

# **Obstacle to Peace? Ethnic geography and effectiveness of Peacekeeping**

Jessica Di Salvatore

University of Oxford

Department of Politics and International Relations

[jessica.disalvatore@politics.ox.ac.uk](mailto:jessica.disalvatore@politics.ox.ac.uk)

## **Abstract**

Under which conditions peacekeeping reduces one-sided violence in civil wars? This article argues that local sources of violence, particularly ethnic geography, affect peacekeeping effectiveness. Existing studies focus on missions' features, yet curbing one-sided violence also depends on peacekeepers capacity to reduce opportunities and incentives for violence. Moving from the idea that territorial control is a function of ethnic polarization, I posit that peacekeepers are less effective against one-sided violence where power asymmetries are large (low polarization) because they *(i)* create incentives for escalation against civilians and *(ii)* are less effective at separating/monitoring combatants. I use UN mission in Sierra Leone from 1997 to 2001 to show that UN troops reduce one-sided violence but their effectiveness decreases as power asymmetries grow.

Keywords: peacekeeping, one-sided violence, ethnic polarization, disaggregated

Do local ethnic configurations affect peacekeepers ability to protect civilians? If so, under which conditions peacekeepers are more effective at saving civilian lives? Existing studies show that variations in the distribution of ethnic groups shape the dynamics of civil conflict and explain who are the targets of violence. In particular, local-level differences in armed groups' number and size result in specific dynamics of conflict because each configuration corresponds to distinct capacities and incentives to use violence. Given that conflict dynamics are very sensitive to variations in the balance of power between ethnic groups, peacekeepers' capacity to reduce violence should be conditional on local ethno-demographic factors. However, existing studies on peacekeeping neglect these factors and point toward a seemingly homogenous curbing effect of peacekeeping on civilian killings. But how do peacekeeping interventions interact with ethnicity, and which deployment strategies are more likely to be successful in protecting civilians?

This article bridges theories on the role of ethnicity and territorial control for the production of violence in civil war with the literature on peacekeeping effectiveness. Both strands of literature focus on factors that are usually studied separately but that clearly interact and produce joint effects on the ground. Peacekeepers are successful at containing violence against civilians; however, they may also inadvertently create incentives for escalation by signalling insufficient commitment and changing the balance of power between fighting parties. This signalling argument finds empirical support when commitment is measured in terms of mission size, with larger and nationally heterogeneous missions being more effective at protecting civilians.<sup>1</sup> However, it is unclear how peacekeeping itself changes the balance of power and, in turn, shapes armed groups' preferences of

---

<sup>1</sup> Bove and Ruggeri 2015; Hultman et al. 2013.

one type of violence over another. My argument is that the capacity of peacekeepers to reduce violence against civilians is conditional on local balance of power and territorial control held by warring parties. Curbing violence in some locations may be more difficult than in others, and increasing the number of blue helmets on the ground does not automatically reduce violence. To put it differently, features of the conflict can interact with peace missions and affect their success or failure. Hence, in order to outline the mechanisms driving some interventions to succeed, the domestic environment has to be explicitly considered in the theoretical framework as the *locus* where local sources of hostility and local capacity interact to impact UN peace strategies.<sup>2</sup> If the objective of peacekeeping is to increase the cost of violence, its effect is necessarily conditional on what incentivizes violence among combatants.<sup>3</sup> Since the dynamics of violence are related to territorial control and the ethno-demographic composition of locations, ethnic configurations are expected to influence the success and failure of peace operations.

The contribution of this study is two-fold. First, the article combines information on the ethnic composition of deployment locations with features of the mission, hence bridging the gap between research on local sources of violence in civil war and peacekeeping effectiveness. In doing so, this article also provides evidence of a crucial dilemma policy-makers face when designing missions, namely intervening to restore peace without provoking escalation of violence, especially against unarmed civilians. Second, it conceptualizes territorial control in relation to ethnic patterns. Moving from Tilly's definition of territorial control as capacity to extract resources<sup>4</sup>, including support and recruit from the local population, larger

---

<sup>2</sup> Doyle and Sambanis 2000; Lyon 2005.

<sup>3</sup> Regan 2002.

<sup>4</sup> Tilly 1985.

share of co-ethnic population is associated with a larger pool of resources and, consequently, more solid territorial control. When armed groups recruit and mobilize along ethnic lines, variations in ethnic geography changes how combatants use violence against civilians and adapt to UN deployment. Fine-grained subnational data on ethnic polarization allows to proxy armed groups' local strength if these recruit from an ethnic-based pool of individuals. By putting more emphasis on the armed actors' relative capacity, the empirical analysis of this study investigates how one-sided violence dynamics change where peacekeepers are deployed. This approach fits well with recent advancements in disaggregating peace missions.<sup>5</sup> Indeed, the contributions highlighted above are mostly a response to the call for "Going Micro"<sup>6</sup> in peacekeeping studies by focusing more on how peacekeepers face varying local conditions. disaggregation is not always necessary, but given the aim of this article it is useful to test mechanisms of effectiveness more explicitly and to explore interactions that take place locally and for which aggregation would add too much 'noise'.

This article is structured as follows. First, I review the main theories explaining how territorial control and ethnic geography affect the dynamics of one-sided violence. Then I present state-of-the-art studies on peacekeeping effectiveness and link this research strand on mission features to the literature on how ethnicity explains patterns and types of violence. In the theoretical section, I formulate hypotheses on how UN missions affect violence, conditional on local distribution of power among combatants. I argue that the capacity of peacekeepers to forestall the targeting of civilians is conditional on pre-deployment balance of power and territorial control.

---

<sup>5</sup> Ruggeri et al. 2016.

<sup>6</sup> Autesserre 2014.

These are central elements in the literature on civilian victimization but largely missing in studies of peacekeeping effectiveness. The proposed mechanism is that under large asymmetries of power (mirrored by low ethnic polarization), peacekeepers are expected to be less effective in curbing one-sided violence because their deployment *(i)* creates incentives for quick escalation in the short-term and *(ii)* makes them less effective at monitoring and separating armed actors because frontlines are more blurred and fluid. In the empirical analysis, I propose ethnic polarization as an appropriate measure of balance of power and test the theoretical expectation with data from UN mission in Sierra Leone in the period 1997-2001. The main model used to test the hypotheses is a negative binomial performed on a matched sample, which reduces model dependency and alleviates selection bias.

#### **DYNAMICS OF ONE-SIDED VIOLENCE IN CIVIL WARS**

The literature on civil war has shown that the territorial distribution of ethnic groups is related to conflict dynamics<sup>7</sup>, thus it represents one of the sources of violence that peacekeepers have to tackle. Various ethnic configurations result in different targets of violence. Also, opponents resort to different types of violence (one-sided, two-sided, selective, indiscriminate, etc.), depending on the power distribution in a location. In particular, violence against civilians has a clear strategic dimension and is argued to be a function of territorial control.<sup>8</sup> In a scenario where two actors are fighting against each other in irregular conflict, civilian cooperation becomes vital, and violence is used as mean of coercion to achieve collaboration. According to

---

<sup>7</sup> Toft 2002.

<sup>8</sup> Kalyvas and Kocher 2009; Kalyvas 2006; Wood 2010.

Kalyvas (2006), combatants will refrain from victimizing civilians when violence is unnecessary or counterproductive. When territorial control is perfectly divided between factions, victimizing civilians indiscriminately will push them to balancing, i.e. seeking protection from the least violent party. Similarly, in locations where one party enjoys complete dominance, indiscriminate violence is off equilibrium. Conversely, there is higher likelihood of civilian victimization when territorial control is relatively solid but incomplete (hegemonic). As Zhukov notes, however, this expectation hinges on the assumption that civilians will choose balancing instead of bandwagoning when deciding to cooperate with one faction or another.<sup>9</sup> The idea is that if two groups have similar territorial control, none of them has enough intelligence to identify opponents and pursue selective violence. Indiscriminate violence against civilians, on the other hand, would backfire as civilians will then support the group that use less violence to seek protection. By relaxing this assumption about civilians' balancing against violent perpetrators, Zhukov shows that one-sided violence is also likely in areas that are fully controlled and that even opponents in very weak positions may have incentives to target civilians.<sup>10</sup>

The relevance of territorial control and power asymmetries among fighting groups in explaining one-sided violence is hardly deniable. A similar argument is made by scholars who posit that the geographical patterns of ethnic groups, as a proxy for group power, is a determinant of violence.<sup>11</sup> If territorial control shapes the group's capacity to extract resources<sup>12</sup>, including recruits, then the greater one's own relative ethnic share, the larger the pool of potential resources. Therefore the index

---

<sup>9</sup> Zhukov 2013.

<sup>10</sup> Zhukov 2013, 45.

<sup>11</sup> Costalli and Moro 2012; Klasnja and Novta 2014; Montalvo and Reynal-Querol 2005; Di Salvatore 2016; Weidmann 2011.

<sup>12</sup> Tilly 1985.

of ethnic polarization has been proposed as a measurement of groups' power based on their relative size. Furthermore, as I will argue, we lack information on balance of power that varies geographically. Information on warring parties' size is inappropriate for testing theories on local dynamics of competition; ethnic polarization is a precious proxy for this purpose.

Polarization is highest when there is perfect parity between groups, resembling bipolarity of control over a territory. The assumption is that two similarly large and strong groups will fight more intensely and on a larger scale. Even when civil wars are not fought primarily along ethnic lines, the salience of ethnicity may increase during the conflict. Selective civilian targeting requires significant information to identify opponents. One way to solve the identification problem is to rely on features that are easier to detect and can be used to infer loyalty. Hence ethnicity can become a salient trait as result of endogenous conflict dynamics that may further reinforce its use. Indeed, when civilians realise that their profile, not their behaviour, makes them targets of violence, the cost of joining rebels to obtain protection is lower than freeriding.<sup>13</sup> In line with this logic, while ethnic composition is not a good predictor for conflict onset, it explains variation in conflict intensity.<sup>14</sup> Overall, highly polarized societies tend to have more violent conflicts.<sup>15</sup> Civilian victimization as specific type of violence, however, increases under conditions of either high polarization (two large groups) or low polarization, since the asymmetry of power makes the smaller group more reliant on coerced civilian support.<sup>16</sup> The latter point is in accordance with research suggesting that strategic environments with

---

<sup>13</sup> Kalyvas and Kocher 2007.

<sup>14</sup> Esteban and Ray 2008.

<sup>15</sup> Costalli and Moro 2012; Montalvo and Reynal-Querol 2005.

<sup>16</sup> Esteban et al. 2010; Montalvo and Reynal-Querol 2008.

large asymmetries increases the use of violence against civilians by the weaker opponent.<sup>17</sup>

The arrival of peacekeepers has the potential to change the balance of power between groups, even when missions are impartial. The mere presence of peacekeepers in some locations alters the opportunity structure for armed actors that perpetrate one-sided violence strategically. The next section focuses on the main findings concerning peacekeeping missions and their impact on civilian killings.

## **PEACEKEEPERS AND PROTECTION OF CIVILIANS**

Military intervention in the context of ethnic conflict and civilian killings poses a dilemma. The scholarship on peacekeeping has produced, overall, optimistic evidence on the effect of peacekeeping on violence against civilians but some results are still concerning.<sup>18</sup> Several studies show that civilian victimization can be prevented only if the peace mission intervenes by explicitly targeting the perpetrators.<sup>19</sup> On the other hand, other scholars argue that changing the balance of power in a civil war by intervening in support of one side creates incentive for the “loser” to escalate one-sided violence.<sup>20</sup> More recent studies find that UN armed personnel reduce civilian killings but unarmed observers are associated with increased targeting of civilians during and after the conflict.<sup>21</sup> The deployment of UN personnel that cannot provide protection to civilians may generate short-term motivations for victimizing civilians. Hultman highlights these worrying dynamics,

---

<sup>17</sup> Hultman 2007; Wood 2010.

<sup>18</sup> Di Salvatore and Ruggeri 2017.

<sup>19</sup> Hultman 2010; Krain 2005.

<sup>20</sup> Kathman and Wood 2011; Kathman and Wood 2014.

<sup>21</sup> Hultman et al. 2013; Kathman and Wood 2011.



concluding that “missions with clear mandates can help reduce violence and enhance the prospects for peace, simply sending troops without the mandate to interfere when necessary can be devastating”.<sup>22</sup> With the possibility of acting proactively, large deployments under robust mandates are expected to reduce violence, both against civilians and on the battlefield. Thus interventions to protect civilians pose a crucial dilemma: missions that do not signal commitment may inadvertently unleash more civilian victimization.<sup>23</sup>

Under which conditions does UN peacekeeping is less effective at reducing one-sided violence? Based on the existing literature, there are at least two possible mechanisms at work. Civilians victimization is more intense if peacekeeping (i) changes the existing balance of power among armed groups while (ii) signalling insufficient commitment and resolve. On the other hand, there are countervailing factors that enable peacekeeper capacity to prevent civilian killings successfully. These conditions allow blue helmets to (iii) separate combatants, thereby reducing battle-related civilian deaths, and (iv) enforce civilian protection behind frontlines. With separation, enforcement and commitment being a function of the contingent’s size and mandate, researchers have mostly focused on these mission-specific factors; however, the importance of the existing balance of power at the local level is largely neglected. If the mechanisms that produce incentives for more one-sided violence can be moderated by imposing constraints on opportunities, a conditional relationship should exist between successful missions and local capabilities of combatants.

