Peace Agreements and Peacekeepers: Accounting For Censoring

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What determines which civil wars experience United Nations interventions? What determines when combatants sign peace agreements in order to end civil conflicts? Are the two questions related? Previous studies of civil war have taken one of two positions. It is either assumed that combatants signing peace agreements causes the UN to intervene, or it is assumed that UN intervention causes combatants to sign peace agreements. The argument presented in this paper is that combatants base their decisions on the actions of the international community and vice-versa. More specifically, the willingness of the combatants to sign an agreement and the UN's desire to see an end to conflict combine to produce one of four observable outcomes: (1) a peace agreement with no UN involvement; (2) a peace enforcement mission in which the combatants are unwilling to come to an agreement prior to UN intervention; (3) a peace agreement signed by the combatants that describes the role of the UN in post-conflict governance and security; and (4) either military victory by one side or some other stoppage of conflict. The factors that lead to these four outcomes are examined with a bivariate ordered probit model that accounts for censoring. To identify the model, I exploit exogenous variation in the UN's willingness to send peacekeepers to a conflict in the mid-1990's, based on the experience of the UNOSOM II mission in Somalia. The results indicate that the UN was substantially less likely to become involved in conflicts after 'Black Hawk Down'. The results also indicate that the UN lends its support in conflicts where the government has a small army, where there is greater mountainous terrain, large numbers of fatalities, and non-democratic governments. The only substantive conclusion that can be drawn about combatants' willingness to compromise is that they are less likely to do so when the government has a large army.

1 Introduction

Civil wars end in many different ways. The government or a rebel group may achieve a military victory. The government and rebels can sign a truce, and stop fighting without addressing the incompatibilities that led them to fight in the first place. The international community might send

in troops in order to force the combatants to stop fighting. The combatants could agree to settle their differences, make compromises, and sign a peace agreement. If this happens, the international community may send in peacekeepers to help insure the implementation of the agreement.

Clearly, combatants play a major role in determining how and when fighting will cease. It is important to also note, however, that the the combatant's decisions about whether to continue fighting or sign a peace agreement are being made at the same time that the international community is making a decision about whether or not to apply its resources in order to achieve a resolution to the conflict. In this situation, the actions of one party inherently depend on the actions of the other parties.

In order to examine that factors that lead to one of the four potential outcomes above, I develop a bivariate ordered probit model that accounts for censoring on the dependent variable in order to test what effects the international community's desire to end a conflict and the combatants' willingness to sign a peace agreement. A model which accounts for censoring is necessary because while we cannot observe each actor's latent preferences, we do observe one of the four eventual outcomes.

To identify the system of equations, one needs a variable that both effects the UN's desire to see an end to conflict, but not the combatant's willingness to end the conflict (or vice-versa). I argue that the 'Black Hawk Down' incident, which occurred on October 3rd and 4th in 1993, fits this condition. In an article entitled *UN efforts everywhere turn to dust - Downed helicopter in Somalia doomed a 'new world order'*, Tom Ashbrook argues that "when the fighting finally ended, an angry mob of Somalis dragged the half-naked body of a US soldier through the streets in front of cameras. As that shocking image was transmitted around the world, the 'Somalia syndrome' was born." Because of this, "conventional wisdom is now that large-scale, UN-led military intervention in the name of peace is unlikely to be seen again soon." Ashbrook (April 30, 1995) For the model to be identified using 'Black Hawk Down' as a shock, it must be true that both: (1) the event had an effect on the UN's desire to get involved in peacekeeping efforts; (2) and it must also be the case that the event had no effect on the combatants' willingness to negotiate and come to an agreement, other than through its effect on the UN. I argue below that this exclusion restriction is valid.

The structure of the paper is as follows. Section 2 discusses the past literature on peace agreements and peacekeeping deployment, and identifies a puzzle: one group of scholars assumes

that peace agreements between combatants cause the UN to deploy to conflicts while another assumes UN peacekeeper deployment causes peace agreements. Section 3 will identify the four possible conclusions to a conflict and relate those four outcomes to willingness of combatants to sign agreements and the UN's desire to see an end to conflict. Section 4 will argue that a bivariate ordered probit model that accounts for censoring is the appropriate the statistical model to analyze conflict resolution data. Section 5 presents the data and Section 6 presents the analysis. Concluding remarks are presented in Section 7.

