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"Falling to Peaces":
Conciliatory Agreements and the Durability of Peace

by

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ABSTRACT

Falling to “Peaces”:
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by

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States often experience disagreements such as competing territorial claims. Sometimes they attempt to address these differences by negotiating explicit, written settlements. Can these agreements help ensure a durable peace? I examine the effect of agreements that attempt to address differences after significant conflict has occurred, such as peace agreements, as well as agreements designed to manage competing claims before they reach the level of violence. I refer to these two sets of agreements together as ‘conciliatory agreements’.

Using the theoretical framework of the bargaining model of war, I argue that the provisions specified in conciliatory agreements make the existing peaceful equilibrium more robust against the potentially disruptive effect of environmental shocks, such as changes in relative capabilities or regime type. Furthermore, I argue that conciliatory agreements not only increase the likelihood that peace is maintained but also impact the kind of peace maintained. Specifically, competing states that experience disruptive changes may remain at peace either because they continue to accept the status quo or because they peacefully renegotiate a new settlement. I argue that varying agreement provisions can account for why, when conditions change, some states resort to force, while others peacefully renegotiate, and still others maintain their original agreement.

In order to evaluate my propositions, I rely on an existing list of territorial claims from the Americas, the Middle East, and Europe between 1919 and 1995, provided by
Huth and Allee’s (2002) research. For each of these cases, I collect all conciliatory agreements between the claimants and use these to test my theoretical expectations about the impact of agreement provisions on the durability of peace and the occurrence of renegotiation.
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Chapter 1: Introduction, Debate, and Definition of Conciliatory Agreements

Part 1: Introduction

In their international relations, states often experience disagreements with one another such as competing territorial claims, disputes over resources, or differences over policy choice. Sometimes states attempt to address these differences by negotiating explicit, written settlements. Can these agreements help ensure a durable peace between states with competing claims? Why are some agreements successful at preventing the outbreak of hostilities while others fail?

Empirically, attempts to address disagreements peacefully are abundant. Indeed, states aim at peaceful settlements far more often than they resort to force. Huth and Allee’s (2002) work on 348 territorial claims between 1919 and 1995 shows that in 68 percent of the cases, major concessions happened without prior violence, as opposed to 32 percent of the cases in which concessions were preceded by military conflict. Similarly, Hensel’s (2001) analysis of 74 dyadic territorial claims in the Western Hemisphere between 1816 and 1992 reveals that bilateral negotiations, which took place in 91.9 percent of all cases, constitute the most common type of settlement attempt, while militarized interstate disputes (MIDs) occur in less than one-fifth of all settlement attempts.

Given that policy-makers have clearly recognized the potential of peaceful settlement attempts, it seems appropriate that scholars devote their energies to the systematic study of such attempts, and more specifically to the design of conflict resolution or conflict management agreements. By examining the circumstances under
which these agreements are successful at ensuring a long-lasting peace and which provisions tend to be particularly promising, scholars can give pertinent advice to policymakers. Unlike factors such as contiguity and relative power, the design of agreements is amenable to manipulation by decision-makers, and scholarly findings on the 'optimal design' of conflict settlement agreements can be directly translated into helpful policymaking advice.

Furthermore, studying the design of conflict resolution and conflict management agreements can contribute significantly to the theoretical debate about the prospects for cooperation. When states have fundamental disagreements and have fought over these disagreements or have found themselves at the brink of war, cooperation should be particularly difficult to achieve. Showing that even under these circumstances cooperation does occur and often is successful lends strong support to the institutionalist argument about the importance of international institutions. Not only can studies of cooperation among adversaries show that agreements matter but they can also take the next step and show how they matter: which kinds of provisions are successful and under which conditions they are successful.

In this project, I examine the effect of agreements that attempt to address differences between pairs of states after significant conflict has occurred, such as peace agreements, as well as written agreements designed to manage competing claims before they reach the level of violence. I refer to these two sets of agreements together as 'conciliatory agreements'.

Using the theoretical framework of the bargaining model of war, I develop an argument to explain under which conditions states with competing claims are able to
maintain a durable peace and what role conciliatory agreements play in achieving this desirable outcome. The bargaining model points to status quo dissatisfaction combined with uncertainty as central factors in the incidence of conflict: conflict occurs if a state becomes dissatisfied with the status quo and demands renegotiation but the dissatisfied state and its opponent are unable to agree on new terms because they lack information on what would be acceptable to the other side. This means that anything that increases the chance that one state becomes dissatisfied and creates or exacerbates uncertainty increases the chance of conflict. I argue that changes in the relationship between states, in their domestic politics, or in the value of the issue may induce dissatisfaction and at the same time create uncertainty. Thus, if such changes occur, states with competing claims might end up fighting.

However, leaders anticipate such changes and their potentially disruptive effects and carefully design conciliatory agreements that increase the chance that changes are absorbed peacefully. Two types of mechanisms in conciliatory agreements should be particularly useful at preventing changes from leading to conflict: cost-increasing provisions and uncertainty-reducing provisions. Cost-increasing provisions reduce the chance that a state may become dissatisfied and willing to fight to obtain a larger share of the issue at stake. Uncertainty-reducing provisions, on the other hand, address the second aspect of why conflict may occur. Such provisions increase the chance that a dissatisfied state and its opponent are able to agree on a new division of the issue peacefully. Thus, if states conclude conciliatory agreements that feature cost-increasing and/or uncertainty-reducing provisions they face a lower likelihood of conflict even if changes take place.
Furthermore, this argument suggests that conciliatory agreements not only increase the likelihood that peace is maintained but also affect the kind of peace maintained. Competing states that experience disruptive changes may remain at peace either because they continue to accept the status quo or because they peacefully negotiate a new settlement. I argue that conciliatory agreements with cost-increasing provisions increase the chance that, in the face of changes, the original status quo distribution is maintained, while uncertainty-reducing provisions make it more likely that renegotiation will occur.

In order to evaluate my propositions concerning the effect of conciliatory agreement provisions on the durability of peace and the occurrence of renegotiation between opponents empirically, I use an existing list of territorial claims between 1919 and 1995, provided by Huth and Allee's (2002) research. For each of these cases, I collect all conciliatory agreements between the claimants and use these to test my theoretical expectations about the impact of agreement provisions on the durability of peace and the occurrence of renegotiation. Currently, I have collected conciliatory agreements for cases of territorial claims from three regions of the world: Latin America, Middle East and Europe. The results presented here are based on data from these three regions.

The project proceeds in six chapters. The second part of this first chapter explicates the debate between Suzanne Werner (1999b, 2005 with Yuen) and Page Fortna (2003, 2004) concerning the effect of environmental changes and agreement provisions on the durability of peace. I show how this debate motivates this project, how the theoretical argument presented here can be seen as a synthesis of the two seemingly
conflicting arguments advanced by Werner and Fortna, how my theoretical argument helps answer a question that remains open in Werner's work, and how this project extends the scope of Werner's and Fortna's studies by looking at the larger set of conciliatory agreements. In the third part of this first chapter, I then provide a more detailed definition of the concept of conciliatory agreements.

The second chapter presents my theoretical argument and derives testable hypotheses concerning the effect of shocks and conciliatory agreement provisions on the durability of peace and the occurrence of renegotiation. The theoretical argument relies heavily on the bargaining model of war as formulated by Fearon (1995), Powell (1996, 1999, 2000, 2004), and others. In Part 1 of the second chapter, I briefly explain the basic logic of the bargaining model of war. This then allows me to show how the effect of changes in environmental conditions (e.g. relative power, regime type, value of the issue) and the effect of conciliatory agreement provisions can be conceptualized in terms of the bargaining model of conflict. Parts 2 and 3 of the second chapter deal with the effect of changes and of conciliatory agreement provisions respectively. At the end of each part I present theoretical propositions derived from my theoretical argument as well as the hypotheses I test empirically.

The third chapter explains how the empirical hypotheses derived in chapter 2 are evaluated empirically. I discuss the selection of cases, the process of gathering conciliatory agreements for all claimants, the operationalization of the dependent variable and the independent variables, and the statistical methods applied.

The fourth and fifth chapters contain the empirical evaluation of my hypotheses. The fourth chapter constitutes a test of the first part of my theoretical argument. I am
interested in the general question of why an existing status quo between claimants might be overthrown and under which conditions this will occur through violent means. The theoretical chapter provides some insight into which kinds of events might lead to the breakdown of an existing status quo arrangement and might potentially induce conflict. The fourth chapter examines whether these factors indeed have the proposed effects.

The fifth chapter addresses the effect of conciliatory agreements. The chapter is divided into two parts. The first part includes conciliatory agreement provisions as separate independent variables, together with the change variables, and examines their effect on both the durability of peace and the occurrence of renegotiation. The second part of the fifth chapter examines the central proposition that it is given the occurrence of changes that agreements should matter. I expect that it is when changes occur, and conflict is therefore most likely, that agreement provisions matter most. This implies that when we examine the effect of agreement provisions on the durability of peace and the occurrence of renegotiation we should do so by using interaction terms between changes and agreement provisions.

Finally, chapter 6 reviews the central argument and findings of this project and suggests implications for both scholars and policy-makers. I show how this project has helped shed light on some of the unanswered questions of the Werner-Fortna debate but also indicate which questions deserve further attention by scholars of international relations. For policy-makers, I explicate how the findings in this project may translate into concrete advice and which issues await further examination before concrete advice can be given.
Part 2: The Debate: Werner and Fortna

Unfortunately, at this point, scholarly work can neither provide solid advice to decision-makers about whether and how to design conciliatory agreements, nor can we confirm or disconfirm the institutionalist argument about the effect of such arrangements. There still exists considerable disagreement with respect to the question of whether agreements between opponents lead to a more durable peace.

On one side of the debate we find scholars who argue that carefully designed agreements intended to manage conflicts do indeed increase the chances for a lasting peace, both in interstate and civil conflict (Holsti 1991, Miall 1992 for interstate conflicts; Hartzell 1999, Hoddie and Hartzell 2003, Hampson 1996 for civil conflicts). With respect to interstate conflict, recent work by Fortna (2003 and 2004) provides the most encompassing treatment of the effects of post-war agreements on the durability of peace between former belligerents. Fortna argues that not only are cease-fires formed under those circumstances where conflict seems most likely to re-erupt, but they also tend to be relatively effective at ensuring this fragile peace. Besides establishing that cease-fire agreements are effective with respect to ensuring a long-lasting peace between former belligerents, Fortna is also able to provide some systematic evidence as to which kinds of provisions tend to be particularly successful. By designing cease-fire agreements that include provisions for troop withdrawals, demilitarized zones, explicit third-party guarantees, peacekeeping missions, joint commissions for dispute resolution, and specific cease-fire terms, decision-makers can help maintain peace between former enemies.

On the other side of the debate we find scholars who assert that agreements have little or no direct effect on whether former opponents are able to maintain a lasting peace.
Maoz (1984) and Senese and Quackenbush (2004) argue that a central factor accounting for the recurrence of conflict between opponents is whether the previous military confrontation ended in an imposed or a negotiated settlement, with imposed settlements leading to more stable peace. This suggests that agreements and their specific design do not matter, but rather that the durability of peace is a function of the balance of military power at the end of the confrontation. In her 1999 article on the “Pecarious Nature of Peace”, Werner finds further support for this notion: the existence of formal peace agreements appears to have no effect on the recurrence of conflict. In her article, Werner examines three possible explanations for why former belligerents might fight again: the issue is not settled, the agreement is unenforceable, or there is an incentive to renegotiate.

Werner dismisses the first two explanations based on weaknesses in logic and lack of empirical support. Instead, she argues that the best explanation for the recurrence of conflict is that changes in relative capabilities and regime type introduce new uncertainty into the relationship between the belligerents. Given these changes, at least one side might believe that it should receive a better deal than the existing one. Changes lead to an incentive to renegotiate, and if renegotiation fails, conflict may recur. External circumstances and changes in such circumstances, such as shifts in relative power and regime changes, explain the recurrence of conflict, while agreements designed to reduce the chance of recurrent conflict seem to have no effect (see also Goertz and Diehl 1995).

In a more recent article that reacts to Fortna's work, Werner and Yuen (2005) argue that post-war agreements may be successful when both sides want peace and agree on the distribution of benefits stipulated by the agreement, but that war will become likely if at least one side becomes dissatisfied with the deal. Dissatisfaction is likely to
occur when there are changes in relative capabilities and the side that has gained power relative to its opponent believes it deserves a better deal. Changes in relative capabilities are particularly prone to result in conflict if the opponents’ beliefs about who should get how much from fighting did not converge at the end of the war, either because a third party forced the states to cease fighting or because the pattern of battle victories was inconsistent. If beliefs did not converge at the end of war, there remains significant uncertainty about who could get which deal through conflict. Under these circumstances, it is difficult to agree on a deal peacefully and conflict may occur.

In their empirical analysis, Werner and Yuen find strong support for the impact of “informational” variables on the durability of peace; changes in relative capabilities, wars interrupted by third parties, and inconsistent battle patterns are significantly and negatively related to the durability of peace. While Werner and Yuen find that these variables add significantly to the explanatory power of the empirical model, the addition of a variable that measures agreement strength (as proposed by Fortna) improves the statistical fit only slightly. They conclude that changes in relative power explain the recurrence of conflict, while agreement design is much less significant.

The recent work by Fortna and Werner (and Yuen) forms the core of a debate about causes of recurrent conflict: Fortna’s work challenges Werner’s 1999 article by showing that cease-fire provisions significantly affect the recurrence of war but, on the other hand, changes in relative capabilities lose their statistical significance once they are lagged. According to Fortna, it is not changes in relative capabilities that cause conflict but conflict that causes changes in relative capabilities. Werner and Yuen reject this argument based on statistical concerns (lagging leads to the loss of too many of the
already too few cases in Fortna's analysis) and the notion that, conceptually, it is problematic to attribute changes in the Correlates of War composite index of national capability (CINC) score, which is used to measure changes in relative capabilities, to the occurrence of war. Instead, using a data set that spans a larger time period (1816 to 1992 rather than 1945 to 1997), they reaffirm that changes in relative capabilities significantly reduce the duration of peace between former opponents. Compared to the effect of changes in relative capabilities, inconsistent battle patterns, and third party pressures to conclude ongoing wars prematurely, agreement provisions carry very little weight.

In this project, I attempt to synthesize the work by Fortna and Werner and Yuen, provide an answer to a question that remains open in Werner's work, and extend the argument about changes and agreement provisions to a larger set of cases. In order to provide a more powerful explanation for why conflict occurs between opponents I incorporate pieces from both arguments: following Werner, I argue that changes in states' relative capabilities (as well as a number of other changes that I specify later) may lead to hostilities; following Fortna, I argue that the existence of agreements is an important factor in preventing the outbreak of fighting, even when changes occur. In fact, it is when changes occur that we should observe agreements to matter most.

Furthermore, I argue that that the existence of specific provisions in conciliatory agreements can explain why some states renegotiate. In her original work, Werner (1999) concludes that incentives to renegotiate, created through changes in relative capabilities, are the most convincing explanation for the recurrence of war between former belligerents. However, she does not explain why sometimes states are able to renegotiate but fail other times. "While this argument explains well why a former belligerent may
attempt to renegotiate a settlement, it does not explain fully why such attempts sometimes result in violence” (p.919). I argue that the answer lies, at least in part, in the design of conciliatory agreements. Uncertainty-reducing provisions increase the chance that, when changes occur, states with competing claims are able to renegotiate the division of the issue peacefully.

Finally, I extend the empirical scope of cases that are considered. While Fortna and Werner focus on post-war agreements (ceasefire and peace agreements respectively), I examine cases in which states have fought a war but also cases in which states have competing claims but these claims have not (or not yet) resulted in violence. The literature on war as part of the bargaining process (especially Filson and Werner 2002) reveals that the dynamics of bargaining at the end of war do not differ from the dynamics of bargaining at the beginning of a war. This suggests that the argument developed in this paper applies to cases in which conflict has occurred as well as to cases in which conflict might occur. Provisions that help maintain a durable peace after the end of a war should also help prevent fighting in the first place.

Part 3: Definition of Conciliatory Agreements

For the purpose of this project, conciliatory agreements are defined as ‘written agreements signed by official representatives of both states that help manage or resolve existing competing claims between the signatories’.

It is important to further illuminate certain aspects of this definition. First, conciliatory agreements are written agreements. They include treaties that are ratified by the relevant political organs in each state, written executive agreements that do not
require ratification as well as official diplomatic notes and similar diplomatic instruments like written communiqués.

Second, conciliatory agreements are concluded between both states. This explicitly excludes unilateral suggestions about how the competing claims shall be resolved or managed. For example, a declaration of one of the states that it intends to invite a mediator is insufficient. Only if the other side agrees to this suggestion in a written statement, signed by both parties, would we have a case of a conciliatory agreement.

However, while conciliatory agreements have to be concluded between both sides, the two sides need not be the only parties to the agreement. Some conciliatory agreements are multilateral. Obvious examples are treaties signed not only by the two competing states themselves but by guarantor powers.¹ Two other examples are 1) the five-party “Agreement on Confidence of the Frontier Area” between Russia, Kazakhstan, Kyrgyzstan, Tajikistan and China that provides for the reduction of forces within a 100-kilometer-wide zone along the border of China with the four other parties and 2) the Open Skies Treaty that allows for aerial inspections of military forces and thereby helps alleviate security concerns between Hungary and Romania, two states with competing territorial claims (Krepon 1999). Note that the latter agreement does not directly refer to the claim between Hungary and Romania. While most conciliatory agreements make mention of the specific issue under dispute, this is not a necessary condition to qualify for a conciliatory agreement. Any agreement that involves a pair of competing states and features cost-increasing and/or uncertainty-reducing provisions and therefore helps the

¹ One example is the 1959 London-Zurich Agreements for the Final Settlement of the Problem of Cyprus, signed by Greece, Turkey, and the guarantor Great Britain.
two states to manage or resolve their underlying dispute counts as a conciliatory agreement.²

Third, conciliatory agreements are intended to help states resolve or manage their competing claims. The goal of conciliatory agreements can be either, or both, conflict resolution or conflict management. Conflict resolution agreements suggest a new division of the issue and thereby attempt to resolve at least temporarily all or some of the competing claims between the signatories. For example, agreements that define in detail the new boundaries between states are conflict resolution agreements. Conflict management agreements, on the other hand, do not attempt to find a resolution for the issue under dispute but rather freeze the dispute and prevent it from escalating to violence. Such agreements usually contain provisions such as demilitarized zones or provide for peace-keeping operations. While cost-increasing and uncertainty-reducing provisions are more frequently featured in conflict management agreements, they also appear in conflict resolution agreements. Therefore, I examine both kinds of agreements.

Fourth, the signatories of conciliatory agreements have competing claims with respect to some issue.³ These competing claims might be reflected in different forms of interaction and hostility levels between the signatories. It may be the case that both sides have voiced their disagreements but not taken any hostile action, that some level of hostile action has occurred and the states have been involved in a militarized interstate dispute (MID), or that the hostility between the states has reached the level of a full-blown interstate war. A conciliatory agreement can be negotiated in each of these cases:

² Another large multilateral agreement that qualifies as a conciliatory agreement is the Helsinki Final Act and the Stockholm Document on Confidence and Security Building measures.
³ The issue underlying the states' disagreement could be of any type, including territorial questions, questions about river usage, policy disagreements, and concerns about regime types.
conciliatory agreements can be concluded without hostilities having occurred, when MID-related hostilities have taken place, or after interstate wars in which case these agreements are usually called cease-fires or peace agreements.

In summary, conciliatory agreements have the following characteristics: a) they are agreements between states that have a dispute over some issue which may or may not have reached the level of violence, b) they are written, c) they are signed by both sides to the claim (although other states may be signatories as well), and d) they are intended to resolve or manage the competing claim. The most frequent type of conciliatory agreements are bilateral conflict resolution or conflict management agreements that focus on the specific claim between the two states. However, conciliatory agreements include multilateral agreements that do not refer to specific claims between participants but provide the means to address these claims.
Chapter 2:

The Bargaining Model, Changes, and Agreement Provisions

Part 1: The Bargaining Model

The goal of this project is to examine under which conditions states with competing claims are able to maintain a durable peace and how factors such as changes in the relationship between states, their domestic politics, and the value of the issue at stake as well as the design of conciliatory agreements affect the prospects of a long-lasting peace between claimants. To understand the conditions under which peace may persist we need to analyze the conditions under which conflict may break out. The underlying model of conflict employed in this project is the bargaining model of war. This model sees the essence of conflict as "disagreement over resource allocation and/or policy choice" (Reiter 2003). States bargain in order to arrive at a mutual agreement over the division of a contentious resource or issue. Given the anarchic nature of the international system and their monopoly over the use of force, states have the option of using violent means if no mutually acceptable agreement can be reached peacefully. While states can use force, they prefer not to do so because conflict is costly both in terms of the loss of life and the use of resources.\(^4\) In their bargaining, states therefore confront the incentive to cooperate by finding a peaceful settlement but, at the same time, they also face the incentive to gain as much as possible which might encourage them to take steps that make conflict more likely.

\(^4\) The bargaining model of war incorporates von Clausewitz' classic insight that war is a means for achieving political goals rather than a goal in itself. Since war is costly, it is not itself desirable but if important goals can be accomplished by resorting to violence, this might cancel out the costs of conflict.
Many scholars have employed the bargaining framework to understand which factors make conflict between states more or less likely (Morrow 1989; Morgan 1994; Fearon 1995; Powell 1996, 1999, 2002, 2004; Reed 2003; Slantchev 2003; Wagner 2000, 2004; Werner 1999a, 1999b, 2000; Filson and Werner 2002, 2004). According to Fearon (1995) and Powell (2002), the basic set-up of the bargaining problem can be depicted as follows:

![Figure 2.1 Basic Set-up of the Bargaining Model](image)

States A and B are bargaining over the division of some issue, which can be represented by the interval [0,1]. State A prefers divisions closer to 1, while B prefers divisions closer to 0. The probability that A wins a conflict and obtains its favorite outcome is $p$. If A and B go to war they will pay $c_A$ and $c_B$ respectively. Note that the terms $c_A$ and $c_B$ do not only capture each side’s costs of fighting but also the value they place on winning or losing the issue at stake. If neither side values the issue highly, $c_A$ and $c_B$ will be high even if fighting would cause little damage. Thus, the terms $c_A$ and $c_B$ represent the willingness of each side to pay the costs of fighting given the value of the issue at stake. Put differently, $c_A$ and $c_B$ capture each side’s resolve. As seen in figure 2.1, A’s expected utility for conflict is then $p-c_A$ (i.e. its probability of winning and obtaining its ideal outcome minus the resolve parameter) and B’s expected utility for conflict is
$p+c_B$. The area between $p-c_A$ and $p+c_B$ is called the bargaining range or agreement set. Any point in this range is preferred by both parties to fighting.

If the status quo ($q$) lies within the bargaining range both parties are considered satisfied. It is when the status quo falls out of the bargaining range, that there is a dissatisfied party.\(^5\) In Figure 2.2, the status quo lies outside the bargaining range:

![Diagram showing the bargaining range and status quo](image)

**Figure 2.2 Dissatisfied A**

A prefers any point to the right of $p-c_A$ to fighting and B prefers every point to the left of $p+c_B$ to fighting. To be more precise, A (B) prefers a division of the issue that is as close as possible to its ideal point. This means that A (B) does not value all points to the right of $p-c_A$ (to the left of $p+c_B$) equally—the closer the point to its ideal point, the more preferred it is.

Since $q$ lies to the left of $p+c_B$, B is satisfied. However, $q$ does not lie to the right of $p-c_A$ which means that A is dissatisfied. Since $q < p-c_A$ A prefers fighting to the status quo. This means that whenever a state can expect to gain more by fighting a war than by maintaining the status quo it is considered dissatisfied.

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\(^5\) Powell shows that it is at most one state that can be dissatisfied. This follows from the assumptions that states are risk neutral or risk averse, that they agree on the distribution of power (i.e. on $p$), and that fighting is costly (Powell 1996, fn.26). However, if any of these assumptions is relaxed both states can be dissatisfied.
Intuitively, whenever a state becomes dissatisfied and prefers fighting over maintaining the status quo division, conflict becomes more likely. If a state is dissatisfied, it is more likely to make a revisionist demand. This demand may then be rejected by the other side which, in turn, may lead to conflict. It is important to note, however, that in order for conflict to occur it is not enough for one state to become dissatisfied with the status quo. While the dissatisfied state will try to obtain a new, more favorable settlement, conflict can be averted if the other side accepts its demand. In this case the division of the issue will be renegotiated and peace will continue on new terms. Only if the other side rejects the demand will war ensue. Under which conditions would the satisfied state reject the dissatisfied state’s demands leading to costly conflict?

As Fearon (1995) argues in his seminal paper, because conflict is costly, bargaining between states should never break down. Rational decision-makers should always prefer to conclude ex ante negotiated agreements to avoid the ex post inefficiency of war. The two states should simply conclude a peaceful bargain that is equal to what would be negotiated at the end of hostilities but that provides the advantage of not having to incur the costs of conflict. However, given the fact that conflict does occur, it is obvious that sometimes states are unable to make these kinds of agreements. What explains this failure of peaceful bargaining?

A central explanation of bargaining failure, whether with respect to the occurrence of war, labor strike, coalition breakdown or other bargaining inefficiencies such as delay is uncertainty.\footnote{Another explanation for conflict invokes commitment problems (Fearon 1995, Powell 2004). This explanation asserts that states are unable to reach a settlement because neither side can trust the other to uphold a deal in the future. A scenario in which commitment problems play a role is one in which one state, which is temporarily weak, is becoming more powerful over time. The other state, i.e. the one that is
Uncertainty is the result of asymmetric information. Information is asymmetric or incomplete when at least one side does not know the reservation point of the other side (i.e. the point that makes the other side indifferent between accepting and rejecting the deal). Each side’s disagreement point is a function of that side’s probability of winning \( p \), its costs of fighting and its valuation of the issue at stake (both of which make up \( c \), i.e. resolve). This means that if at least one side is unsure about either the other side’s resolve or its military strength or possibly even both, the situation is characterized by incomplete or asymmetric information.\(^7\) Furthermore, there may not only be one-sided incomplete information but also two-sided incomplete information: each side has private information concerning its own resolve and war-fighting capabilities and thus both sides are uncertain about the other’s resolve and capabilities.

In terms of the bargaining model of war, (one-sided) incomplete information is modeled by using a probability distribution: side A does not know the exact value of \( c_B \), for example, but it knows the probability distribution from which \( c_B \) is drawn.\(^8\) The greater the variance of this probability distribution, the more uncertainty there is about \( c_B \).

\(^7\) Information is asymmetric in the sense that the other side knows its own resolve and military strength perfectly well, i.e. it has private information concerning its costs of fighting, valuation of the issue and military capabilities.

\(^8\) One-sided incomplete information is modeled far more frequently than the less tractable two-sided incomplete information case. Furthermore, most bargaining scholars tend to model uncertainty about \( c_B \) rather than uncertainty about \( p \) (see Powell’s 2002 review article). A recent exception is Powell 2004b.
Conversely, the smaller the variance of the distribution of $c_B$, the less uncertainty confounds A.

Having defined uncertainty and the form it takes in the bargaining model, the question remains how exactly uncertainty matters. Why can it lead to conflict? To answer this question, suppose that A can make a take-it-or-leave-it offer to B, which then decides to either accept or reject this offer. If both states have complete information, i.e. both states know the probability of winning ($p$) and their respective resolve ($c_A$ and $c_B$), the dissatisfied state A will make an optimal demand. A will simply make the largest demand that B will accept: it will demand the point in Figure 2.1 that is B’s reservation point (i.e. $p + c_B$). If A makes a demand that equals $p+c_B$, B is indifferent between fighting and accepting the deal. Any demand that asks for a more favorable division for A will be rejected because B prefers fighting to accepting such a demand. Any smaller demand is inefficient for A— it can gain more without provoking violent resistance from B. Thus, under complete information, A will know how much to demand from B without provoking it to fight and B will know how much to give A without provoking A to take what it wants violently. In other words, under complete information, the two sides will peacefully renegotiate the division of the issue and conflict should never occur.

