Laying a Foundation for Peace? Micro-Effects of Peacekeeping in Cote d'Ivoire

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Abstract

Multidimensional peacekeeping operations have been central to United Nations efforts to end protracted internal conflicts and consolidate postwar peace. Recent empirical studies have shown that these operations are associated with prolonged peace after civil war. However, there have been few quantitative efforts to evaluate peacebuilding components such as economic rehabilitation, political development assistance, or human rights promotion integrated within peacekeeping operations. We use original data from a survey of the local population in Cote dIvoire and conflict event data to identify micro-effects of the United Nations Operations in Cote dIvoire (UNOCI). We find little to support the idea that UNOCIs deployments significantly affected the security situation, which had already improved tremendously

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prior to UNOCIs arrival, and we find only a suggestive association between feelings that insecurity would mar forthcoming elections and deployment patterns. We do find that UNOCIs presence was associated with less severe economic losses, and that penetration of electoral assistance activities was associated with more confidence in forthcoming elections. Finally, we do not find a clear association between deployments and the restoration of local authorities. Taken as they are, the results suggest the need to emend current theories of why peacekeeping works–perhaps de-emphasizing security aspects, and placing more emphasis on the economic and political programmatic aspects. While these results are preliminary, they suggest the potential of micro-level studies of intermediate peacebuilding outcomes to improve our understanding of *how* peacekeeping helps to build peace in war-torn societies

1   Introduction

Over the past two decades, peacekeeping has been central to United Nations' (UN) efforts to end protracted internal conflicts and consolidate postwar peace. Since the 1990s, the UN moved beyond traditional peacekeeping operations whose main focus had been on military functions such as monitoring ceasefire agreements or setting buffer zones between belligerents to more complex and multidimensional operations. These have included a wide range of activities such as providing law and order to the local population, rebuilding infrastructures, reforming economic and political institutions or promoting democratic participation (Diehl 1994; Ratner 1995; Russett and O'Neal 2001; Jarstad and Sisk 2005; Durch 2006; Call and Wyeth 2008).

Underlying this shift was the belief that military peacekeeping alone would not lead to self-sustaining peace unless accompanied by robust peacebulding efforts to address (i) structural factors believed to have been responsible for war in the first place and (ii) economic and political consequences of war that may leave a society vulnerable to renewed conflict (United Nations [Boutros-Ghali] 1992; Boutros-Ghali 2001; Cousens and Kumar 2001).

Three recent empirical studies, each employing different methods, have shown that multidimensional peacekeeping operations are strongly associated with prolonged peace after civil war. (Gilligan and Sergenti 2008; Fortna 2008; Doyle

and Sambanis 2006). Gilligan and Sergenti's analysis demonstrates that this association is likely causal. Nonetheless, scholars and policymakers have debated the efficacy of multidimensional operations' strategies to bring about economic growth and democracy (Paris 2004; Marten 2004).

These quantitative studies of peacekeeping effectiveness have been carried out at the mission and country level, studying whether peacekeeping operations have succeeded in preventing the recurrence of another war. There have been few quantitative efforts to evaluate specific peacebuilding components—such as economic rehabilitation, political development assistance, or human rights promotion—that are embedded within multidimensional peacekeeping operations.[1] Each peacebuilding component encompasses programs and activities designed to achieve intermediate peacebuilding outcomes. These are discrete subgoals related to specific mandated elements (Russett and O'Neil 2001; Stedman et al. 2002). Many of these intermediate peacebuilding outcomes are presumed to be an essential prerequisite to political stability and lasting peace (Kumar 1997 and 1998; Chopra 1998). This presumption motivates our empirical analysis.

We use a micro-level approach to study intermediate peacebuilding outcomes within the context of the United Nations Operations in Cote d'Ivoire (UNOCI). We use original survey data, conflict event data, and other socio-economic variables to measure micro-effects of peacekeeping in a number of ways.

We advance the study of peacekeeping in at least three ways. First, intermediate peacebuilding outcomes are potential mechanisms at work in peacebuilding. Logically, if we do not find that peacekeeping affects some intermediate outcome, then we begin to cast doubt on the claim that such outcomes are integral to the

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[1]For a comprehensive listing and a detailed description of each of these components and, the Handbook on United Nations Multidimensional Peacekeeping Operations accessible at ¡http://www.peacekeepingbestpractices.unlb.org/Pbps/library/Handbook on UN PKOs.pdf¿. There are many descriptive studies of peacekeeping operations. These include the "Lessons Learned" reports conducted within the UN Department of Peacekeeping Operations (UNDPKO) itself. While extremely useful, these tend to be limited to descriptions of "key" episodes in a peacekeeping mission. They do not attempt to measure the general impact of peacekeeping activities. An exception is the recent study by Humphreys and Weinstein (2007), which examined the disarmament, demobilization and reintegration (DDR) component of the peacekeeping mission in Sierra Leone. Our study follows in the example set by that study, although we cover different types of activities and peacebuilding outcomes.

mechanism through which peacekeeping prolongs peace. Of course, there are limits to what we can infer. A finding of positive micro-level effects in conjunction with sustained macro-level peace within a single country does not allow us to infer that the micro effects and macro peace are related. Such inferences require adding other macro-level comparisons to the analysis. This micro analysis can thus inform future macro-level analysis. Second, intermediate outcomes are more under control of peacekeeping (insofar as they are direct effects of specific programs and activities) than is the end outcome (i.e. overall peacebuilding). The latter is likely to be influenced by other factors outside control of peacekeeping. Thus, from a policy perspective, intermediate outcomes may make it possible to determine what about peacekeeping works and what does not. Third, we contribute to developing micro-level methods for studying peacekeeping impacts. The micro-level quantitative approach allows us to construct, with rigor, a nuanced picture of what peacekeeping operations actually do inside a country.

This is still a work in progress, but a summary of our results at this point are as follows. We find no general impact of the peacekeeping operation on people's perceptions about whether resumption of conflict was likely at different points in time, and civilian victimization rates had already fallen to very low rates long before the operation even deployed. Respondents did tend to state that the UNOCI-monitored Zone of Confidence created obstacles to renewing hostilities, and there is a suggestive association between concerns about insecurity in forthcoming elections and the absence of peacekeeping deployments. But the evidence thus far suggests that UNOCI's *direct* impact on the security situation was negligible. We find a suggestive association between peacekeeping deployments and economic well-being, and between electoral sensitization activities and confidence in forthcoming elections. We find no clear association between the restoration of local authorities and deployments. These associations will be subjective to more thorough causal analysis in future versions of this paper.

The paper proceeds as follows: the next section provides a bit of background to the UNOCI operation. We then describe our methods. Next, we present findings with respect to intermediate peacebuilding outcomes. We conclude by discussing how we can improve the study of peacekeeping with micro-level analysis.

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2   Background to the intervention

The civil war in Cote d'Ivoire erupted on September 19, 2002, following a failed coup led by some 800 soldiers in a preemptive move against their planned demobilization from the armed forces. The rebels quickly gained control of major towns in the northern and western regions. By the end of September, the rebels had consolidated control on the northern half of the country, leading to a defacto partition of the country between the North (predominantly Muslim) and the South (predominantly Christian). Later, they merged with rebels from two other armed groups who were operating from western regions and created a new umbrella political movement called Forces Nouvelles (New Forces), with Forces Armees des Forces Nouvelles (FAFN) or Armed Forces of New Forces in English, as its armed wing. The group's main political demands included the resignation of the country's president, the holding of inclusive national elections, and the end to discrimination against northern populations. The fighting intensified in the ensuing months, putting strain on the political order and causing severe disruptions in the social and economic welfare of the population. By 2004, the conflict was militarily stalemated, and French forces (also known as La Licorne) were monitoring the compliance of warring parties with the January 2003 Linas-Marcoussis ceasefire agreement. The political leadership from both sides and the international community struggled to find a negotiated solution to the conflict. In year since the outbreak of the war, the peace process has gone through at least seven peace accords and three transitional governments. The culmination of the peace process at the time when this study was fielded was the Ouagadougou Accords (March 2007).