2 Past Work on Civil War Resolution and Peacekeeping

2.1 Do peacekeepers go where peace treaties have been signed?

Several recent papers recognize the importance of examining where peacekeeping operations are sent. The major justification for pursuing such a study is the desire to understand the factors that lead the United Nations or other third-parties to intervene in conflicts or engage in conflict resolution. Are peacekeepers sent to conflicts based solely on humanitarian need? Does the structure of the international system affect where peacekeepers are sent? The benefit of such studies, however, is not limited to answering the above questions. If scholars wish to study the effectiveness of peacekeeping operations, then they will have to deal with counterfactual hypotheses. There will be no problem with inferences drawn from statistical analysis of peace duration in cases with and without peacekeeping operations if peacekeeping operations are assigned randomly (or at least non-systematically) to the population of civil conflicts. If, however, peacekeeping missions are systematically assigned to certain types of conflicts, then inferences may be tenuous at best. Understanding the factors that make peacekeeping assignment non-random is an important first step in evaluating the success of peacekeeping operations.[1]

The first systematic study of this question,Gilligan and Stedman (2003), attempts to identify where and when the United Nations deploys peacekeepers. The authors utilize a weibull duration model in order to measure the factors that determine when the UN intervenes in a conflict. This is accomplished by transforming the data from Doyle and Sambanis (2000) into duration data. In

[1]For an application of the issue of non-random assignment and causal inference to the work of Doyle and Sambanis (2000) see King and Zeng (2007), Sambanis and Doyle (2007), and Gilligan and Sergenti (2008)

their analysis, Gilligan and Stedman include a dummy variable indicating whether the combatants signed a peace treaty in order to "control for the possibility that the UN is more likely to intervene in a conflict when the combatants have signed a peace treaty." (p. 13) They conclude:

> *There is no strong evidence that the UN is more likely to intervene in a conflict when combatants have negotiated a peace treaty, but this is probably due to multicollinearity.* This result is quite a suprise given the conventional wisdom that the UN *requires* a peace treaty before it will send in a peacekeeping mission. The variable is the proper sign in all specifications but simply not significant in any of them. A look at a contingency table like the one in Table 6 reveals that there is a significant *bivariate* relationship between the presence of a treaty and whether or not there was an intervention. A bivariate Weibull regression using only the treaty variable (not shown) also reveals a strong bivariate relationship in the right direction. The problem arises in the multivariate results. The culprit appears to be multicollinearity between the treaty and size of the government army variable. The correlation coefficient between treaty and size of the government army is -0.23. When size of government army is excluded from the equation, as we do in column 3 of Table 4, the standard error on the treaty coefficient falls by about a third making the coefficient statistically significant. It would be premature to claim that the UN does not react positively to a negotiated peace treaty. These relatively weak results of the treaty variable are due to correlation between treaty and size of government army and a small sample size.

In another study, Fortna (2004) attempts to answer two questions. Where are international peacekeepers deployed, and are those interventions successful at maintaining peace? Fortna feels that to answer the latter she must answer the former because of the need to "control for factors that might affect both the likelihood of peacekeepers being sent and the ease or difficulty of maintaining peace so as to avoid spurious findings." (p. 269) To answer these questions Fornta uses the case list from Doyle and Sambanis (2000). The dataset consists of every cease-fire that occurred during a conflict that began between 1944 and 1997. Similarly to Gilligan and Stedman, Fortna treats the presence of a peace treaty as an independent variable. She finds that "if peacekeepers deployed where there was 'peace to keep' or where the combatants had signaled their 'political will' for peace by signing a treaty, we would expect this variable to have a positive effect, especially on consent-based missions...but we can confidently reject the hypothesis that peacekeepers are *more* likely to intervene when a formal treaty has been signed.' (p. 279)

Fortna also notes "that my interpretation differs from the argument of Gilligan and Stedman (2001) that the lack of robust findings of a positive relationship between treaties and peacekeeping is due to multicollinearity in the data. Because they do not control for whether or not the war ends

in victory, their treaty coefficient is picking up the UN's proclivity to go where conflicts end with a treaty rather than either a truce or victory." (p. 279, footnote 31)

Fortna's finding, however, requires a little looking in to. Doyle and Sambanis have coded civil wars that have ended into three categories: victory, treaty, or truce. Further, Fortna shows that "while peacekeepers were deployed in over 60% of the cases that ended with a treaty, as compared with only 11% of those that ended with a victory, they were sent to over 78% of those that ended in a truce."[2] The results presented by Fortna for the treaty variable are dependent upon the omitted baseline category that is not included in the logistic regression. Fortna's Table 4 column 3 does not include the truce dummy variable, meaning that the interpretation of the treaty coefficient (or its marginal effect) is a change in the probability of peacekeepers being deployed when changing the outcome of the conflict from a truce to a treaty. Truces and treaties are not very different, since they only vary depending upon whether an agreement covered factors other than military terms, so using truce as the omitted baseline category does not entirely make sense. Comparing treaties to military victories would seem to make sense if one considers that the two long term options combatants have is to either win, lose, or settle their differences. If Fortna's model concerning the deployment of UN missions is replicated with military victory instead of truce as the baseline category (not reported), then the coefficient from the treaty variable becomes positive and statistically significant.[3] Thus, it appears, that using Fortna's method, but changing to a more reasonable baseline outcome variable, the data demonstrates that peacekeepers are *more* likely to intervene when a formal treaty has been signed when compared to a military victory.