Consistent with this expectation, I argue that the capacity of peacekeepers to deter civilian targeting is moderated by the existing conditions on the ground, in

---

<sup>22</sup> Hultman 2010, 42.

<sup>23</sup> Hultman 2010; Kreps 2010; Kuperman 2008.

particular the balance of power and territorial control. So far, the question of how territorial control influences peacekeeping effectiveness has been missing in peacekeeping research. To measure territorial control, ethnic polarization may provide information not only about distribution and power at the local level but also about which alternative strategies are available to the conflict parties. If peacekeepers create obstacles for direct confrontation, warring parties may have incentives to switch from two-sided to one-sided violence, if local conditions give them the opportunity to do so.

#### *Peacekeeping and ethnicity: bridging the gap*

Given the limited resources available for missions, peacekeepers cannot intervene everywhere. Moreover, more violent locations have higher priority. Peacekeepers are indeed sent to conflict with more casualties and, subnationally, to more violent areas.<sup>24</sup> This violence is not evenly distributed within countries and sometimes clusters in specific regions. The dynamics of violence in ethnic conflict, as shown in the literature, are a function of the groups' territorial control<sup>25</sup> and capacity.<sup>26</sup> As I discussed in the previous section, in the context of ethnic strife, the geographic distribution of ethnic groups, their number and size capture different relevant dimensions of control and capacity. Building on this existing strand of literature on ethnicity and one-sided violence, I expect that ethnic geography affects success of external interventions. If violence against civilians is used strategically and is related to the ethnic configurations of groups, then this factor also influences the decision to abandon violence. Intervention by external actors enters this calculation and alters

---

<sup>24</sup> Costalli 2014; Fortna 2004, 2008; Gilligan and Stedman 2003; Hultman 2010; Ruggeri et al. 2016.

<sup>25</sup> Kalyvas 2006

<sup>26</sup> Wood 2010.

the groups' expectations on the outcome of the conflict and the "attractiveness" of violence as tool to achieve their goals. If local conditions that shape incentives and opportunity costs for one-sided violence are ignored, peacekeeping may even inadvertently backfire and result in comparatively more civilian deaths. This is particularly problematic because the decision between confronting the opponent on the battlefield and killing his civilian populations are interlinked<sup>27</sup> but may require different countering strategies. When trying to address one type of violence, peacekeepers may be neglecting the other with horrifying consequences. In sum, the effect of peacekeeping, as Regan notes, "plays out through the strategic calculation between the combatants".<sup>28</sup> I proceed by discussing how peacekeepers change the strategic environment for combatants' actions, thereby rendering some ethnic configurations more challenging to for peacekeepers mandated with protection of civilians.

The logic of one-sided violence for belligerents is thus also shaped by the demography of ethnic groups. If a region is ethnically perfectly homogeneous, it is less likely to experience intense conflict. In contrast, where two different groups of similar size live close to each other, expected violence should be more intense. In this latter example, high ethnic polarization (or parity) forces groups to fight harder in order to defeat their opponents. When ethnic groups are strong enough and the balance of power is even (in other words, ethnic polarization is high), all-out ethnic conflict and two-sided violence is more likely.<sup>29</sup> One-sided violence is not completely

---

<sup>27</sup> Hultman 2007; Wood 2014.

<sup>28</sup> Regan 2002, 74.

<sup>29</sup> Morelli and Rohner 2014; Zhukov 2013.

absent though, but it is mostly used as complementary tactic.<sup>30</sup> Hence, in highly polarized areas peacekeepers would mostly be concerned with reducing open military confrontation and the resulting civilian casualties. Highly polarized locations require a significant deployment of armed troops, signalling a threat for transgression. Deployment of large armed personnel is crucial to deter groups, but deterrence only works if peacekeeper commitment is credible. This aspects is even more important if the size of the mission is used to signal the salience of the conflict for the intervener.<sup>31</sup> Large military deployments should then successfully reduce battle-related violence, but do they also deter civilian killings? Peacekeepers must also consider constraining groups from turning on civilians as alternative way to damage their opponents. I expect that large military deployments in highly polarized areas are less likely to bring about a shift toward civilian victimization for two reasons. First, it is easier to separate two similarly sized groups than those living in ethnically intermingled locations. Where battlefield clashes are more frequent, frontlines are clearer, and peacekeepers can more easily identify where to interpose between factions. In other words, highly polarized locations present conditions that enable peacekeepers to easy detect violations and completely separate combatants. Second, credible commitment signalled by the presence of large numbers of armed personnel increases the cost of targeting civilians.<sup>32</sup> Weak missions with few troops, on the other hand, might still effectively deter groups from large-scale military clashes but are less able to constrain strategic shifts to civilian targeting<sup>33</sup>, especially behind the frontlines.

---

<sup>30</sup> Esteban et al 2010.

<sup>31</sup> Carment and Rowlands 1998.

<sup>32</sup> Hultman et al. 2013; Pushkina 2006; Thyne 2009.

<sup>33</sup> Hultman 2010.

In contrast, when ethnic groups differ in size, such as when ethnic polarization is low, asymmetry characterizes the distribution of power. Here, dynamics of violence look different. The difference in strength makes it unfeasible for the weakest party to directly face the other on the battlefield. Such action would be doomed to failure, or at least is perceived as such by the disadvantaged group. Indeed, weak rebel groups are associated with greater intensity of violence against civilians.<sup>34</sup> This is the result of two concurring dynamics. First, majority groups are more likely to attack minorities if they are vulnerable and isolated from their co-ethnics in enclaves.<sup>35</sup> Indeed, scenarios of low ethnic polarization are commonly characterized by the presence of a majority group that will likely resort to large-scale killings of civilians to achieve ethnic homogeneity and remove threats to territorial hegemony. Another incentive for escalating one-sided violence during deployment exists from the perspective of the majority group. Deployment usually takes time to complete, thus the most powerful armed group will try to achieve solid control by killing potential opponents before peacekeepers can intervene and reach full-scale deployment.<sup>36</sup> Two-sided violence, on the other hand, is less common since the enclaved minorities are isolated and difficult to protect militarily. Although polarization

---

<sup>34</sup> Wood 2010.

<sup>35</sup> Di Salvatore 2016.

<sup>36</sup> An analogous argument is proposed by Kathman and Wood, who posit that governments with genocidal goals will attempt to “complete the liquidation” as soon as external interveners step in (Kathman and Wood 2011). It follows that the quicker the deployment, the narrower the window of opportunity for escalation. Indeed, in the case of Sierra Leone, the rapid deployment of troops (British troops in particular) across regions held by RUF rebels was a key element of success. It is important to highlight, however, that the data at hand does not distinguish ongoing and completed deployment. We can only know how many troops are present in a location at time  $t$ , not whether this is the authorized total number of personnel or a growing contingent. Of course we will observe a higher number of personnel at time  $t+1$  if  $t$  is in the deployment stage, but the results of the analysis can only speak to the impact of different sizes of contingents rather than different stages of the mission.

does not capture the extent to which minorities are enclaved and isolated, in the Appendix (A3) I illustrate that chiefdoms in Sierra Leone exhibit high correlation between polarization and segregation. In polarized locations, groups are highly segregated and separated in two or three large and homogenous regions; conversely, in less polarized areas, groups are less segregated so that minorities are more likely to end up in enclaved territories. The second mechanism has it that sufficiently organized minorities resort to guerrilla tactics, terrorism and targeting unprotected civilian population as alternative warfare. In particular, one-sided violence is crucial for weaker groups to secure civilian support, since they cannot compel it by providing other benefits such as security.<sup>37</sup>

How could UN peacekeepers prevent both strong and weak groups from resorting to one-sided violence? It is already clear that blue helmets face more than one challenge when groups have asymmetric territorial control. Groups have different incentives and opportunities to kill civilians, thus it is more difficult for peacekeepers to tackle both. Compared to the scenario with equally powerful groups, separating combatants is less feasible, especially in the context of irregular warfare. In addition, even if vulnerable civilians were identified and protected areas established, this can further deteriorate civilian safety by making them easy targets, as occurred during the Bosnian conflict.<sup>38</sup> This discussion leads to the conclusion that if the balance of power and territorial control do not favour one side, the deployment of UN blue helmets can reduce incentives for one-sided violence. On the other hand, it is significantly more difficult for peacekeepers to reduce one-sided violence where there is pronounced asymmetry of power and control between the warring parties. Thus, the hypotheses are formulated as follows:

---

<sup>37</sup> Wood 2010.

<sup>38</sup> McQueen 2005.

*H1: When ethnic polarization is high, more UN Troops decrease violence against civilians.*

As corollary, we would expect UN Troops to be less effective at decreasing violence against civilians at low levels of ethnic polarization. It should be clear at this point that ethnic polarization shapes conflict dynamics in different ways, depending on whether peacekeepers are deployed in the country. Most of what we know about the relationship between ethnic configurations and violence against civilians is limited to cases where UN missions are not present. Conversely, the focus here is on the conditional relationship between polarization and peacekeeping because the decision to target civilians in a given location is a combination of both factors. This is the result of polarization and peacekeeping simultaneously producing incentives for – but also constraints on – one-sided violence. While I present a pre-deployment model with ethnic polarization, I do not explicitly formulate a hypothesis on how polarization alone affects civilian deaths because UN deployment itself will influence this relationship.

## **EMPIRICAL ANALYSIS**

The choice of Sierra Leone as case study is motivated by two main reasons. First, the case selection strategy is a least-likely case, namely a case for which I should be less likely to find evidence in support of the proposed argument.<sup>39</sup> However, I will argue that the role ethnicity played in the Sierra Leonean civil war is commonly underestimated in the section describing how I measure balance of power. Second,

---

<sup>39</sup> Gerring 2007.

and relatedly, UNAMSIL was one of the most effective missions in achieving its Protection of Civilians (PoC) mandate. This makes the empirical test on this case more conservative and less likely to show inefficiencies and pitfalls of the mission. Sierra Leone represents an interesting case of UN peacekeeping because it hosted two different UN missions during the civil war. UNOMSIL was deployed in 1998 with a weak observer mandate, while the UNAMSIL mission deployed in 1999 had a robust mandate that explicitly included the protection of civilians. Notably, UNAMSIL was also the first UN mission with a Protection of Civilians (PoC) mandate. Indeed, Sierra Leone's population suffered severe large-scale massacres, even after UNAMSIL deployment. The transition from UNOMSIL to UNAMSIL was particularly critical, with personnel lacking "commonly shared understanding of the mandate and rules of engagement", along with other problems at the level of command and control.<sup>40</sup> When transition was complete and the UNAMSIL force fully deployed, peacekeepers were sent to previously inaccessible areas, significantly increasing the geographical coverage of the mission. Overall, UNAMSIL has been labelled as example of effective missions and the complete withdrawal of UN personnel in 2014 was greeted as "the successful conclusion of over 15 years of successive United Nations peace operations in Sierra Leone".<sup>41</sup> Finally, the frequent reporting from the Secretary General on the UN mission in Sierra Leone is also convenient as it allows for more precise information of UN peacekeeping personnel.

The hypothesized mechanisms hinge on local-level dynamics of power among warring parties, thus they call for a subnational data on ethnicity and peacekeeping deployment. In fact, data on peace operations is available for other countries than Sierra Leone; however the lack of census data that could be georeferenced to

---

<sup>40</sup> UNSG 2000, §54.

<sup>41</sup> UNSG 2014, §51.



calculate local polarization does not allow the inclusion of all sub-Saharan African countries experiencing civil wars. Also, aggregating information at the country level would be inappropriate, as peacekeepers are sent to some areas only and, more importantly, spatial variation in territorial control would be lost. Whereas the subnational design described above is better suited as a test of the conditional effect of ethnic polarization on successful civilians' protection, in the Appendix (A1) I present two cross-national models to address concerns over external validity.

I will test the hypotheses of the conditional effect of ethnic polarization on peacekeeping effectiveness using a time series cross-sectional dataset with administrative division-month as unit of analysis. Geographically, the level of disaggregation depends on the availability of data on the subnational distribution of ethnic groups before conflict started. For Sierra Leone, data are available for the third-order administrative unit, the chiefdom. The sample includes monthly observations on 153 chiefdoms from 1997 to 2001, thus one year prior to the first UNAMSIL deployment and 5 years into the mission.

The dependent variable of the analysis is the number of monthly civilian killings in each administrative unit (Figure 1, left panel), as derived from the UCDP-GED.<sup>42</sup> The main independent variables are ethnic polarization and the logged number of armed personnel deployed by the UN in each month.