These agreements in the peace process have included provisions for UN peacekeeping operations to assist with implementation of the ceasefire and peace accords. The United Nations Mission in Cte d'Ivoire (MINUCI), a political mission, was set up by the Security Council in May 2003 to complement the operations of the peacekeeping force of the Economic Community of West African States (ECOWAS) and French troops. In April 2004, MINUCI was replaced by the United Nations Operation in Cte d'Ivoire (UNOCI)—a multi-dimensional peacekeeping operation tasked with a wide range of activities, including protecting

civilians, building infrastructure, helping with the disarmament of combatants, and assisting with national and local elections. The political transition is still running its course and the first postwar legislative and presidential elections are scheduled for November 29, 2009. However, there is an opportunity to ascertain the impacts of UNOCI thus far, and we do so in this study.

3   Relevant intermediate peacebuilding outcomes

We focus on intermediate peacebuilding outcomes associated with increasing people's (i) sense of security, (ii) ability to be economically productive, and (iii) sense of political normalcy and their ability to resolve political issues through peaceful democratic means. We take these to be core components of peacebuilding. Restoring people's sense of security would seem to be a necessary condition for economic and political improvements, and so there would seem to be a certain primacy to (i). Nonetheless, we are also interested in testing the claim that security provision increases the likelihood of sustainable peace by permitting growth in the economy and in democratic practice. Belief in the benefits of such economic and democratic transformation is a central premise in what we understand as the implicit theory that motivates multidimensional peacekeeping.[2] Our aim is to study whether there is evidence that such processes actually do follow from peacekeeping interventions. Our analysis is not exhaustive. There are possible indicators other than those that we use, and there are other components of multidimensional peacekeeping missions that we do not explore here due to time-constraints or lack of appropriate data.

4   Methods

4.1   Identifying impacts

We make systematic comparisons between individuals and communities who did and did not have exposure to peacekeeping activities. When time-varying data

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[2]The intellectual cornerstone of this implicit theory is Boutros-Ghali's original *An Agenda for Peace* (United Nations 1992).

are available, we study outcomes before and after deployments. This strategy makes sense provided that (i) there is some micro-variation in programmatic activities, (ii) program effects are reasonably measured at the individual- or community level, (iii) we can find recipient and non-recipient communities that are sufficiently similar to permit inference with little omitted variable bias, and (iv) micro-effects are sufficiently local such that there is negligible spill-over of effects from recipient communities into the non-recipient comparison communities.[3] Condition (i) holds with respect to many of UNOCI's activities in Cote d'Ivoire.[4] With respect to (ii), UNOCI's mandate contains activities such as voter registration or education, civilian protection, and repatriation of refugees and internally displaced persons, which are explicitly designed to operate at these lower levels of aggregation. National-level activities, such as reform of state-level institutions, are likely important components of peacekeeping, but we do not study them here. We discuss condition (iii) below in the context of an examination of patterns of exposure to peacekeeping activities. We worked to make (iv) plausible by sampling in localities that were sufficiently distant from each other.

4.2 Data

Our outcome data come from our own survey of the population of Cote d'Ivoire. The survey was commissioned in the summer 2008 by the Inspection and Evaluation Division of the Office of Internal Oversight Services of the United Nations as an assessment of UNOCI's accomplishments, of public perceptions toward the mission, and of what priorities remained. We operated as strictly independent consultants with a mandate to conduct a scientific assessment. The survey sample included 1,459 individuals aged 15 years or older, composed of a national sample of 1,206 civilians and a sample of 253 ex-combatants that was quite limited due to security and political conditions in the country. We use the high-quality civilian sample for all of our statistical analysis below, reserving use of the low quality
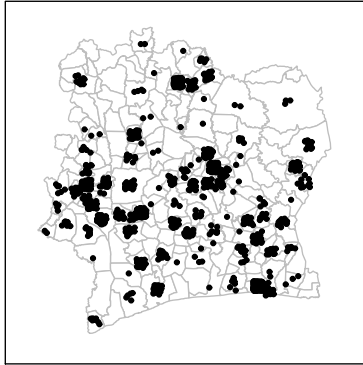
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[3]In the jargon of the causal inference literature, condition (iii) encompasses the "overlap" and "unconfoundedness" principles, and condition (iv) encompasses the "non-interference" principle. Refer to Morgan and Winship (2007).

[4]The various programs included in UNOCI's mandate can be found at http://www.un.org/Depts/dpko/missions/unoci/mandate.html
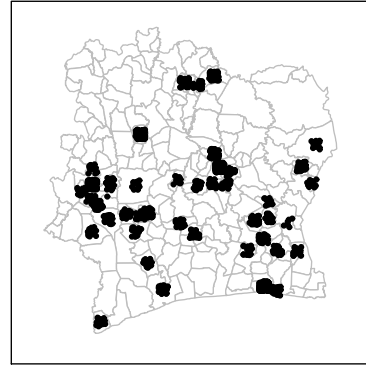
ex-combatant sample for descriptive and illustrative purposes only.

Figure 1: **Locations of respondents' homes**

Respondents' Prewar Locations (ca. 2002)   **Respondents' Postwar Locations (ca. 2008)**

Descriptive statics for the sample and a map of respondents' home locations are in Table 1 and Figure 1, respectively. The civilian sample was drawn in 68 localities based on a geographic stratification of the country into five regions: north, center, west, south, and the city of Abidjan. We oversampled within a band across the middle of the country known as the Zone of Confidence because subjects there were of particular interest to the commissioning agency. We use weights to correct for those types of sampling differences. Target households were selected at random from clusters drawn probability proportional to size within each of the strata. Respondents within households were selected at random from a roster of available adults. Overall, 88% of the first adult chosen in this way participated; for the rest of the interviews, a second or third choice was made. We hired and trained local enumerators through the *Ligue Ivoirien des Droits de l'Homme*. The enumerators conducted the interviews in local languages using a standard questionnaire. The data were entered by trained staff at INS.[5]

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[5]More details of the design and data are available in a technical annex to the original impact evaluation. Please contact the authors for a copy. The survey instrument (in French) is also available.

Table 1: **Sample demographics**

Demographic	Civilians				Combatants	
	No. in sample	Sample percent	Weighted sample percent[a]	SE for weighted percent	No. in sample	Sample percent
Gender:						
Male	876	73	46	2	235	93
Female	330	27	54	6	18	7
Ethnicity:						
Mande	334	28	26	3	134	53
Gour	102	8	8	2	35	14
Krou	293	24	22	3	67	26
Akan	460	38	43	4	16	6
Other	17	1	1	<1	1	<1
Age:						
15-30 yrs	612	51	62	5	118	47
30-50 yrs	480	40	33	3	119	47
50+ yrs	114	9	5	1	16	6
Education:						
No formal education completed	348	29	45	5	156	62
Primary education or more completed	858	71	55	4	97	38
Urban/Rural:						
Rural[b]	676	56	43	5	13	5
Urban[b]	530	44	57	7	240	95
Income:						
No regular monetary income	724	60	64	5	180	71
Regular monetary income	482	40	36	3	73	29

Total sample size is 1,206 for civilians and 253 for combatants.

