

Peacekeeping and Development in Fragile States

Micro-Level Evidence from Liberia

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Abstract

Using surveys and administrative data from post-war Liberia, the hypothesis that peacekeeping deployments build peace “from the bottom up” through contributions to local security and local economic and social vitality was tested. The hypothesis reflects official thinking about how peacekeeping works via “peacebuilding.” A quasi-experiment was created by applying coarsened exact matching to administrative data used in mission planning, identifying sets of communities that were similarly likely to receive peacekeeping bases. The analysis finds nothing

to support claims that deployments increase local security and finds only modest effects on economic or social vitality. Nongovernmental organizations tend to work in areas where deployments are not present, contrary to the hypothesis. Thus, it is less likely that peacekeepers build peace from the bottom up, leaving mechanisms such as signaling and deterrence at the level of leaders as worthy of more attention. For policy, peacekeeping missions should reevaluate their methods for providing local security.

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Peacekeeping and Development in Fragile States: Micro-Level Evidence from Liberia

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1 Introduction

Peacekeeping operations are increasingly integral to the international community's efforts to stabilize and address development challenges in fragile and conflict-affected situations (FCV)—countries that typically face daunting development challenges.¹ Traditionally, peacekeeping operations, particularly those carried out under the United Nations, focused on helping belligerents implement peace agreements and maintain peace in the aftermath of civil war through mechanisms such as monitoring of ceasefire agreements or setting up of buffer zones between the belligerents, which can help build confidence and alleviate commitment problems (Fortna 2008).

Since the early 1990s, however, peacekeeping operations saw a dramatic expansion to include non-military functions such as revitalizing the economy, rebuilding infrastructure, fostering democracy, and promoting human rights, to name a few (Cousens and Kumar 2001). These broader development activities, generally referred to as 'peacebuilding activities,' are in practice indistinguishable from development interventions (Paris 2004) and are often carried out in close coordination among the donors and key development actors (Tschirgi 2004; Woodward 2002).² These activities are typically undertaken on the theory that military means alone cannot lead to self-sustaining peace unless accompanied by robust efforts to address the structural factors responsible for the outbreak of civil war in the first place as well as the economic and political consequences of war that might leave societies vulnerable to renewed conflict (Doyle and Sambanis 2006; Boutros-Boutros Ghalis 1995).

Furthermore, a peculiar feature of contemporary peacekeeping operations is that they operate

¹According to the World Bank, two billion people now live in countries affected by fragility, conflict and violence and it is estimated that by 2015, nearly 52 percent of the world's poor will live in FCV settings. <http://www.worldbank.org/en/topic/fragilityconflictviolence>.

²Contemporary peacekeeping operations have both security and civilian functions, which is why peacekeeping operations are often referred to as "multidimensional operations" or "peacebuilding operations." Throughout this paper, I use these terms interchangeably. For a detailed description of key activities these operations entail, see the Handbook on United Nations Multidimensional Peacekeeping Operations accessible at: [http://www.peacekeepingbestpractices.unlb.org/Pbps/library/Handbook on UN PKOs.pdf](http://www.peacekeepingbestpractices.unlb.org/Pbps/library/Handbook%20on%20UN%20PKOs.pdf).

at the grass-roots level, not just at the macro-level (Stedman et al. 2002). Indeed, most peacekeeping operations carried out in the past two decades have tended to penetrate war-torn societies with unprecedented levels of breath and depth, targeting directly the social, economic and political aspects of local people's lives (Talentino 2007; Pouligny 2006; Sisk and Risley 2005). By providing local-level security and assistance that facilitates economic and social revitalization, peacekeeping operations are presumed to raise the opportunity costs of war and empower those seeking peace.³

Yet, with very few exceptions (e.g., Caruso et al. 2017; Gordon and Young 2017; Ruggeri et al. 2017; Beber et al. 2016), the question of whether and how peacekeeping operations work at the local level remains elusive, as much of the existing empirical literature has focused at the macro-level.⁴ In this paper, we use a micro-level approach to test some of the hypotheses implicit in the design of multidimensional peacekeeping operations in the context of the United Nations Mission in Liberia (UNMIL).⁵ We use matching methods, original survey data, and administrative data from post-war Liberia to measure micro-effects of peacekeeping on security and socioeconomic outcomes. We exploit the fact that when establishing deployment locations in the Liberian countryside, peacekeepers had limited information with which to work. Using coarsened exact matching on administrative data used in United Nations planning, we identify sets of communities that, presumably, were similarly likely to receive a peacekeeping base. Liberia offers a good test of these hypotheses, because extremely low state service capacity allows for the possibility of peacekeepers to have maximal impact.

The evidence suggests a rather negative picture. We find no support for the claim that deployments increase local security, and find extremely modest effects of deployments on economic

³For example, the presence of a peacekeeping deployment may deter armed groups from engaging in local violence, which in turn may make citizens more comfortable about exercising their political voice and right to participate in the political process than they would otherwise be (Mvukiyeye 2017).

⁴See Fortna and Howard (2008) for a review of this literature.

⁵Our empirical approach follows a handful of studies such as Humphreys and Weinstein (2007) and Gilligan et al. (2011), which examined the disarmament, demobilization and reintegration (DDR) component of the peacekeeping mission in Sierra Leone and Burundi respectively. But our study covers different types of activities and key outcomes.

or social vitality. Interestingly, we find that NGOs tend to work in areas where deployments are not present. We are less inclined to believe that peacekeeping, on its own, contributes to durable peace from the bottom up, at least in the case of UNMIL, leaving macro-level mechanisms such as signaling and deterrence among faction leaders as explanations worthy of more attention for the positive association between peacekeeping and peace (Fortna 2008, Gilligan and Sergenti 2008).

This research advances the literature on the nexus between peacekeeping and development in at least three ways. First, the local level security and socio-economic outcomes are potential mechanisms presumed to be at work in peacebuilding efforts, yet the existing empirical research on these effects is scant at best. To be sure, existing empirical studies suggest that UN peacekeeping deployments tend to achieve core security objectives in prolonging the peace in the aftermath of civil war (Doyle and Sambanis 2006; Fortna 2008; Gilligan and Sergenti 2008).⁶ These evaluations, however, tend to focus on peacekeeping deployments primarily as security interventions and rarely, if ever, contemplate the socio-economic consequences of these interventions, let alone at the micro-level where any such effects are presumed to build the foundations of self-sustaining and stable peace (Beber et al. 2016; Carnahan et al. 2006; Hentges and Coicaud 2002). As a result, we know very little about these effects and how they contribute to lasting postwar peace.