While, with complete information, there is a simple solution to the situation and the states will always be able to settle their differences without a violent clash, this is not the case for the incomplete information scenario. If A is unsure about its probability of winning or B’s resolve, it can no longer determine B’s reservation point ($p+c_B$) and make an optimal demand. In this case it faces the dilemma of either making a demand that is too large and would be rejected by B and therefore lead to conflict, or a demand that is
too small, which would be inefficient since it leaves B with a too favorable division of the issue. This implies that when uncertainty exists there is a positive probability that A’s demand will be rejected and war ensues: A may accidentally demand too much. In this sense, incomplete information can cause conflict.\footnote{Note that uncertainty does not necessarily lead to conflict since there is also a positive probability that A will estimate its probability of winning and B’s resolve correctly or that A will underestimate its probability of winning and B’s resolve which would lead to a demand that B will accept and war is avoided. However, while under conditions of complete information war should never occur, it can occur in an incomplete information scenario. See also Gartzke 1999.}

However, if incomplete information can lead to costly conflict, why do rational state leaders not simply exchange information on their military capabilities and their resolve in order for both sides to be able to correctly determine \( p, c_A \) and \( c_B \)? Fearon (1995) argues that the cause of bargaining failure and conflict is not incomplete information by itself but incomplete information paired with incentives to misrepresent. While both leaders prefer to avoid war, they also want to obtain a favorable settlement. Their desire to make a better deal for themselves leads them to misrepresent their military strength and/or resolve. If they can convince the other side that they have a high probability of winning a military confrontation, will suffer low costs and/or value the issue highly, they can force the other side to accept a worse bargain. Since each side faces this incentive to misrepresent military strength and resolve in order to gain more, their announcements concerning troop strength, quality of military technology, and determination are not credible. The exception are cases in which states back their policy announcements by building weapons, mobilizing troops, concluding alliance treaties, supporting foreign troops in a different country, or by creating domestic political costs that would have to be paid if the announcement is proven false (Fearon 1995, p.396). Such signals can give credibility to policy announcements because they require a state to
pay costs to make an announcement: rational states will only pay such costs if they are serious about their position. Thus costly signals tend to be more credible. The problem, however, is that costly signals can themselves make conflict more likely because they can generate a real risk of war.\textsuperscript{10} Uncertainty and the incentive to misrepresent encourage the use of costly signals, but costly signals may increase the chance of conflict.

While Sartori (2002) does not agree with Fearon’s argument that only costly signals can effectively transmit information about resolve and military capabilities, her conclusions are similarly pessimistic. Sartori argues that diplomacy, or cheap talk, can sometimes help state leaders confer information about their actual level of resolve and their military capabilities. While state leaders occasionally feel tempted to bluff, they also want to avoid acquiring a reputation for bluffing. States prefer to give in on small issues and not bluff in order to have greater credibility when they declare that they are willing to fight on more important issues. If a state has developed a reputation for not being a bluffer, the other side is less likely to challenge that state if it declares it is determined to fight. Under these conditions, conflict can be avoided. However, Sartori also argues that while it is true that the defender is more likely to deter an attack when it has a reputation for not bluffing, the defender sometimes ends up fighting when, if it had not committed itself, it would not have fought (p.146f.). Once the defender has committed itself through diplomacy it feels like it has to fight if the challenger attacks since following through on its threat is necessary in order to be able to maintain its reputation for honesty that may become important in future interactions. This means that the probability of conflict may

\textsuperscript{10} Consider for example troop mobilization. Once states have mobilized, they have incurred a significant part of the costs of conflict. Thus, their costs have lowered, making them potentially unwilling to settle for less. Furthermore, by mobilizing their troops leaders have staked their reputation on taking a tough stance. Backing down and withdrawing troops may be associated with domestic reputation costs. Leaders may then prefer to fight.
potentially be higher when states use diplomacy. The reason for this is similar to the reason for why costly signals might make conflict more likely: both costly signals and diplomacy serve as forms of commitment and as Sartor puts it, “commitment is a double-edged sword” (p.137). Once state leaders commit themselves through costly signals they may pay significant audience costs if they back down; once state leaders use diplomacy to commit themselves they need to follow through to avoid acquiring the damaging reputation of being a bluffer.

Both costly signals and the use of diplomacy can help convey information about a state’s resolve and capabilities and thereby reduce the chance of conflict. However, both also can increase the chance of conflict by forcing state leaders to follow through on a threat. Uncertainty is a powerful explanation for the occurrence of conflict: unmitigated uncertainty increases the chance of conflict but the means by which uncertainty can be reduced also carry risks.

Part 2: Changes and the Bargaining model

A. How do changes affect the likelihood of conflict?

The preceding discussion of the bargaining model suggests that conflict occurs when a dissatisfied state demands a greater share of the issue at stake and this demand is rejected by its opponent. Furthermore, rejection of the demand and bargaining failure are a consequence of uncertainty. Thus we can point to status quo dissatisfaction combined with uncertainty as the central factor in the occurrence of conflict. Anything that makes a state dissatisfied and introduces or exacerbates uncertainty increases the risk of violent
clashes. In this section, I argue that changes in the relationship between states, in their domestic politics, or in the value of the issue can do both.

States are willing to accept the status quo and remain in a peaceful equilibrium—that may or may not be supported by a formal conciliatory agreement—if no major changes occur. This is true for cases in which the states have fought a war and the peace agreement has provided a new status quo, as well as for cases in which the states have competing claims but have not made explicit demands to change the status quo.\footnote{One could argue that the existence of competing claims implies that there is status quo dissatisfaction and that demands have been made. I argue that states can experience competing claims without necessarily being dissatisfied and challenging the status quo. Following Powell (1996), I define status quo dissatisfaction as a situation in which a state prefers to fight rather than maintain the status quo. It is possible that states have competing claims and would prefer a different status quo but that they are not willing to fight to obtain a new division. Similarly, Huth and Allee (2002) find 'status quo'-accepting years within their cases of competing territorial claims.}

When the status quo is negotiated it is perceived by both sides as an efficient equilibrium. While it may be the case that one side is not perfectly satisfied with the division of the issue and would prefer a greater share of the issue at stake, neither side is willing to fight to get a better deal. Both states are satisfied and a peaceful equilibrium has been established. As long as no shocks occur that may transform the parameters underlying the peaceful equilibrium, neither state will become dissatisfied and no additional uncertainty will be introduced. Under these conditions conflict is unlikely.

The question then is which kinds of changes lead one side to be dissatisfied and challenge the status quo and which kinds of changes create or exacerbate uncertainty. With respect to the first part of the question we know that side A will be dissatisfied if $q < p - c_A$ and B will be dissatisfied if $q > p + c_B$. This means that any change in the probability of winning ($p$) has an effect on the opponents’ dissatisfaction. If side A has an increased probability of winning, $A$ might become more dissatisfied; if side B becomes
more likely to win, B will potentially become dissatisfied and make a demand for a
bigger share of the issue under dispute. This implies that anything that changes the
probability of winning can create status quo dissatisfaction. While any change in the
probability of winning makes it more likely that one side becomes dissatisfied and makes
a demand, only a change that decreases \( c_A \) and \( c_B \) (i.e. increases the resolve parameter)
will make a state dissatisfied. In other words, since \( c_A \) and \( c_B \) are a function of the costs of
fighting and the value of the issue at stake, anything that decreases costs or increases how
much a state values the issue at stake makes dissatisfaction more likely. If \( c_A \) or \( c_B \) are
increased, it is more likely that the status quo provides greater utility than fighting a war.
Even if there is a large probability of winning, a state may be unwilling to go to war if \( c_A \)
or \( c_B \) are excessively high. High costs and a less valuable issue at stake increase the
probability that \( q < p - c_A \) is fulfilled for A and \( q > p + c_B \) is fulfilled for B.\(^\text{12}\)

Two important clarifications are in order. First, it is not changes in the probability
of winning \textit{per se} that increase the likelihood that a state will become dissatisfied but
changes \textit{relative} to the value of the \( p \) when the status quo was established. The status quo
distribution of the issue reflects particular values of \( p \) and \( c_A \) and \( c_B \) that characterized the
opponents’ probability of winning and their resolve when the status quo was first
established. As long as \( p \) and \( c_A \) and \( c_B \) do not change relative to their values when the
status quo was created, the parties will remain satisfied. However, if changes occur that
make one side more likely to win relative to its probability of winning when the status

\(^{12}\) If \( c \) increases (i.e. resolve decreases) it becomes less likely that one side is dissatisfied because either the
costs of fighting are too high or the issue is not valuable enough to warrant violence. The fact that \( c \) can
change in a way that makes it more likely that the status quo is sustained also opens up the possibility for
an interaction between the parameters \( p \) and \( c \). If \( p \) increases for side A but at the same time \( c_A \) also
increases, A may be no more likely to make a demand. Similarly, if side A’s probability of winning
increases but \( c_B \) decreases (i.e. B’s resolve increases), B may be no less likely and possibly more likely to
make a demand. Thus, it is important to be aware of the interaction between \( p \) and \( c \) when examining
whether and how shocks affect the equilibrium.
quo was first established or increases its resolve relative to its resolve when the status quo was first established, that state may become dissatisfied with the status quo and make a demand for a more favorable division of the issue. This suggests that the number of changes has no effect on whether a state will become dissatisfied and make a demand. For example, if \( p = 0.5 \) when the status quo first came into place, but then shifts to \( p = 0.7 \) and then back to \( p = 0.5 \), A is not more likely to be dissatisfied after the second change than after the first change. In fact, I expect A to be more likely to be dissatisfied after the first change since this change increases its probability of winning by 20 per cent relative to the status quo probability of winning. The second change, however, moves A back to the same probability of winning it had when the status quo was first created which means it should not be dissatisfied after the second change (assuming its resolve did not change either). What matters is not the number of changes but the difference between the values of the parameters after the change and the values of the parameters when the status quo was first introduced.

Second, it is important to note that the ‘size’ of the shocks to \( p \), \( c_A \) and \( c_B \) relative to the status quo values of \( p \), \( c_A \) and \( c_B \) matter. Bigger shocks are more likely to make one side dissatisfied with the status quo and willing to go to war to obtain a better deal. However, smaller shocks might change the bargaining range in a way that the state that now has an increased probability of winning or an increased resolve prefers to have a better deal but is not willing to fight for this. In this case, that state is not dissatisfied according to the definition used here: its utility for maintaining the status quo still exceeds its utility for fighting. In order to better understand the difference between these two situations consider Figures 2.3, 2.4 and 2.5.
Figure 2.3 Situation before the shock

Here the status quo (q) lies inside the bargaining range and both sides are satisfied. This figure depicts the situation before the bargaining parameters are shocked, i.e., before the changes take place. It constitutes the baseline against which the other two graphs can be compared.

Figure 2.4 Large shock to p that is favorable to A

Here A’s probability of winning has increased to such a degree (compared to Figure 2.3) that it is willing to fight to get a better deal: q < p - c_A. A will make a demand and if B does not accept this demand, conflict ensues. Compare this to the Figure 2.5:

Figure 2.5 Small shock to p that is favorable to A
Here the probability of winning has again changed, with A being more likely to win than before (i.e. compared to Figure 2.3) but it has not changed to the same extent as in Figure 2.4. Still, given the shift of the probability of winning in A’s favor, A can gain more. B’s disagreement point is moved to the right of his earlier disagreement point (again compared to Figure 2.3). More technically, \( p^+ c_B \mid \text{change} > p^+ c_B \mid \text{no change.} \) Because B is now willing to accept a less favorable division of the issue at stake, A can demand a better deal and renegotiation might take place. However, conflict should not occur- not even under incomplete information- because A is not willing to back up its demand by fighting in the case that B refuses to accept the demand: its utility for maintaining the status quo is still greater than its utility for fighting \( (q > p-c_A). \) Since A cannot credibly back its demand by a threat of force, it is questionable that it would be successful at achieving renegotiation. Under these circumstances, A might not even demand renegotiation.\(^{13}\)

Shocks to the bargaining parameters \( p, c_A \) and \( c_B \) (i.e. changes in the probability of winning, the costs of conflict or the value of the issue at stake) relative to the status quo values of the parameters tend to create an incentive to renegotiate. Sometimes shocks are intense enough to induce such dissatisfaction with the status quo that a state is willing to fight to get a better deal; other times smaller changes occur that may make a state try to renegotiate but that do not change the circumstances enough to make that state willing to fight.

\(^{13}\) Under complete information A will not demand renegotiation; under incomplete information it might choose to make a demand and bluff. For a discussion of this see Powell (1999, p.93). The same logic also holds for the case in which B’s resolve decreases (i.e. \( c_B \) increases). Under these circumstances, A can obtain a better deal since B’s reservation point moves closer to A’s ideal point. Again, while A might want to make a demand for a more favorable division of the issue under dispute, it is not willing to fight for this new division. If it cannot back its demand with a credible threat of force, its demand is unlikely to be successful and it might not make a demand in the first place.
While changes that modify the probability of winning, decrease the costs of fighting or increase the value of the issue at stake relative to the status quo values of these parameters, can make it more likely that a state will become dissatisfied and make a new demand, this by itself does not necessarily lead to conflict. Only if the other side rejects the demand for renegotiation, conflict will occur. We have seen that this can only occur when states have incomplete information about their relative military strength and resolve.

Unfortunately, changes in the probability of winning, costs of fighting, and issue valuation might not only lead to dissatisfaction and an incentive to renegotiate, but also introduce or exacerbate uncertainty, making conflict more likely. Put more technically, in terms of the bargaining model, shocks can increase the variance of the probability distributions from which $c_B$ or $p$ are drawn.

Note that some degree of uncertainty can exist in the relations between states even if they are peacefully maintaining the status quo. States usually are not perfectly aware of who will win a military confrontation and at which costs. Only immediately after a war would we expect convergence of both sides’ beliefs about who wins and at which terms – the states have just observed the outcome. But even at the end of a war the opponents’ beliefs do not necessarily converge. As Werner and Yuen (2005) point out, if wars are interrupted, i.e. they terminate because of third-party pressures or if they are characterized by inconsistent battle patterns, uncertainty may persist even after the termination of hostilities.\textsuperscript{14} If states have not recently fought a war, there is likely to be even more uncertainty about $p$, $c_A$ and $c_B$ since they have not put their troops to the test. There might be some variation in the degree of uncertainty among states, with some

\textsuperscript{14} See also Smith and Stam (2003).
states having a better idea about what a confrontation would bring than others, but uncertainty naturally exists to some extent.

This uncertainty is further exacerbated by the occurrence of changes in the relationship between states, their domestic politics and the issue at stake. Whenever such a change occurs both parties might know that a change has occurred and they might even know the nature and extent of this change but this does not mean that they can calculate the exact impact of this change on the probability of winning or each side’s resolve. For example, observing that the other side increased its defense budget by five percent may lead state leaders to think that the other side now has a more competent military, but this is not directly translatable in how much more likely the other side will win a potential military confrontation. Increasing the defense budget by five percent might have a direct and significant effect on military performance in one state but might not be effectively translated into greater military strength in a less efficiently organized army.

If changes in the relationship between states, their domestic politics, and the value of the issue at stake may result in status quo dissatisfaction and, at the same time, increase uncertainty, then such changes may not only lead to peaceful renegotiation but also to conflict:

**P1**: Any change in the probability of winning \((p)\), relative to the probability of winning at the time the status quo was formed, increases the probability of both renegotiation and conflict.

**P2**: Any change that increases a state’s resolve (i.e. decreases \(c_A\) and/or \(c_B\), relative to the state’s resolve at the time the status quo was formed, increases the probability of both renegotiation and conflict. More precisely,
P2a. Any change that decreases a state’s costs of fighting, relative to its costs of fighting when the status quo was formed, increases the probability of both renegotiation and conflict.

P2b. Any change that increases a state’s valuation of the issue at stake, relative to its valuation of issue when the status quo was formed, increases the probability of both renegotiation and conflict.

B. Empirical Examples of Changes and Hypotheses

Having conceptually outlined the effects of changes on the likelihood of conflict, it is now important to discuss exactly what kinds of changes can lead states to become dissatisfied, press for renegotiation, and possibly resort to the use of force. Empirically, what kinds of events constitute shocks to the probability of winning, the costs of fighting, and the values of the issue at stake? In this section, I discuss a number of events that might affect the parameters of the bargaining model and propose corresponding hypotheses for an empirical test.

Probability of Winning

In the international relations literature the probability of winning is usually conceived of as a function of the relative power between states. This suggests the kinds of factors that might constitute shocks to \( p \). Any event or development that changes the relative power between adversaries relative to the status quo distribution of power, making one side more powerful than the other, constitutes a shock to \( p \) and makes demands for renegotiation and, given some uncertainty, conflict more likely.
Relative power is a function of both military and economic strength. Military strength directly affects a state’s ability to prevail in a military confrontation, while economic strength has an indirect effect on a state’s chance of winning a military confrontation. If a state is economically powerful it has latent resources that can be mobilized during a military confrontation, making the state ultimately more likely to win.

Any increase or decrease in economic or military strength relative to the states’ military and economic strength at the time the status quo division was negotiated may constitute a shock to \( p \). For example, industrialization, and economic growth generally, increases a state’s relative power. Similarly, states that discover valuable natural resources such as oil, diamonds or, in earlier times, salt, may become more powerful. On the other hand, economic decline such as stock market crashes, depressions, and bankruptcy can make a state less powerful and therefore decrease its probability of winning. If one state’s probability of winning decreases relative to its probability of winning when the status quo was negotiated this means that the other state’s probability of winning is increased and renegotiation and conflict become more likely. So not only economic development but also economic decline should be related to an increased chance of conflict.

Aside from developments that affect economic strength and thus indirectly influence military potential, certain events and decisions can shape military strength more directly. Most notably, an increase in the defense budget should increase a state’s probability of winning a military confrontation. If additional resources are devoted to a state’s military, more and better guns can be purchased and troops will benefit from better training. Furthermore, additional money for defense allows increasing the number
of troops hired by the state and thus makes for a stronger army. So could the introduction of a general draft, which does not necessarily require more spending. Changes such as these constitute shocks to the probability of winning and thus increase the likelihood of conflict.

_H1. Changes in relative power, compared to the distribution of relative power when the status quo was negotiated, increase the likelihood of both renegotiation and conflict between states with competing claims._

Furthermore, internal disasters such as hurricanes or earthquakes and internal violence affect how a state would perform in a military confrontation. States that suffer from internal difficulties such civil wars, riots, and protests are unable to deal with an external challenge at the same time and might make particularly good targets. For example, the 1971 war between India and Pakistan can be seen as a direct result of the revolt and secessions of East Pakistan. Pakistan's domestic chaos created a strategic opportunity for India to make territorial gains (Werner and Yuen 2005).

If the occurrence of internal violence affects a state's probability of winning then the end of internal fighting should do so as well. If a state suffers from internal violence when the status quo is first established but then becomes domestically more stable and is able to direct its resources against the external enemy, its probability of winning is increased relative to its probability of winning when the status quo division was negotiated. This leads to the following two hypotheses:

_H2a. The onset of internal violence in a state, that did not experience internal violence when the status was established, increases the probability of both renegotiation and conflict between states with competing claims._
H2b. The termination of internal violence in a state that experienced internal violence when the status quo was formed, increases the probability of both renegotiation and conflict between states with competing claims.

Costs of fighting

The international relations literature has identified regime type as an important factor affecting the costs of conflict.\textsuperscript{15} In democracies, leaders experience higher costs for fighting wars, which makes them less likely to prefer fighting to accepting the status quo. On the other hand, authoritarian leaders experience fewer costs and are thus more likely to fight to obtain a more favorable division of the issue (Morgan and Campbell 1991; Bueno de Mesquita et al 1999, 2003). Thus, if there is a constitutional change in a country after the status quo is established and the country turns into an authoritarian state, its costs of fighting are reduced, making it more willing to go to war.\textsuperscript{16}

H3. If a state that was a democracy when the status was formed turns autocratic, the likelihood of renegotiation and conflict between states with competing claims increases.

Value of the issue at stake

Shocks that increase a state’s valuation of the issue also increase the likelihood of conflict. One reason for a change in issue valuation is a change in government in one of

\textsuperscript{15} Note that in this section I am only interested in factors that affect the costs of conflict and that can change over time.

\textsuperscript{16} Note that only a turn towards authoritarianism but not a turn towards democracy by one of the states might lead to conflict. If B becomes more democratic its costs of fighting may increase which means that A can now obtain a more favorable deal because B’s reservation point moved closer to A’s ideal point. However, while A might want to make a demand for a renegotiation, it is not willing to fight for this new division. Even with incomplete information conflict should not occur. See footnote 10.
the states. While one party (or winning coalition) might not care much about a certain issue, it might be central to the agenda of another party. If, for example through an election, this second party comes to government it might choose to pursue the issue with great resolve.\textsuperscript{17}

However, one caveat is in order: it is not any change in leadership that should lead to renegotiation or conflict but only a change that brings to power a leader who values the issue more highly than her predecessor. If the new leader does not value possessing the territory more or possibly even values possessing it less than in its predecessor, renegotiation or conflict should be no more likely or potentially even less likely. This means that if one includes a variable that only indicates whether a leadership change takes place, this variable should receive no empirical support—some leadership changes make conflict more likely and others make conflict less likely.

Unsurprisingly, this is exactly what Werner (1999b) finds in her empirical analysis of the recurrence of conflict between former belligerents: the effect of leadership changes on the hazard of conflict is not statistically significant.\textsuperscript{18} The theoretical argument presented here explains her finding but the empirical test conducted here is unable to improve on Werner's analysis. While there is data on leadership changes\textsuperscript{19}, there is no information on the political orientations of leaders, let alone any data that might indicate whether one leader values the disputed territory more than past leaders. Thus, it is currently not possible to test the effect of leadership transitions.

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\textsuperscript{17} With respect to territory, a piece of land may become more valuable to one side if there is a change in government where a party that has ethnic ties with the population of the disputed territory takes over. Given the ethnic ties and the importance this issue probably assumes in its agenda this party might be dissatisfied with the current borders and demand more of the territory.

\textsuperscript{18} Werner's results are supported by my own analysis based on data for two regions (Middle East and the Americas).

\textsuperscript{19} Goemans et al. have assembled a data base of leader transition between 1875-2004 (Goemans 2004).
Part 3: Agreement Provisions and the Bargaining Model

A. How do agreement provisions affect the likelihood of conflict?

While changes in the relationship between states, their domestic politics and the value of the issue at stake increase the chance of conflict, decision-makers do not simply stand by and let these changes have their detrimental effect. Rational decision-makers, foreseeing that the future may bring many changes, try to prevent such changes from resulting in the outbreak of hostilities by designing agreements that increase the chance that shocks can be absorbed peacefully. As Holsti (1991) points out with respect to peace agreements, their success depends on their ability “to anticipate and devise means to cope with issues of the future” (p.353).

The existence of conciliatory agreements and their specific provisions increases the probability that, given the occurrence of changes, two opposing states will be able to manage their competing claims to the issue peacefully (either by maintaining the existing agreement or by peacefully renegotiating its terms) rather than resorting to the use of force. Conciliatory agreements help make the existing peaceful equilibrium more robust to environmental shocks. With a conciliatory agreement, conflict is less likely to emerge between a pair of states that experiences changes than without a conciliatory agreement. It is when changes occur and conflict is most likely that agreements matter most. If no changes occur, conflict is unlikely, whether there is an agreement or not; but when changes occur, the existence of conciliatory agreements and their design will become particularly important. Bringing together Fortna’s and Werner’s seemingly conflicting arguments, I claim that changes are an important predictor of the onset of violence but
that conciliatory agreements also have a tenable effect on the likelihood of conflict between states; and in order to understand the effect that agreements have we need to examine how agreements help stabilize peace when shocks threaten peace.\textsuperscript{20}

Two types of mechanisms are particularly useful at preventing changes from leading to conflict: cost-increasing provisions and uncertainty-reducing provisions. Cost-increasing provisions are designed to minimize the chance that a state will become dissatisfied with the status quo, i.e. that a state will prefer to go to war rather than accept the existing division of the issue.

If changes between the states or within a state increase a state’s probability of winning, it is more likely to become dissatisfied. Similarly, if a state’s costs of fighting decrease significantly or its valuation of the issue increases significantly, that state is likely to become dissatisfied with the status quo. The reason is that these changes affect the location and size of the bargaining range between the states. Changes in the probability of winning move the bargaining range closer to the ideal point of the state that has become more likely to win and decreases in \(c_A\) and \(c_B\) reduce the size of the bargaining range. Since both types of changes improve a state’s expected utility of fighting, they make the state less willing to accept outcomes further away from its ideal point. It then becomes more likely that the claimant that benefited from these changes becomes dissatisfied with status quo and demands a better deal. Combined with uncertainty, this dissatisfaction may lead to conflict.

\textsuperscript{20} Note that this has implications for my empirical tests. While Forina (2003 and 2004) and Werner (1999b and 2005 with Yuen) examine the effect of changes and agreement provisions by adding these as separate variables to their statistical model, I propose that the proper way of testing the effect of agreements is by using an interaction term.
By increasing the costs of fighting, cost-increasing provisions attempt to reduce a state's expected utility for conflict and thereby make it less likely that the state becomes dissatisfied with the status quo, even if changes in the $p$ and $c_A$ and $c_B$ do occur. The effect of cost-increasing provisions can be conceptualized using the following figures:

![Diagram](image)

**Figure 2.6 Pre-change situation for states without cost-increasing provisions**

Figures 2.6 and 2.7 present a scenario in which two competing states do not have cost-increasing provisions in place. In Figure 2.6, no change has yet occurred and both states are satisfied with the status quo—the status quo ($q$) is within the bargaining range. Now, if a change takes place, more precisely a change in the probability of winning that makes $A$ more likely to win, the bargaining range will shift closer to $A$’s ideal point:

![Diagram](image)

**Figure 2.7 Post-change situation for states without cost-increasing provisions**

In Figure 2.7, because $A$ is now more likely to win, its expected utility of conflict relative to its utility of maintaining that status quo has increased. Because it is more likely to win and obtain a more beneficial deal from fighting, the status quo, $q$, is not anymore acceptable. After the change in its probability of winning, $A$ now prefers to fight to get a better deal rather than to maintain the status quo. Given uncertainty, under these conditions conflict becomes a possibility.
If the two states do have a conciliatory agreement with cost-increasing provisions in place, conflict can be avoided because cost-increasing provisions make it less likely that A becomes dissatisfied and is willing to fight to get a better deal. If cost-increasing provisions are in place, the size of the bargaining range, i.e. the range of outcomes that are preferred to fighting by both sides, is larger than when no cost-increasing provisions have been negotiated.

**Figure 2.8: Pre-change situation for states with cost-increasing provisions**

The reason for the larger bargaining range is that both sides, A and B, would experience higher cost of fighting.\(^{21}\) Fighting is thus not anymore a very attractive option and the states are willing to accept outcomes further away from their ideal points.

**Figure 2.9 Post-change situation for states with cost-increasing provisions**

If, when the states have cost-increasing provisions, the same change in A’s probability of winning occurs as depicted in Figure 2.7, the bargaining range does still shift towards A’s ideal point. However, because A’s costs of fighting are high due to the

\(^{21}\) Here I assume that the cost-increasing provisions contained in the conciliatory agreement raise the costs of fighting symmetrically for both sides. In fact, it would be sufficient to assume that, in this scenario, A’s costs of fighting are increased by the agreement. However, most actual conciliatory agreements raise both sides’ costs of fighting.
constraints imposed by the agreement, A’s expected utility for fighting is likely to be lower than its utility from maintain the status quo. In other words, even though A has become more likely to win, because of the increased costs of fighting, conflict is not desirable. Unlike when no cost-increasing provisions are in place, A prefers to simply maintain the status quo.

The figures presented above reflect what may happen to states that do not have a conciliatory agreement with cost-increasing provisions, compared to those that do, if one state’s probability of winning increases. Essentially, by increasing the bargaining range, cost-increasing provisions reduce the chance that even if a state has become more likely to win, that it prefers to fight. Cost-increasing provisions have a similar effect with respect to decreases in \( c_A \) and \( c_B \). If environmental changes lead to a decrease in a state’s costs of fighting or there is an increase in the state’s valuation of the issue, these changes tend to decrease the size of the bargaining range, making it likely that the state becomes dissatisfied with the status quo. However, if the states do have cost-increasing provisions in place, then these provisions can weigh against decreases in \( c_A \) and \( c_B \) and prevent that the bargaining range shrinks as much as it would without cost-increasing provisions. In this way, cost-increasing provisions increase the likelihood that the status quo will remain acceptable to the two states even if \( c_A \) and/or \( c_B \) have decreased.

