A.49}$$

$$\Leftrightarrow 0 < -\frac{q(1-\lambda)\lambda(\delta_A - \delta_B)}{(1-\delta_A(1-\lambda))(1-\delta_B(1-\lambda))}. \tag{A.50}$$

Together, $\lambda < 1$ and $0 < \delta_B < \delta_A < 1$ imply (A.50) never holds.

Step 2. We show that the RHS of (A.47) increases in p faster than the LHS of (A.47). Differentiating each side of (A.47) with respect to p, this holds iff

$$\frac{\lambda}{1-(1-\lambda)\delta_B} < \frac{\lambda}{1-(1-\lambda)\delta_A}, \tag{A.51}$$

which holds because $\delta_B < \delta_A$.

Step 3. Step 2 implies that if (A.47) holds at $p = 1$, then there exists $\underline{p} \in (0,1)$ such that $p > \underline{p}$ implies that war occurs in every SPE.

If $p = 1$, then (A.47) simplifies to

$$1 - \frac{(1-\delta_B)((1-\lambda)(1-q) - c_B)}{1-(1-\lambda)\delta_B} < \frac{(1-\delta_A)((1-\lambda)q - c_A) + \lambda\delta_A}{1-(1-\lambda)\delta_A}. \tag{A.52}$$

Rearranging, (A.52) holds iff

$$\begin{aligned} &\frac{(1-\delta_A)c_A}{1-(1-\lambda)\delta_A} + \frac{(1-\delta_B)c_A}{1-(1-\lambda)\delta_B} \\ &\qquad < \frac{(1-\delta_B)(1-\lambda)(1-q)}{1-(1-\lambda)\delta_B} + \frac{(1-\delta_A)(1-\lambda)q}{1-(1-\lambda)\delta_A} + \frac{\lambda\delta_A}{1-(1-\lambda)\delta_A} - 1. \end{aligned} \tag{A.53}$$

If the RHS of (A.53) is positive, then we can always choose c_A and c_B sufficiently small to satisfy (A.52).

Step 4. We characterize conditions on q such that the RHS of (A.53) is positive. That is, we show there exists $\overline{q} \in (0,1)$ such that $q < \overline{q}$ implies

$$1 < \frac{(1-\delta_B)(1-\lambda)(1-q)}{1-(1-\lambda)\delta_B} + \frac{(1-\delta_A)(1-\lambda)q}{1-(1-\lambda)\delta_A} + \frac{\lambda\delta_A}{1-(1-\lambda)\delta_A}. \tag{A.54}$$

At $q = 0$, (A.54) reduces to

$$\begin{aligned} 1 &< \frac{(1-\delta_B)(1-\lambda)}{1-(1-\lambda)\delta_B} + \frac{\lambda\delta}{1-(1-\lambda)\delta_A} \\ &\Leftrightarrow \lambda\delta_A + (1-\lambda)(1-\delta_B) > 1 - (1-\lambda)\delta_B - (1-\lambda)\delta_A + (1-\lambda)^2\delta_B \\ &\Leftrightarrow 1 > (1-\lambda)\delta_B, \end{aligned}$$

which holds because $1-\lambda \in (0,1)$ and $\delta_B \in (0,1)$.

Next, we show that the RHS of (A.54) strictly decreases in q. Differentiating with respect to q yields,

$$\frac{(1-\delta_A)(1-\lambda)}{1-(1-\lambda)\delta_A} - \frac{(1-\delta_B)(1-\lambda)}{1-(1-\lambda)\delta_B} < 0 \tag{A.55}$$

$$\Leftrightarrow (1-\delta_A)(1-(1-\lambda)\delta_B) < (1-\delta_B)(1-(1-\lambda)\delta_A) \tag{A.56}$$

$$\Leftrightarrow -(1-\lambda)\delta_B - \delta_A < -(1-\lambda)\delta_A - \delta_B \tag{A.57}$$

$$\Leftrightarrow \lambda\delta_B < \lambda\delta_A, \tag{A.58}$$

which holds because $\delta_B < \delta_A$.

Finally, consider $q = 1$. Then, (A.54) holds iff

$$1 < \frac{(1-\delta_A)(1-\lambda)}{1-(1-\lambda)\delta_A} + \frac{\lambda\delta_A}{1-(1-\lambda)\delta_A} \tag{A.59}$$

$$\Leftrightarrow (1-(1-\lambda)\delta_A) < (1-\delta_A)(1-\lambda) + \lambda\delta_A \tag{A.60}$$

$$\Leftrightarrow 0 < -\lambda(1-\delta_A), \tag{A.61}$$

a contradiction. Thus, there exists $\overline{q} \in (0,1)$ such that $q < \overline{q}$ implies that the RHS of (A.53) is strictly positive.

