United Nations Peacekeeping and the Duration of Post-Civil Conflict Peace

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United Nations peacekeeping dynamics and the duration of post-civil conflict peace

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Abstract
How do the qualities of United Nations peacekeeping operations (PKOs) influence the duration of peace after civil wars? Recent work shows that UN peacekeeping extends the duration of peace. However, this work has only been able to assess whether the presence or absence of UN missions affects post-conflict peace processes. Such analyses offer little in the way of policy prescriptions for planning and structuring PKOs to effectively pursue their goals. By employing fine-grained data on the personnel composition of PKOs, and generating expectations from rationalist bargaining models of civil war, we argue that the number and type of personnel deployed to a PKO influence the UN’s ability to guarantee peace by addressing the information and commitment problems that so often lead to the collapse of post-conflict peace. We analyze how the composition of missions influences the duration of peace, finding that, as the number of UN military troops deployed increases, the chance of civil war recurring decreases. However, other personnel types do not have the same effect. We conclude that the effectiveness of post-conflict peacekeeping lies in the ability of PKOs to alleviate commitment problems through the deployment of military troops that are able to defend the peace.

Keywords
Civil war, peace duration, United Nations peacekeeping

How can the United Nations maintain peace in the aftermath of civil war? Following often brutal and bloody conflicts, the UN is commonly tasked with stabilizing post-conflict
environments, rebuilding war-torn societies, assisting in the reconstitution of political and civil institutions, and restoring order. Achieving and maintaining peace between former combatants is a difficult and complex process. The UN’s most visible, costly and potentially important means of realizing these ends is to deploy peacekeeping operations (PKOs). Yet research has historically been divided over how effective such efforts are in achieving the many objectives that peacekeeping missions are tasked with fulfilling. Several case studies and some initial quantitative analyses point to a general ineffectiveness of the UN in its peacekeeping efforts (Diehl et al., 1999; Jett, 1999; Jones, 2001). However, more recent quantitative work has convincingly concluded that post-conflict states receiving PKOs experience a more lasting peace than conflicts without (Doyle and Sambanis, 2000, 2006; Fortna, 2004, 2008; Gilligan and Sergenti, 2008; Sambanis and Schulhofer-Wohl, 2008). Furthermore, UN PKOs achieve this goal even under very arduous conditions, as the UN tends to deploy its missions to the most difficult and intractable civil conflicts (Fortna, 2004, 2008; Gilligan and Stedman, 2003). The positive impact of UN peacekeeping on peace and stability in these environments is remarkable given the conditions under which the UN becomes involved.

Even as scholars have come to greater agreement on the effect of peacekeeping in extending post-conflict peace, the literature does little to reveal the types of PKO deployments most associated with peacekeeping success. In fact, much of the extant literature has only associated positive peacekeeping outcomes with the mere presence or absence of a deployed PKO. Yet the decision-making calculus of policy-makers charged with constituting peacekeeping missions to confront difficult post-conflict environments is clearly more nuanced than simply deciding whether or not to dispatch a mission. Instead, missions come in many varieties, composed of different personnel types of various numbers and mandated to achieve numerous tasks. Some missions are outfitted with large numbers of military troops that intervene between combatants and protect civilians. For example, UNOSOM deployed fewer than 500 military troops to Somalia in early 1993. By November 1993, UNOSOM had grown to almost 30,000 military troops. Other missions are primarily composed of small numbers of unarmed observer personnel to monitor agreements and relay information to the UN, such as the approximately 200 observers sent to Burundi in 2005 through ONUB. Some missions have varying numbers of police personnel that serve behind the frontlines to protect civilians. Fewer than 200 police were deployed to ONOMUZ in Mozambique in January 1994, but the mission grew to include over 1000 police by October 1994. With such variations across and within missions in mind, existing research that relies on simple dichotomous indicators of the presence or absence of PKOs in post-conflict settings is not likely to be terribly enlightening to policy-makers intent on effectively constituting PKOs to pursue their mission objectives.

This paper offers a more nuanced assessment of peacekeeping effectiveness in post-war environments by accounting for important variations across peacekeeping missions that seek to maintain and extend the peace following civil conflicts. We explore how the characteristics of UN missions and the conditions under which they are deployed influence the duration of peace in civil conflicts. Relying on theoretical insights from the bargaining literature on civil war recurrence, we argue that a PKO’s ability to assist in consolidating post-war peace depends upon the mission’s capacity to pursue and enforce this mandate. Peacekeeping operations come in many more forms than is revealed by the simplistic dichotomous renderings that are common in quantitative research. The size of a PKO’s personnel commitment is indicative of the effort put forth by the UN and its member states in seeking to stabilize the peace. As more personnel are deployed, a mission becomes more robust in its ability to
mollify ongoing commitment problems and improve the revelation of private information between the former combatants. Larger missions should therefore be more capable of securing peace. In addition, PKOs are variously constituted and the different personnel types commonly deployed vary in their ability to curb commitment problems and facilitate information sharing between belligerents.

Overall, we find that both the composition of UN missions and the conditions under which they are deployed enhance the UN’s ability to ensure a stable peace. In particular, our results indicate that as more armed troops are deployed to post-conflict zones, the duration of peace is extended. We argue that this is a result of the ability of UN troops to mitigate commitment problems. In the following sections we review the conflict-bargaining literature as it applies to post-civil conflict environments and elaborate on the role of mission capacity and constitution in affecting the commitment and information problems between former belligerents. We then generate and test hypotheses on a sample of peace spells following civil conflicts in post-Cold War Africa. We conclude by reiterating the importance of mission capacity and constitution in informing our understanding of peacekeeping effectiveness, and we offer implications of this research for the policy-making community.

