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The Effect of Child Soldiers on Rebel Violence against Civilians

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Abstract: Existing work describes child soldiers as very violent towards civilians. This implies that employing children should increase rebels' victimization of civilians. Challenging this, I posit that children's effect on group behaviour is conditioned by whether rebels' receive civilian support. Because they have weak pre-existing norms, children are prone to normalize violence but also likely to be susceptible to rebel efforts to control their use of violence. They should thus closely follow group rules in their behaviour towards civilians, implying a moderating effect of these rules. I expect that child soldiering increases civilian victimization only for groups who have little incentives to show restraint towards civilians because they receive no support from them. In contrast, child soldiering has no such effect for groups with a strong civilian support base. Tests using global data on intentional killings of civilians from the period 1989-2009 support these expectations.

Keywords: child soldiers; violence against civilians; civil war; rebel groups; violence

Word count: 9,622

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1. Introduction

Child soldiering continues to be a widespread feature of armed conflicts and though international actors have recently increased efforts to stop the practice, current numbers indicate that the global number of underage recruits is hardly decreasing (Bahgat et al., 2017). While some children join voluntarily, others are abducted and coerced into joining and the recruitment of minors in general has been identified as a glaring violation of children's rights (Goodwin-Gill and Cohn, 1994). Former child soldiers have also been found to suffer from negative long-term consequences as regards their psychological well-being and economic prospects (Betancourt et al., 2013; Blattman and Annan, 2010; Kohrt et al., 2008). In addition, recent studies argue that child soldiering also contributes to armed conflicts becoming more enduring and more likely to reignite (Haer and Böhmelt, 2016a, 2017), thus shining a light on the negative outcomes the practice can have for entire societies.

I build on these studies by exploring how rebel groups' use of child soldiers affects their victimization of civilians. Existing studies of child soldiering note that the participation of children in armed conflict is closely connected to subsequent atrocities against civilians (e.g. Münkler, 2005; Peters, 2011; Singer, 2006), leading some authors to even propose child soldiering as an early warning sign of future atrocities (Johnson et al., 2018). However, these studies largely disregard the role of armed group institutions such as combat training and political education in shaping combatant violence (e.g. Hoover Green 2016; Loken 2017). This may be particularly problematic as rebel group's demand for child soldiers can be explained with children's susceptibility to the behavioural effects of these institutions (Andvig and Gates, 2010; Beber and Blattman 2013).

Based on a recent literature on rebel group socialization (e.g. Checkel, 2017; Cohen, 2017), I thus argue that the effect of child soldiers crucially depends on what type of group they fight for. I posit that exposure to violence during recruitment and induction makes underage recruits become disposed towards the use of violence. While this also affects older recruits, children are especially prone to normalize violence due to not yet having developed strong norms of their own. This implies that rebel groups with children among their ranks exhibit more violence towards civilians than groups without. However, rebel groups may also seek to control their fighters' violence, using training and education to socialize recruits into organizational norms on who should be targeted and who must be spared (Hoover Green 2016). As children are especially susceptible to such socialization practices, they should more closely follow group rules in their behaviour towards civilians than adults that have already developed stronger norms. Child soldiering should hence only increase violence against

civilians if rebels have no incentive to show restraint towards civilians and to train recruits accordingly. I expect that child soldiering increases civilian victimization only for groups unable to mobilize civilian support who thus have no such incentive for spare civilians.

I test this proposition by analysing global data on intentional killings of civilians from the period 1990-2010. Results support my claim. For groups without civilian support, child soldiering results in over 50 additional civilian casualties. In contrast, the effect is statistically indistinguishable from zero for groups who enjoy civilian support. This result is robust to a battery of robustness checks, thus strengthening the notion that the effect of child soldiers on violence against civilians is positive but conditioned by rebels' extent of civilian support. The next section reviews the literature on civilian victimization. Section three develops my theoretical argument and section four discusses my research design. Section five presents my empirical analysis while section six concludes.