To see why bellicosity must be non-monotonic in expected conflict duration, consider the following. First, note that increasing λ implies a shorter expected duration, while decreasing λ implies a longer expected duration. At $\lambda = 1$, (A.47) reduces to

$$1-(1-p)+(1-\delta_B)c_B < p-(1-\delta_A)c_A \tag{A.62}$$

$$\Leftrightarrow (1-\delta_A)c_A + (1-\delta_B)c_B < 0, \tag{A.63}$$

a contradiction. Thus, $\lambda = 1$ guarantees peace. Similarly, $\lambda = 0$ implies that (A.47) reduces to

$$1-(1-q)+c_B < q-c_A \tag{A.64}$$

$$\Leftrightarrow c_A + c_B < 0, \tag{A.65}$$

a contradiction. □

Short-Term Agreements

The baseline model most directly represents bargaining situations in which today's proposal does not affect the war-period payoffs of future negotiations. This has many applications. Take negotiations between the United States and a regime committing human rights violations as an example. Suppose the U.S. and that state reach an agreement this year that reduces the level of abuse. Such a deal does little to change the situation on the ground next year should war break out—the state can go right back to committing those violations while the United States initiates a conflict to try to stop it.

Not all issues at stake have this flavor. Consider instead territorial disputes. Redrawing borders today changes tomorrow's *intrabellum* distribution. To illustrate, the transfer of Alsace-Lorraine following World War I meant that France could control the area until Germany achieved military victory. Thus, transfers today alter tomorrow's war payoffs—in a sense, the parties now bargain objects that influence future bargaining power. Such a connection can cause conflict (Fearon 1996; Chadefaux 2011).

Unlike prior research on the subject, stalling in a static model leads to war. Thus, the key question we now must address is whether war also occurs in a dynamic setup. The answer is not immediately obvious. Bargaining over objects that influence future bargaining power is not an inherently possible task. Fearon (1996) shows that peace prevails when parties share a discount rate and the function mapping the division to a level of power is continuous. Chadefaux (2011), however, shows that war can result when players have noncommon discounts.

Still, it is conceivable that short-term agreements changing the *intrabellum* distribution during future wars may have a pacifying effect. In the standard bargaining over power setup, the central tension is that a concession today makes the opponent stronger tomorrow. Thus, concession has a pernicious effect. There is no analogous pernicious effect in our model.

Indeed, the central bargaining tension here is that weak and impatient states currently enjoying the *intrabellum* distribution have incentives to maintain it. Negotiations seem to alleviate this problem. That is, such a state could make a small concession to its opponent in the present. It would therefore maintain a large share of the *intrabellum* distribution in the short term—what it values most—and avoid paying the cost of war. Meanwhile, if these concessions continue, the patient actor eventually receives a large share. Because the short-term is less important to that actor, it may also benefit from avoiding the costs of conflict.

We show this pacifying effect of short-term agreements never arises in equilibrium under certain conditions. To demonstrate this, consider the following extension to the baseline

model. In each period, if conflict has not previously occurred, then A makes a demand x_t. If B accepts, then A and B receive payoffs x_t and $1 - x_t$, respectively, in period t. Next, the game continues with x_t as the *intrabellum* distribution in period $t + 1$. Finally, assume that rejection still leads to war, which proceeds as in the baseline model and effectively concludes the strategic interaction. Thus, each period's *intrabellum* distribution is endogenous to the previous period's bargaining outcome.

Proposition A.3. *Consider the model with short-term agreements. If δ_A is sufficiently low, δ_B is sufficiently high, and $q_1 > p$, then there exists an open set of parameters in which conflicts occurs in every stationary SPE.*

PROOF. Consider the dynamic extension of the baseline model and fix first-period *intrabellum* distribution q_1. Suppose $q_1 > p$.

State A's normalized expected dynamic payoff from a war initiated in the first period is $w_A(q_1) = (1 - \delta_A^T)q_1 + \delta_A^T p - c_A$. Next, A's normalized expected dynamic payoff in a stationary SPE in which war never occurs is bounded above by $1 - w_B(0) = 1 - \delta_B^T(1 - p) + c_B$.

Thus, we obtain the following sufficient condition for conflict to occur in every stationary SPE,

$$1 - \delta_B^T(1 - p) + c_B < (1 - \delta_A^T)q_1 + \delta_A^T p - c_A \tag{A.66}$$

$$c_A + c_B < \delta_A^T(p - q_1) + \delta_B^T(1 - p) - (1 - q_1). \tag{A.67}$$

As $\delta_A \to 0$ and $\delta_B \to 1$, the RHS of (A.67) goes to $q_1 - p$, which is strictly positive because $q_1 > p$. The desired result follows by continuity. □

Loosely, conflict occurs in Proposition A.3 because A prefers to start a conflict to enjoy *intrabellum* distribution for a while, even though its prospects for ultimately prevailing are not particularly great, rather than have B accept a demand that is weakly better for A than any acceptable equilibrium demand. Because B is very patient, it overwhelmingly values the payoff it receives once conflict resolves. In turn, this makes A's best peaceful demand less favorable for A. Because A is very impatient, its focus centers on enjoying the *intrabellum* distribution before conflict resolves and is virtually unconcerned about the prospect of losing. Together, these forces create conditions under which A always makes an unacceptable demand that leads to conflict.