Rationalist explanations of civil war

According to the rationalist bargaining model of war, because civil wars are costly enterprises, belligerents should find peaceful solutions to their grievances rather than let conflict persist. Yet wars are fought and endure largely for two reasons: information asymmetries and commitment problems (Fearon, 1995). In the process of bargaining over the division of disputed resources, civil war combatants have incentives to misrepresent privately held information in an attempt to secure an agreement that yields the greatest benefit (Wagner, 2000). Combatants misrepresent private information to appear stronger, more resolved, less willing to back down and less agreeable to solutions that do not satisfy their most preferred bargaining position. Conflict is a way to gain information about one another’s resolve, strength and reservation points. Information revelation increases the ability of the combatants to come to an agreement over the division of the disputed resource (Filson and Werner, 2002; Ramsay, 2008; Slantchev, 2004).

If information asymmetries provoke fighting, then revealing relevant information should help the parties arrive at negotiated solutions that result in an end to fighting and the establishment of an enduring peace. However, the cessation of conflict does not necessarily mean that information asymmetries no longer exist between the factions. Civil war combatants may de-escalate hostilities below an easily observable threshold in order to regroup, reform their forces or go underground to rebuild popular support. They may then later reinitiate the fight to acquire information or to relay information about their capabilities and resolve. Thus, civil wars may experience prolonged periods of ‘peace’ that are simply the product of low combat activity.

Even in instances where the government and rebels reach a negotiated pact, these agreements may be unstable, evidenced by the tendency of ceasefires to break down soon after signing. Settlements may serve as stopgap measures that allow breathing space before fighting resumes. In this sense, ceasefires or peace agreements may not be representative of mutually agreeable resolutions that sufficiently satisfy combatant reservation points.
Like information asymmetries, commitment problems can lead to war even in the presence of perfect information (Powell, 2006). Commitment problems hamper the ability of opponents to reach peaceful settlements, since one or both sides believes that gains from fighting outweigh the concessions offered by a negotiated outcome (Powell, 1999, 2012). Commitment problems between combatants have seen increasing applications to civil war (Walter, 1997, 2001; Wood and Kathman, 2014). Such problems loom particularly large in civil wars, where rebel groups face a security dilemma. For civil war to effectively end, rebels must disarm, demobilize, and eventually reintegrate themselves into society. However, by disarming, rebels sacrifice their only means of protecting themselves from a government incentivized to renege on its previous commitments to the group. Some mechanisms of peace agreements, such as power-sharing provisions, help overcome incentives by the parties to renege on their commitment to peace (Hartzell and Hoddie, 2003, 2007; Mattes and Savun, 2010). However, in the relatively anarchic environment that defines government–rebels interactions during and immediately following civil war, formal agreements may only be valuable to the extent that they are enforceable. Thus civil wars often persist for extended periods unless combatants are able to secure outside security guarantees that ensure the fulfillment of the war termination terms (Walter, 1997, 2001; Walter and Snyder, 1999).

To summarize, civil wars occur and recur as a result of information asymmetries and commitment problems between the combatant factions. Even with a conflict’s cessation, opportunities exist for the restart of hostilities. Since the ‘end’ of war does not often mean the elimination of one side at the hands of the other, the ongoing organization of combatants keeps open the door for renewed hostilities, as opportunities for redistributing resources and benefits through violence persist into the post-conflict period.2

**The importance of mission characteristics in securing post-conflict peace**

Applied to post-conflict environments, the bargaining model of conflict implies that in order for third parties to stabilize post-conflict settings and extend the duration of peace following civil wars, third parties must be able to help share or reveal private information between combatants, or help combatants commit to and uphold durable peaceful settlements. By extension, for UN peacekeeping to maintain peace in the aftermath of civil war, it must help combatants overcome these bargaining obstacles. Previous studies indicate that the presence of a UN peace operation, or foreign intervention more generally, assists in securing post-conflict peace (Fortna 2004, 2008; Gilligan and Sergenti, 2008; Walter, 1997, 2001).

However, we have relatively little knowledge, especially with regard to UN peacekeeping, as to what qualities or characteristics of interventions lead to durable peace. Research on the effect of UN peacekeeping on peace duration has generally not captured the distinct qualities of UN PKOs that may be consequential to peace and conflict processes beyond rather simplistic dichotomous measures of a mission’s presence or absence in the host country. Noting the effect of a PKO’s presence in the post-conflict state reveals little about which aspects of peacekeeping missions are most closely associated with the extension of post-war peace.3 Not much can be said about the components of peacekeeping missions that yield positive outcomes. Recent studies, however, indicate the importance of mission capacity and constitution for protecting civilians, ending battlefield violence, increasing cooperation between combatants, improving the quality of immediate post-conflict peace and containing conflict.
contagion (Beardsley, 2011; Hultman et al., 2013, 2014; Kathman and Wood, 2015; Ruggeri et al., 2013).