2. Literature Review

One-sided violence against civilians, "the intentional and direct use of violence" against civilians by "the government of a state or by a formally organized group" (Eck and Hultman, 2007: 235), is a regular feature of intrastate armed conflict. While its global levels have decreased since the 1990s, casualty numbers are still considerable and non-state actors have become the main culprits for them in the last twenty years (ibid.; Pettersson and Eck, 2018). Thus, a recent but substantial literature examines what determines non-state actors' extent of targeted violence against civilians.

Following Kalyvas (2006), most studies focus on the strategic use of civilian victimization in order to bring or keep local populations on their side while deterring enemy informants. Accordingly, the extent of rebel's territorial control has been found to be negatively related to their use of violence against civilians (e.g. De la Calle, 2017; Kalyvas and Kocher, 2009; Raleigh and Choi, 2017). Similarly, these studies posit that rebels victimize civilians as a reaction to shifting military power or new contestants entering the conflict as they seek to (re-)instill loyalty or cannot attack harder military targets (Clayton and Thompson, 2016; Hultman, 2007; Raleigh and Choi, 2017; Wood, 2010; Wood and Kathman, 2015).

At the same time, many rebel groups also have to use strategic *restraint* towards communities they rely upon for recruits and support in order to wage an effective war (see Hoover Green, 2016). As a result, groups who have clear civilian constituencies mostly spare those (Balcells, 2010; Fjelde and Hultman, 2014; Ottmann, 2017), especially as their power increases (Wood, 2014), as do ones with territorial control inside the conflict zone (Stewart and Liou, 2017). These groups have little incentive to engage in violence as this would only decrease their

support base. In contrast, groups with external sponsors, foreign members, or who operate from outside the conflict zone are less dependent on and have weaker links with civilian communities, meaning that they have less incentives for restraint and hence attack civilians more often (Moore, 2019; Salehyan et al., 2014; Stewart and Liou, 2017; Wood, 2014).

The literature also suggests that though groups use violence and restraint strategically, this strategic use can be threatened by principal-agent problems between group leaders and subordinates. Violence against civilians can also result from individual fighters or units seeking to achieve personal, non-military goals (Gates, 2002; Mitchell, 2004). In this line, it is argued that individuals who joined a group to gain material benefits are especially predisposed to deviate from group directives and violently pursue their own goals (Humphreys and Weinstein, 2006; Weinstein, 2005, 2006). At the same time, Manekin (2013) argues that even if combatants initially have individual norms against the use of violence, these norms can erode as they spend prolonged time in a clear power position among out-group civilians, implying that they become more likely to victimize civilians with time. As a result, armed groups that value strategic restraint at least towards some categories of civilians employ a variety of instruments to minimize such deviatory violence. These include selective recruitment, strict discipline and military and ideological training and are generally found to be effective in curtailing civilian victimization (see Hoover Green, 2016; Humphreys and Weinstein, 2006; Manekin, 2013; Oppenheim and Weintraub, 2017).

In sum, rebels' use of and restraint from violence against civilians can thus be seen as a strategic choice whose viability can be affected by individual combatants deviating from group orders and attacking civilians to pursue personal goals. However, the existing literature gives little consideration to how individual combatants' characteristics may affect their propensity to engage in strategic violence and restraint (for recent exceptions, see Loken 2017; Mehrl 2020). And in consequence, it also hardly examines how these characteristics interact with group-level attributes such as rebels' political education or their general incentives for restraint to affect civilian victimization[1]. In the following, I begin to tackle these issues by discussing how some combatants' status as children may be expected to affect their behaviour towards civilians conditional on the group norms they get exposed to.

3. Theory: Linking Child Soldiers and Civilian Victimization

Joining a rebel group can generally be expected to go hand in hand with a change in norms on the use of violence. Recruits are very likely to experience combat, witness the death of both opponents and peers, and commit violence themselves. Additionally, joining a rebel group often means undergoing a series of traumatic events that include coerced recruitment, seeing

relatives be killed, and – voluntarily or involuntarily – committing violence against others (Annan et al., 2011; Blattman and Annan, 2008; Cohen, 2017; Wessels, 2006: 59). Entry into a rebel group has thus been described as causing a normalization of violence as individuals develop no other means of solving conflict than violence or even begin to enjoy it and the power it gives them over others (Hoover Green, 2016; Maclure and Denov, 2006; Mitton, 2015: 136-139; Peters and Richards, 1998).