I motivate the choice of ethnic polarization over other candidate measures in the next section, then explain how the index is constructed. With regard to the size of UN contingents, I rely on United Nations Secretary General (UNSG) Reports, which often include a map indicating the position of peacekeepers and the contributing

---

<sup>42</sup> Sundberg and Melander 2013.

countries. Unfortunately, these maps do not give information on the size of the contingent in each location. Luckily, the UN Department for Peacekeeping Operations (UNDPKO) records each country's monthly contributions to peacekeeping by mission and by personnel type. This allows me to estimate the size of the mission in the locations indicated by the maps. For example, suppose India has contributed 100 troops to UNAMSIL in a given month. If the deployment map in the UNSG report indicates Indian troops in two different chiefdoms, I divide India's contribution by two and assign the mean to both chiefdoms. If the map indicates that India is contributing in two chiefdoms but only providing troops to one, then only the latter is assigned all 100 soldiers. I interact size of UN troops with ethnic polarization in order to test my hypotheses.<sup>43</sup> Since I hypothesize peacekeeping to moderate the effect of polarization, the interaction coefficients should be negative.

Several control variables from the PRIO grid version 2.0 are included in the specification, namely population (log), purchasing power parity (log), night light emissions, the number of excluded ethnic groups, distance from capital Freetown, and a dummy for the presence of primary diamond mining sites.<sup>44</sup> More violence should be associated with larger population living far from the capital<sup>45</sup> and with the presence of aggrieved excluded groups.<sup>46</sup> Night light emissions also capture some degree of economic exclusion. But more generally they are a good proxy for economic condition.<sup>47</sup> In addition, proximity to mining sites is likely to result in more

---

<sup>43</sup> Appendix (section A4) also shows a model that measures UN presence as sum of troops and police. Results are consistent with main models in Table III.

<sup>44</sup> Tollefsen et al. 2012.

<sup>45</sup> Raleigh and Hegre 2009.

<sup>46</sup> Cederman et al. 2013.

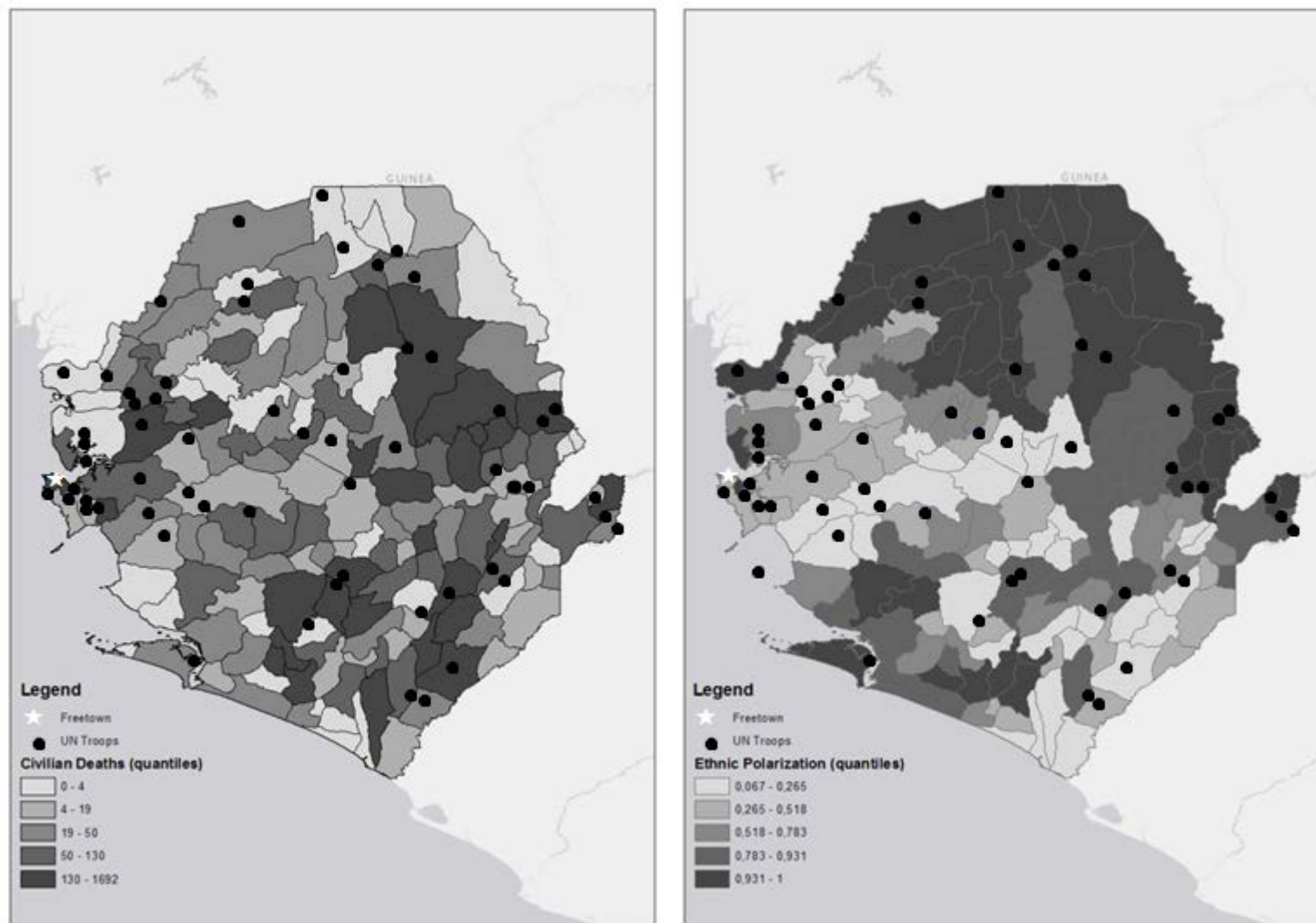
<sup>47</sup> Cederman et al. 2015.

confrontation if groups compete over resources to fund their operations.<sup>48</sup> Unfortunately, these variables do not vary much as they are reported at yearly intervals. To account for spatial interdependence, the spatial lag of

---

<sup>48</sup> Ross 2004.

Figure 1. Left Panel: Civilian killings in Sierra Leone aggregated by chiefdom (1997-2001)  
 Right Panel: Ethnic polarization levels from pre-war census



civilian deaths and peacekeeping personnel size is incorporated in all models.<sup>49</sup> Finally, I include a variable measuring the aggregated number of civilian deaths before blue helmets had been deployed in each of the chiefdoms. As final remark, all covariates are lagged in the previous month in all models. The descriptive statistics of all variables are presented in Table I.

**Table I. Descriptive Statistics**

Variable	Obs	Mean	Std.Dev.	Min	Max
Civilian Deaths	9,660	0.482	10.93	0	864
Ethnic Polarization	8,940	0.643	0.336	0.068	0.999
UN Troops (log)	9,660	0.137	0.980	0	8.135
Population (log)	9,660	9.136	0.757	7.009	10.93
Purchasing Power Parity (log)	9,660	0.005	0.004	0.0001	0.026
Capital Distance	9,660	173.3	75.85	26.60	332.3
Nightlights Emissions	9,660	0.0265	0.007	0.014	0.042
Diamonds	9,660	0.174	0.379	0	1
Prior Violence	9,660	27.23	113.3	0	1564
Excluded Groups	9,660	0.144	0.4	0	2

I start with a negative binomial model with clustered standard errors, with the number of killed civilians as the dependent variable. The main shortcoming of this model is that it does not control for selection bias. Peacekeeper deployment locations are not randomly selected, neither at the country nor at the local level.<sup>50</sup> In order to attenuate selection bias, I will also show results after using Coarsened Exact Matching (CEM) to compare units with and without peacekeeping that are similar with regard to

<sup>49</sup> The spatial lag is constructed on a monthly basis using a First-order Queen Contiguity Matrix. Cells in the matrix take value 1 when chiefdom  $i$  and chiefdom  $j$  share a border. First-order refers to the fact that only immediate neighbours are considered contiguous, thus excluding neighbours-of-neighbours.

<sup>50</sup> Gilligan and Stedman 2003; Ruggeri et al. 2016.

violence before deployment and ethnic polarization.<sup>51</sup> Therefore, I run a negative binomial model on the matched sample. The CEM procedure assigns different weights to observations to balance substantial differences between the treatment and non-treatment group. In addition, to rule out the possibility that unobservable factors are driving the selection bias, I also estimated a Conditional Mixed Process model (CMP). The CMP models allow relaxing the assumption that conflict intensity and presence of peacekeepers are independent, uncorrelated processes. Thus, both one-sided violence intensity and peacekeepers presence are used as outcome variables in two separate models with correlated disturbances.

### *Measuring Balance of Power*

Ethnic diversity and groups' relations are acknowledged as important factors explaining conflict onset and intensity. Diversity is measured in several ways, with the most prominent measures being ethnic fractionalization, ethnic dominance and ethnic polarization.<sup>52</sup> Ethnic polarization was used by Montalvo and Reynal-Querol<sup>53</sup>, among others, as an alternative to the traditional ethno-linguistic fractionalization index (ELF). Society is described as polarized if there are a few significantly sized groups with high intra-group ethnic homogeneity and high inter-group ethnic heterogeneity.<sup>54</sup> With  $\pi_i$  being the share of the ethnic group over the total population, the following formula of polarization index was applied:

---

<sup>51</sup> Iacus et al. 2011.

<sup>52</sup> See Esteban and Schneider 2008. The index of ethnic fractionalization (ELF) describes diversity mostly in relation to the number of ethnic groups. Ethnic dominance is usually measured as a dummy variable that equals 1 if one ethnic group represents at least 45% of the total population in a country or subnational unit. Notably, none of these two operationalizations directly captures a fundamental feature of ethnicity that relates to conflict, namely the relative power of groups.

<sup>53</sup> Montalvo and Reynal-Querol 2005.

<sup>54</sup> Esteban and Schneider 2008.

$$4 \sum_{i=0}^n \pi_i^2 (1 - \pi_i)$$

This formula is a special case of the polarization measure originally proposed by Esteban and Ray (1994). With bipolarity indicating the highest level of polarization, the index attempts to measure how distant a distribution is from a perfect bipolar setting. The measure ranges from 0 to 1, where 1 signifies two equally sized groups. In such bipolar setting, ethnic groups represent opposite and comparable poles. The interpretation of the polarization index is comparable to the power parity index used by Balcells and Balcells, Daniels, and Escriba-Folch<sup>55</sup> to measure political competition. Indeed, the two measures exhibit a correlation of almost 0.9 (Figure A2.1, Appendix), and switching to power parity produces very similar results (see Table A2 and Figure A2.2, Appendix). One important aspect of the power parity index and the argument proposed by Balcells, however, is that it identifies strong competition when the difference between groups' share is low; that is, small margins indicates that groups will compete over this pool with the aim of improving their position. The fluidity of political support enables groups to follow this strategy, but this is less likely to be successful when support is (at least partly) based on ethnicity.

Esteban and Ray have explored the relationship between ethnic polarization and ethnic fractionalization and their effect on conflict onset and intensity.<sup>56</sup> These two aspects of conflict are very distinct and related to ethnicity in strikingly different ways. As the authors show, the risk of conflict outbreak is higher at intermediate

---

<sup>55</sup> Balcells 2011; Balcells, Daniels, and Escriba-Folch 2014.

<sup>56</sup> Esteban and Ray 2008.

levels of polarization. In extremely polarized societies, conflict is too costly for both groups, whereas in societies with low degrees of polarization there might be not much to fight for. However, conditional on conflict onset, high polarization is associated with very intense violence while the opposite occurs when groups are less polarized.

Polarization captures two very important dimensions of interest for this manuscript. First, it proxies local-level extraction capacity of a group, i.e. its territorial control compared to opponents. Hence, polarization summarizes the local balance of power among groups. In order to connect more clearly armed group to a support base, I calculate polarization only for ethnic groups that can be linked to armed groups, for example, based on recruitment strategies, claims or support.<sup>57</sup> Second, high polarization also entails strong intra-group cohesion, which in turn makes groups more structured and better able to coordinate large-scale military fights. Indeed, while ethnic fractionalization hampers coordination, polarization significantly decreases the cost of coordination.<sup>58</sup> The distinction between polarized and fractionalized ethnic groups has pivotal relevance for the proposed argument. It is interesting to note, for example, that Humphreys and Weinstein's study on abuses during the Sierra Leone civil war finds that civilian victimizations is not explained by co-ethnicity, but rather is mostly the product of the groups' internal discipline.<sup>59</sup> It is clear that the authors do not intend to completely dismiss the role of ethnicity; by measuring internal discipline as ethnic fragmentation, the underlying argument seems to be that it is not ethnicity per se that matters (0/1 for kinship). Rather, it is

---

<sup>57</sup> Wucherpfennig et al. 2012.

<sup>58</sup> Collier and Hoeffler 1998; Montalvo and Reynal-Querol 2005.

<sup>59</sup> Humphreys and Weinstein 2006.



important to look at what ethnic diversity entails and how it shapes organizational features and strategic use of violence by armed groups.