By studying micro-level security and *socioeconomic* effects of peacekeeping operations, this paper helps shed light on two important, but overlooked aspects of international efforts to restore peace and promote development in fragile states reeling from the devastations of civil war: that these efforts recognize the need to deal with both military and non-military root causes of instability and violence and that they do so by focusing not just at the macro-level, but also at the micro-level. Logically, if we do not find that peacekeeping affects some intermediate outcome,

⁶The importance of contemporary peacekeeping operations as a tool for development, rather than just for security promotion, was underscored by several policy-makers at a recent meeting. For instance, Togo's representative noted that "incorporating development [in peacekeeping operations], was making the blue helmets "artisans of peace and reconstruction", as they acted in various areas from security and rule of law to good governance, institutional-building, justice, reform and national capacity-building" (United Nations, 2013).

then we begin to cast doubt on the claim that such outcomes are integral to the 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-level analysis can thus inform future macro-level analyses.

Second, these local level outcomes are more under the control of peacekeeping missions (insofar as they are direct effects of specific programs and activities) than is the end outcome (i.e. overall peace). The latter is likely to be influenced by other factors outside the control of peacekeeping missions. Thus, from a policy perspective, intermediate outcomes may make it possible to determine what about peacekeeping works and what does not. Third, the micro-level quantitative approach allows us to construct, with rigor, a nuanced picture of what peacekeeping operations actually do inside a country. From a methodological standpoint, this approach also minimizes contextual differences and makes it easier to identify the effects of peacekeeping deployments.

The paper proceeds as follows: the next section discusses two hypotheses implicit in arguments linking peacekeeping interventions to security and socioeconomic outcomes. We follow with a brief background to the Liberian civil war and UNMIL's intervention. The next sections describe our methods for identifying micro-level peacekeeping effects. Then, we present empirical findings followed by a discussion of key results. The final section provides a conclusion that discusses the implications of our findings.

2 Hypotheses

The objective of this paper is to investigate the effects of UNMIL deployments on local security, economic, and social outcomes presumed to be important for stable peace. The academic literature

has yet to articulate a coherent theory of how exactly contemporary, multidimensional peacekeeping operations such as UNMIL, contribute to these positive changes in these outcomes. However, the literature suggests two channels of influence through which peacekeeping might do so. The first is what we call the “security bubble hypothesis,” which proposes that peacekeeping deployments create security bubbles in their immediate vicinity that stimulate local economic and social revitalization (Stedman et al. 2002).

Implicit in this hypothesis is the presumption that postwar environments may be prone to pervasive insecurities and residual violence, while also maintaining local capacity for autonomous socioeconomic and political recovery.⁷ Without a secure environment, these capacities for recovery are not activated (Del Castillo 2008). Few people are willing to invest in a context of instability for fear that they may suffer harm or have to flee prior to enjoying the fruits of those investments. This goes for both economic investments as well as investments in social institutions. To the extent that postwar stability is nothing more than convergence in popular expectations about security conditions, then peacekeeping can enhance stability (and thus make it possible for people to invest in the social and political order) in that their visible presence and capability can increase people’s perceptions of security. The visible presence of capable external security providers may be especially important given that postwar governments may be either too weak to provide the kind of security that is needed or not trusted, oftentimes having been one of the protagonists during the conflict (Fortna 2008; Wantchekon 2004; Kumar 1997).

An alternative hypothesis is what we call the “direct assistance hypothesis,” which suggests that the socioeconomic and political improvements are a result of direct assistance (e.g. material assistance, sensitization on human rights issues or democracy) provided by peacekeeping opera-

⁷Insecurity is a major challenge for any society; in postwar societies, however, insecurity can be exacerbated by a host of other factors that are peculiar to these settings, including the proliferation of small arms and people who actually know who to use them for ill purposes, the prevalence of property and land disputes and sectarian violence, among others (Maynard 1997; Tschirgi 2004).

tions in and around their deployment sites. This hypothesis starts with the premise that postwar societies are not only prone to pervasive insecurities, but they may also have higher prevalence of risk factors such as ethnic polarization, political exclusion or information asymmetries that are rooted in the structures of these societies and which make them more vulnerable to conflict recurrence (Collier et al. 2006).⁸ The availability of resources to cut deals across these lines of conflict may be crucial, but damage caused by civil war may limit the availability of such resources (Doyle and Sambanis 2006). Thus, unlike the security bubble hypothesis that presumed the existence of local capacity to foster recovery endogenously, a central presumption in the direct assistance hypothesis is that such capacity may be limited and that the resources and mediation of outside actors are needed to restructure domestic social and political order (Pouligny 2005).

Our purpose in this paper is not to adjudicate which of the two channels of influence is at work in the context of UNMIL. Indeed, it is quite likely that both processes may be at work.⁹ Carnahan (2007) nicely highlights this potential interaction between the two mechanisms:

The greatest contribution of peacekeeping operations to development lies in the restoration of basic peace and security, since this provides incentives for investment in the legal economy. But these operations also directly jump-start the local economy when help is most needed, early in the recovery process, providing employment and incomes that in turn support the restoration of peace and stability.

Our primary aim in this empirical investigation is to focus on identifying the effects of UNMIL

⁸For a discussion and empirical investigation of these risk factors, see Bigombe et. al (2000) and Collier et al. (2008).

⁹In addition to being multidimensional, UNMIL was also integrated, meaning that at the operational level, its peacebuilding activities were coordinated closely with those of other UN agencies such as UN Development Program (UNDP), the UN High Commission for Refugees (UNHCR), the UN World Food Program (WFP) to name a few. Moreover, to enhance coordination between military and civilian acuties, there were co-deployment military units and civilian units and agencies that were carrying out non-military activities. Though, as we discuss below, this study uses military deployments as the main proxy of UNMIL security and non-security contributions. We do not attempt to measure other types of UN assistance directly. So the results here should not be taken to speak to the importance of these other types of assistance.

deployments on security and socioeconomic outcomes at the local level, the presumption being that any such effects might occur through either one of the two afore-discussed mechanisms.

3 Context

Liberia, a small coastal country in Western Africa of about 4 million people (circa 2010), was embroiled in a devastating 14-year civil war that claimed the lives of 250,000 people and displaced more than a million others. Armed rebellion against the dictator Samuel Doe started in 1989 when the self-proclaimed National Patriotic Liberation Front (NPLF), led by Charles Taylor, a former government employee, launched attacks against government forces in Nimba County, from neighboring Côte d'Ivoire. The conflict escalated when the Kran-dominated government forces retaliated against civilian populations from the Mandingo and Gio tribes of the region. The rebel forces quickly overran much of the countryside and a splinter faction led by Prince Johnson captured and executed President Doe. The country plunged quickly into turmoil, as no faction was able to gain a decisive upper hand.