Essentially, we can conceive of cost-increasing agreement provisions as an additional parameter added on to our classical bargaining model. A state will be dissatisfied and willing to fight if \( q < p - c - \alpha \), where \( \alpha \) represents the additional costs for fighting imposed on A through the conciliatory agreement. The higher \( \alpha \), the less likely
will this inequality be met, the less likely a state will be dissatisfied and the less likely the occurrence of conflict.

**P3:** Given the occurrence of changes, conciliatory agreements with cost-increasing provisions reduce the likelihood of conflict between states with competing claims.

The second type of provision contained in conciliatory agreements addresses the second factor that tends to increase the likelihood of violent clashes. In order for conflict to occur, a state needs not only to be dissatisfied and make a demand but that demand also needs to be rejected by its opponent. According to the bargaining model, the main reason for why demands are rejected and bargaining breaks down is incomplete information. If the dissatisfied state has incomplete information concerning the probability of winning and the other side’s cost of fighting and/or its valuation of the issue at stake, it may accidentally demand too much; its opponent will then reject the demand and conflict becomes likely.

Since uncertainty is a key factor in the occurrence of conflict, rational decision-makers often attempt to design agreements that help reduce uncertainty by providing reliable information to both sides. This helps the states with competing claims locate a settlement that both find agreeable and avoid conflict.

**P4:** Given the occurrence of changes, conciliatory agreements with uncertainty-reducing provisions reduce the likelihood of conflict between states experiencing competing claims.
However, while both of these types of provisions minimize the chance of conflict, they have slightly different effects with respect to whether peace is maintained because the original agreement is upheld or a new agreement is negotiated in the face of changes.

Cost-increasing provisions affect the size of the bargaining range. If, for example, cost-decreasing shocks occur, such as one state’s transformation into an authoritarian regime, then cost-increasing provisions contained in the conciliatory agreement might weigh against these shocks. Cost-decreasing shocks will reduce the size of the bargaining range but the cost-increasing provisions contained in the agreement will ensure that the bargaining range remains larger than it would be if no agreement had been concluded. A larger bargaining range, in turn, increases the chance that the original agreement remains in the bargaining range. Similarly, if a shock occurs that increases a state’s chance of winning a military confrontation, the bargaining range will be shifted toward that state’s ideal point. Agreement provisions that increase costs, however, can increase the size of the bargaining range so that even if the bargaining range shifts, the original division stays in the bargaining range. As stated earlier, the $\alpha$-term (i.e. the costs imposed by the agreement for fighting) increases the probability that the inequality $q < p - c - \alpha$ holds and thus that both sides prefer to maintain the status quo.

While cost-increasing provisions raise the likelihood that the status quo is maintained despite changes, uncertainty-reducing provisions increase the likelihood of renegotiation. Uncertainty-reducing provisions help the two opposing states locate a bargain that is acceptable to both sides given that changes have occurred. Shocks to the bargaining parameters can change the location and size of the bargaining range and therefore make the status quo that was previously acceptable to both utterly unacceptable
to one side. If the status quo is not a viable option anymore, then a new deal needs to be located that is acceptable to both. The dissatisfied state (A) needs to find a demand that the other side (B) will accept. Uncertainty-reducing provisions help A identify this demand. Put more technically, uncertainty-reducing provisions help reveal which $x$ (i.e. division of the issue under dispute) fulfills the following inequality $x \geq p + c_B$ (i.e. which $x$ is minimally acceptable to B). If both sides know which kinds of deals will now be acceptable to the other side, they are more likely to settle on a new division of the issue. Thus, when there are uncertainty-reducing provisions, renegotiation is more likely to occur. This argument can be translated into the following two theoretical propositions:

**P5:** Given the occurrence of changes, cost-increasing provisions increase the likelihood that the status quo will be maintained and peace persists on old terms.

**P6:** Given the occurrence of changes, uncertainty-reducing provisions increase the likelihood of renegotiation, with peace continuing on new terms.

### B. Empirical Examples of Cost-increasing and Uncertainty-decreasing Provisions

Particularly useful provisions that are featured in conciliatory agreements include: troop withdrawal, demilitarized buffer zones, third party involvement to guarantee peace, peacekeeping, confidence-building measures (i.e. exchange of military information, hot lines, onsite or aerial verification), issue linkage, third party monitoring and arbitration clauses.

Most of these provisions fall into the cost-increasing category. Troop withdrawal and demilitarized zones make it physically harder to engage the other side militarily. When, due to the terms of the conciliatory agreement, the opponents have to withdraw
their troops, it becomes more costly to resume fighting than if the troops had remained in
the vicinity of the battlefield. In the case of contiguous states, moving troops from one
part of the country into another is costly, and in cases of noncontiguous states these costs
are even higher. Not only are such troop relocations costly, they are also time consuming.
If it takes days, weeks or even months to move troops back to the battlefield, the former
opponent will be able observe these movements and prepare for an attack. This means
that a surprise attack becomes much more difficult and an important advantage in
fighting is reduced. Under these conditions conflict becomes less likely.

\( H4. \text{ Given the occurrence of changes, conciliatory agreements with troop}
\]
withdrawal provisions reduce the likelihood of conflict between states with
\[ \text{competing claims.} \]

Demilitarized zones have a similar effect. While troop withdrawal provisions
usually command the relocation of troops to the status quo ante bellum, the withdrawal is
usually less extensive when demilitarized zones are created. Demilitarized buffer zones
often cover only two or three kilometers in which any military activity is forbidden. This
means that moving the troops back to the frontline might not be as costly as after a troop
withdrawal but there are still significant costs involved in bringing troops, arms,
munitions, and supplies back to the front line and setting them up so that they can carry
out effective offense and defense maneuvers. Furthermore, like troop withdrawal,
demilitarized zones also make surprise attacks more difficult and thus reduce the chance
that either side feels it can prevail in a battle.

\( H5. \text{ Given the occurrence of changes, conciliatory agreements that create}
\]
demilitarized zones reduce the likelihood of conflict.
The physical costs of fighting may also be higher if a third party has committed itself to guarantee peace between the opponents. In this case, the aggressor will not only have to fight its opponent's army but potentially also the forces of a guarantee power. If the aggressor needs to fight both the target and the guarantor it is less likely to win and more likely to bear significant costs. Third-party guarantees make fighting an unattractive option.

H6. Given the occurrence of changes, conciliatory agreements with third-party guarantees reduce the likelihood of conflict.

Unlike these cost-increasing provisions, peace-keeping and arbitration clauses make renewed conflict more costly not because they create physical constraints but because they create international reputation costs for violating the existing agreement. Peacekeepers can only be deployed with the consent of both sides and such consent signals the determination to foster peace. If suddenly one side attacks its opponent, the international reaction might be more severe than if no peacekeepers were deployed. Furthermore, the United Nations as well as the states that send peacekeepers do not like to see their troops in danger and may respond violently to such provocation.

H7. Given the occurrence of changes, conciliatory agreements that provide for peacekeeping missions reduce the likelihood of conflict between states with competing claims.

Similarly to peacekeeping provisions, arbitration provisions may also increase the international and domestic reputation costs for leaders. A state that promises to have its dispute arbitrated by another country or an international entity and then goes back on this promise and uses force is also likely to be seen as an aggressor. This should be even more
so in the case that a state has agreed to the arbitration process and even accepted the arbitration award but then violates the arbitration decision and uses military force to obtain a more favorable settlement. Again, whether the leader of this state will be punished by other leaders and/or its domestic public depends on a multiplicity of factors. However, given the possibility of costs for violating arbitration promises, one would expect that leaders generally are less likely to resume conflict when they have committed themselves to a process of international arbitration.

H8. Given the occurrence of changes, arbitration provisions reduce the likelihood of conflict between states with competing claims.

A final type of cost-increasing provision does not introduce physical constraints for fighting or produce reputation costs for states that violate the agreement but tries to increase costs by raising the stakes of violation. Conciliatory agreements may include provisions on cooperation on a number of profitable projects: a common hydroelectric plant, cross-border railways and other joint ventures. Presumably, both states benefit from such cooperation and if they started fighting they would not only have to pay the immediate costs of conflict but also the costs associated with a decline or loss of cooperation in these various fields. By linking other issues to the management of the competing claim, conciliatory agreements can increase the costs for defection and decrease the likelihood that states will fight.

H9. Given the occurrence of changes, provisions for cooperation on other issues reduce the likelihood of conflict between states.

All of these cost-increasing provisions reduce the likelihood of conflict between the claimants but they also increase the likelihood of a particular peaceful outcome: cost-
increasing measures increase the likelihood that the status quo will be maintained and peace continues on old terms. This leads to the following additional hypotheses concerning the effect of cost-increasing provisions:

- **H10.** Given the occurrence of changes, conciliatory agreements with troop withdrawal increase the chance that the status quo will be maintained.

- **H11.** Given the occurrence of changes, conciliatory agreements that create demilitarized zones increase the chance that the status quo will be maintained.

- **H12.** Given the occurrence of changes, conciliatory agreements with third-party guarantees increase the chance that the status quo will be maintained.

- **H13.** Given the occurrence of changes, conciliatory agreements that provide for peacekeeping increase the chance that the status quo will be maintained.

- **H14.** Given the occurrence of changes, arbitration provisions increase the chance that the status quo will be maintained.

- **H15.** Given the occurrence of changes, provisions for cooperation on other issues increase the chance that the status quo will be maintained.

Among the provisions that help reduce uncertainty between the two competing states are confidence-building measures and monitoring by third parties. Confidence-building measures include a variety of different provisions: a) procedures for the exchange of information on the size of forces, equipment, and location of troops, b) communication measures such as hotlines and regular consultative meetings by defense ministers of the two countries, c) aerial and other verification.\(^{22}\)

The first two types of confidence-building measures only work if states can rely on their adversaries to provide them with correct and reliable information. However, as

\(^{22}\) See Darilek (1999) for a typology of confidence-building measures.
Fearon (1995) and others point out, both parties to a claim have an incentive to misrepresent. In order to obtain a greater share of the issue under dispute they may try to bluff concerning their ability to win a war and their resolve to do so. But if bluffing is to be expected, how can confidence-building measures that rely on self-reporting by states be successful?

The reason is that bluffing is probably not as pervasive as it might appear. Sartori (2002) argues that while state leaders occasionally feel tempted to bluff, they also want to avoid acquiring a reputation for bluffing. In order to be able to make more credible threats when the stakes are high, they will generally tend to tell the truth and are therefore able to confer credible information concerning their actual level of resolve and their military capabilities through diplomacy. Self-reporting of troop strength, equipment and troop locations as well as hotlines and consultations between political and military leaders can thus help reduce uncertainty between states.

Aside from relying on the other side’s word, opponents can also design confidence-building measures that allow each side to check up on the other by using aerial verification or on-site inspections. Such provisions sidestep problems that might result from the incentive to bluff and should therefore be a particularly valuable means by which to gather information about military capabilities.

A different means by which to gain independent information, i.e. information not provided by the other side, is to use information generated by third parties, such as international organizations. Third parties such as the United Nations, regional organizations, or groups of states sometimes send monitors for observation. These monitoring missions may help provide important information about the other side’s
capabilities and resolve. Based on information received either by means of own verification, monitoring by third parties or by the other side states should be able to have a better idea about $p$, $c_A$ and $c_B$, even if changes occur, and the less uncertainty characterizes the situation, the lower the chance of conflict.

$H16$. Given the occurrence of changes, conciliatory agreements that provide for confidence-building measures decrease the likelihood of conflict between states with competing claims.

$H17$. Given the occurrence of changes, conciliatory agreements that involve monitoring by third parties, decrease the likelihood of conflict between states with competing claims.

Both confidence-building measures and third-party monitoring should reduce the likelihood of conflict between states with competing claims and they should do so by making it more likely that the two claimants renegotiate peacefully. This suggests the following set of hypotheses:

$H18$. Given the occurrence of changes, conciliatory agreements that provide for confidence-building measures increase the chance of peaceful renegotiation.

$H19$. Given the occurrence of changes, conciliatory agreements that involve monitoring by third parties increase the chance of peaceful renegotiation.
Part 4: Summary of the Argument and how it fits into the literature

To summarize and clarify the argument outlined in this project the following diagram may prove helpful:

![Diagram](image)

**Figure 2.10: Summary of Argument**

The diagram shows that the status quo (which may or may not be characterized by the presence of a conciliatory agreement) persists as long as no major changes take place. Once changes occur, one of the states—presumably the one who believes that it has benefited from the shock—may become dissatisfied with the status quo and make a demand for a change in the distribution of the issue. If changes occur but neither of the states becomes dissatisfied, no demand is made and the status quo stays in place. If a demand is made and the status quo is challenged, the two states may either decide to retain the status quo, to renegotiate the division of the issue peacefully, or they may fight. Whether the states are able to find a peaceful settlement depends on the degree of uncertainty about the probability of winning and the opponent’s resolve. If there is
incomplete information the dissatisfied state might make a demand that is too large to be accepted by its opponent and conflict will ensue. However, whether changes will lead to conflict also depends on whether a conciliatory agreement is in place: when there is a conciliatory agreement states will be less likely to end up in conflict even if significant changes have taken place. The presence of a conciliatory agreement not only has the general tendency of increasing the likelihood of a peaceful outcome; its specific provisions also affect the form that peace will take. Cost-increasing provisions make it more likely that the status quo prevails. Uncertainty-reducing provisions tend to increase the chance that renegotiation will occur.

Chapter 2 outlines the theoretical argument concerning the effect of both changes and agreement provisions on the probability of renegotiation and conflict between two claimants. The chapter also provides a number of hypotheses concerning the effect of certain types of changes and agreement provisions that can be evaluated empirically in order to gauge the explanatory power of the theoretical argument. In Chapter 3, I explain how these hypotheses can be tested.
Chapter 3:
Research Design

Part 1: Case Selection

In order to examine my hypotheses concerning the effects of changes and conciliatory agreement provisions on the durability of peace and the occurrence of renegotiation, I use Huth and Allee’s (2002) list of 348 cases of world-wide territorial claims between 1919 and 1995. Huth and Allee define territorial claims as “disagreements between governments over (a) the location of existing international boundaries in particular sectors or along the length of their common border, (b) the refusal of one government to recognize another’s claim of sovereign rights over islands, claiming sovereignty for itself instead, or (c) the refusal of one government to recognize another state as a political-territorial unit, laying claim to the territory of that state” (p.300).

There are three distinct advantages to using this list of cases as the basis for the empirical test. First, Huth and Allee have attempted to identify the population of territorial claims in the period between 1919 and 1995. Their data include claims from all regions of the world and spans a relatively long time period. This increases confidence in statistical results.23

Second, Huth and Allee’s data contain sufficient variance with respect to conflict levels and conciliatory agreements to test the theoretical propositions presented in this project. Cases are identified based on the existence of territorial claims (written political

23 The problem of few cases is not a theoretical one but an empirical one. Since the theoretical argument formulated here applies irrespective of place and time, the size of the sample should not matter. However, using a larger data set is beneficial given the use of maximum likelihood estimation that is sensitive to the number of cases: the more cases, the more accurate the estimates.
statements or verbal policy declarations by representative government officials) rather than the level of conflict. The data include cases in which no violence transpired, as well as cases in which militarized interstate disputes occurred, and cases where the claims resulted in full-blown interstate wars.\textsuperscript{24} Furthermore, for all levels of contention, there are cases in which claimants designed conciliatory agreements as well as cases in which no such agreements were concluded; the agreements concluded also contain varying provisions.

The third advantage is of a more practical nature. While Huth and Allee did not themselves collect the agreements signed by the claimants, they do record the dates of various rounds of talks. Rather than having to identify cases of competing claims myself and investigate whether and when agreements have been signed, I am able to rely on this existing list of cases and use the information already available in order to help me locate conciliatory agreements.

Despite the significant advantages to working with Huth and Allee’s data, there is also a possible disadvantage that needs to be discussed: Huth and Allee’s list of competing claims is limited to territorial disagreements, while the argument in this paper applies to any type of claim. However, an exclusive focus on territorial issues would only be problematic if such issues were particularly prone to peaceful resolution. Finding that conciliatory agreement provisions make peace more durable in easy cases does not mean they can be successful in harder cases. However, it is not the case that territorial issues are particularly amenable to peaceful conflict resolution. Rather, the opposite is true: territorial issues have been found to be particularly conflict-prone. The extant literature

\textsuperscript{24} Of the 348 cases of territorial claims, 56% experience no militarized conflict and the remaining 44% experience one or multiple rounds of MIDs (Huth and Allee 2002, p.37). Furthermore, 40 wars evolved out of the territorial claims covered by Huth and Allee’s data (p.30).
reveals a widespread consensus that territorial issues increase the likelihood of initiation and escalation of militarized disputes and crises, as well as foster the emergence of rivalries and their escalation into violent conflicts (Gochman and Leng 1983, Holsti 1991, Vasquez 1993, Hensel 1996, and Senese 1996, Brecher and Wilkenfeld 1997, Huth 2000). The fact that territorial disputes are more likely to lead to violent conflict than other claims implies that this project examines particularly hard cases for international cooperation. If it can be demonstrated that conciliatory agreements are successful at preventing violence in territorial disputes, this suggests stronger support for the argument that institutions and their design matter.

Before Huth and Allee’s data can be used to test my hypotheses concerning the effect of agreement provisions and shocks, five important changes that affect the number of cases need to be carried out. First, in Huth and Allee’s data the same territorial claim can yield two cases if both states are challengers. For my analysis, I use non-directed dyads and thus can eliminate duplicates.

Second, after eliminating duplicates of the same case, Huth and Alle’s data still contains multiple claims between the same pair of states. There are two reasons for this: one has to do with Huth and Allee’s coding of claim termination and the other with whether claims were treated separately by the claimants.

With respect to claim termination, if a challenger pursues a claim, the challenger and the target agree on some kind of settlement, but after a few years there is another challenge concerning the same piece of land, Huth and Allee code this as two cases. If challenger and target reach some agreement on the issue under dispute, the claim is considered to have terminated. If new disagreements about the issue evolve later, this is a
new case. In my data, both the initial challenge and the resurfacing of the claim need to be considered part of the same case. I am interested in examining how, once states develop competing claims, these claims are managed and whether the management of the claim is successful in averting conflict. A resurfacing of the claim helps determine whether the initial claim was successfully managed or not. Thus, all claims between states concerning the same issue are part of one case.

Aside from claims that resurface, the same pair of states might also have multiple territorial claims in Huth and Allee’s dataset if the two states themselves treated these claims as separate issues. Given the theoretical argument formulated in this paper, however, it is more appropriate to combine all cases of territorial claims between the same pair of states into one case. Rather than conceptualizing a number of bargaining processes concerning different pieces of territory, the bargaining process is conceptualized as applying to the entirety of the territory that can be divided between the claimants. When states find themselves in a status quo this is a ‘general’ status quo. Keeping the claims separate implies that there can be a status quo for one claim and not for another, which seems inappropriate given the theoretical argument. Furthermore, if changes occur and one side becomes dissatisfied there is no reason to expect that it will demand more of territory 1. It might as well demand more of territory 2 or claim a new piece of territory, in which case my change hypotheses might not find any support. However, this is not the case because changes do not lead states to potentially become dissatisfied and demand more but because changes do not necessarily lead states to demand more of a specific piece of territory. Bargaining over 1 is simply not independent
from bargaining over 2 and 3 and the three claims should be treated together. Thus, I combine all claims between the same pair of states into one claim.\textsuperscript{25}

Third, in some of Huth and Allee's claim cases there are multiple states on one or both sides. Most of these cases involve colonial powers.\textsuperscript{26} Consider for example the dispute between Britain/Kuwait versus Saudi Arabia. Here Britain, the colonial power in charge of Kuwait, is involved in a dispute with Saudi Arabia on behalf of Kuwait's boundaries. Until Kuwait's independence, Saudi Arabia and Britain are the main protagonists. When Kuwait achieves independence in 1961, the claim continues between Saudi Arabia and Kuwait. Cases like these are split up into two separate claims: first the claim between the colonial power and its adversary which is censored when the colony becomes independent, and second the claim between the former colony and the original adversary that begins after the colony gains independence.

Fourth, Huth and Allee's data contain a few cases involving countries that are not members of the international system according the Correlates of War data (Correlates of War Project, 2005). For these cases, it is not possible to obtain information on a number of central independent variables. For this reason, a claim is dropped when at least one side is not a system member. This leads to the elimination of two further claim cases.\textsuperscript{27}

Finally, the fifth change is the result of needing to define empirically what the status quo point is. This is crucial for two reasons. First, I need to determine the starting

\textsuperscript{25} The exception is cases of colonial powers in different regions of the world. I do not combine the cases between Britain and France in the Americas with those between Britain and France in the Middle East.

\textsuperscript{26} One exception is the claim starting in 1958 between East Germany/Soviet Union versus US/West Germany/France/UK. This claim is dropped because it would be misleading to code a claim between each of the countries on one side with each of the countries on the other. Furthermore, the data already contain the claim between East Germany and West Germany.

\textsuperscript{27} The two cases are Hijaz-Najd and North Yemen-Asir. Furthermore, in a case like Britain/Iraq-Najd/Saudi Arabia, no separate claim for Britain-Najd is recorded. However, as described earlier, there is a Britain-Saudi Arabia claim that ends in 1932 when Iraq becomes independent and after that a claim between Iraq-Saudi Arabia.
point for my observations. Second, I need to identify the point relative to which changes are measured. For Werner the status quo point is the end of the war and for Fortna it is the conclusion of the cease-fire agreement.

I determine as the status quo point the division of the issue that results from the first interaction of the competing states after the claim starts.\(^{28}\) Say the claim starts in 1951 and in 1953, after either talks or a conflict, the two states arrive at an agreement on the division of the issue. This agreement is the new status quo (which can be the same as the status quo in the beginning of the claim if the states simply reaffirmed the division already existing in 1951).\(^{29}\) This status quo point is then used as the starting point of the case and the point relative to which changes are measured.

This operationalization of the status quo point leads to the exclusion of a few claim cases in which either the states never engaged in talks or a militarized dispute or in which talks and disputes occurred every year after Huth and Allee’s beginning of the claim.\(^{30}\) In total, this happened in 22 claim cases, all of which were dropped from the data set.

\(^{28}\) Huth and Allee identify the beginning of a claim based on “either written documents or public statements by state leaders in which the leaders of one government claim the territory of another state” (Huth 1998, p.23). I cannot use the beginning of the claim, as defined by Huth and Allee, as the starting point of my observations for two reasons. First, in some cases states experience conflict in the first year of their territorial claim. By definition, in these cases, the first year of the claim is not a status quo year. Second, some of the territorial claims started well before 1919 but only appear in Huth and Allee’s data from 1919 onwards. Huth and Allee’s time-frame is 1919 until 1995 and claims that started before 1919 are left-censored in their dataset. Note that if cases started before 1919 it is possible that they reached a status quo well before 1919. In this case, it would be incorrect to define 1919 as the baseline to compare possible changes. The baseline should be the year in which the status quo was first reached.

\(^{29}\) I examined for all of Huth and Allee’s cases the duration of time that passes between the beginning of the competing claim and the first talk or MID. If many years pass between the beginning of the competing claim and the occurrence of talks or a MID then it may be inappropriate to determine the result of the first talk or MID as the status quo. I found that in more than 85 percent of the cases a talk or MID occurs within five years of the start of the competing claim.

\(^{30}\) The latter is particularly the case for claims that start in 1990 or later.
After these changes to Huth and Allee’s data I obtain 125 territorial claims in the
three regions for which I have collected all agreements: 42 claims in the Middle East, 41
in the Americas, and 42 in Europe.\footnote{31} Using these claims, I then create a data set in which
every observation is a territorial-claim-status-quo-year. For each territorial claim, I
determine the (first) status quo that the two competing states reach after (or in) 1919 and
include as an observation every year following this initial year until conflict or
renegotiation occurs. If neither conflict nor renegotiation occurs, the observation is coded
as right-censored in 1995.

Consider for example the following case(s): a territorial claim starts in 1951, in
1953 the two states make concessions after talks, and in 1975 they fight. For this case, I
include 1953 and every year following 1953 until 1975. There are 22 rows in the data for
this territorial claim. After 1975, a new case starts and if there is no militarized conflict or
renegotiation until the cut-off point in 1995 this case is coded as right-censored. This
means that one territorial claim may yield one or more cases: whenever the states engage
in a militarized conflict or renegotiate the divisions of the issue (for the renegotiation
analysis) a new case starts.\footnote{32} Based on this operationalization, I obtain 245 cases (85 in
the Middle East, 85 in the Americas, and 75 in Europe).

\footnote{31} There are actually 127 dyads but for two of these dyads, Oman-UAE and Albania-Yugoslavia, I have not
been able to find sufficient information on their conciliatory agreements. Since all agreement provision
variables for these cases are coded as missing, they are dropped from the analysis entirely.
\footnote{32} The new case usually starts right after the MID. So if there is a MID until e.g. September 5, 1975, the
new case starts on September 6, 1975. The exception are cases in which states lost their independence for a
few years after the MID (e.g. World War II Europe). These cases start as soon as both states regain
independence.
Part 2: Dependent Variable

The dependent variable is the duration of time until either conflict or renegotiation. In order to code these variables I need to identify both when conflict occurs and when renegotiation occurs.

With respect to the occurrence of conflict, Fortna (2003, 2004) and Werner (1999b, 2005) use different criteria for what constitutes conflict. Fortna focuses solely on the occurrence of interstate war. In her analysis, peace ends when the opponents become involved in a new war as defined by the Correlates of War project (COW).\footnote{According to the COW definition, a war occurs between members of the inter-state system and involves at least one thousand battle deaths among all participants (Small and Singer 1982).} Werner’s study on the duration of peace after war examines three ways in which peace may end (Werner 1999b, p.921). First, she looks at whether either one of the former belligerents threatens the use of force. Second, she requires that peace terminate only if one of the belligerents actually uses force against the other. Third, like Fortna, she requires that peace only ends if a new war between the former belligerents occurs.

In this project, I use Werner’s second criterion for the breakdown of peace. The first criterion seems inappropriate given my theoretical argument and the third criterion appears to be too restrictive.

The argument developed in this project is based on the logic of the bargaining model of conflict. This model assumes that conflict is costly. While the threat of force might create some costs, it seems that the assumption underlying the bargaining model is much better met by conflicts in which force is not only threatened but used. The threat of force does not constitute bargaining failure but rather can be seen as part of the ‘peaceful’ bargaining process; and thus the conciliatory agreement need not reduce the chance that
there is a threat of force. On the other hand, conciliatory agreements should reduce the likelihood that one state actually uses violence against the other. Furthermore, it seems that it is not only the goal of conciliatory agreements to avoid full-blown interstate war but also the use of violence short of war. Undoubtedly, war is a very costly form of violence but disputes short of war can be very disruptive and costly as well. Conciliatory agreements are intended to channel disagreements into peaceful negotiations and prevent the use of force in principle.\textsuperscript{34} Thus I code conflict as occurring between a pair of states if they experience a militarized interstate dispute (MID) that involves the use of force (i.e. level 4 and higher) and in which the motivation of at least one of the two states is territory.\textsuperscript{35}

Unfortunately, Huth and Allee’s data records the occurrence of militarized disputes between the claimants but does not provide any information on the hostility level of the claimant’s interaction. This means it is not possible to determine whether actual force was involved or states were merely threatening each other. Furthermore, while there is some overlap between Huth and Allee’s data on militarized disputes and the Militarized Interstate Dispute (MID) data (Ghosn, Palmer, and Bremer 2004; Jones, Bremer, and Singer 1996), there are also significant discrepancies. This makes it difficult to identify which of Huth and Allee’s militarized disputes involve the use of force, even if the MID data set is used to fill in the information concerning the hostility level.

Given these difficulties, I rely mainly on the dyadic MID data version 2.0 (DYDMID2.0) compiled by Maoz (2005) to identify conflicts between the claimants.

\textsuperscript{34} Defining conflict more broadly also allows me to overcome a problem in the empirical analysis: too few cases of war. In the three regions that I analyze I count a total of 18 wars occurring.