[a] *Detailed information on the weights is in a separate Technical Appendix that is available from the authors.*

[b] *The urban/rural classification refers to the respondent's current location, and it refers to towns and other small population centers in addition to larger cities (e.g. Man or Abidjian).*

As per the mandate that we were given in designing the study, the sample was drawn to meet two aims. Unfortunately, practical constraints force the aims to work against each other. The first aim, and the subject of this paper, was to assess peacekeeping impacts. The second aim was to describe general conditions in the population. The first aim would have us design a sampling plan that minimized the potential for confounding. Setting for ourselves the goal of estimating the effects of peacekeeping in places that would likely receive peacekeeping, such a sampling plan would try match sampled peacekeeping recipient communities with non-recipient communities. The problem is that such a sample would likely leave us with little or no data in areas that we would want in order to describe general

conditions in the population. We did our best with the information and knowledge that we had at the time to balance these competing aims in our sampling plan.

Data on the location, scale, and timing of peacekeeping deployments were based on the deployment maps issued by UNDPKO. Conflict events data were from the Peace Research Institute of Oslo's "Armed Conflict Location and Event Data" (ACLED) project, which generates time- and geo-coded conflict events datasets from news reports (Nordas et al 2008). Demographic data and pre-war economic conditions data were from the *Institut National de la Statistique de Cote d'Ivoire* (INS), and more fine-grained population distribution data were from geo-coded estimates by Columbia University's Center for International Earth Science Information Network. Infrastructure data were from Bogetic and Sanogo (2005).

4.3 Estimation

Sample sizes within regions were not so large and so the benefits of random sampling notwithstanding, we wanted to correct for deviations from population distributions in our sample. We thus used poststratification weights based on the most recent and reliable population information available, which in our judgment came from the high-quality INS 2005 Demographic and Health Survey (n=9686).[6] Unless explicitly noted, estimates below use these weights, and should thus be considered estimates on the population (rather than on the sample).

Because peacekeeping activities are assigned at the level of communities, we often use *sous-prefectures* and municipalities, analogous to counties, as community-level units of analysis. The sizes of household samples ranged considerably across the 41 communities in civilian respondents currently reside (0%, 25%, 50%, 75%, and 100% quantiles are 5, 17, 20, 26, 266, respectively). We thus used hierarchical small area estimation methods, as demonstrated in Gelman and Hill (2007, especially pp. 301-210), to estimate community-level outcome variables. Rao (2003) discusses cross-validation studies that have shown such methods to be superior to direct estimation (i.e. just taking the community mean) with sparse data. For communities with few observations, the method effectively draws the estimated

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[6]Details on the derivation of the weights are in the technical appendix to the original impact evaluation. This is available from the authors.

community average to the national mean, biasing the analysis in favor of accepting null hypotheses. We consider this a conservative approach to dealing with instances of sparse data.
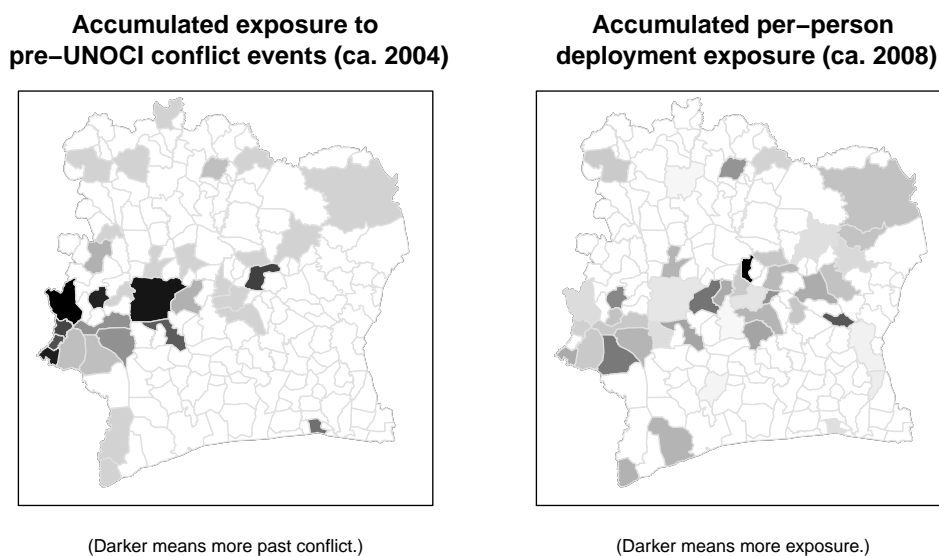
Estimates of the impact of peacekeeping activities took different forms, depending on the data available. In cases where over-time information was available, we used panel methods, which allow us to purge the data of certain unmeasured but fixed confounders. In cases where only cross-section information was available, we use cross-sectional methods that, while still sensitive to possible unmeasured confounders, attempt to be minimally reliant on modeling assumptions. To preserve the flow of the discussion below, we put the details of our estimation methods in the appendix.

5 Exposure patterns and the potential for identifying impacts

The deployment of peacekeeping forces and related activities is based on mission assessments of need and feasibility. The features of localities that cause them to receive deployments may confound estimates of the impact of peacekeeping. Figure 2 shows a map of conflict deployment patterns beside a map of accumulated pre-deployment conflict exposure. The connection is strong, but not perfect. More generally, it strikes us as reasonable to believe that there is considerable looseness in the connection between peacekeeping deployments, potential confounders (like conflict history), and our outcomes of interest. Imperfect knowledge of the situation on the ground, for example, ensures that there is always some randomness in deployment assignment. After conditioning on potential confounders and exploiting variation over time, this residual randomness is what we rely on to identify peacekeeping's micro-level impact. We use our awareness of imbalances in the data and judgements about unmeasured factors to determine what potential biases may remain.

The potential for confounding in an empirical study is an attribute of the sample, not the population. Thus, it is important to assess the sensitivity of our sample to potential confounding. In this paper, we measure the impacts of exposure

Figure 2: **Pre-deployment conflict events and PKO deployments**

Accumulated exposure to
pre−UNOCI conflict events (ca. 2004)

Accumulated per−person
deployment exposure (ca. 2008)

(Darker means more past conflict.)   (Darker means more exposure.)

The left map is colored according to the number of major conflict events in a locality prior to UNOCI's 2004 deployment. Darker areas mean more events. The right map is colored according to accumulated per-person exposure to peacekeeping troops (measured as armed troops per 1000 households).

to two types of program activities: peacekeeping deployments and elections sensitization activities. Programs are assigned at the community level, and so confounding checks should be done at that level as well. We want to examine how these exposure variables are associated with pre-exposure attributes of communities and individuals that may also be associated to outcomes of interest. We should not consider the need to condition on post-exposure variables, because doing so threatens to bias our measures of impacts (post-treatment bias). In the analyses that exploit over-time information, we can use differencing methods to "sweep" out the effects of fixed, pre-exposure confounders. However, even in those analyses, pre-exposure factors may have interactive effects with exposure itself or other time-varying shocks. It is thus always important to examine how patterns in pre-treatment variables are related to exposure.