From the outset, the Economic Community of West African States (ECOWAS) undertook several peace initiatives and established a Military Observer Group (ECOMOG) to support these efforts (Adebajo 2002; Sawyer 2005). This civil war saw many twists and turns as several ceasefires were signed and violated by the warring parties. With the support of the newly established United Nations Observers' mission in Liberia (UNOMIL), ECOMOG brokered several peace agreements between the warring parties, which resulted in the 1997 presidential elections that brought Charles Taylor to power. The window of peace, however, was short-lived, as two new armed factions, the Liberians United for Reconciliation and Democracy (LURD) and the Movement for Democracy and Elections in Liberia (MODEL), emerged in 1999, vowing to overthrow Charles Taylor's government purportedly due to the endemic corruption and the inadequacy of promised political and

security reforms.

The situation came to a head in 2003 when Charles Taylor was forced to step down under pressure from the United States. Meanwhile, several political actors and members of civil society were involved in peace talks in Accra, Ghana, in an attempt to put together a Transitional Government that would be tasked with completing the peace process and organizing elections. These new developments paved the way for the United Nations Security Council to establish a multidimensional peacekeeping operation, the United Nations Mission in Liberia (UNMIL), comprising 15,000 international peacekeepers and hundreds of international and local civilian personnel.

As a multidimensional peacekeeping operation, UNMIL was tasked with supporting the implementation of the comprehensive peace agreements and helping rebuild the country's social, economic, and political structures left in ruin by the conflict. Aside from promoting security provision, UNMIL conducted a multitude of economic and social revitalization activities. Economic programs included national recovery, reconstruction and development such as rehabilitation of roads and bridges. Humanitarian activities included rehabilitation and building of schools, the construction of parks and the provision of free medical services. Other social activities included HIV/AIDS awareness training and sensitization as well as radio programs covering topics such as education, psychosocial counseling and so on.¹⁰

In addition, UNMIL was an integrated mission, which means that at the operational level, its activities were carried out in close coordination with other UN agencies. The political transition culminated in successful legislative and presidential elections in 2005. In recent years, the mission has implemented a phased drawdown of troops and gradual handover of security responsibilities to the Government of Liberia. The drawdown, which began in 2008, accelerated after the 2011 elections. Then, on June 30, 2016, the Government of Liberia assumed full security responsibil-

¹⁰For more information on UNMIL activities, see the Sixteenth progress report of the Secretary-General on the United Nations Mission in Liberia (S/2008/183).

ities after which, as per Security Council Resolution 2239 (2015), UNMIL's authorized military strength was reduced to 1,240 military and 606 police personnel. Finally, after the 2017/2018 elections, the UNMIL is set to close and the United Nations' support to Liberia will then be provided by the Country Team.¹¹

For reasons that are unfortunate for residents of the country, the Liberia case provides a good setting for isolating and evaluating local impacts of peacekeeping missions. First, the erosion of state capacity and institutional vacuum that resulted from decades of conflict meant that UNMIL deployments were the only credible security provider for large swathes of the country. Second, the poor coverage of roads and communications infrastructure means that there is little to connect areas where peacekeepers are deployed to places where they are not. This limits the extent to which outcomes some moderate distance away from a given deployment might be affected by the presence of that deployment.

4 Identification

Motivated by the hypotheses discussed above, our aim is to estimate local-level causal effects of peacekeeping deployment locations on security, economic, and social outcomes. In order to do so, we need to attend to two sources of potential bias. The first source of potential bias is confounding due to unmeasured determinants of deployments, which may cause omitted variable bias. The second source of potential bias is spill-over effects beyond the immediate vicinity of deployments. Here we discuss our approach to mitigating these inferential threats.

With regard to confounding, peacekeepers' base locations are not randomly chosen. However, the information available to peacekeepers for making local basing decisions was very coarse, limited to only rough information from maps of conflict events, road infrastructure, and terrain, as well

¹¹For more information on UNMIL, see the United Nations Mission in Liberia Webpage (<https://unmil.unmissions.org>).

as a rapid assessment by the United Nations Office for the Coordination of Humanitarian Affairs. Our identifying assumption is that if we take these into account, we can identify locations that were equally likely to have received a deployment base. Moreover, identification depends on the fact that bases are not moved after they are set up initially. This stickiness is in fact evident in the deployment maps.¹² We implement this identification strategy using coarsened exact matching (Iacus et al, 2009) and then regression adjustment on the matched data to reduce residual bias (Rubin and Thomas, 2000). We matched communities on covariates understood to have been important in the UN’s decisions to locate bases along with additional covariates that help to account for, e.g., variation in ethnicity:¹³

- Proximity to the major road network, set as a binary covariate as “beside road” or not.
- Wartime conflict exposure, set as a three level covariate for low, medium, or high.
- Number of households, set as a three level covariate for small, medium, or large.
- Number of schools per household, set as a three level covariate for none, few, or many.
- Number of health posts per household, set as a two level covariate for none or some.
- Whether the community is in the coastal region, set as a binary covariate.
- Whether the community is in the Kru speaking region, set as a binary covariate.

¹²These were contained in the multi-annual United Nations Reports of the Secretary-General, available at <http://www.un.org/en/peacekeeping/missions/unmil/reports.shtml>.

¹³The ethnicity, region, and road network measures were taken from pre-deployment era public domain maps posted to the online University of Texas Perry-Casteneda Library Map Collection. The conflict exposure data were pulled from the Peace Research Institute of Oslo’s Armed Conflict and Event Location Date file (2009 release). The population and social infrastructure data were drawn from a data file produced as part of a rapid baseline assessment conducted by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) in early 2004. This was early enough in the deployment period that population figures and infrastructure could not yet have been affected by deployments. These data were consulted by UNMIL itself in assessing baseline conditions, making them quite appropriate for the purposes of this study.

The covariate coarsening was determined by inspecting the histograms of the variables to see how communities naturally separated.

To minimize the threats from spill-overs, we only matched non-peacekeeping deployment communities that were relatively far away from any deployment communities. Given the difficulties of moving from place to place in Liberia, we felt that this would accomplish a lot. There is still the possibility that information about peacekeepers' activities could spread, creating spill-overs over arbitrary distances. These kinds of spill-overs would push our estimates toward the null. Our analysis can be understood, therefore, as capturing the effect of the material presence of peacekeeping deployments, above and beyond whatever effects may have occurred due to diffuse knowledge of their presence in the country.

We used a simulation based power analysis to determine the sample size necessary for a household survey with at least 80% power to detect non-negligible treatment effects (e.g. 0.1 differences in proportions) with 95% confidence under moderate levels of intra-cluster correlation and treatment effect heterogeneity.¹⁴ We determined that a sample of approximately 25 deployment and 25 non-deployment communities with sample sizes of about 15 respondent households per community would meet power requirements to estimate effect sizes of policy relevance. The precise number of communities was determined through the matching procedure, and ultimately we selected 29 peacekeeping and non-peacekeeping communities.¹⁵ We limit the analysis to rural communities outside the capital of Monrovia. The reason for excluding Monrovia is that it is, due to population density and economic vibrancy, a case apart from the rest of the country. In each selected commu-

¹⁴The power analysis followed recommendations in Gelman and Hill (2007, 449-454).