\textsuperscript{35} It is important to note that a level 5 MID is actually an interstate war. Thus technically, I code conflict as occurring when the two claimants either experience a violent MID or an interstate war.
Using this version of the data ensures that, in the case of a multilateral dispute, the two
claimants did actually use force against each other. There are a total of 103 violent MIDs
in the data. Some dyads experience no MID at all, while others experience multiple
MIDs.\(^{36}\)

The second event of theoretical interest is the incidence of peaceful renegotiation
between the opponents. Renegotiations can be understood as any peaceful and mutually
recognized change in the territorial status quo between the claimants.\(^{37}\) In order to
determine when such renegotiations occur, I cross-reference my 125 claims with Tir,
Schafer, Diehl, and Goertz’s (1998) data on changes of the territorial status quo (see also
Goertz and Diehl 1992). Tir et al.’s data is an attempt to identify all changes of the
territorial status quo that involved at least one nation-state between 1816 and 2000. Tir et
al. report on the gainer, the loser, and the entity exchanged, including whether it was only
a piece of this entity or the entity in its entirety. This information makes it easy to match
the cases of competing claims and Tir et al.’s territorial changes. Furthermore, because
Tir et al. identify the type of procedure involved in the transfer, and whether conflict
occurred, it is possible to distinguish cases of peaceful renegotiation from cases in which
the exchange of territory was the result of a violent interaction. Whenever Tir et al.
indicate that the change in territorial status quo was peaceful and conquest was not the
procedure of transfer, I code this as an instance of peaceful renegotiation. There are a
total of 28 peaceful renegotiations in the three regions included in the analysis here.

\(^{36}\) Of the total 125 dyads, 48 experience at least one violent MID. The highest number of MIDs experienced
by any one claim dyad is 10 (Ecuador-Peru).

\(^{37}\) Note that for renegotiation to occur the division of the issue under dispute must be modified. A change of
conflict management provisions (i.e. cost-increasing and uncertainty-reducing provisions) is not considered
renegotiation.
Observations can end in three ways: conflict, renegotiation, or censoring. So far I have discussed the two outcomes of theoretical interest. The third possibility, censoring, occurs for the following reasons. An observation is censored at the end of the observation period (i.e. 1995) if the claimants experience neither conflict nor renegotiation. Cases are coded as censored if they become obsolete because the two claimants unify (e.g. East and West Germany) or if one of the claimants disintegrates (e.g. Czechoslovakia). Cases are also coded as censored if the piece of territory that is at the center of the claim becomes independent and does not continue to pursue the claim anymore (e.g. the claim between Brazil and Britain concerning Guyana).

Part 3: Statistical Method

As discussed above, the dependent variable is the duration of the status quo until either conflict or renegotiation. Whenever a spell (here: status quo acceptance) may fail in more than one way and there is reason to believe that the covariates have a different effect on the likelihood of each outcome, competing risks analysis is an appropriate statistical technique (Box-Steffensmeier and Jones 2004). I assume that the status quo is at risk of being overturned by conflict or by renegotiation at any time and that, conditional on the independent variables, the hazards of the risks are independent.

A commonly applied framework to the problem of independent competing risks is the latent survivor time approach (Box-Steffensmeier and Jones 2004, p.168-172). This approach assumes that there are $k$ events and each has a potential failure time associated with it. However, not all events and their associated durations will be observed: only the shortest duration time is actually observed. Once an observation has failed through one
event it is no longer at risk for any of the other k-1 events. This means that the duration times for the other k-1 events are latent. In the context here, both renegotiation and conflict are possible events but an observation cannot experience both events: a spell will terminate either through renegotiation or through conflict.\textsuperscript{38} If the spell terminates though conflict then the duration time associated with conflict is observed; the duration time associated with the renegotiation outcome is latent.

While we have not observed duration times for the k-1 events (i.e. the ones that did not actually occur), we do know that the latent duration times for these k-1 events lasted at least until the first event occurred. Therefore, the latent duration times for the k-1 events can be treated as censored with the occurrence of the first event. In the context here this implies that in order to analyze the hazard of conflict, renegotiations can be treated as censored and, in an analysis of renegotiation, conflict can be censored. Thus I estimate separate duration models for renegotiation and for conflict, treating the termination due to the other risk as randomly censored.

A variety of parametric and non-parametric duration models that differ depending on the assumption one makes about the hazard rate, i.e. the instantaneous rate of failure at time \( t \) conditional on survival until time \( t \), can be employed within the competing risks framework. Box-Steppensmeier and Jones (1997, 2004) argue that if the researcher has strong theoretical expectations regarding the shape of the hazard rate conditional on the covariates included in her model, she should choose the parametric model that fits these expectations. For example, if it is assumed that the hazard rate does not change over time, the exponential distribution is appropriate; if the researcher expects either that the hazard rate is monotonically increasing or monotonically decreasing, the Weibull specification is

\textsuperscript{38} It may also be the case that neither event occurs and the case is right-censored.
appropriate. However, if a researcher has no strong theoretical expectation concerning the shape of the hazard rate, Box-Steppensmeier and Jones strongly recommend the Cox proportional hazards model. The advantage of the Cox model is that it avoids making restrictive assumptions about the hazard rate that may not be met by the data and may lead to misleading inferences concerning the effect of the covariates and duration time. Instead of positing a monotonically increasing or decreasing hazard rate (like the Weibull specification), the Cox leaves the form of the baseline hazard rate unspecified.

Theoretically, there is some reason to expect positive duration dependence here. Over time more and more changes occur that are not all measured by the independent variables included in the model. The more such changes occur, the more likely one side will become dissatisfied and the more uncertainty will be introduced. Thus, both renegotiation and conflict should become more likely with time passing by. However, it also seems intuitively plausible that peace may be precarious at first and then gets safer for a while because the status quo has become increasingly institutionalized and neither state wants to deviate from it. The first argument implies a monotonically increasing hazard, while the second suggests a non-monotonic hazard that first increases and then drops.

Given that both a monotonically increasing hazard and a non-monotonic hazard appear plausible and given that making false assumptions about the shape of the hazard rate can result in misleading inferences, I follow Box-Steppensmeier and Jones

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39 The assumption of a monotonically increasing hazard is based on a notion that as time passes by the spell is more likely to fail (i.e. positive duration dependence). Conversely, the assumption of a monotonically decreasing hazard is based on a notion that the spell is less likely to fail as time passes by (i.e. negative duration dependence).
recommendation and opt, at least initially, for the more flexible Cox proportional hazards model which leaves the form of the baseline hazard unspecified.\footnote{Continuous time models, including the Cox model, generally assume that there are no ties (i.e. coterminal events). However, the Cox model, unlike parametric models, can be adapted to handle tied data (Box-Steppensmeier and Jones 2004, p.53f.). I use the Efron method for most analyses. Since my data contains many ties, I also estimate the statistical models using the exact discrete method, which is preferable but also more computationally demanding. Results are consistent.}

However, I retrieve the baseline hazards for conflict and renegotiation from the Cox model estimates. If the baseline hazard appears to be monotonically increasing or decreasing or takes a form that corresponds to the assumptions of another parametric model, the parametric model will be preferred. The reason is that if the assumptions underlying parametric models are met, these models are slightly more efficient than the semi-parametric Cox model (Box-Steppensmeier and Jones 2004, p.87).

While the Cox model does not make any restrictive assumptions about the shape of the hazard, it does assume that the effect of each covariate on the hazard is proportional over time. In other words, it assumes that the effect of an independent variable on the likelihood of experiencing an event does not vary over time. Box-Steppensmeier and Zorn (2001) and Box-Steppensmeier, Reiter and Zorn (2003) warn that a violation of the proportional hazard assumption may lead to biased estimates, incorrect standard errors, and misleading substantive interpretations.\footnote{If the proportional hazard assumption is not met the estimate obtained will be an average of the effects of the covariate over time. However, the covariate may never actually have the effect the estimate suggests: it may, for example, have a stronger effect on experiencing the event early on and a weaker effect later on.} Because of the consequences from violation of the assumption, they strongly recommend that it be tested and, if evidence of a non-proportional effect of a covariate found, that this be corrected for in one’s model. I test for the possibility of nonproportionality using the Grambsch and Therneau global proportional hazards test statistics and Harrel’s rho, as suggested by
Box-Steffensmeier and Jones (2004, p.135). For those covariates that turn out to have a non-proportional effect on the hazard, I correct for this non-proportionality by creating an interaction term between the offending variable and a function of time (Box-Steffensmeier and Jones 2004, p.131-137).

Interpretation of the basic Cox model is straightforward. Since coefficients are parameterized in terms of the hazard rate, a positive coefficient suggests that the hazard rate is increasing, i.e. that higher values of the covariate lead to an increased risk of experiencing the event of interest. Conversely, negative coefficients indicate that the hazard rate is decreasing, i.e. that higher values of the covariate reduce the risk of experiencing the event. This basic interpretation is complicated by the inclusion of time-varying covariates.

Given the nature of the independent variables, in particular the change variables, I need to complicate the Cox model by including time-varying covariates (TVCs), i.e. covariates that take on different values over time. Given data availability, the TVCs are measured annually. Time-varying covariates can be interpreted as the change in the log-hazard ratio for observations that experience a unit change in the value of the TVC versus observations that experience no such change in the value of the TVC at time $t$. The estimated covariate parameter reveals by how much the risk of an event increases or decreases given the change in the value of the covariate (Box-Steffensmeier and Jones 2004, p.104ff.).

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42 Both Grambsch and Therneau’s and Harrel’s test statistic rely on Schoenfeld residuals (i.e. observed minus expected values of the covariates at each failure time) to identify whether the proportionality assumption is met. The Grambsch and Therneau test allows determination of whether the model as a whole shows evidence of non-proportional hazards, while Harrel’s rho allows to identify exactly which covariates have non-proportional effects (Box-Steffensmeier and Jones 2004, p.135).
43 I use the Lin and Wei (1989) variance estimator to correct for the non-independence of observations that is further aggravated by the introduction of time-varying covariates (Box-Steffensmeier and Jones 2004).
A further complication arises due to the nature of the data: there is likely to be some unobserved heterogeneity in the data. Unobserved heterogeneity occurs if covariates that affect an observation's likelihood of experiencing an event are not included in the analysis because they are unmeasurable or unobservable. The result is that even if all explicitly included covariates are held at the same level some observations are more failure-prone than others. Unobserved heterogeneity can lead to inconsistent parameter estimates, wrong standard errors, as well as misleading estimates of duration dependence (Box-Steffensmeier and Jones 2004, p. 141).

Box-Steffensmeier and Jones point out that this is a typical complication in studies of militarized disputes where some dyads never experience conflict (p.148). Thus, I expect that heterogeneity may be present in the analysis undertaken here. In fact, there are three additional reasons to suspect heterogeneity in the data analyzed here. First, the data include cases of claimants that have experienced a variation of hostility levels in the past. There are claimants that have fought full-blown interstate wars (e.g. Bolivia and Paraguay, Greece and Turkey), cases that have had militarized disputes below the level of war (e.g. Ecuador and Peru, Chad and Libya), and cases in which the states have expressed their claims verbally but not used any violence against each other (e.g. Colombia and Nicaragua, Sweden and Finland).

Although the theoretical argument assumes that the same mechanism of conflict and renegotiation applies to all of these cases, there may be some variation in conflict proneness among them. Holding the type and magnitude of changes constant, the status quo may be more likely to be overthrown between states that have fought wars before

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Since not only the yearly observations within a specific case are unlikely to be independent of one another but multiple cases can involve the same two states and therefore there is also non-independence across cases, I cluster on the dyad rather than the case.
than between states that have had relatively peaceful relations. The reason is that states that have fought a war over their borders previously probably value the disputed territory more than other states. If both states place a large value on obtaining as much of the disputed territory as possible their resolve is likely to be high. In terms of the bargaining model, this implies that the bargaining range may be smaller (given lower $c_A$ and $c_B$), which in turn means that if even a smaller change occurs one of the states can become dissatisfied and willing to fight.

A second, but related, concern is the fact that some of the cases experience multiple militarized disputes. Of the 125 claim dyads included in this analysis, 20 experience more than one MID (Ecuador and Peru fight the largest number of times: 10), while only four dyads renegotiate more than once and none renegotiate more than twice. Like cases that involve states that have previously fought wars, cases with multiple MIDs may be characterized by greater hostility levels and are therefore potentially more failure-prone, especially with respect to experiencing conflict. Repeated events may thus reflect an underlying heterogeneity in the data: some dyads are more failure prone than others and the repeated failures in these dyads are not independent of one another. Standard duration analysis will falsely treat the events as independent and therefore lead to an overestimation of the amount of information these repeated events provide: the standard errors will be smaller than they should be. Taking the heterogeneity of different observations into account, helps address the problem of falsely deflated standard errors.

A third factor that might introduce additional heterogeneity is the fact that I have not measured all changes that may occur in the relations between the states or within each

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44 This assumes that the costs of fighting are held constant—or at least that costs are not any higher for states that place great value on the issue under dispute.
of them. Changes in relative capabilities, the occurrence and termination of civil wars, and regime transition from democracy to autocracy are explicitly included in the model. However, there are a number of other types of changes that may possibly take place and that affect the likelihood of conflict and renegotiation as well (e.g. natural disasters, swings in public opinion). Some cases may never experience any of these non-measured changes but others may. Those cases that do experience such changes are then more likely to experience renegotiation or conflict than those that do not. Being unable to measure all the different changes that might affect the probability of winning, decrease the costs of fighting, or increase the value of the issue at stake is likely to introduce heterogeneity.

In order to address the problem of heterogeneity I employ two techniques. First, to address the first source of heterogeneity, I employ a simple strategy: I run the standard Cox model on a subset of cases that have previously fought wars. If results for this subset of cases diverges significantly from the results for the complete set of cases, this suggests some evidence of heterogeneity and I be will able to derive more refined conclusions for this set of cases.

Second, a more sophisticated means of dealing with unobserved heterogeneity and one that also addresses the issues of repeated events and unobserved changes, is the use of a “frailty model”. The basic idea underlying the frailty model is to introduce into the hazard rate an additional random parameter that accounts for random frailties. These frailties may be individual-specific or group specific. The frailties here are group specific: all cases associated with a dyad that has previously fought a war, experienced multiple MIDs, or experienced unmeasured changes are more failure prone. Thus I
estimate a Cox model with a frailty parameter shared at the dyadic level. The model assumes that frailties are distributed according to the Gamma distribution (Box-Steffensmeier and Jones 2004, p.142-148). Estimation of this model helps identify whether heterogeneity is indeed present and helps account for the effect of this heterogeneity on the parameter estimates and standard errors.

Part 4: Independent Variables

Three sets of independent variables are included in my analysis. First, I discuss the operationalization of the change variables. Second, I explain how I create the variables pertaining to agreement provisions. Third, I discuss the interaction terms between change variables and agreement provision variables.

1. Change variables

With respect to the first set of variables, I formulated hypotheses concerning shocks to the probability of winning and the costs of conflict. The following changes constitute shocks to $p$: changes in relative power and internal violence. Shocks to costs occur when a state that was a democracy at the time the status quo was formed experiences a regime transition and becomes autocratic. In the following subsection, I discuss how these various different types of shocks can be operationalized.

Relative power is operationalized using the COW composite index of national capability score (CINC) (Singer 1987). Rather than coding a state’s absolute power, the

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45 It is possible to assume that frailties are distributed according to any continuous distribution with positive numbers, a unit mean and a finite variance. Other possibilities than the Gamma distribution that have been used are the inverse Gaussian and log-normal. However, the Gamma has been the most readily adopted (Box-Steffensmeier and Jones 2004, p.144).
CINC score codes each state’s power relative to all other members of the international system. It reports each state’s proportion of the total power in the international system based on six demographic, industrial and military indicators. The advantage of such a relative rather than absolute indicator is that it facilitates comparison over time which is exactly what I am interested in here. Unlike for example GDP, the CINC score does not require any adjustment if it is measured over time.

In building my measure of changes in relative capabilities based on the claimants’ CINC scores, I rely on the measures suggested by Werner (1999). Werner operationalizes changes in relative capabilities in two ways: differences in the opponents’ growth rates and percentage change in the opponents’ relative capabilities. While the two measures get at very similar concepts, I focus on the second measure which seems slightly more appropriate given my theoretical argument about how changes in the probability of winning (i.e. p) can affect the likelihood of conflict. The probability of winning is a function of the states’ relative capabilities and thus I predict that changes in relative capabilities should increase the likelihood of conflict. In this context, a measure that focuses on the states’ power *relative* to each other rather than compares individual states’ growth rates seems more appropriate.

Note that Werner’s measure needs to be adjusted according to my theoretical argument. While Werner expects changes in relative capabilities from one year to the next to increase the likelihood of conflict, I expect that changes in relative capabilities compared to the status quo distribution of capabilities increase the likelihood of conflict. Thus, I measure changes in relative power as the percentage change in the belligerent’s

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46 The formulas that correspond to these measures are the following: \(((P_{i,t} - P_{i,t-1})/P_{i,t-1}) - ((P_{j,t} - P_{j,t-1})/P_{j,t-1})\) and \((P_{i,t}/P_{i,t-1}) - (P_{j,t}/P_{j,t-1})\). See Werner 1999, p.923, fn.7.
relative power *compared to the status quo* and adjust Werner's formula in the following way: \( (P_{i,t} / P_{j,t}) - (P_{i,sq} / P_{j,sq}) / (P_{i,sq} / P_{j,sq}) \). This measure is highly skewed. While the mean change of relative capabilities from the status quo value of relative capabilities is a change of 79 percent, fewer than 20 percent of the observations experience such a change. There are many observations with small changes and very few with large changes.

Aside from this continuous measure, I also create a dummy variable to capture whether a significant change in relative power occurs in a given year: I use as a threshold a change in relative capabilities of 30 percent or more. About 50% of the observations experience such a change.

Second, internal violence, especially civil wars, might also change a state’s ability to win in a military confrontation and thus may constitute a shock to the probability of winning. Information regarding the occurrence of civil wars is available from the Correlates of War (COW) project (Sarkees 2000). Based on the COW intra-state conflict data version 3.0, I create a variable that compares the domestic situation in any given year to the domestic situation in place when the status quo was first established.

If no civil war was ongoing when the status quo was formed then the occurrence of a civil war may weaken the state that is experiencing the domestic conflict and increase the other state’s probability of winning, making that state more likely to be dissatisfied. If the reverse is true and a civil war was ongoing when the status quo was formed, then the end of the civil war strengthens the state that was experiencing the civil war. Given that now its resources need not be diverted towards the domestic conflict, the

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47 I also operationalize the change in relative capabilities variable according to the second measure suggested by Werner. Like Werner, I find a high correlation between the two measures (.78).

48 It is difficult to identify what degree of change constitutes a 'significant' change. In addition to using the 30% threshold, I ran the analysis with a 10%, 50%, and 100% threshold. I discuss the results for these various thresholds in chapter 5.
state will be more likely to win a military confrontation with its opponent than it was when the status quo was introduced. This means it should be able to obtain a better deal after the end of the civil war than the one concluded while the civil war was ongoing. Thus, it is likely to become dissatisfied with the status quo and make a demand for renegotiation.

In order to capture these dynamics, I create a variable that is coded 1 in a given year if either of the states is experiencing a civil war but did not experience a civil war when the status quo was introduced or when the states are not experiencing a civil war but did so when the status quo was introduced. Conversely, this variable is coded 0 if neither state experiences a civil war and did not experience one when the status was formed or if one of the states is experiencing a civil war and did experience a civil war when the status quo was formed.\textsuperscript{49} In about 40 percent of the cases one side either experienced a civil war that then terminated or was involved in a civil war when the status quo was formed but the civil war then ended.

With respect to the costs of fighting, the international relations literature has identified regime type as an important factor. In democracies, leaders experience higher costs for fighting wars, which makes them less likely to prefer fighting to accepting the status quo. On the other hand, authoritarian leaders experience fewer costs and are thus more likely to fight to obtain a more favorable division of the issue (Morgan and Campbell 1991; Bueno de Mesquita et al 2003). Thus, if there is a regime change in a

\textsuperscript{49} If both states experienced a civil war when the SQ was established but the civil war stops in both countries then those years during which the civil war stops in both countries and internal peace is ongoing are coded 0 – neither side should now be more likely to win. Similarly, if neither side had an ongoing civil war when the SQ was established and a civil war erupted in both countries then the years in which both countries experience the civil war are coded as 0. While civil war might impose different resource constraints on the parties, it seems as if neither party should be more likely to win a military confrontation.
country after the status quo is established and the country turns autocratic, its costs of fighting are reduced, making it more willing to go to war.  

In order to determine whether such a regime change occurs, I use the democracy scores provided by the Polity IV data (Marshall and Jaggers 2002). Unfortunately, a significant number of observations have missing values for their Polity IV democracy score. This is particularly problematic if the status quo year is missing: every following year is missing as well. Due to missing Polity IV data, 48 cases would drop out.

In order to minimize this problem I fill in information on whether a state is a democracy or not in the status quo year of the claim using three rationales. First, using Polity IVd, I identify cases in which the status quo was formed during a part of the year in which the democracy score is not missing and code these cases accordingly. Second, I use the Freedom House data to code cases that involve Belize or Surinam. Country years that are coded as “free” in the Freedom House data are coded as democracy years; cases that are coded as “not free” are coded as autocracy and “partially free” years are coded as a democracy when the political rights score was 4 and higher.  

Third, cases that were coded as missing due to foreign occupation (-66) or collapse of political authority (-77) are coded as autocracy years. Fourth, for the remaining cases, I identified whether a

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50 According to my theoretical argument, only a change towards autocracy, not a change towards democracy, should make conflict more likely. If a state becomes more democratic, its costs increase. This means that the other side might be able to get a better deal but it is not willing to back up such a demand with force since it still prefers the existing status quo to the use of force.

51 I focus on the political rights score since the argument about why autocracies should experience lower costs of fighting essentially rests on the notion that the likelihood that a leader who wages a war is removed from office is lower in autocracies than democracies. Political rights address exactly this aspect of regime type. The political rights score ranges from 1 (free) to 7 (not free). Coding scores of 4 and higher as non-democracies is thus conservative.
country is a democracy or not using historical sources. In about 15 percent of the cases at least one state experienced a regime transition from democracy to autocracy.

Before detailing the operationalization of the agreement provision variables, a short note on the nature of the change hypotheses is in order. A number of the change hypotheses appear to be monadic: H2a, H2b, and H3 point to the effects of the occurrence and termination of internal violence, a switch towards an autocratic domestic system and leadership change. While these are developments that affect primarily individual states, theoretically these developments also affect the relationship between the two claimants by modifying the location and size of the bargaining range between them. Changes in either state’s probability of winning or costs of fighting affect the equilibrium between the states. For this reason, the effect of the change variables is appropriately assessed in a dyadic context.


In order to code conciliatory agreement provisions, I collect all conciliatory agreements between the competing states. Conciliatory agreements are defined as ‘written agreements signed by official representatives of both states that help manage or resolve existing competing claims between the signatories’. The conceptual definition, outlined in greater detail at the end of chapter 1, emphasizes that conciliatory agreements are a) always written, b) they are signed by both sides to the claim (although other states may be members as well), and c) they help resolve or manage the competing claim.

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52 For example, the Polity IV data codes Italy in 1925 as experiencing a transition (-88). However, Mussolini already had dictatorial powers conveyed to him in 1923.
Based on this conceptual definition, I develop a list of operational criteria to identify conciliatory agreements that I then use to guide the data collection. In order for an agreement between two claimants to be counted as a conciliatory agreement the agreement needs to be written, it needs to be signed by both sides and it needs to mention differences between the claimants in either a specific or abstract fashion. This means that not only agreements that mention explicitly the issue at stake but also agreements that refer more generally to differences that the states seek to resolve are included in the data set.  

One additional operational criterion that is implied by the conceptual definition requires further explanation. In this project, I am interested in the agreements that states sign willingly in order to manage their competing claims. Thus, peace treaties that, after a significant victory, are imposed on one of the claimants, against this state’s will and sometimes even without consulting it in the process of creating the peace treaty, should be excluded from consideration even if they potentially contain relevant provisions. Practically, this implies that all World War I and World War II peace treaties are excluded from the main analysis presented here.  

Using these criteria of the operational definition, I compile a list of agreements based on a number of very useful secondary sources as well as documents series. In

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53 Purely economic agreements (e.g. tax treaties) and legal agreements (e.g. extradition treaties) are excluded. Agreements that often meet the requirements for a conciliatory agreement are Boundary Treaties, Treaties of Friendship and Good-Neghborliness, Treaties for the Avoidance of Frontier Incidents, Arbitration Agreements, and Peace and Cease-fire Agreements.

54 The provisions from imposed agreements are not included in the analyses presented here but I did collect and code these agreements as well. The reason is that if imposed agreements include cost-increasing and/or uncertainty-reducing provisions, these are likely to affect the relationship between the claimants as well and should be controlled for. Unfortunately, there is too little variation in provisions from imposed agreements and it is not possible to include these variables as separate controls. However, I did run analyses in which I include provisions from imposed agreements along those from conciliatory agreements. The results are consistent.
particular, the first step involves listing the agreements mentioned in Huth and Allee’s (2002) and Klein, Goertz and Diehl’s (forthcoming) case summaries, Biger’s (1995) description of boundaries, Day’s (1987) and Butterworth’s (1976) synopses of border and territorial disputes as well as the material provided by the *International Boundary Studies* project. I then search three main document sources for the time between 1919 and 1995 (*League of Nations Treaty Series*, *United Nations Treaty Series* and *British Foreign and State Papers*) for all relevant agreements. I have been able to obtain a significant portion of the agreements listed in Huth and Allee, Klein et al, Biger, Day, Butterworth, and the International Boundary Studies in these document collections. For those agreements that are missing, I turn to secondary sources that discuss the relations between the claimants and/or the claim in detail. While I have been able to locate and obtain a copy of most agreements (at least for Latin America, the Middle East, and Europe), a few agreements unfortunately remain elusive.\(^\text{55}\) However, whenever secondary sources allow me to conclude that an agreement meets the definition of a conciliatory agreement and provide sufficient information to code this agreement, I go ahead and code it based on these secondary sources. 187 of the about 300 agreements that I collected contain either cost-increasing or uncertainty-reducing provisions.

There are ten conciliatory agreement provisions that are of theoretical interest to this study. Cost-increasing provisions include troop withdrawal, demilitarized zones, third party guarantees, peace-keeping, arbitration provisions, and provisions for cooperation on other issues. Uncertainty-reducing provisions comprise confidence-building measures such as exchange of information on maneuvers and troop size,

\(^{55}\) There are about 44 agreements that I expect may contain relevant provisions that I have been unable to find so far.
bilateral consultation and hotlines, surveillance of one party by the other, and monitoring by third parties. I code every conciliatory agreement for the presence or absence of these provisions.\(^{56}\)

Note that my coding simply identifies whether a provision is present or not but does not take into account the specific characteristics of the provisions, such as the number of peace-keepers or the width of the demilitarized zone. The reason is that theoretically the presence of any cost-increasing or uncertainty-reducing mechanisms should decrease the likelihood of conflict and uncertainty-reducing mechanisms should increase the chance of renegotiation. While in future research it may be interesting to refine the agreement provision measures, I will rely mainly on the simple determination if a certain provision is present or absent.

The identification of many of the cost-increasing provisions is straightforward. Conciliatory agreements contain provisions for troop withdrawal if they state that troops of either or both sides need to be moved back from their current location. While the extent of a troop withdrawal varies, with some agreements calling for only a partial withdrawal, some calling for a withdrawal to the status quo ex ante and some calling for a withdrawal beyond the status quo ex ante, I simply code for the presence or absence of any troop withdrawal. Similarly, I code the presence of a demilitarized zone if the agreement demands the establishment of a zone in which neither side is allowed to maintain any troops (or only a small number of troops), equipment, forts or other military

\(^{56}\) Note that the claimants may have multiple conciliatory agreements in place in a given year and each agreement may include different provisions. For example, in 1963 Hungary and Romania signed an agreement that provided for border cooperation (i.e. issue linkage). This agreement remains in place until the mid-1980s. Both are also signatories of the Helsinki Final Act (1975) that provides for information exchange on maneuvers, among other things. Thus during the second half of the 1970s I code both issue linkage and exchange of information on troop maneuvers as present.
installations, irrespective of whether such a zone spans the entire border and irrespective of how kilometers the zone spans.