Mullenbach (2005) approaches the question of where peacekeepers are sent from a slightly different perspective than Gilligan and Stedman, and Fortna. Instead of focusing solely on the attributes of conflicts such as duration or intensity, Mullenbach wishes to answer the question "what effect do international-level factors have on the likelihood that third-party peacekeeping personnel will be deployed in an intrastate dispute?" (p. 529) Mullenbach codes whether the country in conflict has a military alliance with a major power, whether the country is itself a major power, whether a major power has been previously involved in the conflict, and whether an international institution has attempted any conflict management activities such as military sanctions, human rights monitoring, or fact-finding missions. In the analysis, Mullenbach also includes whether a

[2]Fortna (2004), p. 278

[3]The peace treaty has a coefficient of 3.34 with a SE of 1.16 and a marginal effect of .653 with a SE of .157 with all other variables held at their median value

ceasefire agreement was signed as a control variable in order to "control for the possibility that the likelihood of a peacekeeping mission varies depending on whether or not the parties formally agree to a cessation of military hostilities." (p. 543)

Mullenbach's unit of analysis is civil conflicts that have lasted at least 10 days. He identifies 213 conflicts that began after 1945, with 102 of those conflicts ending or still ongoing in the post-Cold War period. The analysis shows "the coefficients for ceasefire agreement were positive and statistically significant in each of the eight models." (p. 548) From this he concludes that "not surprisingly, third-party peacekeeping missions are significantly more likely to be established when the parties to the conflict have formally agreed to a cessation of military hostilities...Gilligan and Stedman (2003:50), who found no evidence that the UN was more likely to establish a peace-keeping mission when the parties to a civil war had negotiated a peace treaty, indicated that conventional wisdom suggested that 'the UN requires a peace treaty before it will send in a peacekeeping mission.' Actually, the conventional wisdom is that the UN requires a ceasefire agreement–not a peace treaty-before it will send in a peacekeeping mission. The results of this study strongly suggest that the UN is in fact more likely to establish a peacekeeping mission when the parties have formally agreed to a cessation of military hostilities." (p. 548, footnote 36) This is a particularly interesting claim, especially because Mullenbach does not include a dummy variable for peace treaty. His ability to make claims about the differences between ceasefires and peace treaties, where there is one, is limited by the fact that his analysis does not address the role peace treaties play in determining where peacekeepers are sent.

Two important points emerge from these three articles. The first is that the results from all three articles suggest that the deployment of peacekeepers is probably determined by whether the combatants have signed either ceasefires or peace treaties. The second, and more important point, is that the authors treat the ceasefire or treaty variables as exogenous. That is, by using ceasefire or treaty dummy variables as explanatory variables, the authors are assuming that the combatants' decision to sign a peace treaty or ceasefire is independent of any possible decision by the UN or other possible third-party enforcer to agree to enforce an agreement. The sequence of events all these papers assume is: first, combatants decide whether to sign a peace treaty or ceasefire, and then second, third-parties decide whether or not they wish to enforce those agreements.

2.2 Are Treaties More Likely to be Signed When Peacekeepers Are Present?

Similar to the literature on where peacekeepers are sent, scholars have attempted to answer the question, "When and where do combatants sign peace treaties"? These scholars assume, as opposed to the work described above, that first, the actions or views of third party enforcers are known prior to the signing of peace agreements, and second, that combatants then decide whether or not to sign a peace treaty.

Walter (2002) attempts to explain the process of civil war resolution. Her dependent variable divides the conflicts into four categories: (1) no negotiation, (2) negotiation, (3) signed bargain, (4) successful implementation, based on how far along each conflict got in the peacemaking process. An ordered logit model then estimates the extent to which the explanatory variables help get the combatants from one stage to the next. Of particular interest here is getting from the negotiation stage to the signed bargain stage. Two criteria were used to determine if combatants had signed a treaty. "First, the combatants were able to agree on a comprehensive peace plan that included a political as well as a military solution to the conflict...Second, a peace treaty had to be signed by all combatants actively fighting a war, not just a subset of actors." [4]