Consider Figure 1, which plots the deployment of armed PKO troops to two missions in Africa from late 1999 through 2002. The UN mission in Sierra Leone (UNAMSIL) dramatically escalated its troop commitment in early 2000 and again in mid-2001. By comparison, the UN mission to the Democratic Republic of the Congo (MONUC) made a much smaller and more incremental troop increase over the course of its deployment. Dichotomous indicators of a mission’s presence or absence in the conflict state only indicate that UNAMSIL was present across the entire time period, whereas MONUC did not arrive until late 1999 and remained until 2002. If the simple presence or absence of a mission is enough for the UN to be effective, then these two missions are indistinguishable and should have an equal chance of success. Yet, evidence suggests that the escalation of troops to Sierra Leone resulted in a great deal of progress, helping end the bloody conflict and secure the peace that followed (Findlay, 2002). MONUC on the other hand saw substantially less success, at least in the early stages of its deployment. Empirical models that employ categorical indicators of peacekeeping do not capture these critical differences between missions like UNAMSIL and MONUC. Therefore such models cannot assess the consequence of these differences for the stability of post-conflict peace.4

Not only do peacekeeping missions differ in the overall number of personnel and timing of deployment, but they also differ in the personnel type deployed. PKOs are generally outfitted with three personnel types. In addition to armed troops, UN missions are commonly

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**Figure 1.** Monthly number of UN peacekeeping troops.
deployed with armed police units and unarmed observer personnel. Each of these personnel types serves distinct purposes in attempting to achieve the mandated goals of each operation. If the ability of missions to fulfill their objectives is a product of the tools made available to them, then variations in types of personnel deployed to PKOs should be particularly important to understanding which missions are more or less effective at securing peace following an end to civil conflict.

For UN PKOs to effectively assist the former combatants in avoiding a return to civil war, operations must be able to overcome commitment problems and information asymmetries. UN missions and the peacekeeping personnel that outfit these operations do this in two important ways. First, peace operations seek to separate the combatants and reduce their short term fears that the opponent will embark on another military offensive. By interceding between the former belligerents, UN missions essentially solidify the status quo power balance between combatants (Hultman et al., 2013). Given that confrontation on the battlefield is the primary means by which combatants attempt to improve their relative power, destabilizing power shifts that motivate commitment problems are diminished when PKOs effectively separate the belligerents, at least in the short term. As missions remain deployed to fulfill this task, security guarantees offered by the operation should improve the willingness of the former combatants to disarm and demobilize.

However, it is not simply the presence of a peace operation that is sufficient for achieving this goal. The UN’s ability to overcome commitment problems between the belligerents is a product of the UN’s commitment to the conflict state. Former combatants judge the strength of the UN’s commitment by evaluating the quality and strength of the personnel deployed (Findlay, 2002; Gberie, 2005). The UN is able to signal its commitment to post-conflict peace by committing a greater number of peacekeeping personnel to the host state. UN resolve is revealed as more personnel arrive. Larger deployments make the withdrawal of PKO forces more politically costly to the UN. Additionally, robust deployments indicate the UN’s willingness to bear costs in its deployment, essentially revealing the UN’s resolve for maintaining the mission in pursuit of the mandated goal of avoiding conflict recidivism.

Furthermore, PKOs require a particular type of personnel to overcome commitment problems between combatants by interceding on the battlefield. Military troops are responsible for preventing a resurgence of battlefield hostilities. UN troops are deployed to the frontlines, are often equipped with arms and heavy weaponry, and are trained to engage in combat. Peacekeeping troops are therefore the personnel type most closely associated with thwarting battlefield activities between the former combatants. Logically, as more UN troops are deployed to a post-conflict state, they can engage in more activities that reduce opportunities for renewed conflict. Armed troops are the type of personnel that is tasked with separating combatants, and having a larger deployment of troops enhances the UN’s ability to separate the factions in several important ways. With an increasingly large number of troops, UN missions can patrol larger territories, expand the buffer zone between combatants, and offer a more visible indication of the UN’s commitment to peace. Additionally, larger numbers of deployed troops increase the capacity of missions to disarm rebel and militia groups (Holt et al., 2009). By doing so, UN troops reduce the physical capacity of former combatants to re-engage on the battlefield. Therefore, larger numbers of troops deployed to post-conflict environments should improve the UN’s ability to overcome commitment problems between the combatants, improving the ability of the UN to secure post-conflict peace.
Finally, even if the combatants are motivated to return to open hostilities, preferring continued combat to peace processes, the deployment of ever larger numbers of troops should impede their ability to achieve this. The expansion of buffer zones and the intercession of blue helmets reduce the combatants’ tactical options to engage in violence. Efforts at continued hostilities in spite of large troop deployments could also cause the UN to use its troops to more aggressively confront these hostilities. For instance, UN responses to continued violence during recent deployments in the Ivory Coast offer examples of more aggressive policies used by UN missions to halt hostilities forthrightly. At times, these missions forcibly pursued separation, disarmament, and demobilization strategies even when one or more factions resisted these practices. Larger troop deployments are more fully able to engage in these efforts, generating negative consequences for combatant factions and increasing their costs of pursing their political goals through combat. The above discussion motivates the following hypothesis:

**Hypothesis 1**: As the UN deploys more armed troops to a post-conflict state, the duration of peace increases.

In addition to commitment problems, rationalist theories indicate that combatants have asymmetric information on their own strength, resolve, and reservation points, and have incentives to misrepresent this information to their opponents in hopes of attaining more attractive terms. Fighting helps to reveal this information, as the belligerents can do little to conceal battlefield outcomes. While combat may indeed reveal information about the combatants’ strength, resolve, and reservation points, the terms of an initial conflict termination may not sufficiently satisfy the interests of the factions to yield lasting peace. A UN mission may help improve information sharing between combatants. However, not all peacekeeping personnel are suited to facilitate a productive information-sharing process. For instance, police units are primarily deployed behind the frontlines to secure population centers, train indigenous police, and protect civilians from combatant abuses. While beneficial for the sake of securing civilian protection (Hultman et al., 2013), these responsibilities do not improve the combatants’ ability to judge the strength and resolve of their opponent.