Peacekeeping is similarly straightforward. If an agreement provides for the dispatch of peacekeepers by regional or international organizations, whether armed or unarmed and regardless of the number of peacekeepers dispatched, I code peacekeeping as present in the agreement.

While most of the cost-increasing provisions are straightforward, third party guarantees, arbitration provisions and provisions for cooperation on other issues are somewhat harder to code. I code a third party guarantee as present if the agreement contains an explicit statement that one or more third parties guarantee the execution of the agreement, i.e. the final delimitation of the boundary, or the boundary itself. Such a guarantee is contained, for example, in the 1942 Rio Protocol in which the United States, Argentina, Brazil and Chile state that they “shall continue until the final demarcation of the frontier between Peru and Ecuador, this Protocol and its execution remaining under the guarantee of the four countries (...)” (Art. 5).57 Another example is the British guarantee of the independence of Cyprus in 1959.

Conciliatory agreements can contain three types of arbitration provisions. First, they might promise to submit to arbitration any dispute that may arise. These promises do not refer to the specific claim and are contained in general arbitration treaties. While these promises are legally binding, since they are part of an international agreement between the two states, it seems that violating such a provision would not carry very high domestic audience costs. The states have made a commitment but it is unlikely that the

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general public will know about the existence of such an agreement and if the public does not know that such an agreement existed then it will not punish a leader for violating the commitment. On the other hand, violation of the two other types of arbitration commitments contained in conciliatory agreements is likely to be more costly. If states have submitted a specific dispute to arbitration or have accepted an arbitration decision, then go back on this and attack the other side, this is a much more salient violation and is thus more likely to create audience costs. For this reason, I code only arbitration provisions that specify that a particular dispute is submitted to an impartial tribunal and the acceptance of an arbitration award as cost-increasing arbitration provisions.

The final cost-increasing mechanism of interest is the presence of provisions for cooperation in other areas. In order to identify these provisions, I do not rely on statements about cooperation generally, but focus on cooperation with respect to the disputed territory. While provisions for economic, social, health, environmental etc. cooperation certainly increase the costs of conflict, I cannot claim to have obtained all agreements that cover these areas of cooperation. Therefore, a coding of the cooperation provisions based on these areas of cooperation would be incomplete. Instead, I code whether the agreement specifies that the claimants will cooperate on issues specific to the territory under dispute such as building bridges, roads, hydro-electric power plants, oil pipelines etc. Such cooperation increases the stakes of conflict since it might be lost if the states started fighting.

There are four uncertainty-reducing provisions of interest, three of which are traditionally referred to as confidence-building measures. Exchange of information on maneuvers and troop strength, bilateral consultations and hotlines, surveillance of one
party by the other constitute CBMs. The fourth measure is monitoring by a third party (or parties).

I create one variable for each type of confidence-building measure and one for monitoring by third parties. CBM1 is coded as present if the agreement specifies procedures for the exchange of information on the size of forces, equipment, and location of troops. CBM2 is coded as present if the agreement provides for communication measures such as hotlines and regular consultative meetings by the defense ministers of the two countries. CBM3 is coded as present when the agreement provides for surveillance of one party by the other such as on-site inspection or early warning systems. Finally, third-party monitoring occurs when the claimants agree to the presence of international observers in order to supervise the implementation of other provisions provided for in the agreement, e.g. that a cease-fire is sustained, troops are removed, or a demilitarized zone is established. Third-party monitors may be peace-keepers sent by the United Nations or regional organizations or they may be sent by one or multiple states that have agreed to help. For example, the guarantee powers of the Rio Protocol mentioned above sent observers for the Military Observer Mission Ecuador/Peru (MOMEP) in 1995. In other words, while I code third party monitoring as present whenever there is a provision for peacekeeping, not all third-party monitoring is done by peacekeepers.

Although cost-increasing or uncertainty-reducing provisions are only coded as present when they are mentioned in a written conciliatory agreement, the fact that a conciliatory agreement provides for these mechanisms does not necessarily mean that they have actually been implemented by the two states. While some provisions do not
require any specific action on behalf on the claimants in order to have their effect, others will only work as cost-increasing or uncertainty-reducing provisions if they are actually implemented. If the two claimants sign an agreement that submits their dispute to arbitration then no further action is required by the claimants. However, an agreement that specifies that a demilitarized zone shall be created does require the states do act in a particular way: they need to remove troops from the designated neutral area and dismantle potential fortifications and other military installations. For provisions of this latter type, it matters whether the states implement the provision mandated in the agreement. If the states do not create a demilitarized zone, they do not actually have higher costs of fighting and thus conflict should not be any less likely.

While, for a number of provisions, it is important to know whether they were actually implemented and until when they were implemented, this information can be very hard to retrieve. In order to deal with this problem I try to rely mainly on historical sources but, for those cases or individual provisions for which I have not been able to find sufficient information, I ultimately rely on the following coding rule: the provision is coded as present until a conflict occurs. The occurrence of a conflict automatically terminates all cost-increasing and uncertainty-reducing provisions unless a new conciliatory agreement after the end of the conflict specifies the continuation of the provision or the provision is part of an agreement that continues in force even after the conflict occurs.

I aggregate the cost-increasing and uncertainty-reducing measures in two ways. First, I create two dummy variables, one for cost-increasing and one for uncertainty-reducing provisions, which measure whether either of the cost-increasing and
uncertainty-reducing provisions are present. More specifically, the dummy for cost-
increasing provisions is coded 1 for a given year if the states have a conciliatory
agreement that provides for either troop withdrawal, demilitarized zones, guarantors,
submission to arbitration, acceptance of an arbitration award, or issue linkage. The
dummy for uncertainty-reducing provisions is coded 1 for a given year if the states have a
conciliatory agreement that provides for transfer of information on maneuvers/troop size,
bilateral consultations/hotlines, surveillance by the other party or third party monitoring.

For each year in which a conciliatory agreement that features a specific provision
is in place, the variable concerning this provision is coded 1 and 0 otherwise. If the
provisions of the conciliatory agreement change because a new agreement is created, the
coding for the provision variable changes. For example, say the competing states
conclude two conciliatory agreements and the first includes a provision for a
demilitarized zone and the second does not, I code the dummy variable for demilitarized
zone 1 for each year in which the first conciliatory agreement is in place and 0 for each
year in which the second conciliatory agreement is active.\textsuperscript{58}

Table 3.1 reports the frequency with which each of the cost-increasing and
uncertainty-reducing provisions appear in the data. I report frequencies for both cases and
claim dyads. There are a total of 245 cases and 125 dyads.

\textsuperscript{58} Note that in this example the second conciliatory agreement does not change the distribution of the issue. If it did introduce a different division, it would introduce a new case rather than change the coding of the provisions variable for the existing case.
Table 3.1: Number of cases and dyads with each type of provision

<table>
<thead>
<tr>
<th></th>
<th># CASES</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not present</td>
<td>Present</td>
<td>Not present</td>
</tr>
<tr>
<td>Troop withdrawal</td>
<td>213</td>
<td>32</td>
<td>103</td>
</tr>
<tr>
<td>DMZ</td>
<td>208</td>
<td>37</td>
<td>100</td>
</tr>
<tr>
<td>Peacekeeping</td>
<td>235</td>
<td>10</td>
<td>119</td>
</tr>
<tr>
<td>Guarantors</td>
<td>234</td>
<td>11</td>
<td>120</td>
</tr>
<tr>
<td>Submission to arbitration</td>
<td>230</td>
<td>15</td>
<td>112</td>
</tr>
<tr>
<td>Arbitration award</td>
<td>224</td>
<td>21</td>
<td>108</td>
</tr>
<tr>
<td>Issue linkage</td>
<td>202</td>
<td>43</td>
<td>93</td>
</tr>
<tr>
<td>Exchange of info on maneuvers etc.</td>
<td>197</td>
<td>48</td>
<td>81</td>
</tr>
<tr>
<td>Bilateral consultations and hotlines</td>
<td>163</td>
<td>83</td>
<td>67</td>
</tr>
<tr>
<td>Surveillance of one party by other</td>
<td>197</td>
<td>48</td>
<td>83</td>
</tr>
<tr>
<td>Third-party monitoring</td>
<td>227</td>
<td>18</td>
<td>115</td>
</tr>
</tbody>
</table>
These descriptive statistics suggest that for most provisions there is variation: almost all provisions are absent in the majority of the cases (with the exception of bilateral consultations) but most provisions still appear relatively frequently. All three types of confidence-building measures are the most frequent provisions. The most frequent cost-increasing provision is issue linkage, followed by demilitarized zones, and troop withdrawal. There are two provisions that appear more infrequently than most others: peacekeeping and guarantors only occurs in 5 and 6 dyads respectively.

I aggregate the cost-increasing and uncertainty-reducing measures in two ways. First, I create two dummy variables, one for cost-increasing and one for uncertainty-reducing measures, which measure whether either of the cost-increasing and uncertainty-reducing provisions are present. More specifically, the dummy for cost-increasing provisions is coded 1 for a given year if the states have a conciliatory agreement that provides for either troop withdrawal, demilitarized zones, peacekeepers, guarantors, submission to arbitration or acceptance of an arbitration award, or issue linkage. The dummy for uncertainty-reducing provisions is coded 1 for a given year if the states have a conciliatory agreement that provides for transfer of information on maneuvers/troop size, bilateral consultations/hotlines, surveillance by the other party or third party monitoring. Table 3.2 reports how many cases had cost-increasing provisions in place at some point during the duration of the claim, how many had uncertainty-reducing provisions, how many had both and how many had neither.
Table 3.2: Number of cases with cost-increasing and uncertainty-reducing provisions

<table>
<thead>
<tr>
<th>COST-INCREASING PROVISIONS</th>
<th>UNCERTAINTY-REDUCING PROVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not present</td>
</tr>
<tr>
<td>Not present</td>
<td>95</td>
</tr>
<tr>
<td>Present</td>
<td>47</td>
</tr>
</tbody>
</table>

In 95 of the 245 cases the two claimants did not have any cost-increasing or uncertainty-reducing provisions present. In 47 cases the claimants had at least one cost-increasing provision but no uncertainty-reducing provision in place and in 47 cases the reverse was true. Finally, in 55 cases the claimants had at least one cost-increasing and at least one uncertainty-reducing provision in place.

While the presence of any cost-increasing or uncertainty-reducing measure should reduce the likelihood of conflict and the presence of any uncertainty-reducing measure should increase the chance of peaceful renegotiation, it seems plausible that the more measures are in place the less likely conflict and the more likely renegotiation (for uncertainty-reducing provisions). The larger the number of cost-increasing provisions in place, the higher the costs of attacking one’s opponent and the less likely a state will become dissatisfied and willing to fight. Similarly straightforward, the larger the number of uncertainty-reducing provisions, the less uncertainty about the probability of winning and each side’s resolve, the more likely the two states should be able to peacefully renegotiate and avoid conflict. Given that these provisions might have such an additive
effect, I create two additional summary measures. I create one measure that counts the number of cost-increasing provisions and one measure that counts the number of uncertainty-reducing provisions in place in a given year. Table 3.3a and 3.3b presents the descriptive statistics for these two measures.

**Table 3.3a: Number of cases with 0-5 cost-increasing provisions**

<table>
<thead>
<tr>
<th>COST-INCREASING PROVISIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 provisions</td>
<td>143</td>
</tr>
<tr>
<td>1 provisions</td>
<td>61</td>
</tr>
<tr>
<td>2 provisions</td>
<td>23</td>
</tr>
<tr>
<td>3 provisions</td>
<td>13</td>
</tr>
<tr>
<td>4 provisions</td>
<td>5</td>
</tr>
<tr>
<td>5 provisions</td>
<td>0</td>
</tr>
</tbody>
</table>

This table reveals two things. First, the number of cases decreases consistently with increases in the number of provisions present: 61 cases have one cost-increasing provision, fewer have two (i.e.23), even fewer have three (i.e. 13) etc. Second, not a single case has a conciliatory agreement(s) that provides for all five cost-increasing provisions.
Table 3.3b: Number of cases with 0-4 uncertainty-reducing provisions

<table>
<thead>
<tr>
<th>UNCERTAINTY-REDUCING PROVISIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0 provisions</td>
<td>143</td>
</tr>
<tr>
<td>1 provisions</td>
<td>52</td>
</tr>
<tr>
<td>2 provisions</td>
<td>8</td>
</tr>
<tr>
<td>3 provisions</td>
<td>41</td>
</tr>
<tr>
<td>4 provisions</td>
<td>1</td>
</tr>
</tbody>
</table>

Unlike with respect to cost-increasing provisions, it is not the case that the number of cases decreases consistently with increases in the number of uncertainty-reducing provisions. Cases seem to either have only 1 provision or 3. The reason is that third party observers tend to not be combined with any of other uncertainty-reducing provisions and that the three types of confidence-building measures often appear together.

3. Interaction Terms

Finally, since a central argument of this project is that it is *given changes* that agreement provisions should matter most, I create interaction terms between change and agreement provision variables. First I create a variable that identifies whether there has been any change during a given year. This variable is coded 1 if either the dichotomous measure of changes in relative capabilities variable from the status quo is coded 1, the
civil war variable is coded 1, or the regime change variable is coded 1. If change is operationalized in this way, about 64 percent of the observations experience a change, while 36 percent do not.\footnote{It is important to note that these frequencies depend on the cut-off point for significant changes in relative capabilities. The cut-off point consistently used for the analysis presented in 30 percent.} I then multiply this variable with the dummy that indicates whether any cost-increasing provisions were in place and I also multiply it with the dummy that indicates whether any uncertainty-reducing provisions were in place.

Before moving on to the empirical analysis, a short summary is in order. Chapter 2 outlines the theoretical argument and the relevant hypotheses that need to be subjected to empirical testing. Chapter 3 explains the details of the empirical test: the cases used to test the hypotheses, the operationalization of independent and dependent variables, and the statistical method employed.

In this chapter, the scope of the study has been somewhat limited. While the theoretical argument developed in this project in principle applies to competing claims about any issue, the empirical test focuses on competing territorial claims. Because territorial claims are particularly conflict prone, they present a particularly hard set of cases to test the argument about the effect of agreements provisions. There are also certain practical advantages to using Huth and Allee’s (2003) list of territorial claims cases. First, a number of sources provide reliable information on when states might have concluded conciliatory agreements pertaining to territorial claims and agreements that address territorial questions tend to be published in major treaty sources. Second, using territorial claim cases provides a natural and easily measurable operational definition of the concept of renegotiation. Renegotiations can be operationalized as changes in the
territorial status quo between the states and data concerning such changes is available from an existing source (Tir el al. 1998).

Thus, narrowing down the set of cases to territorial claims is not only in line with the theoretical argument but actually makes it possible to conduct a reliable test of this argument. This test is presented throughout chapters 4 and 5. Chapter 4 focuses on the first part of the theoretical argument and examines the effect of changes in the probability of winning and decreases in the costs of fighting on conflict and renegotiations. Chapter 5 builds on chapter 4 but includes cost-increasing and uncertainty-reducing provisions alongside the change variables. Chapter 5 thus provides a test of the second part of the theoretical argument concerning the effect of cost-increasing and uncertainty-reducing provisions on the occurrence of conflict and renegotiation.
Chapter 4:

The Effect of Changes in the Probability of Winning and Decreases in the Costs of Fighting on Conflict and Renegotiation

This chapter evaluates empirically the theoretical propositions about the effects of changes in the probability of winning (i.e. \( p \)) and decreases in the costs of fighting (i.e. \( c_A \) and \( c_B \)), relative to the values of these parameters when the status quo was first established. Both of these types of changes should make it more likely that one of the claimants becomes dissatisfied with the status quo distribution of the issue and is willing to fight to obtain a better deal and, at the same time, these changes also exacerbate existing uncertainty with respect to the states’ military capabilities and resolve. Under these conditions, it is still possible for the claimants to renegotiate peacefully but there is also the possibility of violent conflict between them. Thus, changes in the probability of winning and decreases in the costs of fighting may lead to either conflict or renegotiation.

I examine these central theoretical propositions using an independent competing risks model in which I calculate two semi-parametric Cox models— one for conflict and one for renegotiation— and censor for the other risk. This model features the continuous measure of changes in relative capabilities\(^{60}\) and the civil war variable as measures of changes in the probability of winning and a variable that captures whether a formerly democratic state turns into an autocracy as a measure for decreases in the costs of fighting. The construction of all of these variables is explained in detail in chapter 3.

\(^{60}\) This variable is strongly skewed. In order to examine whether the functional form of this variable may be inappropriate I use the procedures described by Box-Steffensmeier and Jones (2004, p.126). I plot the martingale residuals against the changes in relative capabilities variable. I find no systematic deviation from 0, indicating that no transformation is required. See Appendix C, Figure C1.
Before reporting and explaining the results for this analysis, a brief digression is in order. When explaining the choice of the specification for the duration model employed within the framework of the competing risks approach in chapter 3, I emphasized Box-Steefensmeier and Jones' (2004) argument that the semi-parametric Cox model should be preferred. The reason is that the Cox model leaves the shape of the baseline hazard unspecified, while parametric models make restrictive assumptions about the shape of the hazard. While it is correct that parametric models, such as the Weibull specification, should not be used when assumptions about the shape of the hazard are not met (because they lead to misleading inferences about the effect of the covariates and duration time), they may be preferable when their assumptions are met. The reason is that the Weibull specification is slightly more efficient than the Cox model and thus will not tend to overestimate standard errors, as can be the case for the latter (Box-Steefensmeier and Jones 2004, p.87). Given the potential superiority of the Weibull specification when its assumption of a monotonically increasing or decreasing hazard are met and, given that the Weibull has been the preferred specification by both Werner (1999b) and Fortna (2003, 2004), I assess whether this model is potentially more appropriate here. I do this by retrieving the baseline hazard for both conflict and renegotiation from the Cox model described above. The shape of the hazard rate for militarized disputes is displayed in Figure 4.1 and the shape of the hazard rate for renegotiations is displayed in Figure 4.2.\footnote{The basic shape of the hazard for both conflict and renegotiation stays the same when the full model, including agreement provisions is estimated.}
Figures 4.1 and 4.2 suggest very clearly that a Weibull specification would be incorrect. The hazard for both conflict and renegotiation is neither monotonically increasing nor monotonically decreasing. The hazard for conflict increases for the first 10 or so years, then it decreases and after about 40 years there is again a slight increase. The
hazard for renegotiation increases sharply for the first 15 years, then it decreases for another 10 years and after that it experiences further increases and decreases. Given the shape of the hazard rate for both conflict and renegotiation, it is clear that the more flexible Cox model is preferable over the Weibull specification.

The shape of the hazard not only provides guidance on which statistical model is more appropriate but also allows us to draw some theoretical conclusions. Chapter 3 stipulates that there is some reason to expect positive duration dependence. As time passes by, more and more changes occur, which should aggravate uncertainty between the states and make it more and more likely that one of the claimants becomes dissatisfied with the status quo. Thus, as time passes by, observations should be more likely to fail, either through renegotiation or through conflict.

Figures 4.1 and 4.2 suggest that it is indeed the case that claim-dyads are increasingly more likely to experience conflict or renegotiation for the first 10 or 15 years after the status quo is put in place. However, it also appears that after these 10-15 years the risk of both conflict and renegotiation declines significantly. What this might suggest is that there is some kind of institutionalization effect: if the status quo has proven robust to changes for 10-15 years, states have come to accept this status quo division as legitimate and are less likely to abandon it.

Given that the shape of the baseline hazard lends support to the appropriateness of the Cox model, all further analyses are conducted using this specific duration model. The results for the Cox proportional hazards models for the effect of changes in relative capabilities compared to the status quo, the occurrence and termination of civil war, and regime transitions on both conflict and renegotiation are displayed in Table 4.1.
Table 4.1: Independent Competing Risks Model: Cox Proportional Hazards for changes in relative capabilities from the status quo, civil war, and regime transition

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in relative</td>
<td>-.123 (.120)</td>
<td>-.027 (.066)</td>
</tr>
<tr>
<td>capabilities (status quo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil war</td>
<td>.742*** (.263)</td>
<td>-1.277 (.994)</td>
</tr>
<tr>
<td></td>
<td>110% increase</td>
<td></td>
</tr>
<tr>
<td>Regime transition</td>
<td>.948*** (.279)</td>
<td>.114 (.703)</td>
</tr>
<tr>
<td></td>
<td>158% increase</td>
<td></td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5360 (93)</td>
<td>5360 (27)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-449.917</td>
<td>-127.031</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***p<.01. Robust standard errors clustered on dyad. Efron method for ties.

I begin with a discussion of the findings of the effect of the change variables on the hazard of conflict. The results for militarized disputes reported in Table 4.1 provide empirical support for two of the change variables, the civil war variable and the regime transition variable. Both of these variables are statistically significant at the p<.01 level and, as expected, their coefficients are positive. Cases in which one of the states suddenly experiences a civil war but did not endure one when the status quo was initially formed or cases in which one of the states was involved in a civil war when the status quo was established but the civil war ended, face an increased risk of conflict. The hazard of a militarized dispute increases by 110 percent compared to other claim cases. Similarly, the hazard of a militarized dispute increases significantly when at least one of the states turns from being a democracy when the status was formed into an autocracy later on. For cases in which such a regime transition occurs, the hazard of conflict rises by 158 percent.

---

62 I obtain the Schoenfeld residuals for this model and perform the Grambsch and Therneau’s and Harrel’s tests for non-proportionality in the hazard. I find that there is no evidence of a non-proportional effect for all the variables included in this model. Generally, none of the variables examined in this chapter appears to have a non-proportional effect on the hazard.
While the empirical results provide support for the hypotheses concerning the effect of civil war and regime transition on conflict, the hypothesis about changes in relative capabilities is not supported. Changes in relative capabilities seem to have no effect on the hazard of experiencing a militarized dispute.

This finding is rather surprising given that changes in relative capabilities are always in the right direction and significant in Werner’s (1999b) and Werner and Yuen’s (2005b) analyses. However, it is important to remember that there are two differences between Werner’s and my measure. The first is that Werner (1999b, 2005 with Yuen) considers relative growth rates of states rather than changes in relative capabilities, which is the measure chosen in this paper. However, the difference between these measures is minor and the two measures yield consistent results, both in Werner’s (1999b) analysis and in the analysis conducted here. Furthermore, Werner feels comfortable in labeling the measure she uses, which really is based on differences in growth rates, as a measure of changes in relative capabilities.

A much more significant difference between the measure used by Werner, Werner and Yuen, as well as Fortna compared to the one employed in this project is that the former looks at changes from one year to the next and the measure used here considers changes relative to the status quo.

The theoretical argument, as discussed in chapter 2, suggests that it really is changes relative to the status quo that should matter rather than changes from one year to

---

63 The formulas that correspond to these measures are the following: \( \left( (P_{t+1} - P_{t}) / P_{t} \right) \times \left( (P_{t+2} - P_{t+1}) / P_{t+1} \right) \) and \( \left( (P_{t} / P_{t+1}) - (P_{t+1} / P_{t+2}) \right) \). See Werner 1999, p.923, fn.7. Chapter 3 explains why the second measure is preferred in this project. Results for the alternative measure based on differences in growth rates are consistent.

64 In her 1999 article, Werner finds that the correlation between the two measures is .74 (Werner, 1999b, p.923, fn.7). In my data set the correlation is .77 for changes relative to the status quo and .79 for changes from t-1 to t.
the next. The reason is that the status quo is based on the states' beliefs about who would win a military confrontation and at which costs. In other words, the division of the issue agreed upon when the status quo was formed reflects the states' expectations about how much each side would get through fighting. If changes occur and one state becomes more likely to win than it was when the status quo was formed or its resolve increases, then it will demand a better deal, one that reflects the new values of \( p \) and \( c \). On the other hand, changes in \( p \) and \( c \) from one year to the next should not necessarily make a state more likely to become dissatisfied with the status quo and therefore willing to fight. Changes from \( t-1 \) to \( t \) should therefore not necessarily increase the probability of either renegotiation or conflict.

Given that the theoretical argument outlined in this project suggests that it is really changes relative to the status quo that should matter rather than changes from one year to the next, it is interesting to examine whether Werner's measure receives more empirical support than the measure proposed here. In order to stay as close to Werner's measure as possible, I not only focus on the effect of changes from one year to the next but I also look at the states' changes in relative growth rates rather than changes in relative capabilities. However, following Werner's convention, I still refer to this measure as changes in relative capabilities. Table 4.2 reports the results for the same analysis as conducted above, with one exception: rather than looking at changes in relative capabilities relative to the status quo it considers the states' relative growth rates from \( t-1 \) to \( t \).\(^{65}\)

---

\(^{65}\) Like the measure for changes in relative capabilities proposed in this project, Werner's measure is strongly skewed. Plotting the martingale residuals against the changes in relative capabilities variable reveals some deviation from 0 at higher levels of the variable (See Figure C2 in Appendix C). However,
Table 4.2: Independent Competing Risks Model: Cox Proportional Hazards for changes in relative capabilities from t-1, civil war, and regime transition

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in relative capabilities (year to year)</td>
<td>.607 (.73)</td>
<td>2.65*** (.691)</td>
</tr>
<tr>
<td>Civil war</td>
<td>.747*** (.265)</td>
<td>-1.269 (1.015)</td>
</tr>
<tr>
<td>Regime transition</td>
<td>.932*** (.291)</td>
<td>-.200 (.798)</td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5352 (93)</td>
<td>5352 (27)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-449.75</td>
<td>-122.491</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***<.01. Robust standard errors clustered on dyad. Efron method for ties.

These results indicate that the measure developed by Werner does not perform any better with respect to predicting conflict than the measure of changes in relative capabilities proposed here. This finding is puzzling since Werner’s measure is consistently significant and in the expected direction in Werner and Yuen’s (1999b, 2005) as well as in Fortna’s (2003, 2004) work.

One possible explanation for the fact that Werner, Werner and Yuen, and Fortna consistently find that changes in relative capabilities from t-1 to t increase the hazard of conflict, but I am unable to replicate this finding for the data compiled for this project, may be the different nature of the data analyzed here. Both Werner (and Yuen) and Fortna examine the durability of peace between states that had previously fought a full-blown inter-state war according to the COW definition. While the data set compiled for my project includes cases of claimants that have fought wars, there are also cases of claimants who had violent disputes below the level of war as well as cases in which the states verbalized their competing claims but never resorted to violence.

given that the deviation is slight and that Werner (1999b), Werner and Yuen (2005), and Fortna (2003, 2004) do not transform the variable, I do not either.
If the divergent findings on the effect of changes in relative capabilities on the hazard of conflict are indeed due to the fact that I analyze cases in which previous conflict levels have varied, then selecting a sample of cases that resembles Werner’s and Fortna’s cases more closely should lead to findings that are more similar to Werner’s and Fortna’s findings. In order to create such a sample, I isolate all those cases in which the claimants had previously fought a war over territory. This reduces the number of cases from 245 to only 51 and the number of failures from 93 MIDs to 20, and from 27 renegotiations to only 7. Given the small number of cases and failures, I examine only the bivariate relationship between changes in relative capabilities and the durability of the status quo, which may end either through conflict or through renegotiation. Table 4.3 reports these results for the subset of cases that have previously fought a war, or multiple wars, over territory.

Table 4.3: Independent Competing Risks Model: Cox Proportional Hazards for changes in relative capabilities from t-1 for cases with previous territorial wars

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in relative capabilities (year to year)</td>
<td>1.321* (.801)</td>
<td>-.053 (1.46)</td>
</tr>
<tr>
<td>N (# failures)</td>
<td>1107 (20)</td>
<td>1107 (7)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-68.492</td>
<td>-24.358</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***<.01. Robust standard errors clustered on dyad. Efron method for ties.

The findings reported in Table 4.3 reveal that changes in relative capabilities from one year to the next do have a statistically significant, albeit barely significant, effect on the hazard of conflict for cases of claimants that have previously fought a war. A 10 percent change in relative capabilities from t-1 to t, raises the hazard of conflict by about

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66 I include only those cases in which the claimants fought about territory at some point during the 20th century. Cases with recent wars are more similar to Werner’s, Werner and Yuen’s, and Fortna’s cases. Werner, Werner and Yuen, and Fortna include cases right after the war between the belligerents terminates.
14 percent. On the other hand, Table 4.4 shows that changes in relative capabilities from the status quo do not have any effect on the hazard of conflict, even for cases that have previously fought a war against each other.