Consider Figure 3. From top to bottom, the graphs plot values of important

Figure 3: **Balance of community variables over deployment levels**
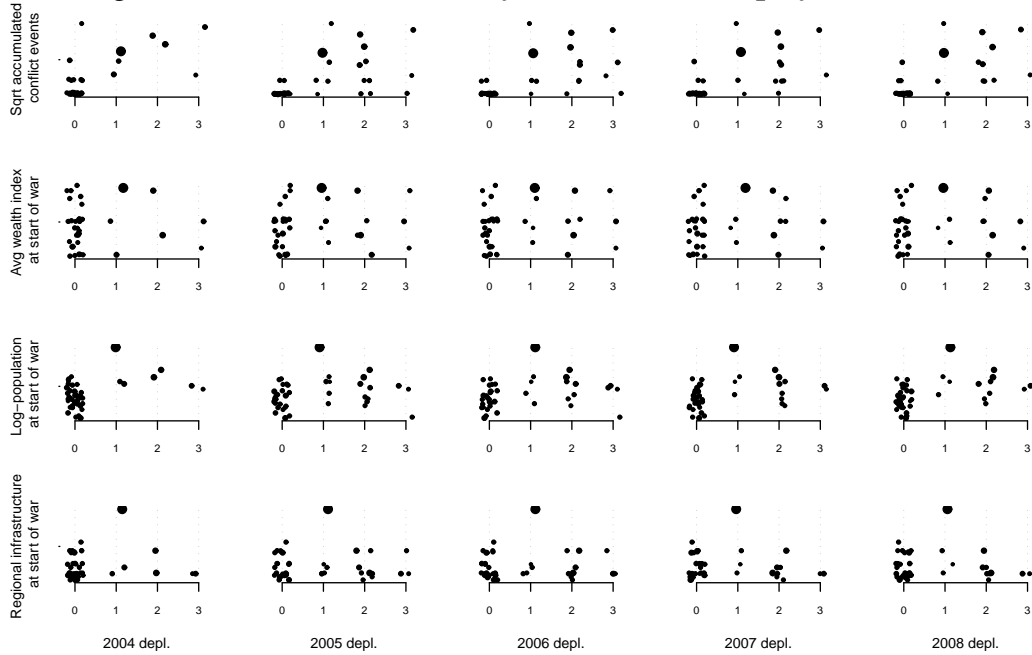
Each dot is for a community that is included the civilian sample. The size of a dot is proportional to the size of the sample in that community. The graphs plot values of community level variables (y axes) over deployment levels (x axes). The dots were jittered a bit to show areas of concentration.

community-level variables over deployment levels, with one plot for each deployment year (2004-2008). The variables are (1) accumulated conflict exposure, (2) local population size, (3) regional wealth levels, and (4) regional infrastructure. The deployment levels (0,1,2,3) refer to the following terms: 0 refers to no deployment, 1 refers to non-forceful deployment (e.g. liaison officers) or force strength of less than 1:1000 troops to population, 2 refers to force strength between 1:1000 and 4:1000 troops to population, and 3 refers to force strength above 4:1000 troops to population. Force strength allocations changed over time, increasing in some communities, and decreasing in others. Each dot in the graphs is a community, with the size of the dot proportional to the size of the sample drawn from that community (the very large dot is Abidjian).

We can study how much balance exists on important community-level variables by checking whether a community, represented by a dot in a given graph,

has neighbors to the left and right at roughly the same height on the y-axis. Our impression is that balance is not so bad. Some exceptions are with Abidjian (the large dot), which is an outlier with respect to local infrastructure and population size. We would not be able to disentangle high infrastructure and population size effects from other attributes of Abidjian. Also, we note that accumulated conflict event levels are such that all communities with relatively high accumulated events (e.g. above the mean) received deployments in all periods except the first (2004). Reasonable balance exists over deployment levels 1,2, and 3. But counterfactual predictions about how level 1,2, or 3 communities *would have* fared under a level 0 deployment will be quite dependent on how we model the effects of accumulated conflict events.

We are continuing to work on these balance assessments, and future versions of the paper will include statistical summaries of balance/imbalance for other co-variates over deployment levels as well as for exposure to elections sensitization activities.

6   Estimates of Impacts

6.1   Security provision

Contrary to our prior beliefs about the primacy of security provision, we do not discern any substantial security-enhancing impact associated with UNOCI's deployments to communities. We base this conclusion on (1) evidence about the timing and location of security-related events relative to deployments, and (2) evidence on impacts of deployments on civilian reports on armed-conflict-related activities.

As a first bit of descriptive evidence, we note that UNOCI arrived on the scene after a year-long lull in fighting and major reduction in victimization rates. The lull commenced with the establishment of the confidence zone in early 2003. Figure 4 shows estimated levels of civilian victimization due to violence from 2002 to 2008. Each dot is an estimated number of conflict events or victimization episodes in the corresponding month; we plotted lowess curves to summarize trends. There were twelve major conflict events in the post-deployment period; they occurred

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over 2004-5 within six communities. Bouake, which was the site of four of these events, and Korhogo, which was the site of three, were actually host to deployments (out of) at the time the events occurred. Events in Logouale (1 event), M'Bahiakro (1 event), Seguela (1 event), and Vavoua (2 events) occurred when no deployments were present, although subsequently they all received deployments. Post-2004 victimization rates were very low at the time UNOCI deployed, and they remained very low. We estimate that about 6% of households experienced some victimization event from 2004 to 2008. The corresponding figure for the period of war from 2002 to 2004 is an astonishing 39%. There was clearly little scope for UNOCI's deployments to improve things, and thus we are unable to detect any change in victimization rates around the time of the initial deployment in early 2004. Geographic variation in post-2004 victimization reflects the geography of the renewed hostility in late 2004 and 2005. For those living in areas of renewed hostility either before or after the war, the rate of exposure to any of the listed forms of victimization was 10-14% (95% CI); for those in other locations, the rate of victimization was 5-6% (95% CI). But as the evidence on the locations of these conflict events foreshadows, proximity to UNOCI operations was not found to be significantly related to victimization risk (analysis excluded).[7] There is little descriptive evidence of UNOCI deployments having been either in a position to tame major conflict dynamics, or associated with more security in the much more secure post-confidence zone environment.

We measured the impact of UNOCI's deployments on individuals' reports of events that indicate renewed or on-going conflict. Our survey included a battery of eight "yes-no" questions about whether people witnessed or suspected inter-ethnic fighting, presence of armed groups, or recruitment in their localities. We asked for this information with reference to four time periods: (1) around the time of the signature of the Linas-Marcoussis Accord and the installation of Seydou Diarra's government in January-February 2003; (2) in period just prior to the installation of Charles Konan Banny's government in December 2005; (3) in the period just prior to the installation of Guiallaume Soro's government in April 2007; and (4) in the period since Soro's government was established to the time of the survey in

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[7]Interestingly, ethnicity was an important variable: ethnic Mande were almost three times more likely to experience post-2004 vicitimization relative to ethnic Akan.

Figure 4: **Trends in Conflict and Victimization Over Time**
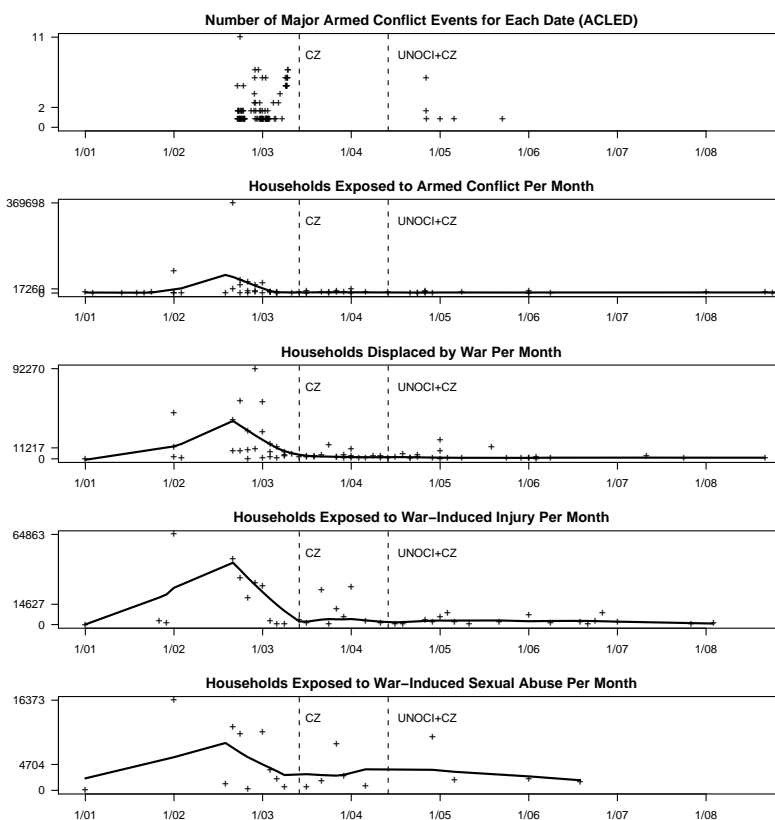
Notes: The top graph shows armed conflict event counts, and the bottom four graphs show estimates of monthly victimiza-tion rates with trend lines (lowess fits). The dashed vertical lines mark starts of the confidence zone ("CZ") and UNOCI deployments ("UNOCI+CZ"). The maximum and average pre-UNOCI levels are on the vertical axes. For readability, the y-axes are scaled to these maxima, rather than to a common scale.