The index of ethnic polarization is proposed in the manuscript as a well-suited measure of balance of power. A better measure of balance of power, of course, would be a polarization index based on armed groups' size instead of the size of population from which armed groups potentially recruit. In fact, data on armed groups' size has been collected but only at the group level. Lacking a geographical dimension, total armed groups' size cannot be used to capture balance of power at the local level. Alternatively, I could focus on armed groups tactics. Moving from Kalyvas and Kalyvas and Balcells<sup>60</sup>, conventional and symmetric non-conventional tactics are dominant in regions where groups' control is balanced; irregular warfare, on the other hand, prevails where groups' territorial control is unbalanced. However, the distinction between conventional, non-conventional and symmetric non-conventional warfare is ultimately a typology of civil wars, so it is problematic to apply it to local-level violence. This is not just a theoretical problem, but also an empirical one. For example, Sierra Leone is coded as symmetric non-conventional conflict by Kalyvas and Balcells.<sup>61</sup> How to identify areas where conflict is fought conventionally in the context of an overall non-conventional civil war? One possibility is to measure the ratio of battle violence and terrorist attacks in a given location, with the assumption that the two types of events mirror respectively conventional and non-conventional tactics. In practice, however, determinants of terrorist violence in conflict are numerous, thus the measure would rely on more assumption than those needed by the ethnic polarization measure (as proposed here). On a more practical

---

<sup>60</sup> Kalyvas 2006; Kalyvas and Balcells 2010.

<sup>61</sup> Kalyvas and Balcells 2010.

note, the Global Terrorism Database only records 33 terrorist attacks for years 1999 and 2000, thus only covers one year of the UNAMSIL mission. Lastly, one could use selective and indiscriminate violence against civilians to identify zones of control, as defined in Kalyvas.<sup>62</sup> Unfortunately, it is not possible to distinguish the two forms of civilian killings with the available data. Furthermore, it is a tautology to use violence against civilians (whether indiscriminate or selective) to code balance of power and then use it to explain, again, intensity of violence against civilians. Ultimately, ethnic polarization is a well-suited candidate to measure balance of power among armed groups at the local level. Other measures are proxies themselves and also have less desirable features given the purpose of the manuscript.

*Ethnic polarization in Sierra Leone.* Figure 1 (right panel) maps the geographic variation in ethnic polarization in Sierra Leone. In order to obtain the polarization index, I georeferenced the 1963 national census. Using census data prior to the conflict ensure that ethnic patterns are not endogenous to conflict dynamics.<sup>63</sup> The census data are from IPUMS international database of the Minnesota Population Center.<sup>64</sup> The IPUMS international database provides a representative sample from the original national census. In some cases, information is missing for some small units because these have been aggregated in the released dataset. In order to calculate polarization, I georeferenced the sampled census at the smallest administrative unit available and calculated the share of population for each listed ethnic group. Based on these shares, ethnic polarization is easily computed with the

---

<sup>62</sup> Kalyvas 2006.

<sup>63</sup> Replicating the analysis using ethnic polarization indexes calculated from census data after the conflict (2004) does not yield significant differences in estimated coefficients (not shown).

<sup>64</sup> Minnesota Population Center 2015.

formula indicated above. The census lists 18 ethnic groups, with Mende and Temne being the two majority groups. Each of the two groups represented more than 30% of the total population. It is worth reiterating that I do not compute ethnic polarization among all ethnic groups living in the country, but only among those that were actively involved in the conflict and can be linked to armed groups (Temne, Mende and Limba); by doing this, the ethnic demographic balance is a better approximation of power balance among groups. Although the conflict in Sierra Leone was not predominantly centred around ethnic issues<sup>65</sup>, ethnic identities were significantly politicized during the process of state formation and continued to play a role in the conflict.<sup>66</sup> As Horowitz noted, “ethnicity has not been everything in Sierra Leone politics [...] yet ethnicity has been so prominent in military and civilian politics that an analysis that sorts out ethnic variables is warranted”.<sup>67</sup> In particular, Mende dominance was a main political issue since independence. There is evidence that the Kamajors armed group enjoyed Mende support and made claims on behalf of this ethnic group.<sup>68</sup> Similarly, Rosen points out that “The Mende based Kamajors were the dominant militia group and the CDF [Civilian Defense Forces] leadership was largely drawn from the Mende”.<sup>69</sup>

In addition, the opposing Revolutionary United Front (RUF) was Temne-dominated and claimed to fight against Mende rule, with support from the Armed Forces Revolutionary Council (AFRC), headed by Limba leaders.<sup>70</sup> The instrumental use of

---

<sup>65</sup> Bangura 2004.

<sup>66</sup> Kandeh 1992.

<sup>67</sup> Horowitz 1985, 474.

<sup>68</sup> Wucherpennig et al. 2012; Minorities at Risk (MAR) available at <http://www.mar.umd.edu/assessment.asp?groupId=45103>.

<sup>69</sup> Rosen 2015, 153.

<sup>70</sup> Minorities at Risk (MAR) available at <http://www.mar.umd.edu/assessment.asp?groupId=45103>.

ethnic identities and the subsequent mobilization along ethnic lines did occur to some extent in Sierra Leone, and the civil war should not be reduced to mere competition over diamonds.<sup>71</sup> Both CDF and RUF necessitated co-optation of local elites. In the case of CDF this was largely due to their nature of community-based armed group that emerged as counter-insurgent pro-government militia. In the case of RUF, this was related to their rapid expansion and need to control of diamond sites.<sup>72</sup> In both cases, recruiting members in areas that fell under each militias' control meant that having a larger pool of potential recruits was particularly important in explaining conflict dynamics.

Consistently, the map in Figure 2 further corroborates the link between major ethnic groups and armed factions. The map shows chiefdoms where the three ethnic groups linked to armed groups represented the majority. Mende people were the majority group in most southern chiefdoms, while Temne and Limba people were majority groups in several northern chiefdoms. In order to assess, to some extent, the degree of military control, I geocoded establishment of headquarters by Kamajors, AFRC and RUF using ACLED.<sup>73</sup> Setting up of headquarters stems from a variety of strategic and tactical choices of armed groups; furthermore, some headquarters are just temporary bases. Nonetheless, taken with a pinch of salt, the map in Figure 2 illustrates how armed groups in Sierra Leone tended to establish headquarters in areas where the ethnic group they are linked to is demographically dominant. With this map, in fact, I do not argue that headquarters measure territorial control unambiguously, rather that if armed groups are linked to ethnic groups, they

---

<sup>71</sup> Kalyvas 2001; Schraml 2012.

<sup>72</sup> Johnston 2008.

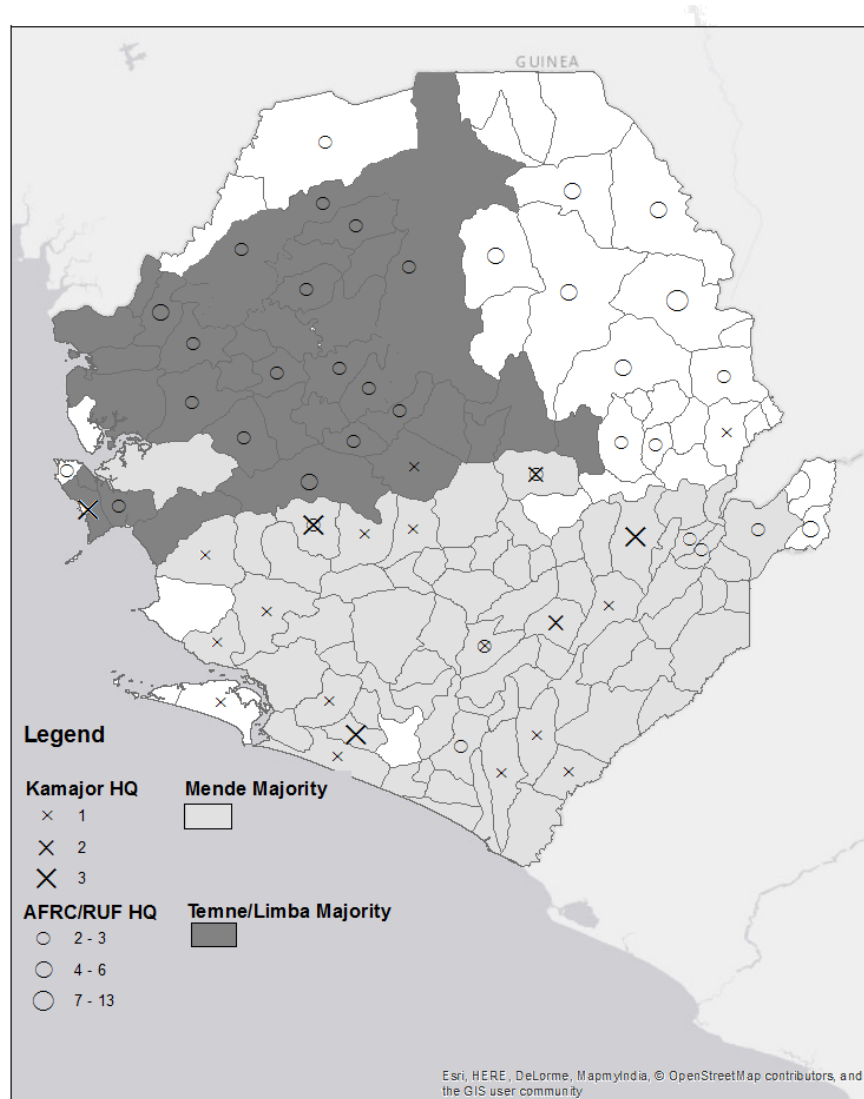
<sup>73</sup> Raleigh et al. 2010.

will more likely base their key activities in areas where more ethnic support is expected.

### *Results and discussion*

The negative binomial models are presented in Table II. Model 1 uses only the sample of chiefdoms-months before the deployment to look at dynamics of one-sided violence when no UN mission was present. In this model, I include all variables except those measuring peacekeeping. This baseline model indicates that one-sided violence is severe where polarization is high. It also seems that there is some degree of contagion across neighbouring chiefdoms, as the positive coefficient of the spatial lag suggests. More populated areas and locations with higher nightlight emissions are also associated with more violence, though at a lower significance level ( $p < 0.1$ ). In Model 2, the entire sample is used and peacekeeping-related variables are added.

**Figure 2. Ethnic majorities and Armed Groups' Headquarters**



The estimated coefficients show that peacekeeping has a negative effect on civilian victimizations. The size of the military personnel deployed by the UN is associated with a reduction in civilian deaths in the following month, in line with most recent findings from Hultman et al.<sup>74</sup> Ethnic polarization has a positive coefficient, suggesting that civilians are targeted in areas where the balance of power among factions approaches parity; however, the coefficient is not statistically significant. Among the control variables, significant estimates are reported for the number of

<sup>74</sup> Hultman et al 2013.

civilians killed in the previous month in the chiefdom and its surroundings. Interestingly, UN Troops might reduce on one-sided violence not only in the unit where they are deployed, but also in its surroundings (as suggested by the negative coefficient of the spatial lag for UN military, although it is only significant at the 10%). In Model 3, I interact ethnic polarization with UN troop size. None of the component terms of this interaction is significant, but the interaction term has the expected negative and statistically significant coefficient.

This provides initial support to the idea that peacekeepers are better able to protect civilians in locations where combatants can be separated effectively and where the symmetry of power is not significantly altered by the presence of UN personnel. Conversely, when polarization is low and one group tends to be the hegemon, it is difficult to separate it from the minority group (especially if the latter is scattered), and civilians can be victimized both by the weaker group and the hegemonic one.<sup>75</sup>

As discussed before, the main limitation of the negative binomial models is that they do not account for selection bias. It is important to recognize that neither the CMP models nor the CEM technique fully address the problem of endogeneity, but they do attenuate it under certain conditions. Coarsened exact matching alleviates selection bias under the assumption that observable factors responsible for the selection are accounted for. Because peacekeepers are usually sent to more violent areas, I perform matching based on distance from capital, level of violence

---

<sup>75</sup> Other models, including a dummy for mandate robustness (not reported), show that a robust mandate improves peacekeeper performances in protecting civilians. Furthermore, this is not conditional on the local balance of power. It is likely that the micro-level use of one-sided violence is affected more by the local peacekeeping strategy instead of its larger operational setting described by mandate type. Additionally, the dummy used to measure robustness is basically a dummy for the UNAMSIL mission, so might be capturing something about civil war phases.

prior to the deployment, and the measure of ethnic polarization. The imbalance of the sample dropped from 0.97 to 0.55, and as expected, the size of the sample also shrunk from more than 9,000 observations to 7,790.<sup>76</sup>

The results of the post-CEM negative binomial estimation are presented in Table III. The empirical findings for the main variables of interest are similar to those reported in the non-matched models (Model 2 and Model 3). In Model 4, the log of UN Troops has a negative coefficient as expected, while polarization does not reach statistical significance. When interacted in Model 5, neither polarization nor UN Troops seem to have independent effects on civilian killings, as inferred from the estimated coefficients. Consistent with theoretical expectations, there is an inverse conditional relationship between the two. Figure 3 plots the marginal effect of average UN troop size on civilian deaths, conditional on different levels of ethnic polarization. For extremely low levels of ethnic polarization, UN Troops do not have a significant curbing effect on one-sided violence, although their deterrent capacity improves at higher degrees of polarization. In more substantive terms, Figure 4 plots the predicted number of civilian killings in chiefdoms that experienced significant levels of violence. Across levels of polarizations, more troops always result in less civilian deaths but the drop in civilian killings is more pronounced in chiefdoms with high polarization. In chiefdoms where ethnic polarization is at the first quartile (0.3), 100 (1000) troops result in 8 (3) civilian victims, but the same amount of troops produce only 2 ( $\approx 0$ ) victims in highly polarized areas (0.9, which corresponds to the third quartile).