While joining a rebel group may alter any individual's norms, the resulting norm change should be much more likely and consequential for child recruits than for older joiners. Children have weaker pre-existing norms than adults and are hence more susceptible to being socialized into taking up new norms and behaviours (Checkel, 2017; Draper, 1974; Thompson, 1999; Wessels, 2006: 35f.). As recruitment into a rebel group goes together with regular experiences of violence, children should thus internalize it as normal behaviour whereas this process will be less pronounced for adults. Accordingly, existing studies find that childhood exposure to violence increases individuals' propensity for violence (Cecchi et al., 2016; Couttenier et al., 2019; Miguel et al., 2011) and that former child soldiers are more likely to self-report aggressive behaviour (Blattman and Annan, 2010). Because children are more malleable than adults, being exposed to violence thus results in a stronger normalization and consequentially higher use of violence for them. Child soldiering may thus be expected to increase rebels' violence against civilians.

However, it is unlikely that this occurs irrespective of the rebel group children are fighting for. To succeed, rebel groups require "large groups of combatants who unhesitatingly employ violence" but also "some control over the violence that fighters wield" (Hoover Green 2016: 620). In other words, rebel combatants should not only internalize the use of violence as something normal but also who they can target with this violence and who they should spare. To achieve these aims, rebel groups seek to socialize recruits into adhering to their norms (Checkel, 2017; Gates, 2017). They use a mixture of combat and political training, rituals, religion, but also common experiences of both performing and suffering violence to elicit such a socialization of their recruits[2] (Becker, 2010; Cohen, 2017; Eck, 2010; Gates, 2017; Haer et al., 2011). But as before, these socialization efforts should be more consequential for children than for older recruits due to their weaker pre-existing norms (Checkel, 2017; Draper, 1974; Wessels, 2006: 35f.). It is this malleability that Beber and Blattman (2013; see also Andvig and Gates, 2010) identify as the key driver behind rebel groups' demand for child soldiers. In contrast, older recruits will generally be more resistant towards such behavioural and norm change and instead often follow personal goals in their targeting of violence.

Children should thus not only be more likely to normalize the use of violence than adults but also to successfully be socialized into organizational norms on who to target with it.

This means that how child soldiering ultimately affects rebel group's use of civilian victimization should crucially depend on what norms and behaviours recruits are trained to adhere to. Most critically, it appears relevant whether training only aims to turn recruits into "combatants who unhesitatingly employ violence" (Hoover Green 2016: 620) or whether it also seeks to instil additional behavioural constraints regarding who should be targeted or spared. As children will normalize and hence use violence to a larger degree than adult recruits, child soldiering will increase rebel violence against civilians. But because they will also better internalize and thus more strictly adhere to group norms on who to target and who to spare, this effect will ultimately only exist for groups without an incentive for strategic restraint towards civilians.

Most generally, this suggests that child soldiering will only increase the extent of civilian victimization by groups who lack civilian support. Existing studies indicate that armed groups attempt to use restraint towards civilians if they already receive or aim to acquire their support or collaboration but behave more violently towards them when this is not the case (Salehyan et al., 2014; Whitaker et al., 2019; Wood, 2014). Accordingly, groups that enjoy civilian support should explicitly train combatants in behaving well towards this source of resources and aim to instil norms inhibiting opportunistic violence against civilians. In contrast, groups that have little or no ability to mobilize locally have no such incentive to spare civilians from violence. Instead, they may even be incentivized to use violence against civilians as attacking and pillaging local communities may be their main way of obtaining material supplies (Koren and Bagozzi, 2017; Moore, 2019; Stewart and Liou, 2017). Their training will thus focus on turning recruits into loyal and unhesitantly violent fighters but not on rules governing the good treatment of civilians. Instead, this training may even feature attacks on civilians, thus furthering recruits' loyalty towards the organization while defining civilians as part of the enemy and legitimizing their victimization (Cohen, 2017; Mitton, 2015: 134-145). As argued above, child soldiers should successfully internalize these diverging group norms on whether to target or spare civilians, meaning that the effect of child soldiering on violence against civilians will depend on rebels' support base. If rebels' enjoy civilian support, they will train their recruits to behave well towards the civilian population and child soldiers will accordingly spare civilians. But if rebels have no civilian support base, their training will not bar recruits from targeting civilians or may even explicitly endorse doing so, meaning that child soldiering will increase their extent of violence against civilians.