August 2008.[8] These responses were used to construct an index of "pessimistic reports" about the likelihood of renewed conflict in the different periods. We

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[8]To make the survey less exhausting for respondents, we did not ask all respondents about all time periods. Rather, all respondents were asked about the first time period. Then each respondent was asked about only one randomly selected subsequent time period. Thus, for each latter time period, we gathered data from approximately 400 of the 1,206 civilian respondents. We felt this would greatly increase the reliability of responses, making it worth the compromise of precision.

estimated how exposure to different deployment levels affected changes in pessimistic reports over time. We controlled for any fixed effects as well as dynamic effects of victimization events and exposure to major conflict events subsequent to UNOCI's initial deployment. We took care to ensure no post-treatment bias in the estimation. The appendix provides more details.

Figure 5 displays the results. The gray polygons are the 95% confidence intervals for estimates in baseline (i.e. no deployment) communities. The thick dashed line shows point predictions for communities with light (level 1), moderate (level 2), and heavy (level 3) deployments. The thin dashed lines outline the 95% confidence intervals for these estimates. We find that pessimistic reports did not decline more rapidly in deployment communities than in baseline communities. We know that there is imbalance over conflict exposure between people in baseline communities and those in deployment communities. So, more reliable inference can be drawn by comparing across deployment levels. The point predictions suggest that moderate and heavy deployments are more effective than light deployments, although this difference is only significant (95% confidence) when contrasting light and moderate deployments during the first two years of deployments. This reinforces our sense that UNOCI's impact on security provision was small, if anything.

Additional descriptive evidence comes from perceptions about UNOCI and the Zone of Confidence. A Zone of Confidence was established as part of the Linas-Marcoussis Accord in January 2003. It was a zone of geographic separation between rebel forces in the North and government forces in the South. Many combatants interviewed expressed the opinion that the Zone of Confidence made it more difficult to launch attacks (84% stated as such) and was effective in protecting them against enemy attacks (73%). But even if French, ECOWAS, and ultimately UNOCI troops would monitor the Zone, it was a creation of the parties to the conflict themselves, and had been in operation for about a year prior to UNOCI's arrival. The added value of UNOCI's deployments are difficult to discern. Majorities of respondent civilians understood, unprompted, that the objective of the confidence zone was to prevent military clashes between the armed forces and to provide protection to the civilian population (98% and 91%, respectively). But most respondents nationwide (52%) disagreed with the idea that civilians within

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Figure 5: **Exposure to deployments and change in pessimistic reports**
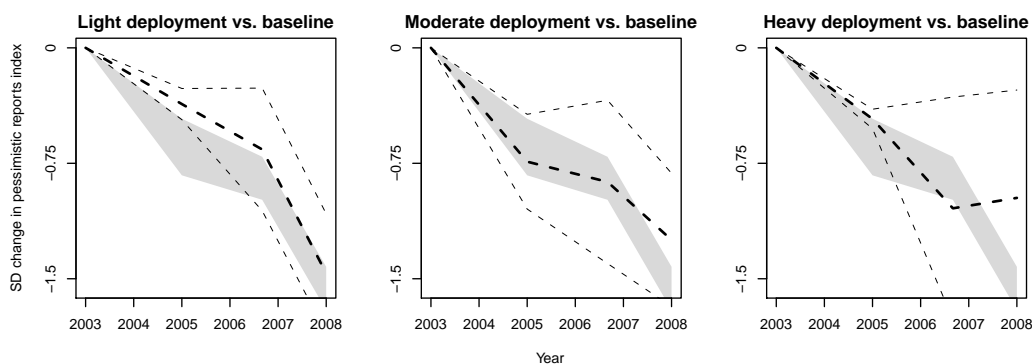
The gray region is the 95% confidence interval for estimated change in the pessimistic report index for subjects in communities that did not receive deployments. It is the same on all three graphs. The axis is scaled to the standard deviation of the pre-deployment (2003) index values. The dashed lines show the estimated changes for subjects in recipient communities. The thick dashed lines show the point estimates, and the thin dashed lines contain the 95% confidence intervals. For details on the estimation, refer to the appendix.

the confidence zone were secure. Respondents emphasized primarily and in equal measure (i) "chaos" and a lack of law and order (57% among those who said confidence zone residents were less secure), and (ii) the likelihood that confidence zone residents will be victims if the war were to resume (59%). 38% of those who thought confidence zone residents were less secure emphasized a lack of confidence in the "impartial forces" guarding the zone; and after further probing, the primary reasons for this lack of confidence were a sense that the impartial forces had not "mastered the terrain."

UNOCI may have profited from the restraint of the parties to the war, but there is little here to suggest that the assignment of UNOCI deployments to communities, *per se*, did much to affect the security situation within those communities. This is due in part to the fact there was not much left to do in this respect by the time UNOCI deployed. This may also be due, in part, to limitations of the operation itself.

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6.2 Economic recovery

We present preliminary evidence of the potential impact of UNOCI deployments on the restoration of the economic vitality of households. In general, UNOCI's presence was associated with less severe economic losses experienced by households, although at this point, we assert this as a merely descriptive claim. Further analysis will attempt to measure causal impacts. We constructed pre- and post-war household economic welfare indices by combining survey measures of material possessions, domicile quality, income, and amount of food consumed regularly. From these we also created a measure of economic welfare change. [9] For the economic change index, households achieve a negative score when their current situation is worse than the pre-war situation; positive scores reflect improvements relative to the pre-war status quo. As the map in Figure 6 displays, the areas that have been the hardest hit economically include those near the Liberian border where fighting was intense, as well as other localities within and along the Zone of Confidence.

The map on the right in Figure 6 shows the results of a very preliminary analysis, using only a dichotomous measure of whether a community was or was not host to deployments. Future work will exploit all the variation in deployment intensities. The map illustrates the extent to which conflict history is associated with economic hardship. After taking this into account, peacekeeping deployments were associated with less severe economic losses. The most generous interpretation is given by the diagonal dashed lines, which show regression lines for peacekeeping and non-peacekeeping localities. Despite the good fit to the data for peacekeeping localities, note that the regression comparison forces us to extrapolate far beyond the data for the none-peacekeeping localities. A very conservative estimate is given by the space between the short horizontal lines to the left of

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[9]The indices do not translate directly into tangible economic quantities. Nonetheless, we feel that the index provides a better measure than monetary income. First, as a developing country with a large rural base, many needs are met through goods being handed down or exchanged without money. We estimate that some 20-25% of the population obtains most of their food from sources other than markets (e.g. by growing or catching food by themselves). Second, income streams are often irregular in economies such as this. Thus, responses to questions about "monthly income" can be misleading. Rotated factor scores on the items listed above were used to produce the indices.

the graph. These lines indicate average economic loss levels in peacekeeping and non-peacekeeping localities, restricting ourselves to communities that share common common conflict histories. Peacekeeping localities still score better by this measure, but the difference is not significant at 95% confidence. The truth relationship probably lies somewhere between these two estimates. By exploiting all the variation in deployment intensities, we will be able to do more to reduce model dependence of this sort.