UN observer personnel, on the other hand, are tasked with several responsibilities that directly facilitate information sharing. While combatants may prefer to keep private information about their military capabilities and their potential intentions to return to battlefield combat, military observers are tasked with monitoring the implementation of peace terms and sharing their findings. In this way, the former combatants are incentivized to adhere more strictly to the peace terms knowing that information about their (non)compliance will be relayed to the former adversary. For instance, post-conflict elections and the unification of disparate rebel and government armed forces are often unstable and tense processes. The presence of observers to oversee unification efforts and offer unbiased information on the fulfillment of agreements is an important step in securing peace. Additionally, after armed peacekeeping troops effectively separate combatants on the battlefield, observers play an informational role in overcoming commitment problems. While belligerents may have a difficult time demobilizing, observers can verify disarmament and decrease each side’s expectation that the opponent will renege on the agreed demobilization terms. Indeed, this is a common task performed by observer personnel across missions. While some PKOs are specifically tasked with information-sharing mandates, the ability of observers to witness
developments in the host country and share this information with the factions is not limited to pre-deployment agreements about peacekeeping procedures.

The ability of the UN to witness and scrutinize post-conflict developments and assist in the sharing of information is in large part determined by the number of observer personnel it commits to each host state. As the number of observers deployed increases, the number of polling stations monitored during elections increases, larger swaths of contested territory can be surveyed, and more disarmament and demobilization processes can be verified and reported. As a result, larger numbers of UN observer personnel committed to post-conflict states should improve the UN’s ability to overcome information asymmetries that distress the combatants’ ability to adhere to the peace. The above discussion leads to a second hypothesis:

**Hypothesis 2:** As the UN deploys more unarmed observers to a post-conflict state, the duration of peace increases.

In the following sections, we describe our research design and test the above hypotheses. The above hypotheses lead to a second hypothesis:

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In the following sections, we describe our research design and test the above hypotheses.5

**Research design**

To assess the above hypotheses, we construct a post-conflict peace duration dataset that includes monthly observations of peace following all African civil wars in the 1989–2010 period. While we would, of course, prefer to test our arguments on a global dataset that spans many decades, we are limited by data availability, as several of our variables are measured at the monthly level. To fully leverage our data, we restrict the spatio-temporal domain to Africa in the post-Cold War period. Still, our sample is attractive. Given the high prevalence and wide variety of civil wars in Africa during this period, we are able to control for several common correlates of victimization, and we are confident that we have not selected a sample of wars that would meaningfully bias our results. Further, there were many instances of UN intervention in African conflicts in this period, and these PKOs were diverse in their chosen means of intervention. Additionally, our temporal domain follows the effective end of the Cold War which removed the primary political barrier to Security Council action. Thus, in both theory and practice, more robust peacekeeping methods were made newly available, including Chapter 7 forms of peacemaking and enforcement. This is evidenced by the explosion of the number and type of peacekeeping efforts in Africa during this time. In this sense, our spatio-temporal domain is a rather desirable one.

We measure conflict and post-conflict peace at the government–rebel group dyad level because different rebel groups terminate their hostilities with the government at different times, initiating peace at unique points in time within the same overarching conflict (Nilsson 2008). Likewise, individual rebel groups can re-initiate their combat with the government independent of one another, producing dyad-specific peace cessations.

We rely upon the Uppsala Conflict Data Program’s (UCDP) Dyadic Dataset v.1-2013 (Harbom et al., 2008) to indicate the list of civil conflicts after which peace duration is coded. For inclusion in the dataset, each conflict dyad must have crossed a 25 battle deaths threshold and subsequently terminated hostilities. The cessation of conflict is determined by the UCDP Conflict Termination Dataset (Kreutz, 2010). The beginning of a peace duration spell is recorded as the month in which conflict hostilities ended. Conflict terminations occur in one of three primary ways according to Kreutz (2010): negotiated settlements, the victory of
one combatant over the other, or the reduction in battlefield violence for one year such that
the hostilities do not reach or exceed the 25 battle deaths threshold. Our dependent variable,
peace duration, is then coded in monthly observations until war recurs or until an observa-
tion is right-censored by the dataset’s temporal domain.

**UN peacekeeping mission capacity**

To test the effect of various peacekeeping personnel commitments on post-conflict peace
duration, we generate three variables to reflect peacekeeping personnel types commonly
deployed to host states: armed troops, armed police units, and unarmed military observer
personnel. Information on these personnel commitments are taken from a new dataset on
the size and type of peacekeeping deployments to UN missions, as reported in mission sum-
maries made available by the UN Department of Peacekeeping Operations (Kathman,
2013). For every month during which a mission was deployed to a post-conflict peace spell,
we record the number of each personnel type deployed to each conflict.

*UN Troops* captures the number of armed military troops. This variable serves to test the
first hypothesis, as armed troop personnel so often intercede between the combatants, pro-
moting post-conflict stability by ameliorating inter-faction commitment problems. *UN
Observers* is a count of unarmed observers and is included in our models to test the second
hypothesis, as it is observer personnel who are commonly tasked with observing peace imple-
mentation processes and reporting this information to both the UN and to the former adver-
saries. Finally, we include in our models *UN Police*, which measures the number of police
units deployed to each mission month. Given that police personnel are often tasked with
such things as training and securing civilian protection behind the frontlines, and given that
these responsibilities are not directly associated resolving information and commitment
problems between the belligerents, this variable does not test a hypothesized expectation
with regard to peace duration. However, we include it because it is one of three commonly
deployed peacekeeping personnel types.