What factors does Walter determine to be necessary for combatants to sign treatys? She argues that "once combatants initiated negotiations, five completely different factors affect their decision to reach and sign a peace agreement. Only third-party security guarantees, territorial and political pacts, mediation, and nonterritorial goals have a sizable and significant effect on the decision to sign a peace agreement; the duration of war and the number of war-related deaths no longer exert any significant impact on combatants' ability to move forward." (p.78) Furthermore, "third-party security guarantees have the greatest impact on the willingness of combatants to sign peace settlements." (p.79) Walter provides predicted probabilities that combatants will sign a treaty, which assert combatants are 50 percent more likely to sign treaties if a third-party has stepped forward to provide security.[5] Thus, "if a third party offers to verify or enforce demobilization, as the British did in Zimbabwe in 1979 and the United Nations did in Bosnia in 1994, combatants are significantly more likely to sign a peace treaty than if no such offers are made."(p.80)

Greig and Diehl (2005) examines "the potential impact that a peacekeeping force might have in

[4]Walter (2002), p.52

[5]Note that Walter does not differentiate between UN and non-UN third-party guarantees.

facilitating a peace agreement between protagonists." (p. 621) They claim "peacekeeping missions, almost by definition, are oriented toward fostering and implementing a cease-fire, we argue that mediation and negotiation efforts that follow peacekeeping, in order to be considered successful, must move beyond cease-fires and stimulate either partial or full settlement between the disputants." (p. 632) The authors gather data on all attempts to mediate conflicts and initiate negotiations, and also on UN and other thrid-party interventions in civil wars. They find that "peacekeeping had no general impact on mediation or negotiation successes." (p. 640) The authors admit, however, that there may be other ways that peacekeepers promote conflict resolution. It could be that the *prospect*, rather than presence, of a peacekeeping force may promote peace agreements, that the presence of peacekeepers may lessen the probability of a return to violence, or that combatants will be more willing to commit to more detailed provisions in the peace agreement.

DeRouen and Sobek (2004) examine the factors that determine how civil wars conclude. Using the data from Doyle and Sambanis (2000), the authors run a multinomial logit model that explains whether a conflict ends in government victory, rebel victory, truce, or treaty. They include a dummy variable indicating whether the UN was involved in the resolution of the conflict. They conclude, "one of the strongest predictors of the outcome of civil wars is the intervention of the UN. When the UN intervenes in a civil war, it increases the probability of both truce and treaty." (p. 311) Furthermore, from their competing risks model, the authors claim that "in terms of duration, UN involvement...decreases the time for a truce or treaty." (p. 317)

The authors discussed above all treat the presence or promise of peacekeepers as exogenous. The sequence of events all these papers assume is: first, the UN decides whether or not it wishes to become involved in a conflict, and then second, the combatants decide whether or not they wish to end the conflict given the actions of the international community are know. Clearly, the logic of this sequence is the exact opposite to the one discussed in the previous section.

2.3 Discussion

Define PA to be a dummy variable indicating whether or not combatants sign a peace agreement, and PK to the whether or not the UN has offered (or sent) a peacekeeping mission. The first set of papers above essentially all have the following model in mind:

$$PK = \beta_1 + \beta_2 PA + X'\beta + \epsilon_1$$

That is, that whether or not an agreement has been signed by the combatants determines whether or not the UN sends in peacekeepers. Similarly, the second set of papers essentially all have this model in mind:

$$PA = \beta_1 + \beta_2 PK + X'\beta + \epsilon_2$$

That is, whether or not the UN sends (or agrees to send) peacekeepers determines whether or not combatants sign a peace agreement. It seems more logical, however, that these two outcomes are jointly determined. That would suggest that the following model is in fact the correct model:

$$PK = \beta_1 1 + \beta_2 1 PA + X'\beta 1 + \epsilon_1$$

$$PA = \beta_1 2 + \beta_2 2 PK + X'\beta 2 + \epsilon_2$$

, where $(\epsilon_1, \epsilon_2 \sim BVN)$

If this were indeed the correct model, then it could be estimated with a bivariate probit model. I argue in the next section, however, that due to censoring on the dependent variable a more elaborate statistical model is needed to recover the β's for PK and PA.

3 Theory

I present a simple theory of peace agreements and peacekeeping which consists of two latent components: 1. circumstances which encourage cooperation among combatants, and 2.the desire of the UN to see the conflict end. The first component, the latent level of cooperation between the combatants, can be thought of as the existence of a bargaining range that contains values that both sides prefer to continuing costly conflict or represent factors that overcome impediments (i.e. in-

complete information or commitment problems) to cooperation. The second component, the desire of the UN to see the conflict end, measures the UN's utility for peace.