¹⁵“Community” in this study refers to the administrative unit of the “clan,” which is the third tier administrative unit in Liberia below county and district, but above village. Clans contain clusters of villages that are linked on the basis of traditional ties, and therefore circumscribe domains of routine economic and social interaction. “Clan” in this context should not be confused with a family unit. It refers specifically to a geographic area. On average, a clan contains about 1,000 households (the average size for a household is between 5 and 6 people). In Monrovia, there are no clans, but rather administrative blocks that the Liberia Institute of Statistics and Geo-Information Services (LISGIS) has demarcated and that have approximately the same population as clans. LISGIS lists 673 clans and 165 administrative blocks, and these 838 units partition the entirety of Liberia’s territory.

nity, three villages were sampled at random, and then households were sampled at random within the villages from lists enumerated on site. The baseline target sample size within each community was 15, with some variations to satisfy needs for a complementary study (analyzed in [[reference withheld]]). Non-response was typically infrequent enough that sampling targets were met. In six communities, however, the non-response rate was higher than 33%. The household level data are weighted to ensure balance in the numbers of treated and control households within each of the matching strata. The household survey was conducted in December 2009 through January 2010. We also obtained community level outcome measures from surveys with local chiefs and from the 2008 Liberian census data file.

Table 1 reports summary and balance statistics for the raw matching covariates. The top panel shows how peacekeeping deployment (PKO) communities compared to non-PKO communities in general. We see important differences on most covariates. Relative to non-PKO communities, PKO communities tend to be less heavily concentrated in the Kru areas, closer to major roads, have much higher populations, fewer schools and health posts per capita, and much higher wartime conflict exposure. As such, simple comparisons across the two types of communities would likely produce false impressions about the effects of PKO deployments. The lower panel shows how balance is improved by the matching procedure. The gaps between the covariate distributions are closed considerably. Nonetheless, there remains some residual imbalance on the distance to major roads and, to a lesser extent, in the population sizes.¹⁶ We account for these residual imbalances by including these (as well as all of the other) covariates in all of the regressions reported below.

¹⁶Distance to roads is measured in decimal degrees, where 1 decimal degree equals about 100 kilometers. Thus, the mean for PKO communities is about 5 km, whereas for non-PKO it is about 8km.

5 Outcomes

The unit of treatment assignment is the community, and so some care needs to be taken in constructing outcome measures. The reason is that while the communities that we have sampled are fixed relative to their proximity to deployments, individuals and households are not. People relocate, being pushed by insecurity and pulled by opportunity. To focus on outcomes that adhere to individuals or households rather than communities may be fallacious. For example, suppose we wanted to study whether peacekeeping base proximity affects the likelihood of violent victimization. Suppose then that we simply ask individuals whether they had been victimized in recent years, and then compare the responses of those residing in deployment base versus non-base communities at the time of fieldwork. We may find that respondents in deployment base communities report victimization in recent *years* at a higher rate than in non-base communities. But this may be because they relocated to the base communities from elsewhere due to the security of the base community relative to their home community. Higher rates of victimization responses in deployment communities may reflect the fact that these places are *more* secure, not less. If one failed to take such mobility into account, one might draw the wrong conclusion.

Keeping these perils in mind, we use a set of indicators that attempt to capture community-level security conditions as reflected in people's behavior. As such, these indicators provide ostensibly objective reflections of risks and behavioral responses to perceived risks. These indicators are also typically of intrinsic interest in policy evaluations (Mvukiyehe and Samii 2010). With respect to security, we have (with data sources shown in parentheses),

- Victimization by looting or physical attack, or fear of such victimization, occurring in the current community in which one is residing at the time of interview (household survey).¹⁷

Security from PKO deployments should result in lower rates of victimization occurring in

¹⁷We have demonstrated in previous work that incidences of victimization by armed groups in the post-deployment period were extremely rare (Mvukiyehe and Samii, 2010). Therefore, we only focus on isolated criminal violence.

those communities.

- In-migration by conflict victims (household survey). Security should be associated with higher rates of in-migration of such vulnerable households as they leave areas of higher risk and enter areas of lower risk.
- Infrastructural regeneration in terms of number of schools, health posts, and wells built either by the community itself or by NGOs (chief survey). A security bubble surrounding deployment bases is hypothesized to allow these projects to occur with greater frequency. A better security environment allows for these projects to take place without fear of attack or vandalism. It may also provide motivation in that communities and NGOs would feel more confident that community members will be able to remain and enjoy the benefits of rebuilt infrastructure.

With respect to downstream economic and social revitalization outcomes that the security bubble and direct assistance should improve, we have,

- Having a productive livelihood (household survey), measured in terms of the share of households having business, skilled labor, or professional occupations relative to unskilled, agricultural, or no occupation.
- Personal monthly income (household survey).
- Levels of alimentary consumption in terms of meals eaten in the previous day (household survey).
- Higher order consumption in terms of investment in household repairs (household survey).
- Participation in community organizations such as a rotating credit group (*Susu*), farmers self-help group (*Koo*), producers' cooperative, or social club (household survey).

- Participation in politics, through attending rallies, calling in to radio programs, attending peace festivals, and indicating that one feels that they can speak freely about politics (household survey).

Table 2 summarizes our outcomes and data sources. Summary statistics for covariates and outcome variables used in the analysis are displayed at the household and clan level in Tables 3 and 4, respectively.

In the household survey data, two variables—income and meals—exhibited substantial amounts of missingness (18% and 16% of observations, respectively). The missingness is due to a combination of non-response, “don’t know” responses, and enumerator error. Listwise deletion for missingness at those rates can result in substantial bias (King et al., 2001). We use one round of imputation to fill missing variables that exhibit less than 5% missingness, and then multiple imputation to fill missing outcome values with higher rates of missingness.¹⁸

6 Estimation and inference

Estimates below are covariate-adjusted differences-in-means estimated via ordinary least squares (OLS) fixed-effects regressions. For household level outcomes, the specification used for all estimates is,

$$y_{icm} = \alpha_m + \beta T_{cm} + \lambda' X_{cm} + \epsilon_{icm}, \quad (1)$$

where y_{icm} is an arbitrary outcome for household i in clan c and matching stratum m ; α_m is a stratum-specific intercept; T_{cm} is treatment status for clan c in stratum m , taking the value 1 for communities hosting a peacekeeping base and 0 for those not hosting a base; X_{cm} is a vector of non-coarsened versions of the covariates for clan c in stratum m ; and ϵ_{icm} is assumed to be a mean zero and exogenous error term. The effect of hosting a base is estimated as β , and λ is a

¹⁸We used the MICE package for R (van Buuren and Groothuis-Oudshoorn, 2010).

vector of coefficients on the covariates. Estimates for the community level outcomes use the same specification, only without the i subscripts.