**Control variables**

In addition to the variables of interest, we control for several other factors in our statistical
models. First, we account for characteristics of the post-conflict state. Specifically, we mea-
sure each post-conflict state’s wealth, as low levels of wealth have been associated with civil
war onset. Gross domestic product per capita (GDP/Capita) data are taken from Gleditsch
(2002), and the values are log-transformed. We also measure the quality of each host state’s
*Regime Type* using the 21-point autocracy–democracy scale provided by Polity IV (Marshall
et al., 2011). To control for the possibility of a nonmonotonic effect on a state’s political
institutions, we include a squared term for this variable in the models, which should help to
reveal the effect of anocratic forms of government experiencing post-conflict peace durations
that differ from autocratic and democratic states, as has been found in the civil war onset lit-
erature (Hegre et al., 2001). Next we account for each host state’s total *population size*.
Larger countries are believed to be more difficult to govern, especially following civil war,
and larger populations offer a larger pool from which rebels can recruit followers in order to
reignite their violent challenge to the government (Elbadawi and Sambanis, 2002). Data on
population size are taken from the disaggregated Composite Index of National Material
Capabilities (Singer et al., 1972). This variable is log transformed.
We also include several controls to represent features of the prior conflict. To account for the overall costs paid by the factions in the previous conflict, we include *Previous War Duration* and *Previous War Deaths*, which code the length in months of the previously terminated conflict and the total number of combat casualties of the previous conflict, respectively. Longer and more costly conflicts are likely to reveal more information about combatant resolve and reservation points. The revelation of this information may then make any resolution to the conflict more lasting. Alternatively, extraordinarily long wars may indicate little or no overlap in the combatants’ reservation points, and very violent hostilities may harden animosities and shorten the duration of peace that is eventually achieved. Data on government and rebel battle fatalities are taken from the UCDP Georeferenced Event Dataset (GED) (Sundberg and Melander, 2013). Furthermore, we include *Rebel Political Wing* as a dichotomous indicator of whether each rebel group was represented by a legal political party during the conflict. Ex ante legal access to the political process should have the effect of extending peace duration upon the end of fighting. Data for this variable are taken from Cunningham et al. (2009).

Finally, we control for several qualities of the extant peace. While the presence of peace or conflict is defined by the absence or occurrence of battlefield deaths, one-sided violence by the former belligerents against civilians often continues beyond the cessation of battlefield hostilities. The instability produced by such violence may have the effect of undermining the peace, instigating a renewal of battlefield combat. We thus aggregate one-sided violence events from the UCDP GED to give us a count of the number of civilians killed by the former combatants in each post-conflict month.7 We also code the means by which each civil war ended using the UCDP’s Dyadic Termination Dataset. Specifically, we code whether the current peace spell is the product of a negotiated settlement by the combatant parties, the victory of one side over the other, or the reduction of conflict violence to the point of low activity (e.g. the conflict produces fewer than 25 battle deaths in a year). We suspect that the outright victory of one faction yields more stable peace. Conflicts ending in low activity and negotiated settlements, on the other hand, may yield more tenuous peace because both sides often retain the ability to reinitiate combat. Table 1 reports descriptive statistics on our dependent variable, independent variables of interest, and controls.

**Empirical results**

Since we are interested in the duration of post-conflict peace, we employ a Cox proportional hazards model with robust standard errors clustered on the conflict dyad to judge the effect of the covariates. This model allows us to test the effect of the covariates in extending or shortening the duration of peace. The Cox model makes no assumptions about the shape of the baseline hazard. However, we ran several models using various modeling specifications that make different assumptions about the shape of the baseline hazard and the results were routinely consistent with those reported below for our variables of interest.

The results of the duration analyses are reported in Table 2. Model 1 considers only the effect of the peacekeeping mission composition variables. We do not include the control variables in this model in order to present initial statistical evidence of a relationship between peacekeeping personnel deployments and the duration of post-conflict peace. Model 2 is fully specified, including all post-conflict peace spells, no matter the form of conflict termination. Model 3 includes each variable, but limits the sample to conflicts that terminated via
negotiated settlement or low activity, as UN PKOs are more likely to be present under these conditions relative to those conflicts that end in the victory of one side.

The analyses consistently support hypothesis 1 and indicate that larger UN troop commitments reduce the risk of civil conflict recurrence, indicated by the negative coefficient for UN Troops. As the number of UN troops deployed to a post-conflict state increases, the risk of the state reverting back to civil war decreases. In other words, as the amount of UN troop personnel increases, the duration of peace after a civil war is extended. This is an impressive result, as it is consistent across substantially different model specifications. In particular, we note that, even in model 3 when limiting the sample to conflicts that ended in a negotiated settlement or by low activity—cases in which the UN is both more likely to be involved and be faced with former combatants that remain armed and capable of returning to the battlefield—the monthly number of UN troops deployed to the post-conflict state still reduces the risk of conflict relapse. This finding challenges UN skeptics and shows that UN peacekeeping troops help to establish conditions that are conducive to a more stable peace. Previous research shows that the UN is more likely to commit peacekeeping missions to the most difficult cases (e.g. Fortna, 2008; Gilligan and Stedman, 2003). The number of troops deployed to these conflicts also reflects the complexity of the situation. Considering the selection of UN troops to the most difficult cases, it is noteworthy that we still find that more fully equipped missions are increasingly effective in prolonging the peace.