How do these latent levels of preferences interact to produce the outcomes we observe? In practice, we observe four types of outcomes: 1. Peace agreements accompanied by peacekeeping missions, 2. peace agreements without peacekeeping missions, 3. peace enforcement missions, and 4. conflicts with no peace agreement and no peacekeeping mission. Given these observed outcomes, what can we learn about the latent preferences of the actors? Each of these four possible outcomes of conflict can be arranged according to Table 1, as described below. I argue that combatants have a low, medium, or high level of cooperation, and that the UN has low, medium, and high levels of desire to see an end to the conflict. The meanings of low, medium, and high are given below, and the cutpoints between the three are to be estimated in the statistical model.

To motivate the argument, I present several examples of how conflicts end. In Burundi, both the CNDD-FDD and Palipehutu-FNL were fighting with the government. In November 2003, the CNDD-FDD signed a ceasefire and joined the transitional government. The transition takes place without the presence of UN peacekeepers. This can be seen as an example of the 'peace agreements without peacekeeping missions'. While the CNDD-FDD was joining the government, the "Security Council urged Palipehutu-FNL (Rwasa), the only armed rebel group which had not yet joined the Arusha Agreement, to do so." (Nations (2008), p. 91) Palipehutu-FNL did not join the government, and "in May 204, acting under the enforcement provisions of the UN Charter, the Security Council authorized the deployment, on 1 June, of the United Nations Operation in Burundi (ONUB)." (p. 91) This case falls under the enforcement missions category. The United Nations sent in peacekeepers even though Palipehutu-FNL was fighting the government and not able to come to an agreement to stop the fighting.

Note that this insertion of UN troops into a conflict is entirely different than in Guatemala and Cambodia. In Guatemala, the peace agreement declared, "The ceasefire shall enter into force as of 0000 hours on D-day, the date on which the United Nations verification mechanism shall be in place with full operational capacity." Similarly, in one of the UN's largest and most comprehensive missions in Cambodia, the agreement declared, "UNTAC will exercise the powers necessary to ensure the implementation of this Agreement, including those relating to the organization and conduct of free and fair elections and the relevant aspects of the administration of Cambodia."

Table 1: Censoring in Peacekeeping and Peace Agreements

UN's Resolve	High	UN Enforcement Mission	Peace Agreement / Peacekeepers	Peace Agreement / Peacekeepers
	Medium	No Agreements or Peacekeepers	Peace Agreement / Peacekeepers	Peace Agreement / Peacekeepers
	Low	No Agreements or Peacekeepers	No Agreements or Peacekeepers	Peace Agreement
		Low	Medium	High
Level of Cooperation Among Combatants				

Clearly, a case in which the role of the United Nations is written into a peace agreement is entirely different than a case in which the UN sends in an enforcement mission when no agreement has been signed. The four potential categories than conflicts can fall into are described below.

1. Enforcement Missions - Enforcement missions are the most costly action the UN can take in order to resolve a conflict. If we see an enforcement mission in a conflict, then we know that it has a high level of desire to see the conflict end. It is assumed that the UN, prior to the deployment of the enforcement mission, told the combatants to resolve the problem 'or else'. If the combatants could not come to an agreement even with the UN threatening to increase the costs of the conflict (at least for one side), then we know that the level of cooperation between the combatants is low. So if an enforcement mission is observed, we know that the UN had a high level of commitment to the conflict, and the combatants had a low level of cooperation. This outcome can be seen in the top-left box in Table 1.

2. Peace Agreements Without Peacekeepers - If combatants are able to reach an agreement without any peacekeepers, then we know that the potential for cooperation is very high. That is, a bargaining range existed even without the help that UN peacekeepers provide in implementing an agreement. We also know that the UN's resolve was low because they did nothing to become involved in the conflict resolution process. So if an agreement without peacekeepers is observed, we know that there is a low level of commitment from the UN, and a high level of cooperation among the combatants. This outcome can be seen in the lower-right box in Table 1.

3. Peace Agreements With Peacekeepers - If combatants sign an agreement that is accompanied by the deployment of peacekeepers then the situation becomes more complex. One possibility is

that the combatants have a very high level of cooperation and would sign a peace agreement even if the UN offered no peacekeepers. In this case, the combatants level of cooperation is high. Another possibility is that the combatants are in a middle range in which no bargaining range exists for a peace agreement without peacekeepers, but a bargaining range exists for an agreement with peacekeepers. In this case, if the UN does not offer to send peacekeepers to resolve the conflict, then the combatants will not sign the agreement. I refer to this particular scenario as the combatants having a medium level of cooperation. So if we observe a peace agreement with peacekeepers, we know that the combatants level of cooperation is either medium or high.