RUF and the LRA serve as an illustration for this. Both groups lacked close links the civilian population due to the geographically remote location of their camps, continuous movement, and, in the case of RUF, a significant contingent of foreign fighters (Beardsley et al., 2015; Peters, 2011). As a result, both enjoyed little support from local communities and fit the mould of roving bandits who cast civilians as an enemy to be attacked (Beardsley et al., 2015; Blattman and Annan, 2008; Peters, 2011). Both groups made extensive use of child soldiering and employed training practices that would turn these children into reliable group members while severing their ties to the civilian communities they came from. As part of their training, children fighting in these groups were thus forced to commit atrocities against neighbours and relatives (Blattman and Annan, 2008; Denov, 2010; Gates, 2017) while the victimization and looting of civilians served as a precondition to promotion (Maclure and Denov, 2006). Group leaders also told them that their home communities had turned against them and these children came to see anyone outside the group, including civilians, as supportive of the Kamajors or other anti-RUF militias and thus belonging to the enemy (Beber and Blattman 2013; Maclure and Denov, 2006; Peters 2011). In turn, child soldiers fighting for RUF and the LRA normalized both the use of violence and the victimization of non-combatants, ultimately obtaining a reputation for extreme violence against civilians (Maclure and Denov, 2006; Mergelsberg, 2010; Mitton 2015).

In contrast, the Nepalese CPN-M also extensively recruited children during its ten-year war against the government. But while RUF and LRA enjoyed little civilian support, the CPN-M had a substantial civilian support base among the indigenous and Dalit population, especially in the west of the country (Sharma, 2006). It thus did not cast civilians as the enemy but instead invested in the relationship with these communities by, for example, holding cultural events, integrating underrepresented groups in their governance structure, or instituting and enforcing rules of conduct via special "people's courts" (Lecomte-Tilouine, 2010; K.C. and Van der Haar 2018). This different relationship to civilians also showed in the CPN-M's training of recruits as it made extensive ideological schooling the key prerequisite of joining their armed forces and fighters' political education was constantly refreshed (Eck, 2010). And whereas the RUF and LRA sought to break recruits' ties to civilian communities, the CPN-M's fighters often remained in the same district over time and repeatedly visited the same villages (Onesto 2005). Accordingly, there is to the best of my knowledge no source reporting violence against civilians by child soldiers in the CPN-M.

Based on the theory formulated above and these case illustrations, I thus hypothesize:

Hypothesis: Child soldiering increases rebels' civilian victimization only if the rebel group does not have civilian support, otherwise it does not.

4. Data and Methodology

In order to test this hypothesis, I employ a dependent variable that indicates the yearly number of civilians killed as a result of being "deliberately and directly targeted" (Eck and Hultman, 2007: 235) by a rebel group engaged in intrastate conflict. This variable does not include civilians that were killed as bystanders in combat or died from causes indirectly connected to conflict (e.g. starvation). It is thus well-suited to measure rebels' treatment of civilians. It is coded from the UCDP Georeferenced Event Dataset (Croicu and Sundberg, 2017; Sundberg and Melander, 2013) and *does not* use the 25 yearly casualties threshold employed in the UCDP one-sided violence dataset[3] (Eck and Hultman, 2007), thus also observing observations with less casualties. It is coded for rebel groups involved in an intrastate conflict producing at least 25 yearly battle-deaths as given in the UCDP Armed Conflict Data (Gleditsch et al., 2002; Pettersson and Eck, 2018). It covers the period 1989-2016 and 347 rebel groups, amounting to 1407 dyad-year observations[4], but my sample only includes pre-2011 observations due to data limitations on the main independent variables. While this is only a relatively short period of time, the data is preferable to other datasets on civilian victimization (e.g. Harff, 2003; Melander et al., 2009) as it attributes violence to specific actors, includes only deliberate acts of violence, includes low- and high-intensity violence, and gives the number of deaths instead of an ordinal indicator.