Figure 6: **Household economic change, by locality and over conflict incidence levels**
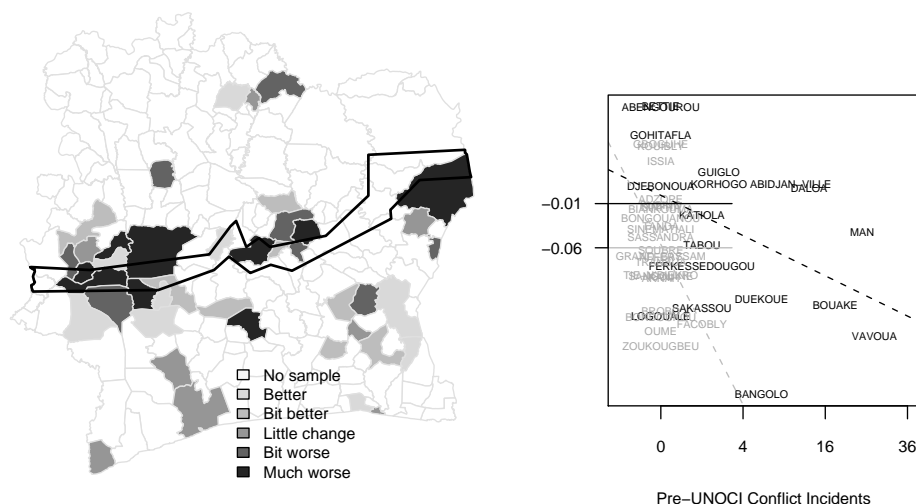
The map on the left gives average household economic change for each locality in the sample. The black polygon merely outlines the Zone of Confidence. In the graph to the right, localities' average change in economic welfare is graphed over past conflict history. Black names and lines correspond to areas with peacekeepers, gray corresponds to areas where they were not. The dashed lines show regression fits; the short solid lines show average changes in economic welfare for peacekeeping and non-peacekeeping cases that overlap on the conflict incidents dimension.

An important part of the restoration of economic normalcy is the return of war-displaced households to their areas of origin. When we divide the economic change scores into "worst-off," "middle," and "best-off" categories, we find that 42% of displaced households are in the "worst-off" category, as compared to only

19% of settled households.[10] We estimate that approximately 30% of civilian households were residing in 2008 in places different than their 2002 home locations. Violence-induced changes in locality account for approximately one third of these; the rest are presumably due to indirect effects of war as well as normal economic considerations (e.g. job seeking). Thus, about 10% of the population overall were "war-displaced." About 12% of households were violently displaced but have *since returned* to their pre-war home localities. Thus, some 22% experienced a violent displacement episode at some point. We do not consider refugees still residing outside Cote d'Ivoire in this calculation.[11]

Preliminary evidence on UNOCI's impact on return rates is mixed. Table 2 shows unadjusted estimates of displaced household return rates as well as results from a basic conditional logit regression (grouped by time period). The results are broken down by region and time period, as explained in the caption to the table. UNOCI's presence has generally been associated with slower rates of return. There is significant heterogeneity in these associations. For example, return rates in the Zone of Confidence localities reached an estimated 44.4% by 2008. In war-affected Centre/Nord-ouest and Sud/Est localities, return rates for the large numbers of displaced from those regions have barely risen above a trickle for localities where UNOCI has been deployed—ranging from 0 to only 3.5%. Further analysis will explore these variations and come to a more definitive statement on UNOCI's impact on displacee return.

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[10]The middle category consists of those with economic change scores roughly equivalent to no change in economic well-being. An estimated 51% of the population fall in this category. Those below and above this score were assigned "worst off" and "best off," respectively.

[11]The extent of displacement that we recorded came as a surprise to us, and thus the survey did not contain follow-up questions that would allow us to investigate this issue in much detail. We consider this to an area where much more study should be done.

## Table 2: **Return of war-displaced households to pre-war home localities**

Status[a]	Home reg.[b] Regr. coef.[d]	Statistic[c]	Year						
			2002	2003	2004	2005	2006	2007	2008
No PKO	CNO,war	n	57	81	11	9	10	10	4
		$\hat{N}$	97869	130852	32035	29484	31302	31302	5676
	$\beta = 0^e$	$\hat{R}$	690	14223	2551	0	0	8564	0
		$\hat{r}$	0.7	10.9	8	0	0	27.4	0
	CNO,peace	n	5	9	12	11	9	8	6
		$\hat{N}$	7980	10868	17536	15120	14083	10348	7991
	$\beta \approx 0$	$\hat{R}$	0	0	2416	1037	3735	0	763
		$\hat{r}$	0	0	13.8	6.9	26.5	0	9.5
	SE,war	n	20	29	4				
		$\hat{N}$	41576	66960	7708		no obs.[f]		
	$\beta = 1.1^{**}$	$\hat{R}$	2937	16876	0				
		$\hat{r}$	7.1	25.2	0				
	SE,peace	n	2	3	2	2	2	2	1
		$\hat{N}$	1889	2411	1970	1970	1970	1970	522
	$\beta = -.3$	$\hat{R}$	0	0	0	0	0	1448	0
		$\hat{r}$	0	0	0	0	0	73.5	0
	CZ	n	51	80	37	12	7	6	6
		$\hat{N}$	98821	138447	53129	19745	12942	12746	12746
	$\beta = 1.0^{**}$	$\hat{R}$	7796	25197	17924	1330	196	0	0
		$\hat{r}$	7.9	18.2	33.7	6.7	1.5	0	0
PKO	CNO,war	n			63	62	60	59	61
		$\hat{N}$	no obs.[f]		91889	96389	92928	94956	110293
	$\beta = -1.1^{**}$	$\hat{R}$			1796	3462	489	1726	3781
		$\hat{r}$			3.4	2.5	1.1	1.3	2
	CNO,peace	n			1	1	1	1	3
		$\hat{N}$	no obs.[f]		348	348	348	348	2706
	$\beta = .^g$	$\hat{R}$			0	0	0	0	0
		$\hat{r}$			0	0	0	0	0
	SE,war	n			21	26	25	24	23
		$\hat{N}$	no obs.[f]		44827	53724	51816	50628	50065
	$\beta = -1.3^*$	$\hat{R}$			0	1908	1188	563	496
		$\hat{r}$			0	3.6	2.3	1.1	1
	SE,peace	n			2	2	2	2	2
		$\hat{N}$	no obs.[f]		615	615	615	615	615
	$\beta = .^g$	$\hat{R}$			0	0	0	0	0
		$\hat{r}$			0	0	0	0	0
	CZ	n			30	36	37	28	24
		$\hat{N}$	no obs.[f]		64003	69468	71089	54790	51818
	$\beta = .7^*$	$\hat{R}$			11201	5728	16299	2972	23033
		$\hat{r}$			17.5	8.2	22.9	5.4	44.4

*The number of displaced households in the sample for which full information was recorded was 234. [a]Categorizes households based on whether peacekeepers are stationed in prewar sous-prefecture of residence for given year. [b]Region containing household's prewar sous-prefecture of residence: "CNO,war" is conflict-affected Center/North-west, "CNO,peace" is non-conflict-affected CNO; "SE,war" is conflict-affected South/East, "SE,peace" is non-conflict-affected SE; "CZ" is confidence zone. [c]Statistics: n is number of sample households that were displaced at the start of the year. Based on n and the sample weights, $\hat{N}$ estimates the number of households in the population displaced at the start of the year. $\hat{R}$ estimates how many out of $\hat{N}$ returned home that year. $\hat{r}$ is the return rate, expressed as a percentage (i.e. $100*\frac{\hat{R}}{\hat{N}}$). Estimates are based on sample weights. [d]Coefficient from a conditional logit regression. ** indicates $p < .01$, * indicates $p < .1$. [e]Reference category in regression. [f]Peacekeepers were stationed in all sampled "SE,war" sous-prefectures, and peacekeepers were not deployed prior to 2004. [g]Insufficient observations to identify regression coefficient.*

6.3 Political rehabilitation and transformation

We collected data that will allow us to study the mission's impact on rehabilitating and transforming political institutions in the country. Here, we present preliminary results.