There are also two potential scenarios with regards to the UN's desire to see an end to the conflict. One possibility is that the UN threatens the combatants with an enforcement mission, and the combatants capitulate and sign an agreement that allowed the UN to come into the country as a chapter VI rather than a chapter VII mission. In this case the UN's commitment to seeing the conflict end is high because their willingness to send in an enforcement mission UN pressure is not enough to force an agreement. The other possibility is that the combatants and the UN come together on an agreement where the combatants are willing to sign an agreement, and the UN is willing to send in peacekeepers given that the combatants are willing to sign an agreement. In this case, the UN's desire to see an end to the conflict is coded as medium. The difference between the two scenarios is that in the former, the UN is willing to send in an enforcement mission if the combatants do not agree to a deal, whereas in the latter, the UN is only willing to send in peacekeepers if their role is written into a peace agreement.

For these reasons, if we observe a peace agreement with peacekeepers, we know that both the combatant's willingness to compromise and the UN's desire to see an agreement is either medium or high. This outcome occupies the upper-right 4 boxes in Table 1.

4. No Agreement/ No Peacekeepers - If no agreement is signed (i.e. military victory, ongoing conflict) then there are three possibilities. The first is that the potential for cooperation between the combatants is low, and so is the UN's desire to see an end to conflict. In the second case, the combatants are so far apart that getting them to come to an agreement is not possible, so whether or not the UN's resolve is low or medium, an agreement with peacekeepers will not be seen. In this case, the UN is willing to send peacekeepers to the conflict if the combatants can reach an agreement, but the combatants are so far apart that an agreement cannot be reached. The third

possibility is that the combatants are willing to sign an agreement if the UN sends peacekeepers , but the UN is not willing to pay the cost to send a peacekeeping mission. In this case we also observe no agreement and no peacekeeping mission. These three possibilities occupy the bottom-left three boxes in Table 1.

Given the arguments presented above about how the combatants and the UN interact to produce four observable outcomes, a bivariate probit model with one equation representing peace agreements and one representing peacekeeping is not the appropriate model. Below, I describe a bivariate ordered probit model that integrates over the bivariate normal distribution according to the cells in Table 1.

4 Statistical Model

In order to examine the factors that influence the UN and combatants' decisions, I construct a bivariate ordered probit model that accounts for censoring on the dependent variable. The model in this sense is similar to the one presented by Smith (1999). In that paper Smith estimates the willingness of combatants to escalate a crisis into a conflict. The model needs to account for censoring because (among other issues) the highest state the crisis reaches does not reflect the highest level the winner of the conflict is willing to escalate the crisis because the other side backs down before the conflict needs to be escalated. Essentially, Smith is not sure what action one party *would* have taken had the other party taken a different course of action, and the statistical model ss designed to account for this uncertainty.

A bivariate ordered probit model that accounts for censoring has two major benefits. First, as described above, it allows the modeler to account for the fact that the actions of one party are censored by the other. Second, because the error terms are correlated, it accounts for the fact that there may be factors other than the included explanatory variables that effect the decisions of both parties, and adjusts the estimates accordingly. Following Smith (1999), one must define censoring rules in order to define a model. The censoring rules will follow the logic described in Table 1.

There are two dependent variables analyzed. The first is the willingness of the combatants to reach an agreement. Each case falls into one of three values (low, medium, high), as is shown in Table 1. As described above, if an agreement is signed even without peacekeepers, then cooperation

among the combatants is high. Similarly, if the combatants do not sign an agreement even with an enforcement mission being sent in, then cooperation is low. If a peace agreement is signed with peacekeepers, then there are several possible scenarios. Cooperation could either be high or medium, but certainly isn't low. Similarly, if no agreement is reached, then cooperation is either low or medium.

The second dependent variable is the UN's willingness to help resolve the conflict. If the UN sends in an enforcement mission, then, obviously, their commitment to resolving the conflict is high. If the combatants sign an agreement and the UN does not send a peacekeeping mission, then the UN's resolve is low.[6] Just as with the combatants, if an agreement gets signed with peacekeepers, then the UN's commitment is allowed to be medium or high, and if no deal is ever reached, then their commitment is low or medium.

4.1 Identification

In order for the model to be identified, I need a variable that effects the UN's willingness to send troops to a conflict, but has no effect on the combatant's willingness to sign an agreement. The effect of 'Black Hawk Down' was to bring US and UN involvement to a standstill in the mid-1990's. Lawson (2007) argues that this period of disengagement with the rest of the world "began with the withdrawal from Somalia in early 1994. This was a period of disengagement driven by the 'Somalia Syndrome'. Reeling from the debacle in Somalia, and with the Rwandan genocide already unfolding, Clinton issued Presidential Decision Directive 25 (PDD 25), which sought to strictly limit future U.N. missions, and especially U.S. participation in them. It listed seven factors that American officials would consider before approving U.N. operations to be carried out by non-Americans, and six additional factors to be considered if U.S. forces were to participate...The first two considerations in approving even U.N. operations that excluded U.S. participation were whether the operation would advance U.S. interests, and whether there was a clear threat to international peace and security." (p. 3) In order to capture this exogenous shock to the system, I create a variable that takes a value of zero prior to 'Black Hawk Down', and then spikes to one the day after. A loss function then brings the effect of the shock back to zero over time.[7]

[6]This assumption may be a problem for the model if the UN would have been willing to send a force but the government did not want to accept the agreement.