We divide our outcomes and associated analyses into four families, as displayed in Table 2. For each family, we perform a single omnibus test for a family-level effect. Our omnibus test is simply to run regression (1) with the outcome being the standardized inverse-covariance weighted average of the outcomes in that family. See Anderson (2008) for details on this approach.

In the regression tables presented below, we economize on space by only reporting the estimates for β . All estimates use weights to balance the number of control units with the number of treated units within each matching stratum. Standard errors account for stratification by the matching cells as well as community-level clustering.

7 Results

This section presents our estimated local security and socio-economic effects of the PKO base deployments.

7.1 Local security

Observable implications of the hypotheses discussed above are that PKO communities should have less criminal victimization occurring, higher rates of in-migration, and more community and NGO reconstruction projects. Table 5 reports the effects that we estimate for criminal victimization and in-migration. The index effect is actually negative, implying that we estimate that the PKO deployments introduce insecurity. This result is driven by an increase in the fear of crime as well as the fact that the share of recently arrived in-migrants is lower in PKO communities. Table 6 shows effects of PKO deployments on the number of community- and NGO-initiated reconstruction projects. The hypotheses discussed above would lead us to expect each of these to be higher in PKO communities. In this case, the results are mixed, and therefore the index-level effect is

insignificant. Looking at the specific outcomes, we find positive effects for community-initiated rebuilding of wells and schools, although the magnitude of the effect is small: on average, just about 1 more well or school project is undertaken in PKO communities relative to non-PKO communities.¹⁹ The effect for health posts is negative. More interesting are the effects for NGOs, which are negative for two out of the three project types (schools and health posts), and statistically indistinguishable from zero for the other (wells). Here, a possible story is that PKO deployments *do not* provide a security bubble or zone of direct assistance within which NGOs can go about their work, but rather that deployments lead NGOs to want to work *elsewhere*. Such a “displacement effect” could arise if NGOs felt that they could do the most good in working in areas where PKO deployments are not located. This would reflect a division-of-labor logic on the part of NGOs. If so, that would run exactly contrary to either the security bubble or direct assistance hypothesis.

7.2 Economic and social vitality

The security bubble hypothesis proposes that by creating zones where risks are perceived as lower, individuals should be more willing to invest in economic activities and social institutions. The direct assistance hypothesis proposes that the provision of resources and mediation should enable more cooperative exchange. The results from the previous section raise some concerns about whether PKO deployments provide the security or assistance necessary to activate this causal chain. Nonetheless, we present our estimates of effects on economic and social outcomes. If we find that positive effects are manifest, it may be that the manner in which security and assistance were measured was inadequate, and that the hypothesized effects are indeed active. Or, it may be that PKO deployments provide benefits to social and economic well-being through other channels, which in itself would be useful to document.

The results are presented in Tables 7 to 9. Altogether, we do not find clear evidence of any

¹⁹The outcome is measured in terms of number of projects.

beneficial effects, as the index effects are insignificant in Tables 7 and 9. Table 7 presents estimates of effects on personal monthly income (on the log scale), both in terms of mean effects as well as quantile effects.²⁰ In all cases, the effect estimates are statistically indistinguishable from zero, and the point estimate for the mean effect (the OLS estimate) suggests that incomes are about 20% lower in PKO communities on average. In Table 8 the only substantial effect is a decrease in levels of professional occupations. The index-level effect for the social outcomes does mask some heterogeneity. In Table 9, we note indication of positive effects participation in credit groups, rallies, and calling in to radio programs, but other effects are null or negative, in terms of point estimates, and insignificant. Taking all of the evidence together, we see nothing that confirms the hypothesis of transformational effects at the local level.

8 Discussion

Our empirical analyses find no evidence that peacekeeping deployments transform local circumstances in the manner presumed in the theory that motivates multidimensional peacekeeping operations. At the heart of this inconsistency between the theory and evidence is the apparent lack of local security effects. Given this, it comes as no surprise that we find no clear economic and social benefits. Here we explore the null security effects in more detail.

At first glance, the finding that the assignment of UNMIL bases to communities did little to affect the security situation and levels of victimization within those communities is puzzling. But upon close investigation of the data, the finding can be explained, at least in part, by a convergence of two factors: (i) UNMIL's deployment on-the-ground coincided with the effective end in the fighting between armed groups and major reduction in victimization rates; and (ii) UNMIL quickly established itself in the eyes of former combatants and civilians as a credible country-wide

²⁰Quantile effects were estimated using quantile regressions that employ the same specification as the OLS regressions. As Bitler et al. (2006) discuss, income effects are typically very heterogenous over the income distribution, in which case quantile effects may be more revealing.

deterrent force.

According to the Armed Conflict Location and Event Database published by the Peace Research Institute of Oslo (<http://www.acleddata.com/>), the last major conflict event in the Liberian civil war occurred in late July 2003. This anticipated the signature of the Comprehensive Peace Agreement in Accra on 18 August 2003, which was soon followed by the deployment of ECOWAS forces. UNMIL assumed control of the peacekeeping operation as of 1 October 2003, two months after the end of major fighting. No subsequent major battle events were recorded. Thus, no major re-escalation occurred on UNMIL's watch. Of course, there is no definitive way to attribute the post-Accra peace to UNMIL's presence as opposed to being the result of natural progress in the peace process. Nevertheless, when the war ended with the Accra agreement in 2003, it ended everywhere in the country. Areas more or less proximate to UNMIL's deployments may not have differed in this regard. In other words, while UNMIL had little active role to play in dealing with major aggression by armed groups, it is quite possible that UNMIL's presence was a blanket deterrent for the entire country.

Other parts of the survey data allow us to assess these possibilities, as the survey included questions on events associated with the risk of conflict recurrence. We asked respondents a set of seven retrospective questions about whether they had witnessed activities that were indicative of the possibility of renewed conflict. These activities include whether one's community experienced armed group fighting, ethnic violence, disappearances or presence of "unfamiliar" people, rumors about recruitment, rumors about possible attacks, people stockpiling food, or people fleeing. Each respondent could say "yes" or "no" to the questions. The questions were asked with reference to two periods: (1) the period just prior to the end of the war, and then (2) one randomly selected period in the post-conflict period—either mid-late 2003, late 2003-late 2005, or early 2006 to present.²¹ We added the "yes" responses to create what we can call a "civilian insecurity index."

²¹ Respondents were only asked about one subsequent period to minimize fatigue from answering too many ques-

We then studied whether changes in the index over time are associated with proximity to peacekeeping deployments—coded as distant or deployment, corresponding to our no-PKO and PKO deployment community codings above.²² The time period corresponds to the periods just prior to any deployment in 2003, during the early deployment period up to fall 2005, through the late deployment period following winter 2006 to the time of interview in 2007-08.