This analysis is in line with previous research finding that more UN Troops can create a buffer between combatants and reduce civilian targeting on a monthly

---

<sup>76</sup> Notice that the algorithm does not use replacement, meaning that control observations are not used multiple times to match treated observations.



basis. However, the results shown so far qualify this claim. Peacekeepers are clearly more successful when power symmetries exist locally and factions can be kept apart. As these favourable conditions change and power asymmetries prevails, however, peacekeeping is a less effective instrument to protect civilians.

As mentioned, the estimations of the negative binomial model after matching are less sensitive to specification and model dependence. Furthermore, the smaller imbalance among observations alleviates the selection bias. It is important to note, though, that this statement holds true under the assumption that selection occurs on observable variables used to weight observations. To rule out the possibility that unobservable factors are responsible for the non-random deployment of troops, I use CMP estimation to address the endogeneity problem by simultaneously estimating two equations with correlated disturbances. If there are unobservable factors that influence peacekeepers deployment and one-sided violence, the model should report a significant correlation between the error terms of the two equations.

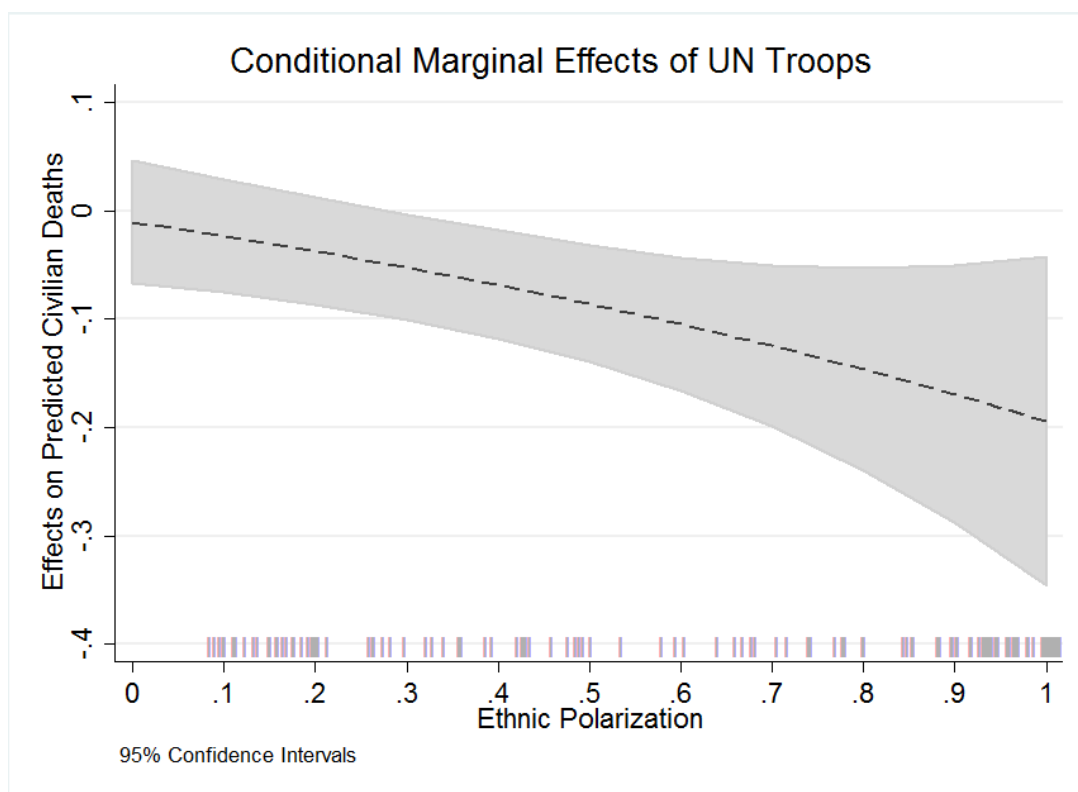
**Table II. Negative Binomial Models**

	Baseline Pre-PK Model 1	Baseline with PK Model 2	Baseline interaction Model 3
Variables			
Ethnic Polarization	1.312*	0.750	0.795
	0.504	0.501	0.506
UN Troops (log)		-0.418*	0.057
		0.136	0.270
Ethnic Polarization # UN Troops (log)			-1.151*
			0.486
Civilian Deaths	0.039*	0.056*	0.054*
	0.016	0.021	0.020
Population (log)	0.591+	0.384	0.418
	0.323	0.338	0.337
Purchase Power Parity (log)	69.582	104.508+	90.320
	71.636	63.091	61.625
Capital Distance	0.003	-0.000	-0.001
	0.003	0.003	0.003
Nightlights Emissions	51.199+	43.509+	42.511+
	26.956	23.748	23.952
Diamonds (primary)	0.491	0.756	0.747
	0.561	0.492	0.493
Prior Violence	0.000	-0.000	-0.000
	.	0.002	0.002
Civilian Deaths (spatial lag)	0.194*	0.208*	0.212*
	0.070	0.071	0.072
Excluded Groups (EPR)	-0.531	-0.314	-0.326
	0.414	0.402	0.402
UN Troops (spatial lag)		-0.002+	-0.536+
		0.001	0.292
Constant	-9.665*	-7.248*	-7.473*
	2.680	2.778	2.770
Inalpha	4.284*	4.939*	4.936*
	0.134	0.130	0.130
N	3576	9499	9499
AIC	2270.588	3345.403	3345.753
BIC	2338.590	3444.544	3451.975

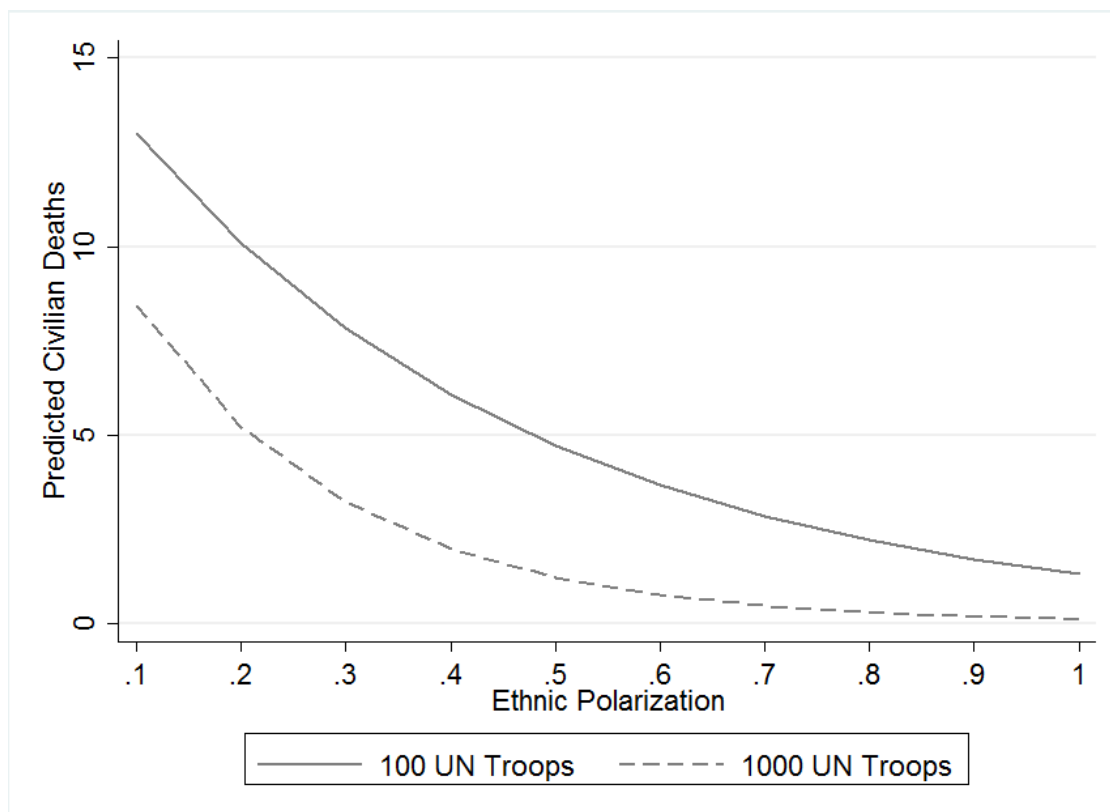
Clustered Standard Errors in parenthesis

\* p&lt;0.05, + p&lt;0.1

**Figure 3. Marginal effect of UN Troops by level of ethnic polarization (Model 5)**



**Figure 4. Predicted one-sided violence (based on Model 5)**



As for the specification of the equation with peacekeeping personnel size as a dependent variable, I include polarization, civilian deaths (time and spatial lag), population and distance from the capital as covariates. This is based on research showing that peacekeepers are deployed in the most violent locations, usually in proximity to urban centres.<sup>77</sup> The results for the CMP models are reported in Table IV. The most relevant result is that the correlation parameter  $\text{atanrho}$  is not significant in both Model 6 and Model 7. In other words, there are no unobservable omitted variables correlated to both mission size and civilian casualties. This does not suggest that there is no selection bias at work rather that it was most likely captured by observable covariates used in the analysis.<sup>78</sup> Consequently, the estimates presented in Table III are further validated.

Table V presents additional models to check the robustness of the results. In Model 8, the actual count of troops is used as covariate instead of its logged transformed version. In Model 9, I included a dummy that equals 1 when a robust mandate was deployed. In Model 10, presence of peacekeepers is coded as 1 instead of being measured in terms of troop size. Finally, in Model 11 I estimate an OLS model with chiefdom fixed effects. Across all models, the conditional effect of

---

<sup>77</sup> Ruggeri et al. 2016.

<sup>78</sup> Interestingly, the correlation parameter is significant when mission size is replaced with a dummy variable for peacekeeper presence; however, it is negative. According to this model (not shown), peacekeepers are less likely to be deployed where more civilians were killed in the previous month and in neighboring areas. While this seems counterintuitive, it might be due to delayed responsiveness by the mission. The fact that peacekeepers do go to the most violent areas is confirmed by the positive and significant coefficient for the variable measuring intensity of violence before the mission starts. Deployment is also more likely in more populated areas and close to the capital. These results are consistent with the subnational analysis on deployment of peacekeepers by Ruggeri et al. (2016).

**Table III. Negative Binomial Models and Matched Sample**

Variables	Neg. Bin CEM Model 4	Neg. Bin. CEM interaction Model 5
Ethnic Polarization	0.471	0.506
	0.636	0.641
UN Troops (log)	-0.370*	-0.068
	0.111	0.180
Ethnic Polarization # UN Troops (log)		-0.760*
		0.350
Civilian Deaths	0.025	0.025
	0.021	0.021
Population (log)	0.381	0.380
	0.375	0.377
Purchase Power Parity (log)	140.220*	139.188*
	38.147	38.298
Capital Distance	0.005	0.005
	0.003	0.003
Nightlights Emissions	10.006	9.913
	36.356	36.600
Diamonds (primary)	-1.721*	-1.724*
	0.671	0.675
Prior Violence	-0.001	-0.001
	0.001	0.001
Civilian Deaths (spatial lag)	0.195*	0.194*
	0.064	0.064
Excluded Groups (EPR)	0.390	0.386
	0.972	0.976
UN Troops (spatial lag)	-0.404	-0.401
	0.341	0.343
Constant	-6.911+	-6.901+
	3.734	3.760
Inalpha	3.960*	3.959*
	0.615	0.615
N	7790	7790
AIC	5401.354	5401.584
BIC	5498.803	5505.993