[7]More specifically, I employ the following loss function: sqrt(Dec. 31st, 2005 - Date of resolution) Using a linear loss function leads to the same substantive conclusions, but with a slightly larger value for the log-likelihood function.

It seems clear that 'Black Hawk Down' had an effect on the UN's willingness to send peacekeepers to a conflict, but it must also be true that the incident had no effect on combatant's decisions to negotiate in other conflicts. One could argue that the norms about how battles are fought changed because of 'Black Hawk Down' or around the same time. If arguments about norms follow time trends, then maybe using time as an instrument is not a good strategy. The norm argument, however, shouldn't be a concern here. The reason is that any norm of how combat is fought would not only have to change around the same time as 'Black Hawk Down', but that norm must also return to previous levels at the same pace as the loss function I employ. It seems more likely, however, that even if a norm change occurred at the same time as 'Black Hawk Down', the new norm would stick around, and would therefore not follow the same loss function I employ.

The incident in Somalia should have no effect on the bargaining range combatants in other conflicts face. Because of this, the model is identified.

5 Dataset

To proceed with this analysis, one needs to be able to differentiate between cases in which the signing of a peace treaty coincides with the deployment of peacekeepers, those in which a peace treaty was signed without the intention of receiving peacekeepers, those in which peacekeepers were sent as enforcement missions, and those which ended with neither a peace treaty nor peacekeepers (i.e. military victory or stalemate).

A new dataset is constructed based the UCDP/PRIO Armed Conflict Dataset (Version 4-2006). (Gleditsch:2002) An armed conflict is defined as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths." Appended to this conflict-year database is the UCDP Conflict Termination Dataset. (Version 1.0) (Kreutz:2005) Conflict years in which there was no resolution to the conflict or in which the conflict fell beneath the 25 deaths/year threshold were dropped. 127 observations remain in which a conflict began in the post-1945 era and was resolved between January 1st, 1989 and December 31st, 2005 or was still ongoing at the point of censoring. From there, the UCDP Peace Agreement Dataset (Version 1.0) is examined to determine which of the conflicts contained signed peace agreements. (Harbom:2006) A

peace agreement is defined as an agreement signed by two primary opposing parties that concerns the incompatibility, that is, solving, regulating, or outlining the resolution process. A dummy variable indicates the years in the conflict in which a peace agreement was signed.

Following Gilligan and Stedman (2003), I choose to examine only UN peacekeeping operations. The UN is the largest and most well known organization for supplying peacekeepers. Accordingly, I coded dummy variables for every year in which the UN had an ongoing operation in a country.[8]

From the peace agreements and peacekeeping dummies, I code three values of the dependent variable. First, if a peace agreement is signed to end a war but no peacekeepers are been sent, the case was coded under the category of 'peace agreement'. If peacekeepers have been sent and no peace agreement is signed (as in the former Yugoslavia, Somalia, and Haiti, Sierra Leone), then the cases are coded under the category 'enforcement mission'. If cases have both peace agreements and peacekeeping missions around the time of the resolution of the conflict, then the individual peace agreements from each conflict are examined to determine if the existence and role of peacekeeping forces is specified in the peace agreement. If the peace agreements contained expectations for peacekeepers, then cases are coded as having both a peace agreement and peacekeeping mission.

Finally, the remaining categories: truce, military victory, or ongoing conflict are combined to form a no-resolution category. These codings are based off the UCDP Conflict Termination Dataset. Of the 127 cases, 32(25%) ended in military victory, 17(13%) ended with a peace agreement, 11(9%) ended with a peacekeeping operation, 21(17%) ended with both a peace agreement and peacekeeping operation,20(16%) ended with a truce, and 26 (20%) of the conflicts are still ongoing.

I include common civil war explanatory variables. From Fearon and Laitin (2003), I include the logged population size, a countries level of democracy, logged GDP/capita, and Fearon's ethnic fractionalization score. The Correlates of War Projects National Material Capabilities (Version 3.02) was used to determine the size of the government's army.(Singer (1987)) The Prio Battle Deaths Dataset was used to determine the log of the cumulative number of fatalities from the conflict.(Lacina and Gleditsch (2005)). Finally, the duration of the conflict was controlled for.