Table 4.4: Independent Competing Risks Model: Cox Proportional Hazards for changes in relative capabilities from the status quo for cases with previous territorial wars

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in relative capabilities (status quo)</td>
<td>-.134 (.384)</td>
<td>-7.09** (2.83)</td>
</tr>
<tr>
<td>N (# failures)</td>
<td>1109 (20)</td>
<td>1109 (7)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-69.743</td>
<td>-21.372</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***<.01. Robust standard errors clustered on dyad. Efron method for ties.

These findings give rise to two puzzles. First, why is Werner’s measure of changes in relative capabilities from year to year significant for only a subset of cases? Second, why is the measure of changes in relative capabilities relative to the status quo not significant, for either the full data or for the subset of violent territorial claims?

With respect to the first question, the results for the full data set show, on the one hand, that Werner’s measure is not a good predictor of conflict. On the other hand, Werner’s measure does seem to work well for the limited set of cases that have previously fought wars, which is similar to the cases both Werner (1999b, 2005 with Yuen) and Fortna (2003, 2004) consider. This finding indicates that there may be a systematic difference between states that have claims but have not engaged in highly hostile behavior and states that have actually fought wars to resolve their differences. It seems as if, for claimants that have not previously fought a war but may or may not have

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67 A 10 percent change in relative capabilities from one year to the next constitutes a relatively large change. Three quarters of the observations record changes of 10 percent and less.
engaged in militarized disputes, very significant shocks are required to catapult the states out of the existing equilibrium. Both the occurrence and termination of civil war and regime transition constitute large shocks: a civil war significantly compromises a state's ability to fend off an external enemy and a transition from a democracy to an autocracy introduces a regime that experiences much lower costs of conflict. The results of the statistical analysis presented in Tables 4.1 and 4.2 indicate that these two types of changes are associated with conflict for all cases included in the data, including those in which no previous war has occurred. On the other hand, changes in relative capabilities, which are on average relatively small, only induce conflict among states with high previous levels of hostility but not among those who have not previously fought wars. Relations among states that have previously experienced a war are more vulnerable to small disruptions, such as changes in relative capabilities, than states that have not fought previously in a full-blown war.

So if changes in relative capabilities from one year to the next do increase the hazard of conflict for states with a particularly conflictual history, why do changes in relative capabilities relative to the status quo appear to have no effect on the hazard of conflict even for these cases? In other words, why does the measure proposed in this project fail to find support?

The measure of changes in relative capabilities proposed in this project is directly derived from the theoretical argument. The logic of the theoretical argument implies

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68 The mean change from one year to the next is 8 percent. However, this is misleading because the variable is very skewed, with only very few cases experiencing larger changes and most changes being very small. For a little more than half of the observations the percentage change of relative capabilities from one year to the next is no more than 5 percent. It also turns out that states that had previously fought a war experience slightly smaller changes in relative capabilities from year to year than cases of claimants that have not fought wars. This lends further support to the notion that claimants with a very hostile history are more likely to be thrown out of equilibrium by even small changes.
changes in the probability of winning (i.e. $p$) and the states’ resolve (i.e. $c_A$ and $c_B$) may make at least one of the claimants become dissatisfied, i.e. willing to fight to get a more advantageous deal, and they also exacerbate uncertainty. This effect of changes can then make both renegotiation and conflict more likely.

The notion that it is changes relative to the status quo that should matter cannot be discarded based on the empirical evidence presented here. Two of the measures of changes relative to the status quo are statistically significant and in the correct direction. Claim dyads in which one of the states did not experience a civil war when the status quo was formed but then later developed one and dyads in which one of the states was involved in a civil war when the status quo division was negotiated but subsequently was able to terminate its civil war, have a significantly higher hazard of fighting a militarized dispute. Similarly, dyads, in which at least one of the states was a democracy when the status quo was established but later turned into an autocracy, have a significantly increased risk of conflict. Thus, changes relative to the status quo have the expected effect for both the civil war variable and the regime transition variable. This implies that it is not the theoretical argument about changes relative to the status quo that is flawed but rather the measure of changes in relative capabilities compared to the status quo.

The problem is that the correlation between duration time and changes in relative capabilities compared to the status quo is positive and relatively strong: .18. This means that the more time passes by, the more the states’ relative capabilities will have changed compared to the status quo. In other words, the difference in relative capabilities compared to the status quo tends to be smaller after 5 years than after 20 years. Since a significant proportion of cases never experience conflict and therefore have a long
duration, it appears as if large changes in relative capabilities compared to the status quo are associated with peace rather than conflict. This explains why I consistently find that the relationship between changes in relative capabilities and the hazard of experiencing a MID is negative (see Tables 4.1 and 4.4). Of course, the changes in relative capabilities variable is also consistently not significant. The reason for this may be that, for any given year, a large change in relative capabilities compared to the status quo is indeed more likely to lead to conflict than a small change. The latter is the effect that the theory predicts but it seems that this effect may be overwhelmed or confounded by the positive relationship between time and changes in relative capabilities. If it were possible to disentangle these counteracting effects, it might be possible to show that changes in relative capabilities do actually lead to conflict. The findings for the civil war variable certainly suggest that changes in the probability of winning relative to the status quo value of $p$ do increase the likelihood of conflict.

Since Werner's measure is history-independent and only considers the instantaneous change from one year to the next, it does not encounter the same problem. Thus, Werner's measure allows uncovering the positive relationship between changes in relative capabilities and conflict for the subset of cases that have previously fought wars. Furthermore, as expected, Werner's measure of changes in relative capabilities also seems to be associated with a higher hazard of renegotiation for all cases. A 10 percent change in relative capabilities from one year to the next increases the hazard of renegotiation by 30 percent. Changes in relative capabilities tend to lead to conflict among states that have previously fought wars but to renegotiation among states that have not previously fought wars. The reason may be that the bargaining range among states
that have previously fought wars is smaller than the one among states that have not fought in the past. Both sides clearly value the issue at stake very highly and are interested in an outcome that is as close as possible to their respective ideal points.\footnote{The argument is not that the bargaining range is narrower because states have previously fought a war. War is a symptom rather than the cause: because the bargaining range is narrower (possibly because both sides value the issue under the dispute highly), they have fought a war and are more likely to experience further violent conflict.}

Given uncertainty, it is more difficult to find a deal acceptable to both sides when the bargaining range is narrow than when it is relatively wide. Thus, states that have previously fought a war are less likely to be able to renegotiate peacefully when relative capabilities change. Instead, they will fight. On the other hand, states that have not previously fought a war are much more likely to be able to renegotiate peacefully and thus to avoid violence.\footnote{Furthermore, at this point we cannot exclude the possibility that changes in relative capabilities raise the hazard of renegotiation for claimants that have previously fought wars. While the variable is not significant in the reduced data set, it is important to note that the number of renegotiations in this data set is too low (71) to draw any conclusive results from this analysis.}

While changes in relative capabilities, at least as operationalized by Werner, seem to increase the hazard of renegotiation among claimants, neither the civil war variable nor the regime transition variable is statistically significant for the hazard of renegotiation. As argued above, the types of changes that both of these variables cover are changes of a relatively large magnitude. If the probability of winning changes or the costs of fighting decrease to such a large extent, claimants are unlikely to be able to renegotiate peacefully. Rather they may end up fighting. Thus, both of these variables have a positive and statistically significant effect on the hazard of conflict but seem to have no effect on renegotiation.

In chapter 3, I discussed the possibility of unobserved heterogeneity in the data and pointed out that such heterogeneity can have grave effects for parameter estimates,
standard errors, and estimates of duration dependence. I speculated that one source of heterogeneity in the data is the inclusion of cases that have previously fought wars, and may thus be more conflict prone, along with cases of claimants that have either only been involved in low-level militarized disputes or have not used violence at all. The difference in results for Werner’s measure of changes in relative capabilities for all cases and for cases of states that have previously fought wars suggest that such heterogeneity is indeed present. Furthermore, repeated events, especially repeated conflict, and unmeasured changes may also contribute to heterogeneity among cases.

Under these conditions, it is appropriate to estimate a Cox model that introduces an additional random parameter that accounts for random frailties shared by observations involving the same dyad. Table 4.5 replicates the analysis presented in Table 4.1, which assesses the effect of changes in relative capabilities from the status quo, civil war, and regime transition, but accounts for possible heterogeneity.

**Table 4.5: Independent Competing Risks Model: Cox Proportional Hazards Shared Frailty Model for the effect of changes in relative capabilities from the status quo, civil war, and regime transition on conflict and renegotiation**

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in relative capabilities (status quo)</td>
<td>-.103 (.165)</td>
<td>-.0259 (.125)</td>
</tr>
<tr>
<td>Civil war</td>
<td>.657** (.299)</td>
<td>-1.273 (.024)</td>
</tr>
<tr>
<td>Regime transition</td>
<td>1.132*** (.369)</td>
<td>.125 (.753)</td>
</tr>
<tr>
<td>Variance of random effect</td>
<td>1.087*** (.443)</td>
<td>.135 (.26)</td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5360 (93)</td>
<td>5360 (27)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-439.569</td>
<td>-126.977</td>
</tr>
</tbody>
</table>

*p<.1  **p<.05  ***<.01. Efron method for ties. Gamma shared frailty.
The results reported in Table 4.5 reveal that the variance of the random effect for
the occurrence of conflict is not zero and statistically significant. This indicates that there
is indeed significant heterogeneity in the data that is not captured by the three change
variables included in this analysis.\textsuperscript{71} However, accounting for this heterogeneity does not
drastically affect any of the previous results. While the correction of the standard errors
by the frailty model leads the regime transition variable to lose some statistical
significance, it remains statistically significant at \(p<.05\). Its substantive effect is also
slightly smaller than originally estimated: the hazard of experiencing a conflict increases
by only 93 percent compared to the 110 percent estimated earlier. Regime transitions
remain statistically significant at \(p>.01\) and the substantive effect of this variable it larger
than originally presumed: the hazard of a MID increases by 210 percent, when
heterogeneity is taken into account, compared to 158 percent when it is not accounted for.

Although some cases are more prone to end up fighting compared to other cases,
it does not appear to be the case that some cases are more prone to renegotiate than
others. The variance of the random effect is not statistically significant in the
renegotiation analysis, indicating that heterogeneity is not a problem here. Furthermore,
the coefficients of the variables and their associated standard errors are similar to those of
the original model presented in Table 4.1.

While the results for the re-estimation of the model in Table 4.1 using a shared
frailty approach do not reveal drastically different results for the coefficient estimates and

\textsuperscript{71} One obvious explanation for the presence of unobserved heterogeneity in this model is that I do not
include any of the agreement provisions variables. Whether or not states have cost-increasing and/or
uncertainty-reducing provisions in place should affect the hazard of conflict between them and thus not
accounting for these provisions may introduce unobserved heterogeneity. However, it turns out that even if
the agreement provision variables are included in the statistical model there still remains significant
heterogeneity (see chapter 5). Thus, the omission of these variables in the model specified in Table 4.5 is
not the source (or a very important source) of heterogeneity.
only small differences with respect to standard errors, a re-estimation of Model 4.2 using the shared frailty approach does lead to different conclusions. Table 4.6 displays the effect of changes in relative capabilities from one year to the next (i.e. Werner’s measure), civil war and regime transitions on conflict and renegotiation for the full data set, taking into account possible unobserved heterogeneity.

**Table 4.6: Independent Competing Risks Model: Cox Proportional Hazards Shared Frailty Model for the effect of changes in relative capabilities from t-1, civil war, and regime transition on conflict and renegotiation**

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in relative capabilities (t-1)</td>
<td>1.193* (.659)</td>
<td>2.65*** (.700)</td>
</tr>
<tr>
<td>Civil war</td>
<td>.661** (.300)</td>
<td>-1.269 (1.023)</td>
</tr>
<tr>
<td></td>
<td>94% increase</td>
<td></td>
</tr>
<tr>
<td>Regime transition</td>
<td>1.101*** (.374)</td>
<td>-.200 (.778)</td>
</tr>
<tr>
<td></td>
<td>201% increase</td>
<td></td>
</tr>
<tr>
<td>Variance of random effect</td>
<td>1.206 (.479)</td>
<td>0</td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5360 (93)</td>
<td>5360 (27)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-438.363</td>
<td>-122.491</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***<.01. Efron method for ties. Gamma shared frailty.

Table 4.6 shows that, unlike in the standard Cox analysis for the full data set, changes in relative capabilities from one year to the next are statistically significant and positive. This provides support for the argument that larger changes in relative capabilities significantly increase the hazard of militarized disputes. A 10 percent change in relative capabilities from one year to the next raises the hazard of militarized disputes by 13 percent. Earlier analyses suggested that this might be the case, but only with respect to cases that had previously fought wars. The coefficient for this variable is not statistically significant for the whole data set. However, once different levels of failure proneness are taken into account by the shared frailty model, the coefficient does turn out to be significant and in the expected direction for the whole data set.
These findings strongly suggest that the failure to account for previous warfare is an important factor for explaining unobserved heterogeneity with respect to conflict occurrence. The Cox frailty model allows us to further investigate whether it is indeed the case that previous warfare accounts for the heterogeneity in conflict proneness among the cases. I re-estimate the statistical model presented in Table 4.5 and obtain an estimate of each dyad's frailty. Based on these estimates, I create a dummy variable that is coded 1 for dyads that are more failure-prone and 0 for dyads that are less failure-prone. Table 4.7 provides further insight into the relationship between failure-proneness and previous warfare. ⁷²

Table 4.7: Previous warfare and failure-proneness

<table>
<thead>
<tr>
<th>FRAILTY</th>
<th>PREVIOUS WAR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Less frail</td>
<td>77</td>
<td>11</td>
</tr>
<tr>
<td>More frail</td>
<td>23</td>
<td>16</td>
</tr>
</tbody>
</table>

These results indicate that dyads that had previously fought an interstate war indeed tend to be more prone to experiencing another violent conflict than dyads that had not previously fought a war. Almost two thirds of the cases that had previously fought a war...  

⁷² I also obtain estimates of each dyad's frailty for the empirical model that includes Werner's measure for changes in relative capabilities as well as for the various models involving agreements provision variables presented in chapter 5. The relationship between warfare and failure-proneness looks essentially the same.
war are prone to fail through another conflict but only about a third of those that did not fight a war previously are marked as more conflict prone.

While previous warfare seems to explain variation in frailties quite well, the fact that the association between failure proneness and previous war is not perfect indicates that there also are additional sources of frailty at work. Most dyads that have not fought a war are not failure prone but there are some that are. Conversely, most cases that have previously fought a war are failure prone but there are some cases that are not. This suggests that additional factors that are not included in the empirical model appear to increase (or reduce) conflict-proneness for some cases that have not fought wars and for some cases that have previously fought wars.

As I explained in chapter 3, one possibility is that additional, unmeasured changes take place that make those states that experience these changes more likely to end up fighting. Due to these unmeasured changes, some dyads appear more frail than others. The shared frailty model allows accounting for these unmeasured changes and other potentially relevant variables statistically, but future research needs to further examine the precise nature of the factors that make some claimants more likely to experience violent conflict. These factors should then be explicitly included into the statistical model.

Unlike for the hazard of conflict, there appears to be no heterogeneity with respect to the risk of experiencing renegotiation. Both tables 4.5 and 4.6 indicate that the variance of the random effect is not statistically different from zero and the results for the effect of the change variables on the hazard of renegotiation are consistent across frailty and non-frailty models.
The fact that heterogeneity is a problem for the occurrence of conflict but not for the occurrence of renegotiation is not surprising. One key factor explaining heterogeneity concerning conflict-proneness appears to be previous warfare. Cases that have previously fought wars and therefore endure high levels of hostility should be more likely to fight again but not necessarily more likely to renegotiate. In fact, high hostility levels between states might make it quite difficult to renegotiate when changes occur. This implies that heterogeneity should be significant for the risk of conflict but not necessarily for the risk of renegotiation. The findings reported in Tables 4.5 and 4.6 certainly indicate that unobserved heterogeneity needs to be taken into account in the remaining analysis of the hazard of conflict but not necessarily for examining the incidence of renegotiation.

This first empirical chapter focuses on the effect of changes in the probability of winning and decreases in the costs of fighting on both conflict and renegotiation. The results so far are mixed: some findings are supportive of the theoretical argument, while others are not. The occurrence and termination of civil war and regime transitions appear to increase the hazard of conflict among states with competing territorial claims but they do not seem to make renegotiation more likely. Furthermore, changes in relative capabilities from the status quo do not have the predicted effect for either conflict or renegotiation.

So far I have not examined any of the theoretical propositions concerning the effect of cost-increasing and uncertainty-reducing provisions. This is the next step: the following chapter, chapter 5, examines whether the theoretical propositions concerning the effect of conciliatory agreement provisions receive empirical support.
Chapter 5:

The Effect of Cost-increasing and Uncertainty-reducing Provisions on Conflict and Renegotiation

This chapter examines whether the provisions contained in conciliatory agreements between states with competing territorial claims have the effects stipulated by the theory. The theoretical argument presented in the second chapter suggests that two types of provisions, cost-increasing provisions and uncertainty-reducing provisions, should be particularly successful at ensuring a lasting peace between states with competing claims. Cost-increasing provisions raise the costs of fighting for the two states, making it less likely that one of them becomes dissatisfied with the status quo and prefers to fight rather than to maintain the existing division of the issue. Uncertainty-reducing provisions prevent violence by making it easier for states to find a new division that is acceptable to both sides. Thus, both of these provisions should reduce the probability of conflict but they should work through slightly different mechanisms. Cost-increasing provisions reduce the probability that one of the claimants will become dissatisfied and thus help support the existing status quo as equilibrium between the states. Uncertainty-reducing provisions help states locate an acceptable deal and renegotiate peacefully.

In order to examine the theoretical propositions concerning cost-increasing and uncertainty-reducing provisions I explore two lines of analysis. First, I examine the effect of cost-increasing provisions and uncertainty-reducing provisions, controlling for the
change variables. Second, I employ interaction terms in order to examine the proposition that agreement provisions should be particularly important when changes have occurred.

While the second set of analyses follows directly from the theoretical argument, this is not necessarily the case for the first set of analysis. The theoretical argument implies that it is *given changes* that agreement provisions should matter. Thus the theoretical argument calls for interaction terms and not for the inclusion of agreement provision variables as separate variables alongside the change variables. Yet, there is good reason to first report the results of the analysis without interaction terms. The reason is actually twofold:

First, one way to evaluate the claim that agreement provisions should matter most when changes occur and thus conflict is most likely, is to compare the fit of a model that includes the agreement provisions variables next to the change variables to a model that includes interaction terms of agreement and change variables. If the empirical fit of the latter is better than that of the former, this suggests some support for the notion that agreements do matter most when we need them most.

Second, while I attempt to capture a large variety of possible changes to the parameters underlying the peaceful equilibrium, there are some changes that naturally occur but are not explicitly measured here. For example, public opinion concerning the value of the issue at stake may change or diseases and natural disaster may occur that affect a state's ability to win a military confrontation. Given that shocks to the parameters underlying the bargaining model may take place that are not included in my empirical model, it makes sense to examine the impact of conciliatory agreement provisions on the duration of the status quo independent of measured changes.
After reviewing the results for the first set of analyses, which includes agreement provisions variables as separate variables alongside the change variables, I perform tests with interaction terms between the change variables and agreement provisions variables.

**Part 1: Agreements Provision Variables and Change Variables Separately**

In order to evaluate whether cost-increasing and uncertainty-reducing provisions indeed reduce the risk of having a militarized dispute and uncertainty-reducing provisions facilitate renegotiation, I include variables for cost-increasing and uncertainty-reducing provisions in a model that also controls for the effect of changes in the probability of winning and decreases in the costs of fighting. Two important points concerning this model need to be clarified before I present the results of this analysis. First, since both changes in relative capabilities from the status quo and the occurrence or termination of civil wars are hypothesized to affect the probability of winning a military conflict, i.e. \( p \), I combine these two variables into a single measure of changes in the probability of winning. This new measure is a dummy variable that is coded 1 if either there have been changes in relative capabilities of 30 percent or more since the status quo was established or if the civil war variable is coded 1 in a given year.\(^7\) The variable for regime transitions remains unchanged but, following more closely the theoretical argument, I refer to this variable as decreases in the costs of fighting. Second, given the limited number of cases and, in particular failures, it is not possible to examine the individual effect of all the different agreement provision variables. Instead, I focus on one dichotomous variable that

\(^7\) I examined other thresholds including changes of 10 percent, 50 percent, 60 percent and 100 percent. The changes in the probability winning variable is closest to statistical significance with the 30 percent threshold but becomes less significant at the 50 percent, 60 percent, and 100 percent threshold. Overall, the findings for this measure are not robust.
measures whether any of the seven cost-increasing provisions is present in a given year
and one dichotomous variable that measures whether any of the four uncertainty-reducing
provisions is present during a given year. The effect of changes in the probability of
winning, decreases in the costs of fighting, cost-increasing and uncertainty-reducing
provisions on the hazard of a militarized dispute and renegotiation are first examined in a
standard Cox proportional hazards model.

Table 5.1: Independent Competing Risks Model: Cox Proportional Hazards Model
for changes in the probability of winning, decreases in the costs of fighting, cost-
increasing provisions, and uncertainty-reducing provisions

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in probability of</td>
<td>.361</td>
<td>.005</td>
</tr>
<tr>
<td>winning</td>
<td>(.229)</td>
<td>(.455)</td>
</tr>
<tr>
<td>Decreases in costs of fighting</td>
<td>1.104***</td>
<td>-.223</td>
</tr>
<tr>
<td></td>
<td>(.291)</td>
<td>(1.06)</td>
</tr>
<tr>
<td>Cost-increasing provisions</td>
<td>-1.426***</td>
<td>.089</td>
</tr>
<tr>
<td></td>
<td>(.537)</td>
<td>(.4)</td>
</tr>
<tr>
<td>Cost-increasing provisions</td>
<td>.500***</td>
<td></td>
</tr>
<tr>
<td>x log of time</td>
<td>(.182)</td>
<td></td>
</tr>
<tr>
<td>Uncertainty-reducing provisions</td>
<td>.1</td>
<td>1.035**</td>
</tr>
<tr>
<td></td>
<td>(.297)</td>
<td>180% increase</td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5249 (93)</td>
<td>5249 (26)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-440.363</td>
<td>-119.308</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***<.01. Robust standard errors clustered on dyad. Efron method for ties.

The results reported in Table 5.1 provide mixed support for the theoretical
propositions advanced in this project. Changes in the probability of winning, i.e. changes
in relative capabilities of 30 percent or more from the status quo or the occurrence or
termination of civil war, are positive but not statistically significant at conventional levels
for the prediction of conflict among competing states. It is true that with a p value of
.115, this variable is relatively close to statistical significance, indicating that changes in
relative capabilities do seem to increase the hazard of experiencing a MID. However, it
needs to be pointed out that this result is driven by the civil war variable, which, in
chapter 4, was shown to have a strong and statistically significant effect on the hazard of militarized conflict. On the other hand, given the problems associated with this measure, changes in relative capabilities from the status quo were shown not to be statistically significant for the prediction of conflict. Furthermore, because this variable is not a good predictor of conflict it is also not surprising that the results for the changes in the probability of winning variable are vulnerable to different thresholds chosen for the changes in relative capabilities variable. More robust are the results for decreases in the costs of fighting. This variable, which has been found to increase the hazard of conflict significantly in chapter 4, works as expected here as well.

More interesting are the results for the agreement provision variables. Despite the inclusion of the agreement provision variables along with the change variables, the variable for cost-increasing provisions is statistically significant and in the correct direction. The hazard of fighting is lower for states that have conciliatory agreements with cost-increasing provisions.

The fact that this variable is found to reduce the hazard of conflict, even when controlling for changes in the probability of winning and decreases in the costs of fighting, suggests that agreement provisions do matter and have an independent effect on reducing the likelihood of conflict. In other words, this finding sheds some doubt on the realist argument that agreement provisions are epiphenomenal.

However, with respect to the finding that cost-increasing provisions reduce the hazard of militarized conflict, it is important to point out that Grambsch and Therneau’s global test and Harrel’s rho test statistic suggests that the effect of cost-increasing provisions on the hazard of conflict is not constant over time. In order to correct for the
non-proportionality of this variable, I follow Box-Steffensmeier and Jones (2004) recommendation and include an interaction term between the offending variable and a function of time. More precisely, in the analysis reported in Table 5.1, I include an interaction term between cost-increasing provisions and the log of time.\textsuperscript{74} This interaction term is statistically significant at $p<.01$ and thus further supports the conclusion that the effect of cost-increasing provisions varies at different points in time. The fact that the interaction term is positive indicates that cost-increasing provisions have a strong effect on reducing the hazard of conflict early on but that the effect wanes over time. The effect of cost-increasing provisions on the hazard of conflict over time is portrayed in Figure 5.1.

**Figure 5.1: Effect of Cost-increasing provisions on the hazard of conflict over time**

![Graph showing the percentage change in hazard over time](image)

Figure 5.1 shows that cost-increasing provisions have a strong effect on reducing the hazard of conflict early on but that this effect declines over time. In the first 2-3 years after a new status quo has been established, cost-increasing provisions reduce the hazard

\textsuperscript{74} An interaction between the log of time seems to be the default choice. However, I also examined an interaction of cost-increasing provisions with the square root of time. The results are fully consistent.
of conflict by about 75 percent. The conflict-reducing effect of cost-increasing provisions then declines consistently for the following one and a half decades and, at about 18 years after the status quo was negotiated, the effect of cost-increasing provisions appears to turn from negative to positive, meaning that after 18 years the presence of cost-increasing provisions actually appears to raise the hazard of conflict.

Theoretically, there is no reason to suspect that the conflict-reducing effect of cost-increasing provisions should decline over time and potentially even become positive decades after the status quo was formed. The theoretical argument suggests that as long as cost-increasing provisions are present, the likelihood of conflict should be reduced, irrespective of how long the status quo has been in place.

One likely reason for observing the varying effect of cost-increasing provisions is the presence of unobserved heterogeneity among the cases. Chapter 4 concluded that there is strong evidence to suggest that some cases are more likely to experience a MID than others and that this heterogeneity has important implications for the interpretation of the results. The finding that cost-increasing provisions initially have a strong effect on lowering the hazard of conflict but that this effect declines over time makes sense within the context of unobserved heterogeneity. Those cases that are particularly failure-prone will exit the data set earlier than those that are less failure-prone. If cost-increasing provisions have a strong effect on reducing the hazard of conflict for those cases that are more likely to fail early on but not as strong an effect for those observations that are less fail, the effect of cost-increasing provisions should be expected to decline over time—just like it does. It also makes sense why cost-increasing provisions would have a more significant effect for more frail cases than for less frail cases: frail cases are more likely
to conclude agreements with cost-increasing provisions. Especially provisions such as
troop withdrawal, demilitarized zones, and peacekeepers are likely to be more prevalent
among states that expect that future conflict is a distinct possibility and that want to
prevent such violent conflict.

If the appearance of a non-proportional effect of cost-increasing provisions on the
hazard of conflict over time is indeed due to more frail cases leaving the data set earlier
than less frail cases, then accounting for the unobserved heterogeneity due to more and
less conflict-prone cases in a shared frailty model, as the one introduced in chapter 4,
should resolve the problem. In order to examine whether the appearance of a non-
proportional hazard for cost-increasing provisions can indeed be explained by unobserved
heterogeneity among the cases, I estimate a shared frailty model for the same variables
included in the simple Cox model in Table 5.2.