Figure 7: **Timing of Return of Local Leaders to Communities that Experienced Leadership Flight During the War**
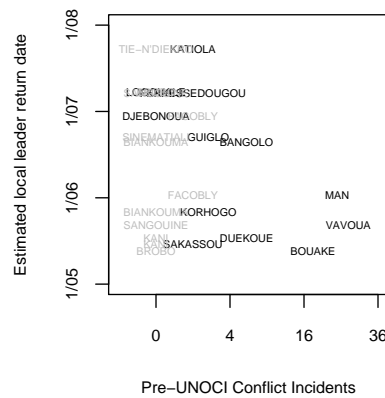

Notes: The graph shows estimated return dates of leaders to communities that had experienced leadership flight, plotted over conflict history. Names of localities with peacekeepers are in black, while those without peacekeepers are in gray. Estimates suggest that localities with more intense past conflict had leaders return much sooner than those with less intense conflict.

The survey also measured the restoration of local political order in terms of questions on the flight and dates of re-establishment of local political authorities.[12] Nineteen out of the 42 localities (45%) covered by the survey experienced leadership flight, with all such flight happening prior to UNOCI's arrival. Among these 19 localities, peacekeeping deployments were assigned to 12. Figure 7 graphs the

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[12]This information was gathered from the surveys. Sometimes respondents gave different answers about whether local leaders fled and, if they fled, when they returned. Disagreement on whether leaders fled never produced a split more even than 30% one way and 70% the other, thus we simply took the more common response on this question. For return dates, responses tended to be clustered around common dates, and so we simply took the average of the dates reported.

estimated return date of local leaders over conflict history, with UNOCI-covered localities in black, and non-UNOCI-covered localities in gray. Localities with histories of more intense fighting actually had leaders return quite a bit *sooner* than those with less intense past conflict. Once this is taken into account, there is no significant difference in the return dates for localities with peacekeepers compared to those without.

Figure 8: **Penetration of electoral preparation and perceptions of electoral unfairness**
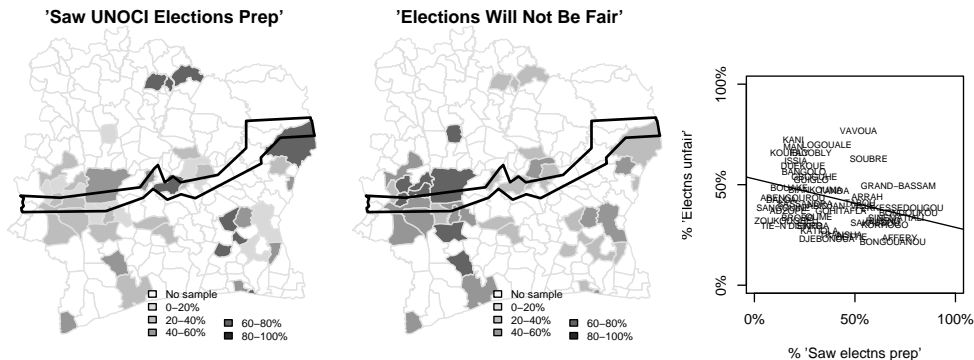
Notes: The leftmost map shows the percentage of civilians in each locality that can confirm that UNOCI had organized meetings locally during which elections issues were discussed. The map in the middle shows percentages of civilians believing the forthcoming elections are likely to be unfair. The black polygons in the middle of each map merely outline the Zone of Confidence. The graph to the right shows the strong relationship between these two factors.

UNOCI's mandate called for the provision of assistance in voter registration and organization of presidential and legislative elections. The data show that UNOCI's efforts to meet with locals across the country on election issues are associated with heightened confidence in the likely fairness of the forthcoming elections. The maps in Figure 8 show, on the left, percentages of civilians across the country who think that forthcoming elections will likely be unfair, and on the right, percentages of civilians across the country who can confirm that UNOCI organized meetings on electoral affairs in their community. The graph to the right shows

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the strong relationship between these two factors. For example, if the number of people exposed to UNOCI electoral programming increases from 25% to 75% in a locality, the number of people who doubt the likely fairness of upcoming elections is predicted to decrease from about 50% to about 35%, a substantial gain in confidence. Despite high levels of concern in the western confidence zone localities, we note that perceptions of electoral fairness were *not* clearly associated with local conflict history or perceptions of local lawlessness and insecurity (analysis not shown). Those who did recognize UNOCI's electoral assistance role tended to emphasize UNOCI's meetings with local leaders and citizens to raise awareness about the electoral process. This appreciation varied greatly from region to region, as indicated by the left-most map in Figure 8. Less than 10% of people were estimated to be able to confirm that UNOCI was otherwise engaged in electoral preparations—e.g. with assistance in completing voter rolls, registration, or observer training.

Table 3: **Will forthcoming elections be fair? If not, why? (%)**

Region[a]	Fair	Unfair			
		Dishonesty	Disorganization	Insecurity	Other
1a. No PKO, CNO, war	16 (5)	17 (9)	8 (2)	59 (2)	0
2a. No PKO, CNO, no war	35 (10)	14 (7)	12 (2)	30 (9)	9 (4)
3a. No PKO, SE, war			No obs.[c]		
4a. No PKO, SE, no war	61 (6)	14 (3)	13 (4)	9 (2)	3 (1)
5a. No PKO, CZ	72 (6)	12 (5)	3 (3)	9 (4)	4 (3)
No PKO, total	59 (5)	14 (3)	11 (3)	13 (3)	4 (1)
1b. PKO, CNO, war	64 (6)	12 (2)	6 (3)	14 (2)	4 (2)
2b. PKO, CNO, no war			No obs.[c]		
3b. PKO, SE, war	58 (5)	10 (3)	15 (4)	10 (2)	8 (2)
4b. PKO, SE, no war	95 (2)	0	2 (>1)	0	3 (2)
5b. PKO, CZ	43 (11)	2 (1)	10 (6)	39 (11)	5 (2)
PKO, total	58 (4)	9 (2)	12 (3)	14 (2)	7 (2)
Nationwide	58 (4)	11 (2)	12 (3)	13 (2)	6 (2)

Notes: Percents given for each row, with standard errors in parentheses. If no standard error is reported, then no observations were recorded for that cell, in which case standard errors are not available.

*[a,b,c] See Notes a, b, and c in Table **??**.*

As the plot on the right in Figure 8 shows, just under half the population (about 42 %) doubts that forthcoming elections would be fair. We asked for people's reasons for their doubts. People's concerns were coded as falling into one of three

categories: (i) concerns about dishonesty—that is, general political distrust and a belief that politicians in Cote d'Ivoire were, on the whole, dishonest; (ii) concerns about disorganization—that is, a sense that preparation for the elections was disorganized, being rushed, or otherwise inadequate; (iii) concerns about insecurity—that is, a sense of concern over the fact that disarmament was lagging, armed groups were still active, and the resumption of war seemed a real possibility. Table 3 shows the results, broken down by region, conflict affectedness, and whether peacekeepers were based in an individual's locality. For the war-affected Center/Northwest, we see an enormous increase in political confidence in areas with peacekeepers; nearly all of this difference is attributable to changes in perceptions about whether insecurity will undermine elections. In the non-war-affected South/East, we see large increases in political confidence in areas with peacekeepers, although the reasons for this increase are attributable to large decreases in all types of concerns. In the non-war-affected Center/West, we have no areas where peacekeepers were deployed, and insecurity concerns dominate among those skeptical about elections. All respondents in the war-affected South/East came from areas where peacekeepers were deployed, and we note that concerns about disorganization predominate among skeptics there. An unusual situation holds for the confidence zone localities. There, peacekeepers' presence is associated with much greater skepticism about elections, with insecurity concerns dominating this difference. This may be attributable to much higher concentrations of former combatants in the areas with peacekeepers, or to other aspects of the war history of these localities. These results would seem to contradict, at least in some places, our conclusions about UNOCI's negligible impact on security. This is something that we plan to examine further.