Figure 2 displays the estimated smoothed hazard function from the analysis reported in model 3, which limits the sample to conflicts that ended in a negotiated settlement or low activity. The hazard function is the rate at which a hypothetical post-conflict state is “failing”, or reverting back to civil war. Control variables are held at their mean or modal values. The figure presents the estimated hazard functions when zero troops are deployed, 1500 troops are deployed and 3000 troops are deployed. The hazard function is generally declining, indicating that, as peace endures, the chance of a state falling back to civil conflict decreases. The figure also shows that the presence of 3000 troops leads to an approximate
85% decrease in the estimated hazard rate compared with a deployment of zero troops, a substantial reduction in the likelihood of civil war recidivism that results from the deployment of a rather modestly composed mission.

Our results indicate that the UN cannot simply dispatch a contingent of unarmed observers to host nations if it wants to provide sufficient support for stabilizing post-conflict peace processes. The UN should instead deploy larger amounts of armed troops, which seem to be closely associated with mitigating the commitment problems that lead to the recurrence of

Table 2. Cox duration analyses of UN peacekeeping mission composition and peace duration following civil wars in Africa, 1989–2010

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1: all conflict terminations</th>
<th>Model 2: all conflict terminations</th>
<th>Model 3: settlement and low activity terminations</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN Troops</td>
<td>−0.0005** (0.00008)</td>
<td>−0.0005** (0.0001)</td>
<td>−0.0006** (0.0002)</td>
</tr>
<tr>
<td>UN Observers</td>
<td>−0.002 (0.005)</td>
<td>−0.0005 (0.004)</td>
<td>−0.007† (0.004)</td>
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<td>UN Police</td>
<td>0.0007 (0.0005)</td>
<td>0.0005</td>
<td>0.0005 (0.0005)</td>
</tr>
<tr>
<td>Previous War Duration</td>
<td>0.001 (0.003)</td>
<td>0.004 (0.004)</td>
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</tr>
<tr>
<td>Previous War Deaths</td>
<td>$1.87 \times 10^{-6}$ (0.00005)</td>
<td>0.0002** (0.00007)</td>
<td></td>
</tr>
<tr>
<td>One-Sided Violence</td>
<td>−0.020 (0.020)</td>
<td>−0.016 (0.020)</td>
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</tr>
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<td>GDP/Capita</td>
<td>−0.025 (0.252)</td>
<td>−0.442 (0.293)</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>0.341† (0.197)</td>
<td>−0.426* (0.211)</td>
<td></td>
</tr>
<tr>
<td>Regime Type</td>
<td>−0.009 (0.056)</td>
<td>−0.097 (0.063)</td>
<td></td>
</tr>
<tr>
<td>Regime Type$^2$</td>
<td>−0.010 (0.011)</td>
<td>−0.013 (0.013)</td>
<td></td>
</tr>
<tr>
<td>Rebel Political Wing</td>
<td>−0.075 (0.393)</td>
<td>0.231 (0.407)</td>
<td></td>
</tr>
<tr>
<td># of Previous Episodes</td>
<td>0.385* (0.158)</td>
<td>0.760** (0.216)</td>
<td></td>
</tr>
<tr>
<td>Negotiated Settlement</td>
<td>0.031 (0.641)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Victory</td>
<td>−1.511 (1.737)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Activity</td>
<td>0.931† (0.542)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>13,813</td>
<td>13,436</td>
<td>8763</td>
</tr>
<tr>
<td>Number of subjects</td>
<td>132</td>
<td>129</td>
<td>94</td>
</tr>
<tr>
<td>Number of failures</td>
<td>36</td>
<td>36</td>
<td>31</td>
</tr>
<tr>
<td>Wald $\chi^2$</td>
<td>42.95**</td>
<td>63.83**</td>
<td>55.19**</td>
</tr>
<tr>
<td>Log pseudo-likelihood</td>
<td>−163.29</td>
<td>−146.83</td>
<td>−118.49</td>
</tr>
</tbody>
</table>

Coefficients and standard errors clustered on conflict dyad. **$p \leq 0.01$; *$p \leq 0.05$; † $p \leq 0.10$. 
civil war. This should not necessarily be interpreted as information asymmetries being less serious obstacles to peace. However, our results imply that UN observers are conceivably ineffective in solving them. Instead, mediation efforts may be much more suitable for overcoming information problems during peace processes (Regan and Aydin, 2006). The strength of UN peacekeeping appears to lie in its ability to alleviate commitment problems, which requires the deployment of armed troops.

In addition to the results reported in Table 2, we tested the robustness of our findings by replicating models 2 and 3 in several ways. First, we included a dichotomous variable to account for the intervention of a regional intergovernmental organization (IGO), such as the African Union or the Economic Community of West African States, in a peacekeeping role using data from the Dynamic Analysis of Dispute Management Project’s Third Party Peacekeeping Missions Data Set v. 3.0 (Mullenbach, 2013). If the effectiveness of UN missions is a partial product of UN PKOs piggybacking on the heavy lifting of other peacekeeping missions, then the negative effect of UN Troops may falsely be reflective of otherwise effective regional IGO interventions. In each replication of our models, the negative and significant effect of UN Troops remained. However, the regional IGO variable reported an insignificant coefficient.