**Table 5.2: Independent Competing Risks Model: Cox Proportional Hazards Shared
Frailty Model for the effect of changes in the probability of winning, decreases in
the costs of fighting, cost-increasing provisions and uncertainty-reducing provisions**

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENegotiation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in probability of winning</td>
<td>.448* (.25)</td>
<td>.005 (.44)</td>
</tr>
<tr>
<td>Decreases in costs of fighting</td>
<td>1.309*** (.395)</td>
<td>-.223 (1.05)</td>
</tr>
<tr>
<td>Cost-increasing provisions</td>
<td>-.948*** (.289)</td>
<td>.089 (.403)</td>
</tr>
<tr>
<td>Uncertainty-reducing provisions</td>
<td>-.131 (.317)</td>
<td>1.035** (.404)</td>
</tr>
<tr>
<td>Variance of the random effect</td>
<td>1.903*** (.677)</td>
<td>0</td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5249 (92)</td>
<td>5249 (26)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-426.776</td>
<td>-119.308</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***p<.01. Efron method for ties. Gamma shared frailty.
Once a shared frailty model is utilized, the effect of cost-increasing provisions on the hazard of conflict appears to be constant over time. The Grambsch and Therneau global test of this model indicates that non-proportionality is not a concern with respect to this model. Based on this finding, it is now possible to say that the hazard of conflict for claimants that have a conciliatory agreement with at least one cost-increasing provision in place shrinks by 61 percent. Furthermore, the effect of decreases in the costs of fighting and changes in the probability of winning is stronger once unobserved heterogeneity is being captured by a random parameter. Decreases in the costs of fighting raise the hazard of militarized conflict by 270 percent. Changes in the probability of winning become statistically significant at a p<.1 level and increase the hazard of conflict by 56 percent.\footnote{However, the fact that this variable attains statistical significance is due to its civil war component and not changes in relative capabilities compared to the status quo. Furthermore, this result is not robust for thresholds other than 30 percent in changes in relative capabilities.}

The surprising finding in this analysis is that uncertainty-reducing provisions do not seem to reduce the hazard of fighting. While the variable has a negative sign, it is far from conventional levels of statistical significance, indicating no support for the theoretical proposition that uncertainty-reducing provisions should reduce the hazard of conflict between competing states. On the other hand, the results reported in both Tables 5.1 and 5.2 indicate that uncertainty-reducing provisions do have a statistically significant effect on increasing the hazard of renegotiation. This finding is fully commensurate with the theoretical argument.

As before in chapter 4, the renegotiation component of the competing risks model does not suffer from any unobserved heterogeneity. The variance of the random effect is zero and the results for the standard Cox model and the shared frailty model are fundamentally the same. It is important to point out that, in both models, there is slight
indication that decreases in the costs of fighting and cost-increasing provisions have a
non-proportional effect on the hazard of renegotiation. However, it is not possible to
include interactions with time for both of these variables—given the small number of
failures (only 26!) the model runs into estimation problems. If I correct for one of these
offending variables at a time, the central finding that uncertainty-reducing provisions
matter for renegotiations persists. Given the fact that the non-proportionality problem
for neither of the two offending variables is as significant as the non-proportional effect
of cost-increasing provisions in the standard Cox model for the hazard for conflict and
given the very small number of renegotiation failures, I stick to interpreting the simple
model that does not account for non-proportionality. Based on the findings depicted in
Tables 5.1 and 5.2 it appears that the presence of uncertainty-reducing provisions
increase the hazard of renegotiation between claimants by about 180 percent.

The fact that uncertainty-reducing provisions appear to make renegotiation
between claimants more likely but do not seem to have an effect on conflict occurrence is
theoretically puzzling. The argument developed in this project claims that uncertainty-
reducing provisions should help prevent conflict by allowing states to renegotiate a deal
that is acceptable to both sides. In this sense, conflict and renegotiation are two sides of
the same coin. If uncertainty-reducing provisions facilitate renegotiation they should also
decrease the hazard of conflict. However, the empirical results indicate that uncertainty-
reducing provisions help states renegotiate but they do not make conflict any less likely.

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76 It appears that adding an interaction term between the log of time and decreases in the cost of fighting
reveal a significant and negative effect of this variable. However, once the non-proportional quality of this
variable is addressed it appears that the non-proportional effect of cost-increasing provisions is attenuated
and both changes in the probability of winning and uncertainty-reducing provisions appear to have a non-
proportional effect as well. I do not further present these results because they are very tentative given the
small number of failures.
One possible explanation for this finding lies in the realist endogeneity critique: those states that are least conflict-prone are the ones that are most likely to renegotiate and most likely to agree on uncertainty-reducing provisions. In other words, the fact that these states do not have very conflictual relations explains both the outcome, i.e. renegotiation, and the fact that uncertainty-reducing provisions are in place. Thus, we find a positive relationship between uncertainty-reducing provisions and the hazard of renegotiation. States that are more conflict-prone and that end up fighting, on the other hand, may or may not have uncertainty-reducing provisions and thus we find no relationship between uncertainty-reducing provisions and the hazard of conflict.

However, a closer look at the raw data reveals that it is not the case that only states that are less conflict-prone renegotiate. If conflict-proneness is operationalized in terms of previous wars, it turns out that one quarter of the cases (7 out of 28) that renegotiate peacefully are conflict prone but only one-fifth (20 out of 103) of the cases that fight another MID are conflict-prone. It is true that a larger proportion of the cases that renegotiate have uncertainty-reducing provisions in place than cases that experience conflict (46 percent and compared to 23 percent). However, among the cases that renegotiate, it is the more conflict-prone cases that tend to have uncertainty-reducing provisions rather than the less conflict-prone cases: 71 percent (5 out of 7) of the conflict prone cases that renegotiate have concluded agreements with uncertainty-reducing provisions, as compared to 38 percent (8 out of 21) of the less conflict-prone cases.

Furthermore, what is striking is that conflict-prone claimants that renegotiate tend to have different uncertainty-reducing provisions in place than less conflict-prone cases. All of the conflict-prone cases that are able to renegotiate have conciliatory agreements
that feature provisions that allow for military inspections either by the other side or by a third party. On the other hand, only one of the eight cases that renegotiate and that have not previously fought a war provides for inspections by the other party or a third state. Most of the provisions among non-conflict prone cases that end up renegotiating are provisions for meetings between military leaders. It also turns out that, of the cases that end up fighting, only about seven percent (7 of 102) have provisions that allow for inspections by the other party or a third state but 17 percent (18 of 102) have uncertainty-reducing provisions that call for the exchange of military information or regular meetings by the parties. Finally, of those observations that neither renegotiate nor fight, i.e. those that stick to the status quo, 35 percent (40 out of 75) of the cases provide for surveillance through the other party or a neutral third party.  

What the raw data seem to suggest then is that some uncertainty-reducing provisions may work better than others. To be more precise, it appears that provisions that call for surveillance by the other side or a neutral third party may help states renegotiate and thereby prevent fighting. All conflict-prone states that renegotiate consistently have at least one of these two types of uncertainty-reducing provisions in place and none of these cases become involved in another militarized dispute after they renegotiate. On the other hand, these provisions are quite rare among cases that end up fighting, both conflict-prone and less conflict-prone cases. Instead, cases that end up experiencing a MID tend to have uncertainty-reducing provisions that call for the exchange of information between the two sides. Such provisions thus appear not to be very useful both in terms of renegotiating and preventing conflict.

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77 I consider only the final years of each case.
The notion that provisions that call for inspections either by the other side or a third party may be more successful at transmitting information than voluntary exchanges of information between the parties is not a new one. In fact, all of this goes back to Fearon’s (1995) original argument that, because states face an incentive to misrepresent their military capabilities and resolve to get a better deal, information conveyed by diplomacy is not necessarily credible. In other words, information obtained through communications by the other side does not reduce uncertainty about the probability of winning and the other side’s resolve. On the other hand, if states can themselves inspect their opponent’s military bases or they can get information from a third party, this information overcomes the incentive to misrepresent problem and thus actually does help reduce uncertainty. For this project, I code both provisions of information change between the parties and provisions for inspections as uncertainty-reducing provisions. However, it appears that only the latter may actually help reduce uncertainty.

Of course, it is important to emphasize that all of this is speculative, based on simple descriptive statistics rather than systematic statistical modeling. However, the notion that only provisions that call for inspections help reduce uncertainty and prevent conflict has important policy-making implications and should certainly be examined in future work. A larger number of cases, with a greater number of MIDs and renegotiation may lead to more conclusive results.

So far the empirical analysis has focused on whether competing states had at least one cost-increasing and at least one uncertainty-reducing provision in place between them. I have included dummy variables for cost-increasing provisions and uncertainty-reducing provisions that were coded 1 if at least one of the seven different cost-increasing
provisions and one of the four uncertainty-reducing provisions was present. The results suggest that states that have at least one cost-increasing provision present between them are less likely to end up fighting and states that have at least one uncertainty-reducing provision are more likely to renegotiate. It is now interesting to examine whether it is helpful for states to have multiple cost-increasing provisions and multiple uncertainty-reducing provisions in place.

Theoretically, it makes sense to expect that the larger the number of provisions, the greater the effect. This should be the case particularly for cost-increasing provisions. States that have both agreed to a particular arbitration award and that have included provisions for demilitarized zones in their conciliatory agreement should be less likely to end up fighting than states that either only agree to an arbitration award or only establish a demilitarized zone. The reason is that if both provisions are present the aggressor not only has to pay the physical costs of moving its troops into the demilitarized zone, closer to the border, but it will also face reputation costs, both domestically and internationally, for violating the arbitration award of a neutral party. In terms of the bargaining model, when multiple cost-increasing provisions are in place, the bargaining range should be even larger than with only one provision in place. Since the costs of fighting are higher with multiple cost-increasing provisions, a state should be even less likely to become dissatisfied if changes occur than if only one cost-increasing provision was negotiated.\footnote{In chapter 2, I conceptualized cost-increasing provisions in terms of an additional parameter, $\alpha$, that is imposed on the parties as a penalty for fighting. The larger this parameter, $\alpha$, the less likely the inequality $q < p - c - \alpha$ is fulfilled, meaning that it is less likely that a state becomes dissatisfied with the status quo and willing to fight.} Thus conflict should be less likely when multiple cost-increasing provisions are in place.
than if only one such provision is included in the conciliatory agreement that regulates the states’ relationship.

Of course, it is to be expected that at some point additional provisions have only a marginal effect on making a state less likely to become dissatisfied: if states already have negotiated troop withdrawal, demilitarized zones, and peacekeepers, adding a provisions for transboundary cooperation (i.e. issue linkage) might not have as important an effect as adding this provision to an agreement that only provides for submission to arbitration.

As with cost-increasing provisions, a larger number of uncertainty-reducing provisions should have a stronger effect than agreements with only a single provision. For one, if states have multiple uncertainty-reducing provisions among them it is more likely that they have one of the provisions that appear to potentially be more successful. In fact, if states have three uncertainty-reducing provisions in place one of them must involve surveillance either by the state itself or a third party. But even if the notion that some uncertainty-reducing provisions work better than others is put aside, it still seems that putting into place multiple uncertainty-reducing provisions should help reduce uncertainty to a greater degree than only one provision.

In order to examine whether it is indeed the case that more cost-increasing provisions and more uncertainty-reducing provisions work better, I substitute the dummy variables examined above with variables that count cost-increasing and uncertainty-reducing provisions respectively. Given the presence of significant heterogeneity in conflict-proneness among dyads, I estimate a shared frailty model that includes count measures of cost-increasing and uncertainty-reducing variables for the hazard of conflict.

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79 Chapter 3 reports the frequencies for each value of the count variable for both cost-increasing and uncertainty-reducing provisions.
Since heterogeneity is not a concern with respect to the occurrence of renegotiation, I use a standard semi-parametric Cox model for renegotiation. The results are reported in Table 5.3.

**Table 5.3: Independent Competing Risks Model: Shared Frailty Model for militarized disputes and Cox Proportional Hazard Model for renegotiation using count measures of cost-increasing provisions and uncertainty-reducing provisions**

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in probability of winning</td>
<td>.438** (.247)</td>
<td>.273 (.454)</td>
</tr>
<tr>
<td>Decreases in costs of fighting</td>
<td>1.162*** (.387)</td>
<td>.413 (.757)</td>
</tr>
<tr>
<td>Cost-increasing provisions</td>
<td>-.38** (.174)</td>
<td>-.014 (.223)</td>
</tr>
<tr>
<td>Uncertainty-reducing provisions</td>
<td>-.159 (.191)</td>
<td>.55*** (.17)</td>
</tr>
<tr>
<td>Variance of the random effect</td>
<td>1.674*** (.612)</td>
<td></td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5283 (92)</td>
<td>5283 (27)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-430.436</td>
<td>-124.23025</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***p<.01. Efron method for ties. Gamma shared frailty for militarized dispute model. Robust standard error clustered on dyad for renegotiation model.

Not surprisingly, the findings on changes in the probability of winning and decreases in the costs of fighting for the hazard of militarized dispute are very similar to the findings reported in Table 5.2. Decreases in the costs of fighting have a significant and positive effect on the hazard of militarized conflict. Changes in the probability of winning also appear to have such an effect but again this finding has to be regarded with caution: the result is driven by the civil war variable and is not robust to different levels in the threshold for significant changes in relative capabilities compared to the status quo.

More interesting is the fact that the count variable for cost-increasing provisions is positive and statistically significant in the analysis of militarized conflict. This confirms the theoretical expectation that the larger the number of cost-increasing provisions, the
lower the risk of conflict between competing states. When a dyad has four cost-increasing provisions— which happens to be the maximum number of cost-increasing provisions present in any given year— the hazard of conflict is reduced by 78 percent, which is slightly higher than the effect predicted based on the dummy variable.\textsuperscript{80}

It is important to recognize that the count variable for cost-increasing provisions is not as statistically significant as the simple dummy variable in Table 5.2. This probably reflects the diminishing effect of adding additional provisions: with already a few cost-increasing provisions in place, adding another provision does not have as strong an effect as when there are only few cost-increasing provisions. The notion that there may be a diminishing effect of the number of provisions included is further supported by the fact that the maximum number of cost-increasing provisions for a case is only four, although up to seven are theoretically possible. State leaders seem not to want to make use of the full set of cost-increasing provisions. A logical reason for this is that they do not expect that having five rather than four cost-increasing provisions will significantly reduce the chance of violent conflict between them. Furthermore, it is not rational to spend resources on negotiating and implementing an additional provision if this provision may not make much of a difference. Thus, the fact that decision-makers do not design conciliatory agreements that provide for more than four cost-increasing provisions suggests that decision-makers themselves anticipate that adding one more provision will not have a significant effect.

Uncertainty-reducing provisions, on the other hand, seem not to suffer from a diminishing effect. The effect of the count variable for uncertainty-reducing provisions

\textsuperscript{80} I also explore the effect of going from no cost-increasing provisions to seven cost-increasing provisions. This would reduce the hazard of conflict by 93 percent. However, it is important to keep in mind that no dyad has more than four cost-increasing provisions present.
on the hazard of renegotiation is even more statistically significant than that of the simple dichotomous measure. As opposed to cost-increasing provisions, decision-makers have opted to have all four uncertainty-reducing provisions in place in a given year. However, this has only occurred between France and Germany after 1975. The maximum number of uncertainty-reducing provisions for all other cases is three and none of the cases that renegotiate have more than three measures in place. However, having three measures in place is clearly better than having only 1. Having one uncertainty-reducing provision in place raises the hazard of renegotiation by 73 percent, while having three uncertainty-reducing provisions in place raises the hazard of renegotiation by 420 percent. This strong effect may be due either to the fact that states that have three uncertainty-reducing provisions also have at least one uncertainty-reducing provision that calls for surveillance, which tends to be very effective, or it may be due to the simple fact that more uncertainty-reducing provisions should reduce uncertainty more.

So far I have examined the effect of agreement provision variables included as separate variables alongside change variables. I have considered both binary variables that measure whether cost-increasing provisions and uncertainty-reducing provisions are present as well as ordinal measures that counts the number of the provisions in place between the competing states. While there are good reasons for conducting an analysis that includes the agreement provisions variables as separate variables and this analysis provides a good initial assessment of the effect of cost-increasing and uncertainty-reducing provisions, it is important to note that theoretically the use of interaction terms between change variables and agreement provisions variables is more appropriate. The
second part of this chapter examines whether agreement provisions is indeed accentuated when changes occur.

Part 2: Agreement Provision Variables and Change Variables interacted

The idea that it is when changes occur that we should see agreement provisions matter most is at the core of the theoretical argument developed in this project. If no changes occur after the status quo division of the issue is negotiated, then neither of the claimants should become dissatisfied with the status quo and uncertainty should remain relatively low. Since there is no incentive to change the division of the issue, we should observe neither conflict nor renegotiation. The outcome should be the maintenance of the status quo, whether or not the states have a conciliatory agreement. Thus, when there are no changes, conciliatory agreements should not really matter.

On the other hand, if changes in the probability of winning, decreases in the costs of fighting, or increases in issue valuation take place, it is quite possible that one of the claimants becomes dissatisfied with the status quo and demands a better deal. Furthermore, since changes tend to exacerbate existing uncertainty about who would win a military confrontation and about the other side’s resolve, the two states may not be able to agree on how the issue should be re-divided peacefully. Attempts at peaceful renegotiation may fail and violent conflict may ensue.

Under these circumstances, whether or not states have conciliatory agreements with cost-increasing and/or uncertainty-reducing provisions matters. By making fighting an unattractive option, cost-increasing provisions help reduce the chance that, in the face of changes, one of the states becomes dissatisfied and willing to fight for a better deal.
Because neither side prefers fighting to maintaining the status quo, no conflict will occur. If changes in the probability of winning or decreases in the costs of fighting do make one of the states dissatisfied with the status quo, uncertainty-reducing provisions can help the dissatisfied state and its opponent find a new deal that is acceptable to both. The states will then be able to peacefully renegotiate and no conflict should take place. When changes occur, conciliatory agreements matter: they help prevent potential violent conflict between claimants.

In order to test the argument that it is given changes that agreement provisions should matter most, I create interaction terms between changes and agreement provisions. First I create a change variable that is coded 1 if either the probability of winning variable, which is based both on changes in relative capabilities from the status quo of 30 percent or more and on the civil war variable, is coded 1 or if there is a decrease in the costs of fighting, operationalized as regime transition from democracy to autocracy. I then interact the change variable with the dummy variable for cost-increasing provisions and with the dummy variable for uncertainty-reducing provisions. This generates two interaction terms: one for changes times cost-increasing provisions and one for changes times uncertainty-reducing provisions. Using these interaction terms and their component variables, I estimate a Cox shared frailty model for conflict and a standard semi-parametric Cox model for renegotiation.
Table 5.4: Independent Competing Risks Model: Shared Frailty Model for militarized conflict and Cox Proportional Hazard Model for renegotiation using interaction terms between change and agreement provisions

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change x cost-increasing provisions</td>
<td>.13 (.501)</td>
<td>-.964 (.816)</td>
</tr>
<tr>
<td>Change x uncertainty-reducing provisions</td>
<td>.085 (.54)</td>
<td>.279 (.778)</td>
</tr>
<tr>
<td>Change</td>
<td>.487* (.285)</td>
<td>.091 (.565)</td>
</tr>
<tr>
<td>Cost-increasing provisions</td>
<td>-.903** (.399)</td>
<td>.523 (.575)</td>
</tr>
<tr>
<td>Uncertainty-reducing provisions</td>
<td>-.228 (.422)</td>
<td>.861 (.542)</td>
</tr>
<tr>
<td>Variance of random effect</td>
<td>1.608*** (.565)</td>
<td></td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5518 (98)</td>
<td>5518 (27)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-464.367</td>
<td>-124.844</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***<.01. Efron method for ties. Gamma shared frailty for militarized dispute model. Robust standard error clustered on dyad for renegotiation model.

Before interpreting the results of this model, it is important to note that Braumoeller (2004) recommends an alternative specification for situations in which there are two interaction terms that both share a common component variable. Here I examine interactions between change and cost-increasing provisions and change and uncertainty-reducing provisions. This means that the change variable is part of both interaction terms. Braumoeller points out that the inclusion of the change variable in both interaction terms may lead to a “tacit interaction” between cost-increasing and uncertainty-reducing provisions. He warns that such a model is equivalent to pegging the interaction between cost-increasing and uncertainty-reducing provisions and the three-way interaction of all variables artificially to zero (Braumoeller 2004, p. 811, fn.6). In order to avoid introduction of such bias it is important to include an interaction between cost-increasing and uncertainty-reducing provisions as well as a three-way interaction between change,
cost-increasing provisions, and uncertainty-reducing provisions. Following Braumoeller’s recommendation, I calculate a model in which I add an interaction between the two different agreement provisions and a three-way interaction.

Table 5.5: Independent Competing Risks Model: Shared Frailty Model for militarized conflict and Cox Proportional Hazard model for renegotiation using interaction terms between change, cost-increasing and uncertainty-reducing provisions

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change x cost-increasing provisions</td>
<td>-.026 (.581)</td>
<td>-1.538 (1.296)</td>
</tr>
<tr>
<td>Change x uncertainty-reducing</td>
<td>-.129 (.673)</td>
<td>.128 (1.175)</td>
</tr>
<tr>
<td>provisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost-increasing provisions x</td>
<td>-.339 (.863)</td>
<td>.288 (1.245)</td>
</tr>
<tr>
<td>uncertainty-reducing provisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change x cost-increasing provisions</td>
<td>.569 (1.101)</td>
<td>.884 (1.899)</td>
</tr>
<tr>
<td>x uncertainty-reducing provisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change</td>
<td>.526* (.296)</td>
<td>.160 (.614)</td>
</tr>
<tr>
<td></td>
<td>69% increase</td>
<td></td>
</tr>
<tr>
<td>Cost-increasing provisions</td>
<td>-.802* (.469)</td>
<td>.394 (.746)</td>
</tr>
<tr>
<td></td>
<td>55% decrease</td>
<td></td>
</tr>
<tr>
<td>Uncertainty-reducing provisions</td>
<td>-.088 (.548)</td>
<td>.700 (.894)</td>
</tr>
<tr>
<td>Variance of random effect</td>
<td>1.611*** (.564)</td>
<td></td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5518 (98)</td>
<td>5518 (27)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-464.233</td>
<td>-124.385</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***<.01. Efron method for ties. Gamma shared frailty for militarized dispute model. Robust standard error clustered on dyad for renegotiation model.

The full model presented in Table 5.5 puts significant strain on the data. It divides cases into eight separate categories based on whether changes occur, and whether cost-increasing provisions, or uncertainty-reducing provisions are present. Given the small number of cases and failures, particularly renegotiation, the inclusion of the various interaction terms is problematic. Thus, it is not surprising that most of the variables for
the two hazards are not statistically significant. However, it is also important to note that the two interaction terms of theoretical interest, i.e. the interaction between changes and cost-increasing provisions and between changes and uncertainty-reducing provisions, are not statistically significant in either model 5.4 or 5.5, neither for conflict nor for renegotiation.

This finding is surprising: unlike the theoretical argument predicts, agreement provisions do not seem to matter more for preventing conflict and bringing about renegotiation when changes occur. In fact, agreement provisions appear to have no effect on the hazard of conflict and the hazard of renegotiation when changes take place.

One possible explanation for this may lie in the flawed measure of changes in relative capabilities from the status quo. This measure has been shown to be unrelated to conflict in chapter 4 and it may be contaminating the results presented here. In order to ensure that it is not this particular measure that drives the results, I estimate the same model as in Table 5.4, with one exception: I operationalize change as either the occurrence or termination of civil war or regime transition. I exclude changes in relative capabilities from the measure of change.
Table 5.6: Independent Competing Risks Model: Shared Frailty Model for militarized conflict and Cox Proportional Hazard Model for renegotiation using interaction terms with change coded only based on civil war and regime transition

<table>
<thead>
<tr>
<th></th>
<th>MILITARIZED DISPUTE</th>
<th>RENEGOTIATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change x cost-increasing provisions</td>
<td>.489 (.514)</td>
<td>-.517 (1.18)</td>
</tr>
<tr>
<td>Change x uncertainty-reducing provisions</td>
<td>.094 (.587)</td>
<td>-.237 (1.211)</td>
</tr>
<tr>
<td>Change</td>
<td>.73** (.32)</td>
<td>-.28 (.996)</td>
</tr>
<tr>
<td>Cost-increasing provisions</td>
<td>-1.121*** (.35)</td>
<td>.106 (.423)</td>
</tr>
<tr>
<td>Uncertainty-reducing provisions</td>
<td>-.169 (.357)</td>
<td>1.0** (.425)</td>
</tr>
<tr>
<td>Variance of random effect</td>
<td>1.567 (.593)</td>
<td>172% increase</td>
</tr>
<tr>
<td>N (# failures)</td>
<td>5398 (96)</td>
<td>5398 (27)</td>
</tr>
<tr>
<td>Log-likelihood</td>
<td>-447.561</td>
<td>-124.506</td>
</tr>
</tbody>
</table>

*p<.1 **p<.05 ***<.01. Efron method for ties. Gamma shared frailty for militarized dispute model. Robust standard error clustered on dyad for renegotiation model.

Table 5.6 shows that the results of an analysis in which only the occurrence and termination of civil war and regime transition is coded as change are broadly consistent with the results of both Table 5.4 and 5.5. Excluding changes in relative capabilities from the status quo does not affect the results.

Tables 5.4, 5.5, and 5.6 consistently reveal four interesting findings, most of which do not conform to the logic of the theoretical argument. First, the interaction terms between changes and agreement provision variables are consistently not significant. Second, the change variable by itself is positive and statistically significant, indicating that when the cost-increasing provisions variable (and, for model 5.5, the uncertainty-reducing provisions variable) is set to 0, changes in the probability of winning or decreases in the costs of fighting do raise the hazard of conflict. Third, it appears that if the change variable is set to 0 (and, for model 5.5., the uncertainty-reducing provisions
variable is set to 0), cost-increasing provisions do reduce the hazard of violent conflict between the claimants. Fourth, uncertainty-reducing provisions appear to raise the hazard of renegotiation when the change variable is set to 0 (and, in model 5.5, uncertainty-reducing provisions are set to 0). However, the latter finding is not as robust as the three other results: in model 5.5 the p value for uncertainty-reducing provisions is .112, almost statistically significant; in model 5.6, the variable is not close to statistically significance; finally, in model 5.6, the variable has a p value of .019.

Of these various results, the only result that conforms with the theoretical argument is the finding that when no agreement provisions are in place, changes in the probability of winning and the costs of fighting increase the hazard of conflict. Depending on whether change is operationalized using all three change variables or only the civil war and regime transition variable, change appears to increase the hazard of conflict by 63-107 percent. This makes sense theoretically: if no cost-increasing or uncertainty-reducing provisions have been negotiated, changes may lead to conflict.

Conversely, the theoretical argument also proposes that when states do have conciliatory agreements with cost-increasing and/or uncertainty-reducing provisions, changes should be less likely to lead to conflict. Not only should such provisions decrease the hazard of conflict when changes occur, but they really should only have an effect on guaranteeing peace when changes take place— if no changes take place neither conflict nor renegotiation should occur anyway and therefore it does not matter if the states have conciliatory agreements.

Paradoxically, what the results reveal is that, when changes take place, cost-increasing and uncertainty-reducing provisions do not seem to have any effect on either
the hazard of conflict or renegotiation: the interaction terms are consistently not significant. Instead, cost-increasing and uncertainty-reducing provisions appear to affect the hazard of conflict and renegotiation when no changes occur. Cost-increasing provisions reduce the hazard of violent conflict by around 60 percent when no changes occur and uncertainty-reducing provisions increase the hazard of renegotiation by up to 172 percent if no changes occur.

One intuitive explanation for these findings lies in the rather weak operationalization of the concept of changes in the probability of winning and decreases in the costs of fighting. Changes in the probability of winning is measured by changes in relative capabilities from the status quo and by the occurrence or termination of civil war. The first measure, i.e. changes in relative capabilities from the status quo, is flawed and the second measure gets only at very large shocks in the probability of winning. If a state was involved in a civil war when the status quo was first established, but the civil war then ends, its military resources are freed up and can now be focused on battling an external enemy. Similarly, if neither state was involved in a civil war when the status quo was formed, but one of the states suddenly becomes embroiled in one, the other state’s chances of victory against an internally disrupted country are drastically increased. Like civil wars, regime transitions from democracy to autocracy also signify high intensity events with a potentially very large effect on the costs of fighting.

If the types of changes measured here constitute large shocks to the probability of winning and the costs of fighting, then it is not really surprising that cost-increasing provisions and uncertainty-reducing provisions do not prevent conflict or facilitate renegotiation when these changes take place. Large shocks will lead to a significant shift
in the location of the bargaining range (for changes in the probability of winning induced by the occurrence or termination of civil war) or contraction of the bargaining range (for decreases in the costs of fighting induced by regime transition). Under these conditions, even if cost-increasing provisions enlarge the range of acceptable outcomes relative to what the bargaining range would be without cost-increasing provisions, the changes are still likely to make one of the claimants dissatisfied. The changes are simply too large for cost-increasing provisions to have their effect.