[8]See http://www.un.org/Depts/dpko/dpko/ for more information on individual UN peacekeeping missions

6 Results

A censored bivariate probit model corresponding to Table 1 is estimated using Optim, an optimization routine available in R. The routine converged after 190 iterations and achieved a log-likelihood value of -99.158521.

Estimates of the UN's Commitment to the Conflict			
Variable	Estimate	Standard Deviation	P-Value
Black Hawk Down	-0.014	0.003	0.000***
Log of Population	-0.161	0.216	0.456
Polity 2	-0.052	0.031	0.099*
Log of GDP	-0.042	0.044	0.338
Mountains	0.204	0.083	0.015**
Ethnic Fractionalization	-0.084	0.636	0.894
Size of Gov't Army	-0.004	0.002	0.022**
Log of Cumulative Deaths	0.190	0.092	0.042**
Conflict Duration	0.000	0.001	0.865
Europe	0.114	0.578	0.843
Constant	-0.032	1.178	0.978
Second Cutpoint	0.700	1.907	0.714

Estimates of the Combatant's Willingness to Compromise			
Variable	Estimate	Standard Deviation	P-Value
Log of Population	-0.041	0.100	0.682
Polity 2	0.032	0.025	0.205
Log of GDP	0.032	0.236	0.891
Mountains	-0.154	0.096	0.112
Ethnic Fractionalization	0.243	0.615	0.693
Size of Gov't Army	-0.003	0.001	0.039**
Log of Cumulative Deaths	0.081	0.073	0.269
Conflict Duration	0.001	0.001	0.620
Europe	-0.125	0.503	0.802
Constant	0.025	0.405	0.991
Second Cutpoint	0.658	1.731	0.704

Interesting patterns emerge from the model. First, the 'Black Hawk Down' variable is negative and statistically significant. This means that the UN was much less likely to want to become involved in conflicts in the mid-1990s.

Interestingly, while GDP may be a good predictor of civil war onset(Fearon and Laitin (2003)), it seems to have little effect on the willingness of combatants to agree to settle their differences or the UN's desire to see a conflict end. Two factors seem to have negative effects on the willingness of combatants to compromise: as the size of the government army (negative and statistically significant) and percent mountainous terrain in a country (negative with a p-value of .112) increase, the less likely it is that a bargaining range will appear. What's interesting is that both of these factors seem to deal with the vulnerability of the rebels post-agreement. If there is a commitment problem for the rebels, then laying down arms when the country contains a large army could conceivably make the rebels more vulnerable. Similarly, if the rebels were forced to come out of their mountain hideouts in order to disarm, then this could also make them more vulnerable.

Also interesting is the fact that the polity score of the government does not affect the combatants' willingness to compromise. One might think that democratic governments may be able to send more credible signals about their intentions to the rebels, thus leading to more agreements, but this does not seem to be the case.

What determines the UN's level of interest in a conflict? First of all, the UN does not like to get involved in countries that have large armies. This is probably because, all else being equal, it is more dangerous for the peacekeepers if the country's army determines that it no longer wishes to abide by the agreement. Thus, the UN seems to be hesitant of where it puts troops in harms way. One surprising finding that runs counter to this argument is that the UN tends to go to countries that have MORE mountainous terrain. Clearly, if leaving the mountains makes the rebels feel vulnerable, then the UN is needed to assuage the fears of these rebels in order for an agreement to be implemented. However, it would also seem that peacekeepers would be more vulnerable in countries that have mountainous terrain.

Gilligan and Stedman (2003) found that the UN responded to conflicts with larger numbers of deaths. The finding here is the same. What is interesting about cumulative deaths variable is that while many deaths spurs the UN into action, they have no significant effect on the actions of the combatants. One would think that conflicts with more deaths would be costlier, and that costlier conflicts for the combatants would be easier to resolve, but this does not appear to be the case. The sign of the deaths coefficient seems to support this argument, but the estimate does not achieve a standard level of statistical significance.

A country's polity score has has a negative effect on the interest of the UN. The UN is less committed to settling conflicts in democracies than non-democracies. This finding does seem surprising, and requires a more in-depth consideration of the indicators that go into the polity measure.

Finally, Gilligan and Stedman (2003) found that the UN does seem to be very interested in ending conflicts in Europe. The coefficient for Europe in this model is positive but not statistically significant.

Concluding Remarks

The major contribution of this paper is to begin unpacking the relationship between peace agreements and peacekeepers. This is important because if one wishes to examine the factors that make agreements more or less likely to succeed, then one also needs to understand the factors that lead to the signing of the agreements. For example, this is important because in order to evaluate the success of UN peacekeeping missions, one must be able to model the non-randomn assignment

issues that have plagued previous research (see Doyle and Sambanis (2000)). This paper, then, can be seen as a first step in an attempt to understand the factors that make peace agreements more or less likely to last.

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