We also included a variable for the robustness of each mission mandate. Mandates define both the goals sought by each PKO and the lengths to which they can go in achieving these goals. Mission mandates may be important to the extent that they restrict or endorse the types of actions that PKO personnel can take in securing the peace. We coded a dichotomous variable to delineate those mission mandates that gave peacekeepers the authority to use “any means necessary” to fulfill their mandated goals. This variable produced a negative and significant coefficient in models 2 and 3, indicating that more robustly mandated
missions extend the duration of peace. However, the variable’s inclusion in the model did not affect the results produced by *UN Troops*. Finally, we considered different specifications of our PKO personnel variables. For instance, we took the natural log of each of the three personnel variables in order to normalize their distributions. Including the logged versions in our models yielded results for *UN Troops* that are consistent with those reported in Table 2.

With regard to the control variables, there are several important findings across models 2 and 3. The number of previous conflict episodes has a positive effect on the hazard of peace failing. In other words, as the number of times that a government and rebel group have abandoned peace and returned to war increases, the shorter each next peace spell is expected to be. This probably indicates an inability of the rebels or government to agree to terms that both sides find desirable, resolve the commitment problem between them or prevent the exploitation of peace spells as periods in which one or both factions rearm and recuperate for the next round of battle.

Additionally, *Population* reports a positive coefficient that is significant at the 0.1 level in each model. As the size of a conflict state’s population increases, the duration of peace following conflict is shortened. This result agrees with a consistent finding in the civil war onset literature. We surmise that larger populations offer larger pools of people from which new rebel soldiers can be recruited, and larger populations should offer greater opportunities for rebels to “go underground”, hiding amongst civilians and convalescing during peace spells before reigniting their violent challenge to the government. Also, the likelihood should be lower that any post-conflict settlement can effectively satisfy the multitude of interested factions which should increase as a state’s population size increases.

Model 2 also shows that a previous conflict ending via a low-activity outcome shortens the duration of post-conflict peace. We suggest this is the case because the belligerents involved in conflicts that terminate owing to low activity often maintain their political and military organization. They thus have the ability to reignite overt battlefield combat even if the conflict between them has been dormant for a period of time. Furthermore, when fighting has fallen below the 25 battle deaths threshold to be considered an active conflict, this does not necessarily mean that the issues over which the combatants have confronted one another have been resolved. The lack of resolution and the continued presence of combatant forces thus appear to be associated with an increased probability of conflict reemergence.

In model 3 we also find that *Previous War Deaths* is significant at the 0.1 level and is positively signed. This indicates that more violent wars have shorter post-conflict peace spells. Rather than battle deaths revealing information about the combatants’ strength and resolve, there is some initial, albeit weak, evidence that more violent wars yield shorter post-conflict peace periods. It may be that increasingly hostile civil wars engender unstable post-conflict periods as the collective memory of the previous war may make it more difficult for the former combatants to re-assimilate to living peaceably with one another again.

Across models 2 and 3, the remaining variables do not report statistically significant results at conventional levels. First, features of the violence are insignificant. Longer war durations may be correlated with an increased amount of information revealed about combatant capabilities and resolve, and this may have the effect of stabilizing the post-conflict peace. At the same time, long wars may also be indicative of the hardened positions of the combatants, positions that may thus be associated with war recidivism. These cross-pressures may thus be responsible for the insignificant coefficient reported for *Previous War Duration*. The level of civilian victimization is also unassociated with peace duration. While this
violence may at times be destabilizing, it may also serve to consolidate control over the population, producing a null effect on conflict reemergence.

Rebel Political Wing is also insignificant. We suggested that ex ante legal access to political processes should help to extend peace following conflict. However, this is not the case according to our analyses. Future analyses may consider whether this variable is consequential in conjunction with the means by which civil wars end, as the presence of a political framework through which rebels are organized may be most relevant when the rebels remain party to the political system through a negotiated resolution or through their own military victory.

Next, the remaining conflict state characteristics are insignificant, indicating that a post-conflict country’s regime type and level of wealth are not associated with the re-emergence of fighting. These variables often report significant results in the civil war onset literature. However, the post-conflict nature of our analyses probably makes it more difficult to find an association between these variables and peace duration. Civil war tends to destroy wealth and democratic political institutions (Collier et al., 2003), thus reducing the variability between cases along wealth and regime type dimensions. As a result, these factors are likely to be more closely associated with the initial conflict onset.

Finally, the remaining conflict outcome types do not significantly affect the duration of post-conflict peace. Whether achieved through victory or a negotiated resolution, these outcomes do not appear to affect the ability of the factions to consolidate peace. The insignificant coefficient for Victory is somewhat perplexing, as one would expect there to be little in the way of recourse for defeated groups to re-initiate hostilities. However, even in defeat, some groups are able to maintain their core organization that can be reconstructed to again challenge its opponent after a brief respite. Additionally, while Negotiated Settlement is insignificant, this may be somewhat unsurprising given recent research that points to the importance of the peace terms as predictors of an agreement’s effectiveness in securing the peace (Mattes and Savun, 2010).

Discussion and conclusion

As we stated at the outset, recent research has largely come to the conclusion that post-conflict UN peacekeeping is an effective mechanism for solidifying the stability of post-civil war environments. However, by and large, this work offers limited prescriptions to policymakers who are tasked with composing these missions to most effectively achieve their objectives. Since prior work employs rather blunt dichotomous renderings of UN PKOs in statistical models, little can be said about the characteristics of these missions that are associated with the persistence of post-conflict peace. From a policy perspective, these findings offer little in the way of actionable information on how the international community should equip UN missions.