Clustered Standard Errors in parenthesis

\* p&lt;0.05, + p&lt;0.1

**Table IV. Conditional Mixed Processes Models**

Variables	CMP Model 6		CMP Interaction Model 7	
	DV: Civilian Deaths (log)	DV: UN Troops (log)	DV: Civilian Deaths (log)	DV: UN Troops (log)
Ethnic Polarization	0.015		0.016	
	0.014		0.014	
UN Troops (log)	0.004		0.011	
	0.006		0.010	
Ethnic Polarization # UN Troops (log)			-0.010	
			0.009	
Civilian Deaths (log)	0.160*	-0.024+	0.160*	-0.024+
	0.037	0.014	0.037	0.014
Population (log)	0.007	0.065+	0.007	0.065+
	0.011	0.039	0.011	0.039
Purchase Power Parity (log)	3.978		3.977	
	3.110		3.085	
Capital Distance	0.000	-0.001	0.000	-0.001
	0.000	0.001	0.000	0.001
Nightlights Emissions	0.311		0.321	
	0.550		0.552	
Diamonds (primary)	-0.006		-0.005	
	0.015		0.015	
Prior Violence	-0.000	0.001	-0.000	0.001
	0.000	0.001	0.000	0.001
Civilian Deaths (spatial lag)	0.205*	-0.129*	0.204*	-0.129*
	0.068	0.046	0.068	0.046
Excluded Groups (EPR)	-0.011		-0.011	
	0.009		0.009	
UN Troops (spatial lag)	-0.009	0.154*	-0.009	0.154*
	0.006	0.071	0.006	0.071
Constant	-0.081	-0.398	-0.080	-0.398
	0.090	0.376	0.090	0.376
<hr/>				
atanhrho	-0.018		-0.017	
	0.012		0.011	
N	9499		9499	
AIC	32467.218		32468.428	
BIC	32631.874		32640.243	

Clustered Standard Errors in parenthesis

\* p&lt;0.05, + p&lt;0.10

**Table V. Models for Robustness Check**

Variables	Model 8 Neg. Binomial Troops Count	Model 9 Neg. Binomial Dummy Robust	Model 10 Neg. Binomial Dummy PK	Model 11 OLS with FE
Ethnic Polarization	0.813 0.505	0.203 0.595	0.911+ 0.504	(dropped)
UN Troops	0.002 0.001	-0.002 0.241		0.010 0.007
Ethnic Polarization # UN Troops	-0.008*	-1.045*		-0.017*
PK dummy	0.003	0.430	-0.003 1.839	0.009
Ethnic Polarization # PK dummy			-7.781*	
Robust mission		-2.804* 0.444	3.005	
Civilian Deaths (lag)	0.054* 0.020	0.052* 0.018	0.055* 0.021	0.377* 0.067
Population (log)	0.431 0.335	0.341 0.397	0.393 0.337	0.258* 0.111
Purchase Power Parity (log)	83.817 61.122	51.219 61.709	97.351 62.234	54.171* 17.260
Capital Distance	-0.001 0.003	-0.003 0.003	-0.000 0.003	(dropped)
Nightlights Emissions	41.392+ 24.037	123.448* 21.778	35.347 24.532	0.272 0.623
Diamonds (primary)	0.742 0.494	0.647 0.535	0.692 0.507	(dropped)
Prior Violence	-0.000 0.002	0.009 0.006	0.000 0.003	-0.001* 0.000
Civilian Deaths (spatial lag)	0.211* 0.073	0.106 0.065	0.214* 0.074	0.168* 0.056
Excluded Groups (EPR)	-0.335 0.401	-0.167 0.429	-0.343 0.408	-0.025 0.029
UN Troops (spatial lag)	-0.536+ 0.294	-0.218 0.286		-0.003 0.006
Constant	-7.546* 2.759	-6.747* 3.399	-7.321* 2.784	-2.568* 1.063
N	8791	8791	8791	8791
AIC	3346.956	3304.532	3347.711	7282.224
BIC	3453.178	3417.836	3446.852	7345.957

Clustered Standard Errors in parenthesis

\* p&lt;0.05, + p&lt;0.10

peacekeeping on polarization is significant. When using fixed effects, however, polarization drops out because of its time invariance. Finally, it is worth noting that measuring peacekeeping as 0/1 confirms that peacekeepers are more effective in decreasing violence where polarization is high. However, when plotted, the conditional effect of the dummy variable is much less precise compared to the conditional effect of deployment size, suggesting that we do need to account for the actual number of troops on the ground.

## CONCLUSIONS

This article shows how the local distribution of power among ethnic groups affects the ability of UN peacekeepers to protect civilians. The reduction of conflict intensity supported in the existing literature does not uniformly affect all conflict-torn locations; rather it is mediated by local groups' capacity and their incentives for one-sided violence. The deployment of a mission alters these existing conditions that produce violence in ways that can be unexpected and tragic. Existing research finds that some external peace initiatives may even spur more civilian victimization instead of deterring it. Based on the empirical findings for the UN missions in Sierra Leone, there is support for the general hypothesis that effectiveness of peacekeeping is conditional on power distribution, as measured by the ethnic polarization score. In accordance with recent studies, missions with large contingents are found to effectively reduce violence against civilians, but this effect is conditional on ethnic power configurations. When there is asymmetry among warring parties, protecting civilians is significantly more difficult. Ethnic groups are intertwined and cannot be separated easily, as it is when polarization among group is low. So it is harder for external actors to monitor the use of violence, especially behind blurry frontlines. In



these settings, the significant power asymmetry may even push weak group against civilian targets, to either coerce them into supporting it or to inflict losses on adversaries. Similarly, the dominant group may also has motivations to escalate violence against civilians to secure its position before a full-scale mission is interposed. In the case of UNAMSIL in Sierra Leone, this meant that in chiefdoms with low polarization peacekeepers had either a very small curbing effect or no effect at all. We can imagine, however, that civil wars with deeper ethnic cleavages this dynamic may spiral and potentially result in UN missions inadvertently backfiring and provoking escalation of one-sided violence.

The findings of this research shed some light on the local dynamics of the targeting and protection of civilians. By adopting a spatially and temporally disaggregated approach, it provides evidence of how blue helmets presence in a location may reduce civilian casualties with varying levels of effectiveness. Violence against civilians exhibits fluctuating patterns that, as noted by Heldt<sup>79</sup>, point toward the triggering role of local circumstances. Some circumstances are pre-existing (i.e. territorial control) while others are the result of the interventions itself, but both requires local-level perspectives to be explained. Furthermore, policy implications are not trivial. As mass-killings plaguing Africa and the Balkans made clear in the early 1990s, deployment coupled with ethnic cleavages can have unintended consequences – even more so if the geography of ethnicity and territorial control that shape strategic use of violence are not taken into account when interventions are planned. Indeed, perpetrators react to interventions differently; if prevented from directly engaging their opponents some belligerents will target civilians when opportunity cost is low. Peace missions need to consider to what extent interventions

---

<sup>79</sup> Heldt 2010.

may make civilians more exposed to brutal attacks. At the core of this concern lies an information gap about local conditions and group capacity. In the last High-level Independent Panel on Peace Operations<sup>80</sup>, protection of civilians was defined as a moral responsibility for UN members. Addressing safety needs of civilians at risk, however, entails a grounded and thorough assessment of the threat, also involving considerations on armed forces and “local sources of resilience”.<sup>81</sup> The more field-focused approach outlined and repeatedly recommended in the report has the potential to fill the information gap and help peacekeepers in accomplishing their protection mandate.

---

<sup>80</sup> United Nations 2015.

<sup>81</sup> United Nations 2015, 39.

## References

- Autesserre, Séverine. 2014. "Going Micro : Emerging and Future Peacekeeping Research." *International Peacekeeping* 21(4): 492–500.
- Balcells, L. 2011. "Continuation of Politics by Two Means: Direct and Indirect Violence in Civil War." *Journal of Conflict Resolution* 55(3): 397–422.
- Balcells, Laia, Lesley-Ann Daniels, and Abel Escriba-Folch. 2016. "The Determinants of Low-Intensity Intergroup Violence. The Case of Northern Ireland." *Journal of Peace Research* 53(1): 33–48.
- Bangura, Y. 2004. "The Political and Cultural Dynamics of the Sierra Leone War: A Critique of Paul Richards." In *Between Democracy and Terror : The Sierra Leone Civil War*, ed. I Abdullah. Dakar: Codesria, 13–40.
- Bove, Vincenzo, and Andrea Ruggeri. 2015. "Kinds of Blue: Diversity in UN Peacekeeping Missions and Civilian Protection." *British Journal of Political Science* 46(3): 681–700.
- Carment, David, and Dane Rowlands. 1998. "Three's Company - Evaluating Third-Party Intervention in Intrastate Conflict." *Journal of Conflict Resolution* 42(5): 572–99.
- Cederman, L.-E., N. B. Weidmann, and N.-C. Bormann. 2015. "Triangulating Horizontal Inequality: Toward Improved Conflict Analysis." *Journal of Peace Research* 52(6): 806–21.
- Cederman, Lars-Erik, Kristian Skrede Gleditsch, and Halvard Buhaug. 2013. *Inequality, Grievances and Civil War*. New York: Cambridge University Press.
- Collier, Paul, and Anke Hoeffler. 1998. "On Economic Causes of Civil War." *Oxford Economic Papers* 50: 563–73.
- Costalli, S., and F. N. Moro. 2012. "Ethnicity and Strategy in the Bosnian Civil War: Explanations for the Severity of Violence in Bosnian Municipalities." *Journal of Peace Research* 49(6): 801–15.
- Costalli, Stefano. 2014. "Does Peacekeeping Work? A Disaggregated Analysis of Deployment and Violence Reduction in the Bosnian War." *British Journal of Political Science* 44(2): 357–80.
- Doyle, Michael, and Nicholas Sambanis. 2000. "International Peacebuilding: A Theroretical and Quantitative Analysis." *American political science review* 94(4): 779–801.
- Esteban, J., and D. Ray. 2008a. "Polarization, Fractionalization and Conflict." *Journal of Peace Research* 45(2): 163–82.
- . 2008b. "Polarization, Fractionalization and Conflict." *Journal of Peace*

- Research* 45(2): 163–82.
- Esteban, Joan, Massimo Morelli, and Dominic Rohner. 2010. "Strategic Mass Killings." (486).
- Esteban, Joan, and Debraj Ray. 1994. "On the Measurement of Polarization." *Econometrica* 62(4): 819–51.
- Esteban, Joan, and Gerald Schneider. 2008. "Polarization and Conflict: Theoretical and Empirical Issue." *Journal of Peace Research* 45(2): 131–41.
- Fortna, Virginia Page. 2004. *Peace Time: Cease-Fire Agreements and the Durability of Peace*. Princeton: Princeton University Press.
- . 2008. *Does Peacekeeping Work? Shaping Belligerents' Choice After Civil War*. Princeton: Princeton University Press.
- Gerring, John. 2007. *Case Study Research: Principles and Practices*. Cambridge University Press.
- Gilligan, M, and S Stedman. 2003. "Where Do Peacekeepers Go?" *International Studies Review* 5(4): 37–54.
- Heldt, Birger. 2010. *Management of Civil Wars and Genocidal Violence : Lessons from Statistical Research*.
- Horowitz, Donald L. 1985. *Ethnic Groups in Conflict*. London: University of California Press.
- Hultman, Lisa. 2007. "Battle Losses and Rebel Violence: Raising the Costs for Fighting." *Terrorism and Political Violence* 19(2): 205–22.
- . 2010. "Keeping Peace or Spurring Violence? Unintended Effects of Peace Operations on Violence against Civilians." *Civil Wars* 12(1-2): 29–46.
- Hultman, Lisa, Jacob Kathman, and Megan Shannon. 2013. "United Nations Peacekeeping and Civilian Protection in Civil War." *American Journal of Political Science* 57(4): 875–91.
- Humphreys, Macartan, and Jeremy M Weinstein. 2006. "Handling and Manhandling Civilians in Civil War." *American Political Science Association Annual Meeting (Toronto)* 100(3): 429–47.
- Iacus, Stefano M, Gary King, and Giuseppe Porro. 2011. "Causal Inference without Balance Checking: Coarsened Exact Matching." *Political Analysis*.
- Johnston, Patrick. 2008. "The Geography of Insurgent Organization and Its Consequences for Civil Wars: Evidence from Liberia and Sierra Leone." *Security Studies* 17(1): 107–37.
- Kalyvas, S N. 2001. "'New' and 'Old' Civil Wars: A Valid Distinction?" *World Politics*

54(1): 99–118.

Kalyvas, Stathis, and Laia Balcells. 2010. "International System and Technologies of Rebellion: How the End of the Cold War Shaped Internal Conflict." *American Political Science Review* 104(3): 415–29.

Kalyvas, Stathis N. 2006. *The Logic of Violence in Civil War*. Cambridge: Cambridge University Press.

Kalyvas, Stathis N., and Matthew A. Kocher. 2009. "The Dynamics of Violence in Vietnam: An Analysis of the Hamlet Evaluation System (HES)." *Journal of Peace Research* 46(3): 335–55.

Kalyvas, Stathis N., and Matthew Adam Kocher. 2007. "How 'Free' Is Free Riding in Civil Wars?: Violence, Insurgency, and the Collective Action Problem." *World Politics* 59(02): 177–216.

Kandeh, Jimmy D. 1992. "Politicization of Ethnic Identities in Sierra Leone." *African Studies Review* 35(1): 81–99.

Kathman, Jacob D., and Reed M. Wood. 2011. "Managing Threat, Cost, and Incentive to Kill: The Short- and Long-Term Effects of Intervention in Mass Killings." *Journal of Conflict Resolution* 55(5): 735–60.

———. 2014. "Stopping the Killing During the 'Peace': Peacekeeping and the Severity of Postconflict Civilian Victimization." *Foreign Policy Analysis* 12(2).