7   Conclusion

We offer a short recapitulation of the findings thus far. The quality and richness of the data, combined with reasonable amounts of covariate balance in our sample, suggest that there is considerable scope for causal analysis of UNOCI's micro-level impacts. We have already engaged in such analysis with respect to security provision. We find little to support the idea that UNOCI's deployments

significantly affected the security situation, which had already improved tremendously prior to UNOCI's arrival. We found only a suggestive association between feelings that insecurity would mar forthcoming elections and deployment patterns. We do find that UNOCI's presence was associated with less severe economic losses, and that penetration of electoral assistance activities was associated with more confidence in forthcoming elections. We do not find a clear association between deployment patterns and the restoration of local authorities. The intermediate outcomes that we study are not exhaustive of the types of activities in multidimensional peacekeeping. Future research will consider other aspects. Nonetheless, taken as they are, our preliminary results already suggest the need to emend current theories of why peacekeeping works—perhaps de-emphasizing security aspects, and placing more emphasis on the economic and political programmatic aspects. These results help us to unpack the strong association between peacekeeping and prolonged peace—something that current quantitative studies have not been able to do. But stronger conclusions require that we wait for the results of our further empirical analysis.

Appendix

A   Statistical models and estimates

A.1   Change in perceptions about renewed conflict

The nature of our data are such that for each individual, i, data on perceptions of the possibility of renewed conflict were available for period 0 (January 2003) and one subsequent period, t (see the text for the other years). For each year, the data consisted of 8 yes-no questions about whether respondents witnessed or suspect conflict related activities in their localities. These data were used to construct an index of "pessimistic reports." The steps for constructing the index were as follows: first, missing binary item data were imputed with Amelia II (Honaker et al 2009) using demographic variables, location and time fixed effects, and the variable discussed below. We note that missing item values were frequent—sometimes up to 35% of observations for a given item. This was due largely to "don't know" responses—but that overall, sufficient data was available on nearly all observations to be useable. We dropped 28 observations (out of 1,206) because too much data was missing. Then, a two-parameter logistic item response model was fit to the data, and factor scores were extracted.[13] These factor scores were very highly correlated with simple sums of the items for each individual ($\hat{\rho} = .95$). For the sake of this analysis, the factor scores are better than a simple summation of the items because they weight the contribution of the different items according to their estimated "discrimination" and "difficulty"[14], and because they are arrayed onto a scale that is not, in principle, truncated. The factor scores are such that a higher value means *more pessimism about renewed or ongoing conflict inherent in the answers provided by the respondent*. We accounted for uncertainty in the factor score estimates by weighting our regression analyses by the inverse of the estimated variance of the factor score estimates.

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[13]The item response analysis was conducted with the `ltm` package in R (Rizopoulos 2006). We decided on a two-parameter model after a likelihood ratio test demonstrated significant improvement ($p < .001$) over a one-parameter Rasch model. The empirical Bayes setting was used to extract the factor scores.

[14]Refer to Rizopoulos (2006) for a discussion of these concepts in item response models.

To model the impact of deployments on the index of pessimism, we assumed the following data generating process:

$$y_{it} = \alpha_i + \gamma_{c(i)} + \sum_{s=1}^{3} \tau_s 1(t=s) + \sum_{l=1}^{3} \theta_l 1(d_{c(i),t} = l) + \sum_{s=2}^{3}\sum_{l=1}^{3} \beta_{sl} 1(t=s) 1(d_{c(i),t} = l)$$

$$+ \kappa C_{c(i),t} + \sum_{k=1}^{2} \phi_k 1(d_{c(i),0t} = k) + \psi V_{it} + \varepsilon_{it}$$

$$y_{i0} = \alpha_i + \gamma_{c(i)} + \tau_0 + \varepsilon_{i0},$$

where α_i is an individual level effect; $\gamma_{c[i]}$ is a community level effect; τ_s is the time effect for period s; $d_{c(i),t}$ is the deployment level (1,2, or 3) active in i's community, c, in period t, if there was a deployment; $C_{c(i),t}$ is an indicator for whether there were any major conflict events in community $c(i)$ between period 0 and period t; and $d_{c(i),0t}$ is the accumulated peacekeeping exposure level (1 or 2) in community $c(i)$ between periods 0 and t; and V_{it} is an indicator for whether the individual experienced any victimization events between periods 0 and t . Taking the first difference and rearranging the time effects yields the following:

$$y_{it} - y_{i0} = \sum_{s=1}^{3} (\tau_s - \tau_0) 1(t=s) + \sum_{l=1}^{3} \theta_l 1(d_{c(i),t} = l) + \sum_{s=2}^{3}\sum_{l=1}^{3} \beta_{sl} 1(t=s) 1(d_{c(i),t} = l)$$

$$+ \kappa C_{c(i),t} + \sum_{k=1}^{2} \phi_k 1(d_{c(i),0t} = k) + \psi V_{it} + (\varepsilon_{it} - \varepsilon_{i0}), \tag{1}$$

thus sweeping away the time-invariant effects. We can rewrite (1) as follows:

$$\tilde{y}_i = \sum_{s=1}^{3} \tilde{\tau}_s + \sum_{l=1}^{3} \theta_l 1(d_{c(i),t} = l) + \sum_{s=2}^{3}\sum_{l=1}^{3} \beta_{sl} 1(t=s) 1(d_{c(i),t} = l)$$

$$+ \kappa C_{c(i),t} + \sum_{k=1}^{2} \phi_k 1(d_{c(i),0t} = k) + \psi V_{it} + \tilde{\varepsilon}_i.$$

We assume that $\text{Cov}(\tilde{\varepsilon}_i, \tilde{\varepsilon}_j) = 0$ only if $c(i) \neq c(j)$, and so we estimated standard errors asymptotically robust to within-community correlation (Baltagi 2005, p. 14). The θ_l's and β_{sl}'s measure per-period differences attributable to deployments in different time periods. The κ, ϕ_k's, and ψ are estimated to reduce spuriousness. Unbiased estimation of the θ_l's and β_{sl}'s requires that other shocks to individuals

or communities that occured between periods 0 and t be exogenous to peacekeeping deployment or inconsequential for respondent attitudes. Estimates for the 16 coefficients in this model are shown in Table 4. The trajectories in Figure 5 were computed by summing the appropriate coefficients.

Table 4: Estimation results : pessimistic reports index

Variable	Coefficient	(Std. Err.)
t1	-0.387	(0.056)
t2	-0.508	(0.043)
t3	-0.938	(0.043)
d1	0.167	(0.065)
d2	-0.057	(0.111)
d3	0.110	(0.061)
t2xd1	-0.055	(0.142)
t2xd2	0.043	(0.231)
t2xd3	-0.227	(0.234)
t3xd1	-0.109	(0.131)
t3xd2	0.246	(0.193)
t3xd3	0.243	(0.228)
C	0.065	(0.125)
d0t1	-0.047	(0.117)
d0t2	-0.338	(0.120)
V0t	0.016	(0.062)
N	1178	
R^2	0.395	

DETAILS ON FURTHER ANALYSES TO BE REPORTED HERE.

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