We have sought to provide greater nuance to the existing quantitative literature that policymakers may find more instructive. We have theorized on and tested empirically the means by which UN peacekeeping is or is not effective at keeping the peace by taking the characteristics of the missions into account. While some studies have evaluated the effect of various types of missions on peace and conflict processes (Doyle and Sambanis, 2006; Fortna, 2008), these categories do not fully reflect the capacity of the missions to manage security dilemmas and commitment problems that so often spoil peace following the end of
civil war. In fact, previous research draws different conclusions about peacekeeping effectiveness when exploring differences in mission mandate and type. While Doyle and Sambanis (2006) show evidence that missions with enforcement or multidimensional mandates are more likely to achieve success, Fortna (2008) finds traditional missions to be the most successful. We believe that one reason for these somewhat divergent findings is that relying on broad peace operation categories abstracts from the functional capacity of missions to pursue and maintain peace. We suggest that it is these important differences in the capacity to deal with the security challenges to former belligerents that is critical to our understanding of peacekeeping effectiveness.

Moreover, the capacity of missions changes over the course of their deployment, and these changes modify the ability of missions to provide the security guarantees that are necessary to help the belligerents overcome commitment problems. Our data and analyses differ from more traditional studies of peacekeeping, capturing the dynamism in PKO deployments in ways that are impossible when using categorical treatments of the presence or absence of peacekeeping operations. By measuring the actual number of troops on the ground and the ways in which these troop commitments change over the course of mission deployments, we are able to capture the UN’s actual ability and resolve to provide security in the aftermath of civil war. In line with this, our results indicate that UN missions with a greater number of troops are also better able to support peaceful solutions to civil wars.

We believe that these findings will be consequential to decision-makers at the UN who are intent on designing peacekeeping operations to be most fully equipped to secure post-conflict peace. Armed with this information, members of the Security Council or policy-makers in the Secretariat should be able to recognize that increasing the deployment of observer and police personnel is not likely to yield positive outcomes, at least in terms of stabilizing host states such that the former combatants do not return to overt conflict. Instead, more fully informed policy-makers should recognize the benefits of deploying armed troops in sufficiently large numbers to post-conflict states in order to maintain the peace that is won with the end of civil war hostilities.

Acknowledgments

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Notes

1. Rationalist approaches also point to issue indivisibilities as explanations of conflict. However, while such intangible issues as ethnicity and religion are sometimes considered indivisible, the fundamental issues over which civil conflicts are fought are tangible (such as control over the state apparatus, territorial autonomy and resource distribution). These issues are inherently divisible. Thus the literature has much more commonly focused on commitment problems and information asymmetries as rationalist explanations of civil conflict.
2. In civil wars, with the end of battlefield combat, the factions often retain the ability to resume fighting. This is especially the case following negotiated resolutions and wars that end in low activity, as the groups often remain constituted, at least in the short term. Also, even in those conflicts that end through the victory of one side over the other, the losing side is rarely so completely vanquished that it ceases to exist, often remaining viable as a violent organization, albeit much diminished and largely incapable of achieving its political goals through open hostilities.

3. An exception to this is that some research has attempted to determine whether different types of missions (observer, peacekeeping, enforcement or multidimensional) are more or less effective at achieving stability or inducing political change (see Doyle and Sambanis, 2000; Fortna 2004, 2008).

4. Of course, if the presence or absence of peacekeeping missions in post-conflict host states was all that mattered, this would beg the question as to why the UN variously outfits its missions in the first place. Furthermore, much qualitative work on peacekeeping has pointed to the lack of needed mission resources as explanations of mission ineffectiveness (Bratt, 1997; Feil, 1998; Olonisakin, 2008; Skogmo, 1989).

5. One critique of this research may be that, if we find support for our expectations, this may be the product of UN decision-making to send large deployments to the post-conflict environments that have the greatest ex ante likelihood of experiencing durable peace. In other words, the UN may choose ‘easy’ cases to which it sends its sizeable missions. However, in contradiction to this concern, the literature on UN peacekeeping has largely come to the conclusion that UN PKOs are sent to the most difficult cases (Fortna, 2004, 2008; Gilligan and Stedman, 2003). Furthermore, even within these difficult cases, research has found that the UN increases its deployments to host countries as violence increases and as the conflict environment favors the more brutal combatant factions (Benson and Kathman, 2014). In this sense, it appears that not only does the UN deploy to the more difficult cases, but it also increases its deployments in the face of rising challenges in those cases. We should thus not expect the results we present below to be the simple product of UN decisions to deploy missions to the most expedient cases. Rather, if larger deployments of troops and observers are associated with extended durations of post-conflict peace, these results should be particularly important given the conditions with which the UN is posed in its deployments.

6. The Conflict Termination Dataset actually codes a variety of terminations beyond the general categories mentioned here. For instance, “peace agreements”, “ceasefire agreements” and “ceasefire agreements with regulation” are all coded separately. However, we group these termination types under the banner of negotiated settlements so as to record more general categories of conflict cessation. There are two additional categories that we combine to serve as the excluded referent category in our analyses. These outcomes are coded by UCDP as “Other” (for conflict dyad terminations that do not fit the categories delineated by the UCDP) and “Joining Alliance” (for rebel groups that were subsumed into another existing organization). These conflict outcomes occur very rarely in the data, and we thus do not assess them directly.

7. The GED events rely upon Eck and Hultman’s (2007) coding of one-sided violence. This violence includes direct, purposeful targeting and killing of noncombatant civilians.

8. We have not included the variable accounting for robustly mandated missions, as this variable is likely to be related to our personnel variables of interest since larger peacekeeping deployments are often teamed with more robust mandate language. Still, consistency in the UN Troops result when including this variable strengthens our confidence in this finding.

9. We have kept the raw counts of the personnel type variables in the models for both the intuitive nature of their interpretation and the relevant policy implications derived from these raw values.

References