Table 10 reports the results of the analysis. There is a very large jump between the first, pre-Accords period and the period immediately following the signature of the peace accords. The index captures the dramatic improvement in security following the Accords but *prior* to any PKO deployments. When we move the early deployment period, we find that the dip in insecurity in the early deployment communities is not as great (a 60% dip) as in the other communities that did not host deployments as of early 2005 (64-85% dips). Moving to the late period (winter 2006 through to late 2007/early 2008), insecurity levels in deployment communities are equal to those of non-PKO communities; indeed there were almost no reports of conflict-related incidents in this last period. This evidence does not suggest that deployments were associated with significant differences in insecurity at the *local* level. Security gains seemed to occur in a blanket manner across the country following the signature of the Accords in 2003, and the largest gains occurred immediately following the signature of the Accords and prior to UNMIL's deployment, although conditions improved steadily over time after UNMIL's deployment.

The survey also included public opinion questions about UNMIL (see [[reference withheld]] for more details), and these are interesting insofar as the perceptions of the public were more positive toward UNMIL than these results would lead one to think. Respondents overwhelmingly stated that they had confidence in UN peacekeepers' ability to prevent violence. Among the respondents

tions.

²²To ensure that respondents' relocation histories did not bias the analysis, the mean and standard deviation for each time period was computed using only respondents who had settled in their current community of residence by the given period.

who were able to give an answer to questions about UNMIL's effectiveness (this was about 85% of respondents, the rest mostly said "don't know"), only 4% stated that they did not have confidence in UNMIL's ability to prevent violence, 13% stated that they had confidence only in UNMIL's ability to prevent fighting among armed groups, 3% stated that they had confidence only in UNMIL's ability to protect civilians, and about 78% stated that they were confident that UNMIL was capable of both preventing fighting among armed groups and protecting civilians. Nearly all (98%) of these respondents stated, in an unprompted manner, that UNMIL's primary role with respect to civilians was to ensure their safety (as opposed to delivering development, etc.). Along similar lines, about 97% of these respondents said "yes" when asked whether UNMIL helped end the war. About 93% said that they felt safer now as compared to the time before UNMIL's arrival six years earlier. Respondents were asked to list to whom, among international and domestic forces, they would turn if they faced insecurity from armed groups. About 88% of these respondents included UNMIL on their list; a bit more than a third of those who included UNMIL on their list did not name anyone else, implying that about 30% of these respondents overall viewed UNMIL as their *sole* security provider against the threat of renewed conflict. About 60% of those who listed UNMIL along with other security forces considered UNMIL to be the most important, meaning that about 35% of these respondents overall considered UNMIL as the *most important* among a range of security actors. Taking this together, we find that about 65% of these respondents considered UNMIL as the primary security provider against threats from armed groups.²³ Finally, respondents were asked whether UNMIL should leave the country now "because they failed", stay on longer "to finish the work they started", or leave "because they have accomplished the work they came to do", and about 82% of respondents indicated that they should stay. None of these rates differed

²³To clarify the calculation: 88% of respondents listed UNMIL, and 34% of those listed only UNMIL, so $88\% * 34\% = 30\%$ reported UNMIL as the sole security provider; of the 66% that listed UNMIL along with others, 60% named UNMIL as the most important, meaning $88\% * 66\% * 60\% = 35\%$ of respondents reported UNMIL as the most important among many. Adding these two together gives the 65% figure.

significantly across the PKO deployment and non-deployment communities.

Furthermore, perceptions from an auxiliary survey with ex-combatants also support the intuition that UNMIL was viewed as a credible deterrent force. We focus here on the responses of the 275 respondents from the sample of ex-combatants that were identified via the national reintegration program. Similar to their civilian counterparts, 74% of ex-combatants stated that they were confident that UNMIL was capable of both preventing fighting among armed groups and protecting civilians, and 94% said “yes” when asked whether UNMIL helped to end the war. Nearly all ex-combatant respondents stated that UNMIL made it more difficult for them and “their enemies” to launch attacks (98% and 94% respectively), and nearly all (90%) stated that third party peacekeeping was crucial to their decision to disarm. Among the respondents who agreed that peacekeeping was crucial for their decision to disarm, 72% stated that only UN peacekeeping forces (in contrast to ECOWAS forces, as an alternative) could have played this role. When asked why, the most common reasons were about evenly split between some expression of “more trustworthy”, “more powerful”, or “they represent the world.”

Given these results, we have a bit of a contradiction. On the one hand, it is clear that PKO deployments are *appreciated* by the public, and they appreciated specifically the security role that UNMIL plays. On the other hand, there is no indication that individuals react *locally* to PKOs as security providers. Rather, the function of the PKOs seems to be appreciated by local communities as a distant guarantor rather than an immediate provider of security.

Another issue for further discussion concerns the seeming inconsistent socioeconomic effects of UNMIL, which often run counter to our hypotheses. We hypothesized positive socioeconomic effects from improved security conditions as well as from direct socioeconomic programming undertaken by the peacekeeping mission. Indeed, there is a small, but growing empirical literature that demonstrates some positive economic (and social) effects of peacekeeping missions at the lo-

cal level. For example, Caruso et al. (2017) used an instrumental variable approach to investigate the effect of the deployment of United Nations Blue Helmets on economic activity in South Sudan with a special focus on agricultural production and their empirical results show that a 10% increase in the size of the troop allows the production of additional 600 tonnes. In their empirical investigation of UNMIL's economic effects in Monrovia, the capital city, Beber et al. (2016) concluded that "UNMIL has played an important role in stabilizing the country and has generated incomes that would otherwise not have materialized."

Yet a closer look at the results, in relation to the existing empirical literature, provides a way to reconcile these seeming contradictions: It appears that peacekeeping operations have some positive effects, but also important distortionary effects in the socioeconomic sector. In other words, peacekeeping missions can contribute to a short-term increase in demands of certain types of goods and services (e.g., demand for unskilled labor or selling goods to peacekeepers in their local deployment locations), which may not necessarily be conducive to long-term economic development (Jennings and Boas 2015). For instance, in the case of UNMIL, Berber et al. (2016) note that the mission led to increased demands in low and unskilled labor in certain deployment locations. This is consistent with the estimates in Table 8, although it is unusual to see this heightened concentration in unskilled occupations coming in exchange for the share of professionals. Given that this decline in the professional share is coming primarily from the share of adults indicating that they are students, this could be indicative of such types of individuals deciding to take up non-professional occupations.