Klasnja, Marko, and Natalija Novta. 2016. "Segregation, Polarization, and Ethnic Conflict." *Journal of Conflict Resolution* 60(5): 927–55.

Krain, Matthew. 2005. "International Intervention and the Severity of Genocides and Politicides." *International Studies Quarterly* 49: 363–87.

Kreps, Sarah. 2010. "Why Does Peacekeeping Succeed or Fail? Peacekeeping in the Democratic Republic of Congo and Sierra Leone." *Modern War and the Utility of Force: Challenges, Methods, and Strategy* 2(2): 90–118.

Kuperman, Alan J. 2008. "The Moral Hazard of Humanitarian Intervention: Lessons from the Balkans." *International Studies Quarterly* 52(1): 49–80.

Lyon, Alynna J. 2005. "Beyond Rwanda and Kosovo: The Interactive Dynamics of International Peacekeeping and Ethnic Mobilisation." *Global Society* 19(3): 267–88.

McQueen, C. 2005. *Humanitarian Intervention and Safety Zones: Iraq, Bosnia and Rwanda*. Palgrave Macmillan.

Minnesota Population Center. 2015. "Integrated Public Use Microdata Series, International: Version 6.4 [Machine-Readable Database]."

- Montalvo, José G, and Marta Reynal-Querol. 2005. "Ethnic Polarization, Potential Conflict and Civil Wars." *The American Economic Review* 95(3): 796–816.
- Montalvo, Jose G., and Marta Reynal-Querol. 2005. "Ethnic Diversity and Economic Development." *Journal of Development Economics* 76(2): 293–323.
- . 2008. "Discrete Polarisation with an Application to the Determinants of Genocides." *Economic Journal* 118(533): 1835–65.
- Morelli, Massimo, and Dominic Rohner. 2014. "Resource Concentration and Civil Wars." *NBER Working Paper* N.20129(May 2014).
- Pushkina, Darya. 2006. "A Recipe for Success? Ingredients of a Successful Peacekeeping Mission." *International Peacekeeping* 13(2): 133–49.
- Raleigh, Clionadh, and Håvard Hegre. 2009. "Population Size, Concentration, and Civil War. A Geographically Disaggregated Analysis." *Political Geography* 28: 224–38.
- Raleigh, Clionadh, Andrew Linke, Håvard Hegre, and Joakim Karlsen. 2010. "Introducing Acled: An Armed Conflict Location and Event Dataset Special Data Feature." *Journal of Peace Research* 47(5): 651–60.
- Regan, Patrick M. 2002a. *Civil Wars and Foreign Powers: Outside Intervention in Intrastate Conflict*. Ann Arbor, MI: University of Michigan Press.
- . 2002b. "Third-Party Interventions and the Duration of Intrastate Conflicts." *Journal of Conflict Resolution* 46(1): 55–73.
- Rosen, David M. 2015. *Child Soldiers in the Western Imagination: From Patriots to Victims*. New Brunswick, NJ: Rutgers University Press.
- Ross, Michael L. 2004. "How Do Natural Resources Influence Civil War? Evidence from Thirteen Cases." *Source: International Organization* 58(1): 35–67.
- Ruggeri, Andrea, Han Dorussen, and Theodora-Ismene Gizelis. 2016. "On the Frontline Every Day? Subnational Deployment of United Nations Peacekeepers." *British Journal of Political Science*: 1–21.
- Di Salvatore, Jessica. 2016. "Inherently Vulnerable ? Ethnic Geography and the Intensity of Violence in Bosnian Civil War." *Political Geography* 51: 1–14.
- Di Salvatore, Jessica, and Andrea Ruggeri. 2017. "The Effectiveness of Peacekeeping Operations." In *The Oxford Encyclopedia of Empirical International Relations Theories*, ed. William R. Thompson. Oxford University Press.
- Schraml, Carla. 2012. "Introduction: The 'Dilemma of Recognition'. On the 'Experienced Reality' of Ethnicised Politics in Rwanda and Burundi." In *The Dilemma of Recognition*, Wiesbaden: VS Verlag für Sozialwissenschaften, 15–

25.

- Sundberg, R., and E. Melander. 2013. "Introducing the UCDP Georeferenced Event Dataset." *Journal of Peace Research* 50(4): 523–32.
- Thyne, Clayton. 2009. *How International Relations Affect Civil Conflict: Cheap Signals, Costly Consequences*. Lexington, MA: Lexington Books.
- Tilly, Charles. 1985. "War Making and State Making as Organized Crime." In *Bringing the State Back*, eds. P Evans, D Rueschemeyer, and T Skocpol. Cambridge: Cambridge University Press, 169–91.
- Toft, Monica Duffy. 2002. "Indivisible Territory, Geographic Concentration, and Ethnic War." *Security Studies* 12(2): 82–119.
- Tollefsen, Andreas Forø, Havard Strand, and Halvard Buhaug. 2012. "PRIO-GRID: A Unified Spatial Data Structure." *Journal of Peace Research* 49(2): 363–74.
- United Nations. 2015. *Report of the High-Level Independent Panel on Peace Operations on Uniting Our Strengths for Peace: Politics, Partnership and People*.
- UNSG. 2000. S/2000/751 *Eighteenth Report of the Secretary-General on the United Nations Mission in Sierra Leone*.
- . 2014. *Final Report of the Secretary-General on the United Nations Integrated Peacebuilding Office in Sierra Leone*.
- Weidmann, N. B. 2009. "Geography as Motivation and Opportunity: Group Concentration and Ethnic Conflict." *Journal of Conflict Resolution* 53(4): 526–43.
- . 2011. "Violence 'from Above' or 'from Below'? The Role of Ethnicity in Bosnia's Civil War." *The Journal of Politics* 73(04): 1178–90.
- Weidmann, N. B., and S. Schutte. 2017. "Using Night Light Emissions for the Prediction of Local Wealth." *Journal of Peace Research* 57(2): 125–140.
- Wood, R. M. 2010. "Rebel Capability and Strategic Violence against Civilians." *Journal of Peace Research* 47(5): 601–14.
- Wood, Reed M. 2014. "From Loss to Looting? Battlefield Costs and Rebel Incentives for Violence." *International Organization* 68(04): 979–99.
- Wucherpfennig, Julian et al. 2012. "Ethnicity, the State, and the Duration of Civil War." *World Politics* 64(64): 79–115.
- Zhukov, Y. M. 2013. "An Epidemic Model of Violence and Public Support in Civil War." *Conflict Management and Peace Science* 30(1): 24–52.

## APPENDIX

### “Obstacle to Peace? Ethnic geography and effectiveness of Peacekeeping”

Jessica Di Salvatore

University of Oxford

Department of Politics and International Relations

[jessica.disalvatore@politics.ox.ac.uk](mailto:jessica.disalvatore@politics.ox.ac.uk)

<b>A1. Cross-National Results</b>	<b>2</b>
<b>A2. Ethnic Polarization and Ethnic Power Parity</b>	<b>5</b>
<b>A3. Polarization and Segregation</b>	<b>8</b>
<b>A4. Total UN Armed Personnel</b>	<b>10</b>



## A1. CROSS-NATIONAL RESULTS

Table A1 is a replication of country-month analysis by Hultman et al (HKS)<sup>82</sup>, with the addition of the polarization index and its interaction with military peacekeepers. Yearly data on ethnic polarization is from Bove and Elia.<sup>83</sup> Model A1 in Table A1 is a replication of the HKS' negative binomial. As in Hultman et al, UN troops report a consistently negative coefficient but their curbing-capacity against one-sided violence, as found in the manuscript, appears to be conditional on national levels of ethnic polarization. As polarization grows (Figure A1), the effect of peacekeepers becomes larger, suggesting that higher polarization creates conditions for more effective PoC (protection of civilians) tasks. As polarization approaches 0.4, confidence intervals get very large and the effect vanishes, but this is due to the fact that in this sample observations up to the 95<sup>th</sup> percentile are below 0.39.

---

<sup>82</sup> Hultman et al 2013.

<sup>83</sup> Bove and Elia 2017.

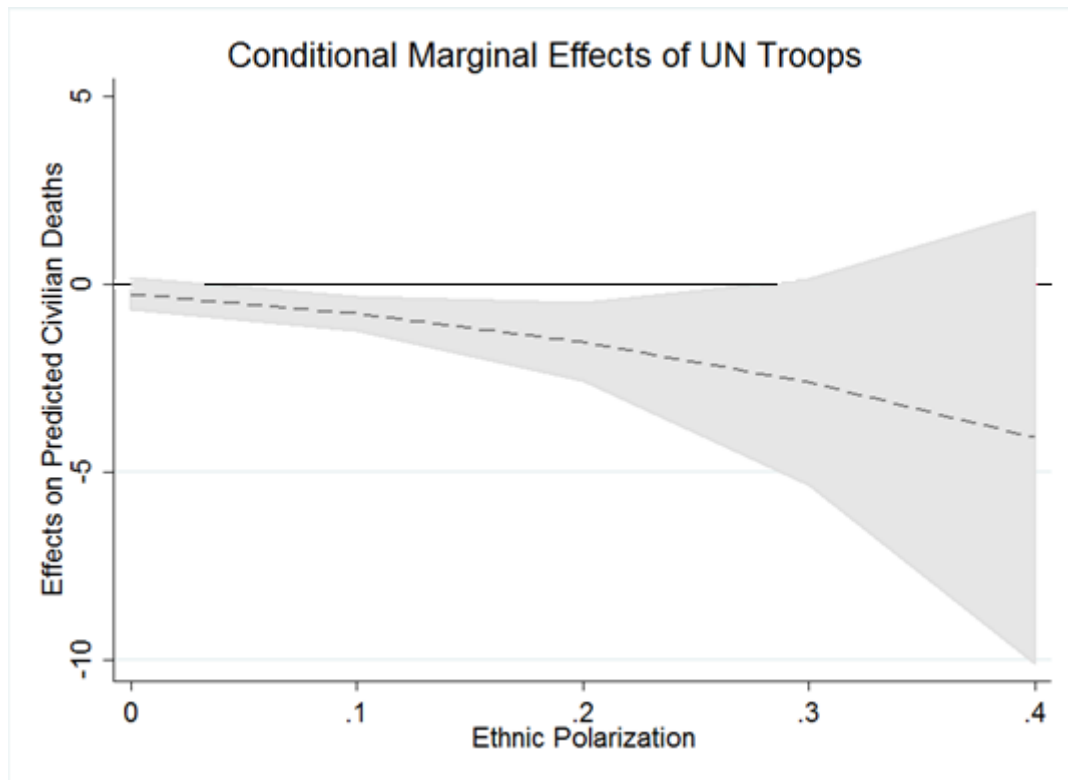
**Table A1. Cross-National Models with all PKO missions in Sub-Saharan Africa (1991-2008)**

	Model A1
Variables	Neg. Bin.
Ethnic Polarization	5.561+ 2.909
UN Troops/1,000	-0.023 0.023
Ethnic Polarization # UN Troops	-0.331+ 0.196
UN Police/1,000	-0.733* 0.279
UN Observers/1,000	1.357* 0.231
Battle-related Deaths	0.000 0.000
OSV (t-1)	6.774* 0.330
UCDP Incompatibility (1=Terr; 2=Govt)	2.344* 0.424
Duration of Conflict Episode	-0.004 0.003
Population (nat. log)	0.870* 0.178
Constant	-13.172* 2.139
Observations	254
AIC	2083.782
BIC	2126.230