Similarly, large changes in the probability of winning and decreases in the costs of fighting induced by the occurrence and termination of civil wars and regime transitions respectively, are likely to significantly exacerbate uncertainty. Under these conditions, uncertainty-reducing provisions may fail to help states renegotiate peacefully.

Thus, the finding that the interaction terms between cost-increasing and uncertainty-reducing provisions and change is not statistically significant may only mean that these provisions do not help if large changes occur. They may be successful with smaller or mid-level changes that have the potential to threaten peace but that can be controlled by cost-increasing and uncertainty-reducing provisions. There are plenty of changes that occur between or within the states, such as swings in public opinion, leadership changes, changes in alliance patterns, and discovery of natural resources in the disputed area, that are not explicitly measured here but that may lead to conflict or renegotiation. Cost-increasing and uncertainty-reducing provisions may not help with the large changes measured here but they may help when these smaller unmeasured changes take place. This would explain why I find that cost-increasing provisions reduce the hazard of conflict when the change variable is coded 0 and uncertainty-reducing
provisions increase the hazard of renegotiation when the change variable is coded 0. The presence of cost-increasing provisions does not help prevent conflict when large changes occur, but they do prevent that smaller changes, that are not explicitly included in the statistical model, lead to conflict. Similarly, when large changes occur, uncertainty-reducing provisions fail in bringing about renegotiation but they may help states renegotiate when smaller changes, that are not modeled here, take place.

Aside from measurement problems, another possible explanation for these astounding results that needs to be considered is simply that the theoretical argument is flawed: cost-increasing provisions and uncertainty-reducing provisions may not work the way it has been proposed. Their effect might not lie in mitigating changes and making the existing peaceful equilibrium more robust to these changes. Instead, they may work in some other way. It is also possible that cost-increasing provisions and uncertainty-reducing provisions do not work at all, in the sense that they do not actually help prevent conflict or facilitate renegotiation. They may simply be a reflection of good relations between claimants and their desire to maintain the existing status quo. States that have friendly relations sign conciliatory agreements and they also remain at peace. Thus, instead of causing peace, cost-increasing provisions may be epiphenomenal: the fact that the claimants have friendly relations explains both the existence of conciliatory agreements with cost-increasing provisions and a reduced hazard of conflict. A similar endogeneity argument can be made about uncertainty-reducing provisions and renegotiation.

While it is a distinct possibility that the theoretical argument about how cost-increasing and uncertainty-reducing provisions work may be wrong and it may even be
the case that these provisions have no independent effect on conflict or renegotiation, it is too early to discard the argument presented here. The theoretical argument is based on a strong theory of conflict and there are some empirical results supportive of it. Before considering it to be falsified, an attempt should be made to collect more and better data on different types of events between and within the claimants that may affect the probability of winning, decrease the costs of fighting, or increase the value of the issue at stake.
Chapter 6:
Conclusion

In their foreign relations, states often experience disagreements such as differences over policy choice, disputes over resources, and competing territorial claims. Sometimes these disagreements lead to violent conflict between states and other times opponents are able to manage their conflicting interests peacefully. For example, Argentina and Britain fought a war on their Malvinas/Falklands dispute and Ecuador and Peru have engaged in multiple militarized disputes concerning their territorial claim in the Maranon region. On the other hand, Saudi Arabia and Oman have been able to handle their conflicting claims to the Buraimi oasis peacefully. Why do some states resort to violence while other states succeed in managing their disagreements peacefully?

In this project, I focus on the role of conflict resolution and conflict management agreements that states can sign in order to prevent that underlying differences eventually lead to conflict. I examine whether these agreements can help ensure a durable peace between competing states and which kinds of provisions should be particularly successful at averting violent conflict.

The question of whether conflict resolution and management agreements work, and exactly how they work, to guarantee a long-lasting peace between states with competing claims is an important question, both for international relations research and policy-making. This question directly addresses the persisting debate between institutionalists and realists about whether institutions matter for international outcomes and it also draws our attention to the sorts of agreements that can help decision-makers prevent conflict in the real world.
Unfortunately, at this point, scholarly work can neither provide solid advice to
decision-makers about whether and how to design conciliatory agreements, nor can we
confirm or disconfirm the institutionalist argument about the effect of such arrangements.
There still exists considerable disagreement with respect to whether agreements help
prevent conflict between states with underlying differences. The debate between Werner
and Fortna on the causes of recurrent conflict is indicative of this problem: Werner
(1999b, 2005 with Yuen) argues that it is changes in factors such as relative capabilities
that increase the risk of recurrent conflict, while peace agreements have no effect. On the
other hand, Fortna (2003, 2004) shows that cease-fire agreements do reduce the
likelihood of conflict between former belligerents and she argues that changes in relative
capabilities do not lead to conflict but are instead the result of conflict.

The Werner-Fortna debate is currently at an impasse, with Werner pointing to
changes in underlying factors and discarding the effect of agreements, and Fortna
emphasizing the role of agreements but questioning the effect of changes. The goal of
this project is to help overcome this impasse and move the debate forward.

The project makes three distinct contributions to this purpose. First, recognizing
that both changes in environmental factors and agreement provisions affect whether
states with competing claims will fight, this project synthesizes the two seemingly
conflicting arguments by Werner and Fortna in one rigorous theoretical framework, the
bargaining model of conflict. Second, using the theoretical framework of the bargaining
model, it becomes possible to identify more specifically which kinds of changes threaten
peace and which kinds of agreements provisions can help prevent conflict and how
exactly they might work. Third, by explicitly drawing on the bargaining model, this
project directs attention to the possibility of a third outcome, renegotiation. States may not only fight or adhere to the status quo—they may also renegotiate and continue peace on new terms. The possibility of renegotiation has not gotten much attention so far and, in fact, Werner points to this omission as the central weakness in her theoretical argument. In this project, I not only explicitly take into account the possibility of renegotiation but also provide an answer for why renegotiation may sometimes succeed and other times fail: this answer lies, at least in part, in agreement design. Finally, this project considers a wider range of cases than either Werner or Fortna. Both focus on post-war agreements, while I am interested in conciliatory agreements, which include agreements that are signed after significant conflict has occurred and agreements that are designed to manage competing claims before they reach the level of violence.

Whether states fight or simply verbalize their competing claims, at some point they arrive at an understanding on how the issue under dispute should be settled. Once such a status quo division of the issue as been agreed upon, it is perceived by both sides as an efficient equilibrium. As long as no shocks occur that may transform the parameters underlying the equilibrium, both states should adhere to the status quo and conflict should be avoided.

However, if shocks occur the equilibrium may break down and conflict becomes a possibility. The bargaining model allows identification of exactly which kinds of changes may lead to the breakdown of the status quo: changes in the probability of winning, decreases in the costs of fighting, and increases in issue valuation may have this effect. The reason is that such changes can make one of the claimants become dissatisfied with the status quo and they introduce uncertainty. If a state becomes dissatisfied with the
status quo and prefers to fight to get a better deal and the states have incomplete
information about which deals will be acceptable to both sides, they may be able to
renegotiate but there is also the possibility of conflict.

Decision-makers know that these changes will take place and that they can
potentially lead to violence between the states. In order to prevent that changes have such
a detrimental effect, decision-makers design conciliatory agreements that increase the
chance that peace will be maintained even if disruptive changes occur. The logic of the
bargaining model points to two types of mechanisms that should be particularly useful for
preventing changes from leading to conflict. Cost-increasing provisions make fighting an
unattractive alternative and thus reduce the chance that a state may become dissatisfied
with the status quo and willing to use violence to obtain a more beneficial outcome.
Uncertainty-reducing provisions help address the second aspect of why conflict may
occur. Such provisions increase the chance that a dissatisfied state and its opponent are
able to agree on a new division of the issue peacefully. Thus, if states conclude
conciliatory agreements that feature cost-increasing and/or uncertainty-reducing
provisions they should face a lower likelihood of conflict, even if changes take place.

Furthermore, the argument suggests that the type of provisions contained in
conciliatory agreements not only increase the likelihood that peace is maintained but also
affect the kind of peace maintained. Competing states that experience disruptive changes
may remain at peace either because they continue to accept the status quo or because they
peacefully renegotiate the division of the issue under dispute. Cost-increasing provisions
increase the chance that, in the face of changes, the original status quo distribution is
maintained and peace continues on old terms, while uncertainty-reducing provisions make it more likely that renegotiation will occur and peace continues on new terms.

In order to assess the theoretical propositions concerning the kinds of changes that should raise the chance of renegotiation and conflict and the effect of cost-increasing and uncertainty-reducing provisions on both conflict and renegotiation, I rely on Huth and Allee's (2002) list of territorial claims between 1919 and 1995. Territorial claims constitute particularly conflict-prone disagreements and are especially hard to resolve. However, many of the territorial claim dyads have made attempts to resolve or manage their competing claims through conciliatory agreements. This is true irrespective of whether the two states had simply verbalized their claims, engaged in low-level militarized disputes, or fought full-blown wars.

Using a variety of sources, I have tried to locate the conciliatory agreements concluded by the claimants. I have been able to find and obtain copies for the majority of conciliatory agreements concluded between claimants in the Americas, Europe, and the Middle East. I have coded a total of 187 conciliatory agreements with cost-increasing and/or uncertainty-reducing provisions for 245 cases from these three regions of the world. These data constitute the basis for the empirical test of the theoretical argument.

The empirical results for both the effect of changes and agreement provisions are mixed. Some theoretical propositions receive empirical support, while others do not. With respect to the effect of changes in the probability of winning and decreases in the costs of fighting on conflict and renegotiation, the most surprising finding concerns changes in relative capabilities.
Changes in relative capabilities increase a state’s probability of winning a military confrontation and thus may potentially lead to conflict or renegotiation. An important part of this argument is that it is changes in relative capabilities compared to the status quo that should matter and not changes from one year to the next, which is what both Werner (1999b, 2005 with Yuen) and Fortna (2003, 2004) analyze. Interestingly, however, it turns out that changes from year to year increase the hazard of conflict, while changes in relative capabilities compared to the status quo are consistently not statistically significant. However, this finding should not necessarily be interpreted as evidence that changes relative to the status quo do not matter. The two other change variables analyzed here both consider changes relative to the status quo and their effect on the hazard of conflict is positive and statistically significant. Cases in which one of the states suddenly experiences a civil war after the status quo was initially formed or cases in which one of the states was involved in a civil war when the status quo was established but the civil war ended, face an increased risk of conflict. Similarly, the hazard of a militarized dispute increases significantly when at least one of the states turns from being a democracy when the status quo was formed into an autocracy later on. These findings imply that it may not be the theoretical argument about changes relative to the status quo that is flawed but rather the measure of changes in relative capabilities compared to the status quo. Werner’s measure, on the other hand, does not suffer from the same complication and thus tends to work.

A second somewhat surprising finding concerning the effect of changes is that the occurrence or termination of civil war and regime transitions increase the hazard of a militarized dispute but do not seem to have an effect on renegotiation. Theoretically, the
same changes that lead to conflict should also be associated with renegotiation. This does not seem to be the case here. One possible explanation for the lack of a relationship between the civil war variable and the regime transition variable and renegotiation is that both of these changes represent relatively large shocks. Such changes may not make renegotiation any more likely but instead will most likely lead to conflict. The notion that renegotiation only will become likely when the magnitude of changes is not excessive is supported by the finding that Werner's measure of changes in relative capabilities from year to year increases the hazard of renegotiation. Such changes tend to be relatively small, with 50 percent of the cases experiencing changes of no more than 5 percent. When changes are small, states can renegotiate more easily.

The findings concerning the effect of cost-increasing and uncertainty-reducing provisions on the hazard of conflict and renegotiation are similarly mixed. As expected, cost-increasing provisions significantly reduce the hazard of militarized conflict between the competing states and uncertainty-renegotiation provisions significantly increase the chance that the claimants will renegotiate peacefully. However, contrary to the theoretical argument, uncertainty-reducing provisions do not reduce the hazard of conflict and neither cost-increasing provisions nor uncertainty-provisions seem to matter more when changes have occurred. Instead, the results indicate that it is when no changes in the probability of winning and decreases in the costs of fighting take place that cost-increasing provisions decrease the hazard of conflict and uncertainty-reducing provisions increase the hazard of renegotiation.

The empirical finding that uncertainty-reducing provisions make renegotiation more likely but do not seem to affect conflict occurrence is theoretically puzzling. It has
been stipulated that uncertainty-reducing provisions help prevent conflict by allowing states to negotiate a deal that is acceptable to both sides. Thus, if uncertainty-reducing provisions facilitate renegotiation they should also decrease the hazard of conflict. One possible explanation for this finding is that it is the states that get along well that renegotiate and that conclude conciliatory agreements with uncertainty-reducing provisions. According to this realist endogeneity critique, uncertainty-reducing provisions do not actually cause renegotiation. If the positive association between uncertainty-reducing provisions and renegotiation is indeed due to a third factor (i.e. friendly relations between the claimants) it is not surprising that no relationship between uncertainty-reducing provisions and conflict has been uncovered.

Given the limitations of the data, it is not possible to disprove this critique. Yet, simple descriptive analysis seems to suggest that it is not true that renegotiation tends to occur predominantly between states with overall friendly relations and it is also not true that such cases are more likely to have uncertainty-reducing provisions. Instead, what appears to be the case is that conflict-prone cases that have adopted specific types of uncertainty-reducing provisions are more likely to help them to renegotiate peacefully. All of the conflict-prone cases that end up renegotiating have provisions for inspections by the other party or monitoring by third parties, while these types of uncertainty-reducing provisions are rare among cases that fight. These empirical regularities suggest that certain types of uncertainty-reducing provisions, namely those that rely on surveillance, may actually help states renegotiate and maintain peace. However, given the limitations of the data, it is only fair to say that the evidence concerning the effect of uncertainty-reducing provisions is currently inconclusive and requires further analysis.
A similar statement can be posited with respect to the argument that cost-increasing and uncertainty-reducing provisions should matter most when changes occur. The theoretical argument implies that if there are no changes, the status quo division of the issue should persist between the states. Only if changes occur, will the status quo break down, either through renegotiation or conflict. Thus, only if changes take place, should cost-increasing and uncertainty-reducing provisions have an effect on conflict and renegotiation. Surprisingly, the results indicate that cost-increasing provisions do not reduce the hazard of conflict when changes occur and uncertainty-reducing provisions do not increase the hazard of renegotiation when changes occur. Instead, these two provisions appear to have their effects when no changes take place.

One logical explanation for this puzzling finding lies in the rather weak operationalization of changes in the probability of winning and decreases in the costs of fighting. One of the measures for changes in the probability of winning, changes in relative capabilities relative to the status quo is flawed and the other measure, the civil war variable, gets at very large changes in the probability of winning. Similarly, regime transitions signify high intensity events with a potentially very large effect on the costs of fighting. It is possible that when such large changes occur, cost-increasing and uncertainty-reducing provisions are simply not as effective and will not prevent conflict and encourage renegotiation. However, they might have the theoretically expected effect on conflict and renegotiation when smaller or medium-level changes take place. Such changes are likely to occur continuously but are not explicitly accounted for in the statistical model. This may explain the finding that cost-increasing provisions reduce
conflict and uncertainty-reducing provisions increase the hazard of renegotiation when none of the measured changes take place.

While there are a number of explanations for the various unexpected findings that do not necessarily lead one to discard the theoretical argument, the fact that the empirical support is mixed and some very important theoretical propositions have not been born out by the evidence, also points to the possibility that the theoretical argument is false. Changes and agreement provisions may simply not work in the ways proposed in this paper.

However, before the theoretical argument should be considered falsified, more empirical testing needs to be undertaken. One large problem underlying the entire data analysis is the relatively small number of cases, as well as militarized disputes and renegotiations. The data are particularly sparse with respect to renegotiations: there are only 27 incidents of peaceful renegotiation— a very low number to base any conclusions on. The collection of conciliatory agreements for the two remaining regions, Asia and Africa, will increase the number of territorial claim cases, militarized disputes, and renegotiations and thus allow for more reliable results. Given data limitations, one can say that the jury is still out on whether changes and agreement provisions work the way it is proposed here. Further testing is required before the findings can be considered conclusive.

Despite these qualifications, scholars of international relations and policy-makers can potentially take away a few tentative insights from the analysis presented here. One such insight is that cost-increasing provisions do seem to reduce the likelihood of violent conflict between states with competing claims. While, given the data limitations, it has
not been possible to identify exactly which of the seven different types of cost-increasing provisions is most successful at preventing conflict between claimants, it appears as if agreements that provide for at least one of these provisions do help states ensure a more durable peace between them. States that have agreed on troop withdrawal, demilitarized zones, peacekeepers, guarantors, submission to arbitration, accepted an arbitration award, and/or engaged in border cooperation are less likely to end up fighting.

Similarly, while the results concerning the role of uncertainty-reducing provisions in facilitating renegotiation and preventing conflict does not fully correspond to the theoretical expectations, it does appear that uncertainty-reducing provisions help even very conflict-prone states like Egypt and Israel renegotiate peacefully. Particularly effective appear to be provisions that either allow for military inspections between the claimants or call for third-party monitoring. These types of uncertainty-reducing provisions overcome the misrepresentation problem and provide reliable information to the states, allowing them to renegotiate peacefully.

A third important insight of this project is that there appears to be significant unobserved heterogeneity with respect to the hazard of experiencing a conflict. This heterogeneity is in part due to the varying levels of hostility that dyads with competing claims experienced previously. Cases that have fought wars about their territorial claims in the past are much more likely to experience further violent conflict than those cases that have not fought previously. Smaller changes in the probability of winning and decreases in the costs of fighting can upset the fragile status quo between them: while the occurrence and termination of civil wars and regime transitions, which constitute changes of large magnitude, increase the hazard of conflict for all cases, changes in relative
capabilities from one year to the next, which constitute less extreme changes, only
increase the risk of conflict for conflict-prone cases. Furthermore, it appears that cost-
increasing provisions have an important effect in preventing conflict among more
conflict-prone cases but less so for less conflict prone cases.

While variation in previous conflict levels among claimants appears to be an
important explanation for the heterogeneity in conflict proneness among cases, it does not
explain all unobserved heterogeneity. The findings presented in Table 4.7 indicate that it
is correct that many more of the cases that have previously fought a war are conflict
prone than of those that have not fought a far: only 1/3 of the cases that have not
previously fought a war are more frail, while almost 2/3 of the cases that have previously
fought a war about their territorial claims are more frail. However, the findings presented
in Table 4.7 also show that there is variation in frailty levels within the group of dyads
that has not previously fought a war as well as within the group of dyads that has
previously fought a war. Among those dyads that have not previously fought a war 23 are
more frail and 77 are less frail. Among the cases that have previously fought a war, 16
are more frail and 11 are less frail. This variation suggests the presence of additional,
unmeasured factors that make conflict more or less likely.

One possible set of relevant factors are changes, both large and small, that
continuously take place in the relationship between the claimants or in their domestic
politics but are not included in the statistical model presented here. Such unmeasured
changes may make those dyads that experience them more likely to fail and thus lead to
unobserved heterogeneity among cases. Various changes that might have such an effect
but are not included here come to mind: changes in alliance patterns and allies'
capabilities affect the probability of winning, and discovery of valuable resources on the disputed territory and specific changes in domestic winning coalitions potentially increase a state’s valuation of the issue under dispute. All of these changes may increase the likelihood of conflict between competing states but are not currently accounted for in the statistical models. Future research, that builds on a larger number of claim cases and thus makes the inclusion of more independent variables possible, should measure these, and potentially other, changes that may affect the likelihood of conflict between claimants. This should help account for at least some of the unobserved heterogeneity.

The finding of unobserved heterogeneity, in particular the variation in conflict proneness among states that have fought a war in the past, also points to another interesting venue for future research. Most of the dyads that have fought previously are also more prone to fight later on. However, 1/3 of the dyads that have fought previously appear to be less conflict-prone. Why are these dyads unlikely to experience more conflict? What is different for these dyads?

One explanation is that these dyads have been able to settle their territorial claims once and for all and put their differences behind them. They have transitioned from a “cold” peace, i.e. the simple avoidance of further violence, into a “warm” peace, i.e. high levels of cooperation where violence is not even considered a possibility. The question then becomes why some former belligerents are able to establish a “warm peace” between them and others are unable to leave the stage of “cold” peace. For example, why is the relationship between India and China still tenuous today, while France and Germany, once embittered enemies, now hold common meetings of their legislatures? While this question is beyond the scope of the project presented here, it does point to an
interesting and important extension: we not only want to understand how violence is prevented but also how cooperation can be deepened and mutual gains can be achieved.

Another possible extension and venue for future research takes a step back rather than forward. Rather than examining whether conciliatory agreements can help ensure a durable peace between states with competing claims and which factors help states achieve even higher levels of cooperation, it is also possible to analyze the conditions under which conciliatory agreements are concluded in the first place and why they are designed in particular ways. Studying questions of the institutional design of conciliatory agreements, in addition to the effect of such agreements, makes it possible to address realist concerns about the endogeneity of agreements more directly. The critique that agreement provisions do not have an independent effect on the outcome but external circumstances determine both agreement conclusion/design and the outcome presents an important challenge to all institutional research. As Simmons and Hopkins (2005) point out, this challenge should be “attacked” theoretically rather than statistically, through the use of selection models. What is needed are testable theories of institutional design. One substantive area within which such a theory can be developed is the design of conciliatory agreements.

Without doubt, the project outlined here has many shortcomings and leaves many questions unanswered. However, it also provides some initial insights as well clear avenues for future research, not only with respect to collecting more data and creating better measures but also with respect to interesting and important theoretical extensions. The question of how destructive conflict between states with competing claims can be prevented and what role conciliatory agreements play in preventing violence and
ensuring peace is without doubt an important issue that warrants further investigation.

This project presents a starting point but much remains to be done.
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Appendix A:
List of territorial claim dyads

**Americas:**

<table>
<thead>
<tr>
<th>Argentina-Britain</th>
<th>Guatemala-Britain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina-Chile</td>
<td>Guatemala-Honduras</td>
</tr>
<tr>
<td>Argentina-Paraguay</td>
<td>Haiti-United States</td>
</tr>
<tr>
<td>Argentina-Uruguay</td>
<td>Honduras-United States</td>
</tr>
<tr>
<td>Bolivia-Argentina</td>
<td>Mexico-United States</td>
</tr>
<tr>
<td>Bolivia-Chile</td>
<td>Mexico-France</td>
</tr>
<tr>
<td>Bolivia-Paraguay</td>
<td>Nicaragua-Honduras</td>
</tr>
<tr>
<td>Brazil-Argentina</td>
<td>Nicaragua-United States</td>
</tr>
<tr>
<td>Brazil-Bolivia</td>
<td>Netherlands-Britain</td>
</tr>
<tr>
<td>Brazil-Britain</td>
<td>Netherlands-Guyana</td>
</tr>
<tr>
<td>Brazil-Colombia</td>
<td>Suriname-Guyana</td>
</tr>
<tr>
<td>Brazil-Paraguay</td>
<td>Netherlands-France</td>
</tr>
<tr>
<td>Canada-Britain</td>
<td>Surinam-France</td>
</tr>
<tr>
<td>Colombia-Nicaragua</td>
<td>Panama-Costa Rica</td>
</tr>
<tr>
<td>Colombia-Peru</td>
<td>Panama-United States</td>
</tr>
<tr>
<td>Colombia-United States</td>
<td></td>
</tr>
<tr>
<td>Colombia-Venezuela</td>
<td>United States-Canada</td>
</tr>
<tr>
<td>Cuba-United States</td>
<td>Venezuela-Britain</td>
</tr>
<tr>
<td>Dominican Republic-Haiti</td>
<td></td>
</tr>
<tr>
<td>Ecuador-Peru</td>
<td>Venezuela-Guyana</td>
</tr>
<tr>
<td>El Salvador-Honduras</td>
<td>Guatemala-Belize</td>
</tr>
</tbody>
</table>

**Middle East**

| Chad-Libya | Iran-Saudi Arabia          |
| Britain-France | Iran-Soviet Union    |
| Britain-Iraq  | Iran-Turkey              |
| Iraq-Saudi Arabia | Iraq-Britain      |
| Jordan-Saudi Arabia | Iraq-Iran        |
| Kuwait-Saudi Arabia | Israel-Jordan   |
| South Yemen/Yemen-Saudi Arabia | Israel-Syria |
| United Arab Emirates-Saudi Arabia | Italy-Britain |
| Britain-Saudi Arabia | Italy-France    |
| Britain-Turkey  | Italy-Turkey             |
| Egypt-Britain   | Libya-France             |
| Egypt-Sudan     | Mauritania-Spain         |
| Egypt-Israel    | Morocco-France           |
| France-Spain    | Morocco-Spain            |
| France-Turkey   | North Yemen-Britain      |
| Iran-Britain    | North Yemen-Saudi Arabia |


Oman-Saudi Arabia
Oman-South Yemen/Yemen
Qatar-Bahrain
Saudi Arabia-Qatar
Soviet Union-Turkey

Tunisia-France
Tunisia-Algeria
United Arab Emirates-Iran
Morocco-Algeria
North Yemen-South Yemen

Europe

Albania-Greece
Austria-Hungary
Austria-Italy
Belgium-Germany
Britain-France
Bulgaria-Greece
Bulgaria-Romania
Cyprus-Turkey
Czechoslovakia-Austria
Czechoslovakia-Hungary
Czechoslovakia-Poland
Denmark-Germany
Denmark-Norway
Estonia-Latvia
Finland-Russia
France-Germany
France-Italy
Germany-Czechoslovakia
Germany-Lithuania
Germany-Poland
Greece-Cyprus

Greece-Italy
Greece-Turkey
Greece-Britain
Hungary-Romania
Hungary-Yugoslavia
Ireland-Britain
Italy-Albania
Italy-Yugoslavia
Latvia-Lithuania
Lithuania-Poland
Netherlands-Belgium
Netherlands-Germany
Poland-Russia
Romania-Russia
Romania-Yugoslavia
Britain-Spain
Sweden-Finland
West Germany-East Germany
Yugoslavia-Austria
Yugoslavia-Bulgaria
Yugoslavia-Greece
Appendix B:
Examples of Cost-increasing and Uncertainty-reducing provisions

A. Examples of Cost-increasing provisions:

- *Troop withdrawal*: “withdraw the forces of the two countries from the positions they currently occupy” (Chad-Libya 1989)

- *Demilitarized zone*: “they mutually undertake not to construct any fortified building within a distance of 5 kilom. On either side of the frontier” (Saudi Arabia-North Yemen 1934)

- *Guarantors*: “the High Contracting Parties collectively and severally guarantee (...) the maintenance of the territorial status quo resulting from the frontiers between Germany and Belgium and Germany and France” (Germany, Belgium, France, Great Britain, and Italy 1925)

- *Peacekeepers*: “in this area will be stationed the United Nations Disengagement Observer Force” (Israel-Syria 1974)

- *Arbitration/adjudication*: “submit the dispute to an impartial tribunal” (UK-Saudi Arabia 1954)

- *Issue linkage*: “construct an oil pipeline” (Argentina-Bolivia 1941)

B. Examples of Uncertainty-reducing provisions:

- *Exchange of info on maneuvers etc.*: “reciprocal written information will be provided about movements of naval forces involving four or more ships (...)” (UK-Argentina 1990)

- *Regular consultation or hotlines*: “mechanism of consultations which will include a liaison system” (Jordan-Israel 1994)

- *Surveillance or verification by the other party*: “establish and operate early warning systems” (Israel-Egypt 1979)

- *Monitoring by third parties*: “The United States of America, Argentina, Brazil and Chile will cooperate, by means of military observers, in arranging matters of withdrawal and the retirement of troops” (Ecuador and Peru 1942)
Appendix C:
Test of Functional Form for Changes in Relative Capabilities Variables

Figure C1: Plot of Smoothed Martingale Residuals against Changes in Relative Capabilities from the status quo

Figure C2: Plot of Smoothed Martingale Residuals against Werner's measure of Changes in Relative Capabilities from year to year