These effects on occupational composition could also reflect other differences between PKO and non-PKO communities that are associated with our finding concerning NGOs. As Carnahan (2007) aptly points out, "...in any post-conflict situation where peacekeepers are deployed the broader development footprint is invariably much larger than the UN mission alone" and thus the

role of non-UN actors cannot be discounted in any attempts to understand the socioeconomic impacts of UN peacekeeping operations on the local people in war-torn countries. NGOs and other actors are often more specialized in development activities and therefore in a better position to achieve the desired socioeconomic outcomes (Fearon et al. 2009; Fowler 1991). NGOs played an important role in rebuilding post-war Liberia. They invested a great deal of resources in both humanitarian emergencies and longer-term development projects in a wide-range of sectors including health, economic and social development, water and sanitation, and government. UN data show an average of about 3 development projects per community and lasting about 3.5 years (some communities had as many as 6 development projects and lasting for as long as 7 years).²⁴ Furthermore, our data reveal a negative correlation between UNMIL base and presence of international NGOs ($r = -.08$), which helps to explain the earlier finding that PKO base communities had on average fewer NGO-initiated socioeconomic development projects. It is possible that NGOs in non-PKO base communities provided employment opportunities as well. This suggests an important relationship between peacekeeping and other development actors, such as international NGOs, that is yet to be fully explored.

9 Conclusion

In this paper, we have articulated hypotheses about “local peacekeeping effects” that are implicit in both the design and policy makers’ interpretation of current multi-dimensional peacekeeping operations. We have tested these hypotheses using a matched micro-level dataset on security, economic, and social outcomes in Liberia, and found no evidence that peacekeeping deployments transform local circumstances in the manner presumed. This is an important finding, as it helps to narrow the range of plausible mechanisms that explain the positive macro-level effect of peacekeeping. The finding also highlights an area in which organizations like the UN Department of Peacekeeping

²⁴<http://www.un.org/africarenewal/magazine/april-2009/after-war-creating-jobs-peace>.

Operations should reassess its efforts.

With respect to external validity, Liberia was a setting in which we would expect pronounced micro-effects of peacekeeping on security, economic, and social outcomes. Even in other peacekeeping intervention contexts where levels of development are similar, such as in Burundi or Côte d'Ivoire, there is much more local capacity and infrastructure. In Liberia, UNMIL intervened in a context of near complete institutional and infrastructural vacuum, as the Liberian state and institutions had long collapsed (Sawyer 2005). Moreover, the army and police forces had to be rebuilt from scratch and by the time the survey was conducted, the local security apparatus had not achieved operational capacity to deploy independently in rural areas. Thus, UNMIL was providing essential law and order functions almost exclusively. Yet, empirical results do not offer strong evidence for any micro-effects of UNMIL.

Nonetheless, our findings have a number of implications about the positive relationship measured between peacekeeping deployments and the durability of peace as well as socioeconomic development cross-nationally. One conclusion is that there is less reason to give credence to micro-level mechanisms that link peacekeeping with “peace-building” via local-level security that enables economic and social revitalization at the local level. Among explanations that have been proposed in the literature, these results would suggest that more emphasis should go into researching macro-level mechanisms based on signaling or deterrence at the level of leaders (Fortna, 2008). At the same time the findings with respect to NGO activities suggest other possibilities that have not been explored in the current literature. That is, there may be a micro-level process that is relevant, but that both peacekeepers and NGOs contribute to lifting up the different areas that they are covering at more-or-less equal rates. In that way, the fact that we do not detect any differences could mask significant improvements resulting from each of the peacekeeper and NGO contributions. To the extent that this is true, then we are less inclined to believe that the nature of peacekeepers' contri-

bution is in providing the local security necessary for economic and social reconstruction to occur, but there may be other channels through which peacekeepers contribute to such reconstruction in a way that is complementary to NGOs. This opens up interesting questions about whether interpretations of the cross-national findings attribute too much to peacekeeping operations per se and too little to NGOs that are almost always present alongside peacekeeping operations.

Do these findings mean that local security provision is simply unimportant in the context of peacekeeping? We do not think this conclusion is warranted. Post-conflict contexts are often marked by considerable amounts of insecurity short of the resumption of war (e.g., Autesserre 2010). Such low intensity insecurity can nonetheless limit economic activity or result in sociopolitical disruptions that can undermine the macro-peace. Therefore, we feel that it is appropriate that local security provision is part of most current UN peacekeeping mandates. However, the results presented here suggest that more thought should go into how the UN pursues this mandate. More generally, for the sake of improving peacekeeping operations, these results suggest that further research is needed on the macro- and micro-level mechanisms driving the well-documented link between peacekeeping operations and durable peace.

In the same vein, further research is needed into the kind of cooperation and coordination that exists among international actors that participate in the reconstruction and development of communities reeling from civil war. Our results suggest potential division of labor—and perhaps substitutions and complementaries—between peacekeeping operations and internal NGOs, which have not been fully explored in the current literature. Understanding these relationships and how they influence the results on the ground is critical to ascertaining the role and impact of peacekeeping operations on security restoration and development outcomes in fragile states staggering from the devastations of civil war. This should be a key priority for future research.

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Tables

Table 1: Balance statistics on raw (non-coarsened) community covariates before and after matching

	Mean PKO	Mean non-PKO	Sd. PKO	Sd. non-PKI	t-test p	KS test p
<i>Before matching</i>						
Kru region	0.43	0.63	0.50	0.48	0.02	
Coastal region	0.39	0.40	0.49	0.49	0.90	
Dist. to major roads (lat/lon. degrees)	0.05	0.18	0.05	0.13	0.00	0.00
2004 households	2293.02	603.89	3567.24	1076.76	0.00	0.00
2004 schools/100 households	0.61	1.05	0.83	1.13	0.00	0.01
2004 health posts/100 households	0.12	0.16	0.13	0.30	0.20	0.00
Low conflict exposure	0.07	0.39	0.25	0.49	0.00	
Medium Conflict exposure	0.34	0.43	0.48	0.50	0.26	
High conflict exposure	0.59	0.18	0.50	0.39	0.00	
<i>After matching</i>						
Kru region	0.38	0.38	0.49	0.49	1.00	
Coastal region	0.31	0.34	0.47	0.48	0.78	
Dist. to major roads (lat/lon. degrees)	0.05	0.08	0.06	0.08	0.08	0.06
2004 households	2442.45	1497.34	3192.52	1732.10	0.17	0.52
2004 schools/100 households	6.59	7.44	9.42	12.02	0.77	0.52
2004 health posts/100 households	1.24	1.61	1.29	2.32	0.46	0.30
Low conflict exposure	0.10	0.10	0.31	0.31	1.00	
Medium Conflict exposure	0.38	0.41	0.49	0.50	0.79	
High conflict exposure	0.52	0.48	0.51	0.51	0.80	

“KS test p” refers to the p-value from a Kolmogorov-Smirnov test for equality of distributions, applied to continuous variables and computed using the bootstrap procedure programmed in Sekhon (2011).