Standard Errors in parenthesis

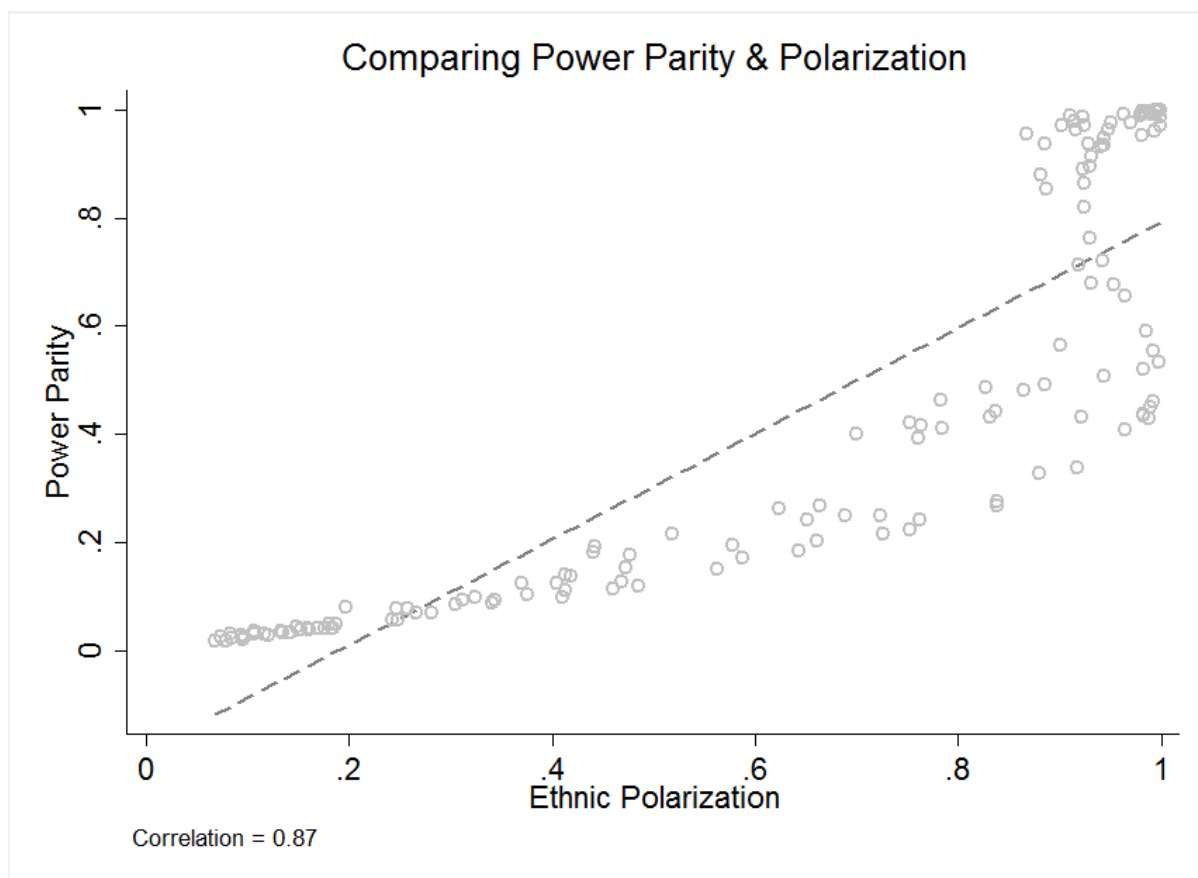
\* p&lt;0.05, + p&lt;0.10

Figure A1. Marginal Effects of UN Troops conditional on level of polarization (Model A1)



## A2. ETHNIC POLARIZATION AND ETHNIC POWER PARITY

Figure A2.1 . Scatterplot comparing indexes of ethnic power parity and polarization



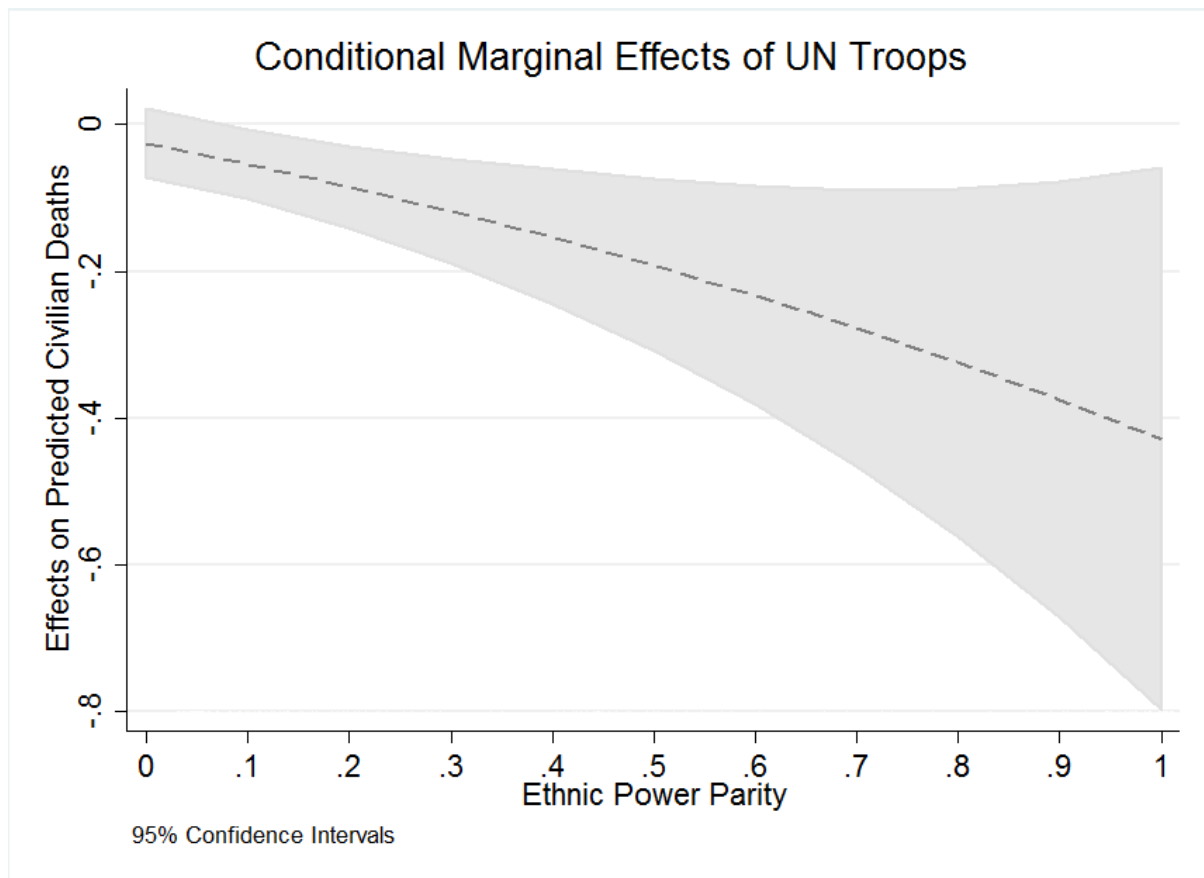
**Table A 2. Replication of Model 5 in Table III with ethnic power parity**

Variables	Model A2
	Replication of Model 5
Ethnic Power Parity	0.663 0.578
UN Troops (log)	-0.151 0.136
Ethnic Power Parity # UN Troops (log)	-1.579* 0.655
Civilian Deaths	0.025 0.020
Population (log)	0.446 0.379
Purchase Power Parity (log)	130.320* 38.378
Capital Distance	0.004 0.004
Nightlights Emissions	1.369 37.722
Diamonds (primary)	-1.710* 0.651
Prior Violence	-0.001 0.002
Civilian Deaths (spatial lag)	0.181* 0.063
Excluded Groups (EPR)	0.367 0.984
UN Troops (spatial lag)	-0.002 0.001
Constant	-7.083+ 3.683
Inalpha	3.952* 0.615
N	7655
AIC	5376.827
BIC	5480.973

Clustered Standard Errors in parenthesis

\* p&lt;0.05, + p&lt;0.1

Figure A2.2 . Marginal Effect of UN Troops by levels of ethnic power parity (Model A2, Table A2)



### **A3. POLARIZATION AND SEGREGATION**

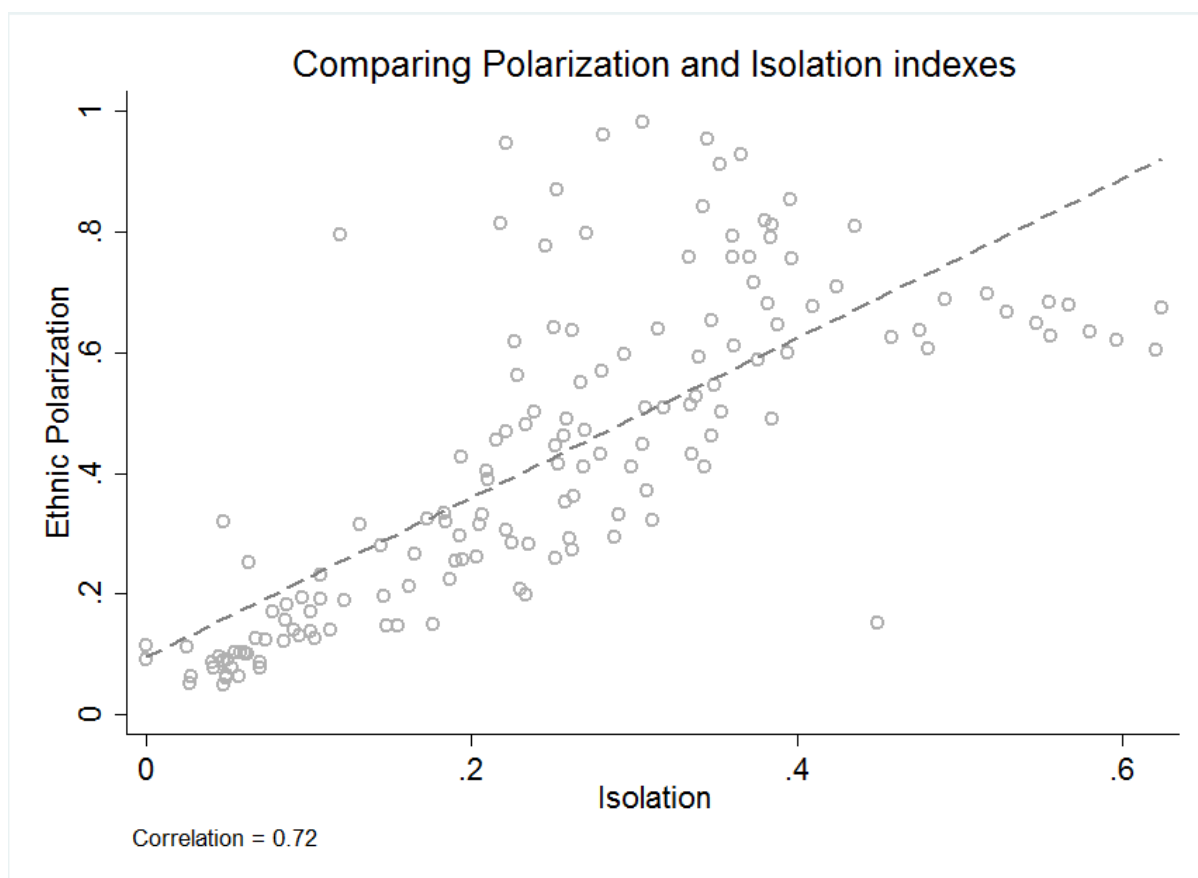
One of the assumptions made in the operationalization of territorial control as ethnic polarization is the degree of segregation at different levels of polarization. I argue that in chiefdoms with high polarization level, groups have similar size and will confront each other militarily along relatively clear separation lines. On the other hand, when polarization is low, there is usually asymmetry in size. While having two large groups makes it easier for individuals to move towards their co-ethnics and, thus, segregate, this is more complicated for minority groups that are surrounded by a dominant group. As result, low polarization corresponds also to intermingling of the minority group in areas inhabited by the majority group.

Ethnic polarization does not measure the degree of segregation. In this section, I show that, in the case of Sierra Leonean chiefdoms, ethnic polarization strongly correlates with segregation index. As measure of segregation, I use the isolation index provided by Glennerster, Miguel, and Rothenberg in their replication dataset.<sup>84</sup> The isolation index measures the exposure of a minority group to the majority group in a given unit. If there is high segregation (groups are physically), the index will approach 1. As intermingling increases, the index decreases toward 0. As depicted in Figure A3, in more polarized chiefdoms groups are more segregated, meaning they are separated and inhabit homogenous areas within the chiefdom. Conversely, as segregation shrinks, polarization follows the same reduction. Notice that segregation indexes do not consider relative size of groups and thus are a poor measure for local balance of power.

---

<sup>84</sup> Glennerster, Miguel, and Rothenberg 2013.

Figure A3. Scatterplot comparing indexes of ethnic isolation and polarization





**A4. TOTAL UN ARMED PERSONNEL****Table A 3. Negative Binomial model with both UN Troops and Police**

Variables	Model A3
	Total PK Armed Personnel
UN PK (Troops&Police)	-0.008 0.237
Ethnic Polarization	0.786 0.508
Ethnic Polarization # UN PK	-0.997* 0.419
Civilian Deaths	0.053* 0.020
Population (log)	0.412 0.338
Purchase Power Parity (log)	95.297 62.701
Capital Distance	-0.001 0.003
Nightlights Emissions	43.377+ 24.017
Diamonds (primary)	0.791 0.489
Prior Violence	-0.000 0.002
Civilian Deaths (spatial lag)	0.212* 0.072
Excluded Groups (EPR)	-0.341 0.398
UN Troops (spatial lag)	-0.537+ 0.292
Constant	-7.468* 2.770
Inalpha	4.933* 0.130
N	8791
AIC	3344.700
BIC	3450.922

Clustered Standard Errors in parenthesis

\* p&lt;0.05, + p&lt;0.1

## References

- Bove, Vincenzo, and Leandro Elia. 2017. "Migration, Diversity, and Economic Growth." *World Development* 89: 227–39.
- Glennerster, Rachel, Edward Miguel, and Alexander D. Rothenberg. 2013. "Collective Action in Diverse Sierra Leone Communities." *The Economic Journal* 123(568): 285–316.
- Hultman, Lisa, Jacob Kathman, and Megan Shannon. 2013. "United Nations Peacekeeping and Civilian Protection in Civil War." *American Journal of Political Science* 57(4): 875–91.