Table 2: Outcomes and data sources

Outcome Family	Indicator	Level of Analysis	Data Source
Individual and household security	Crime victimization	HH	HH Survey
	In-migrant or resettlement status	HH	HH Survey
Community stability	Infrastructural regeneration	Community	Chief Survey
Economic revitalization	Livelihood	Individual	HH survey
	Income	HH	HH survey
	Alimentary consumption	HH	HH survey
	Higher order consumption	HH	HH survey
Social revitalization	Community organization participation	Individual	HH survey
	Political participation	Individual	HH survey

Table 3: Individual- and household-level outcome summary statistics

Variable	Mean	Std. Dev.
Fearful of crime	0.57	0.50
Victim of crime	0.28	0.45
Post-deployment arrival	0.35	0.48
Displaced never	0.50	0.50
Displaced, returned pre-PKO	0.04	0.18
Displaced, returned post-PKO	0.09	0.29
Newly settled, pre-PKO	0.11	0.32
Newly settled, post-PKO	0.26	0.44
Victimized during war	0.51	0.50
No regular empl.	0.06	0.24
Agr. or unskilled lab.	0.63	0.48
Skilled lab., commerce, mil./pol.	0.16	0.36
Professional, post-sec. student	0.15	0.36
Part. in credit group	0.45	0.50
Part. in collective labor	0.53	0.50
Part. in cooperative	0.29	0.45
Attend rally	0.22	0.41
Call radio	0.08	0.28
Attend peace fest.	0.24	0.43
Speak freely	0.70	0.46
Log(income + 1)	5.50	3.22
Meals/day	1.67	0.72
Hshld. repairs	0.44	0.50
N		881

Notes: All variables binary except Log(income + 1) and Meals/day.

Table 4: Village-level outcome summary statistics

Variable	Mean	Std. Dev.
# Community wells built	0.61	1.74
# Community schools built	0.44	1.11
# Community health posts built	0.36	2.63
# NGO wells built	8.17	9.27
# NGO schools built	1.76	2.49
# NGO health posts built	0.53	0.91
N		58

Table 5: Effects on security outcomes

	(1)	(2)	(3)	(4)
	Index	Fear crime	Crime vict.	Recent arriv.
PKO base	-0.17*	0.05*	0.00	-0.09**
	(0.07)	(0.02)	(0.03)	(0.03)
Observations	881	881	881	881
Baseline (no PKO)	0.15	0.53	0.26	0.42

Standard errors in parentheses

OLS with covariates (output omitted), matching-stratum FE, and clan-level clustered s.e.'s.

Index is inverse-covariance weighted average of outcomes in this table.

* $p < 0.05$, ** $p < 0.01$

Table 6: Effects on number of community- and NGO-initiated infrastructure projects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Index	Com. wells	Com. schools	Com. hlth.	NGO wells	NGO schools	NGO hlth.
PKO base	0.16	0.52**	0.74**	-0.77**	0.29	-0.61	-0.40*
	(0.10)	(0.14)	(0.09)	(0.08)	(1.46)	(0.35)	(0.15)
Observations	58	58	58	58	58	58	58
Baseline (no PKO)	-0.10	0.36	0.10	0.71	8.22	1.83	0.78

Standard errors in parentheses

OLS with covariates (output omitted), matching-stratum FE, and clan-level clustered s.e.'s.

Index is inverse-covariance weighted average of outcomes in this table.

hlth. refers to health posts.

* $p < 0.05$, ** $p < 0.01$

Table 7: Effects on economic outcomes

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Index	Log(income)	Income: 0.25q	0.50q	0.75q	Meals/day	HH repairs
PKO base	-0.08 (0.04)	-0.22 (0.18)	0.06 (0.33)	-0.17 (0.16)	-0.07 (0.14)	-0.07 (0.04)	-0.05 (0.03)
Observations	881	881	881	881	881	881	881
Baseline (no PKO)	0.04	5.40	2.20	6.62	7.82	1.71	0.46

Standard errors in parentheses

Regressions with covariates (output omitted), matching-stratum FE and commune-level clustered s.e.'s.

Index is inverse-covariance weighted average of outcomes in this table.

Columns (3)-(5) are quantile regressions for the 0.25, 0.50, and 0.75 quantiles, respectively.

* $p < 0.05$, ** $p < 0.01$

Table 8: Effects on occupations

	(1)
No reg. occ.	0.01 (0.02)
Agr.; unskilled	0.06 (0.05)
Bus.; skilled lab.	0.03 (0.03)
Professional	-0.10* (0.04)
Observations	3488
No reg. occ. baseline	0.06
Agr.; unskilled baseline	0.59
Bus.; skilled lab. baseline	0.14
Professional baseline	0.21

Standard errors in parentheses

OLS with covariates (output omitted), matching-stratum FE, and clan-level clustered s.e.'s.

* $p < 0.05$, ** $p < 0.01$

Table 9: Effects on social and political vitality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Index	Credit gr.	Coll. labor	Coops.	Rallies	Call radio	Festival	Speak freely
PKO base	0.10 (0.06)	0.07** (0.02)	-0.02 (0.04)	-0.02 (0.02)	0.04* (0.02)	0.04** (0.01)	0.05 (0.02)	-0.01 (0.02)
Observations	881	881	881	881	881	881	881	881
Baseline (no PKO)	-0.09	0.40	0.56	0.30	0.18	0.06	0.19	0.69

Standard errors in parentheses

OLS with covariates (output omitted), matching-stratum FE and commune-level clustered s.e.'s.

Index is inverse-covariance weighted average of outcomes in this table.

* $p < 0.05$, ** $p < 0.01$

Table 10: Civilian Insecurity Index Over Time

Community type	Pre-deployment period		Early deployment period		Late deployment period	
	Prior to Accords Mean (SE)	Summer/Fall 03 Mean (SE)	Fall 03-Fall 05 Mean (SE)		Since Winter 06 Mean (SE)	
Distant (no PKO)	5.1 (0.1)	1.1 (0.2)	0.4 (0.2)	0.2 (0.1)		
PKO: late Deployment*	5.2 (0.3)	1.5 (0.5)	0.4 (0.2)	<0.1 (<0.1)		
PKO: early Deployment*	4.6 (0.2)	2.0 (0.4)	0.8 (0.2)	0.2 (0.1)		

*Late deployment communities refer to those that did not host any deployments until mid-2005. Early deployment communities are those that hosted a deployment before early 2005.

The table shows mean values of a civilian insecurity index, constructed by adding the number of “yes” responses to questions about whether the respondent witnessed any of seven types of conflict-related activities (see text for details). “SE” stands for the standard error of the sample mean. A higher score indicates greater insecurity. Measures were taken for the four time periods indicated in the column headings. We see that on the whole, insecurity levels declined greatly since the signing of the peace accords, but that deployment communities did not enjoy more of a decline than comparable distant or proximate communities.