This dependent variable is a count variable – it can take only positive integer values – that is overdispersed with its variance being larger than its mean, making a negative binomial model a good choice (Greene, 2012: 846-849). As in previous studies of civilian victimization, I have a large number of dyad-year observations with zero observed killings of civilians. This is possibly the result of two different processes as rebel groups may abstain from targeting civilians or target but not necessarily be reported as killing them. I thus employ zero-inflated negative binomial (ZINB) models in the main analysis[5]. As the data includes 1036 observations from 268 groups over 21 years, I account for autocorrelation by including a lagged dependent variable in the negative binomial stage and cubic polynomials of time in the inflation stage (Carter and Signorino 2010). I also cluster standard errors on the conflict dyad.

To measure child soldiering, my main explanatory variable, I use an indicator constructed by Haer and Böhmelt (2016b) which codes whether rebels employ soldiers aged under 18 as a binary variable[6]. The data covers the same universe of cases as the Non-State Actor (NSA) data, version 3.3, (Cunningham et al., 2009, 2013) and spans the years 1989-2010. I theorize

that the effect of child soldiering is conditioned by whether a rebel group enjoys civilian support. To measure this, I use information from the NSA dataset on the "ability of the rebel group to mobilize popular support" (Cunningham et al. 2013: 522) to construct the binary item *mobilization* which takes the value 1 if a group has at least moderate mobilization ability and zero otherwise. I rely on this variable as a proxy measure of civilian support as it captures whether a rebel group enjoys a substantial level of non-combatants' voluntary cooperation, receiving recruits and resources from them[7]. As argued above, rebel groups with this type of popular support have a clear incentive to train recruits to behave well towards civilians. That being said, *mobilization* only presents one possible way of proxying for rebels' civilian support and I use two alternatives, them having ethnonationalist goals and their provision of governance and social services, as alternative proxies in the appendix.

To test my hypothesis, I interact the child soldier variable with the mobilization dummy. Table one presents a cross-tabulation of these two variables on the group level, also presenting some prominent example groups for each combination. It indicates that slightly less than half of the groups in my sample are able to mobilize locally and that a majority of them uses child soldiers. However, it also shows that both groups with a low and high ability to mobilize recruit children[8].

	Child Soldiers: No	*Child Soldiers: Yes*	Total
Mobilization: Low	37 (16.02%) (88 obs.) Devrimci Sol (Turkey) Hezbollah (Lebanon) Jondullah (Iran)	104 (45.02%) (498 obs.) LRA (Uganda) KNU (Myanmar) RUF (Sierra Leone)	141 (586 obs.)
Mobilization: Medium or High	28 (12.12%) (69 obs.) Hamas (Israel) MFDC (Senegal) PIRA (United Kingdom)	71 (30.74%) (362 obs.) BRA (Papua New Guinea) CPN-M (Nepal) OLF (Ethiopia)	99 (431 obs.)
Total	30 (111 obs.)	142 (796 obs.)	240 (1017 obs.)

Table One: Cross-tabulation of groups' use of child soldiers and ability to mobilize support. Cell Percentages do not add up to 100 because nine groups appear in two cells as either their use of children or mobilization ability changes over time.

In addition, I control for a number of attributes of the rebel group, conflict, and conflict country that the literature surveyed above has argued to influence civilian victimization and which may be correlated with child recruitment[9]. Regarding rebel attributes, I control for external support, access to safe havens and the presence of natural resources, employing two variables from the NSA data to account for the former and an additive index of the existence of drugs, petroleum, diamonds and gemstones in a country for the latter (Haer and Böhmelt,

2016b). In terms of conflict characteristics, I control for fighting intensity and governmental violence against civilians using UCDP data (Croicu and Sundberg, 2017; Pettersson and Eck, 2018; Sundberg and Melander, 2013), both are lagged by one year to ensure temporal order, and use a binary measure of rebel strength from the NSA data to capture belligerents' relative capability. Additionally, civilian victimization may grow worse over the duration over conflict, I thus code how long a conflict-dyad has been active for in a given dyad-year from the UCDP armed conflict data. Finally, I account for a country's economic development, population, type of government, and ethnic composition by including, respectively, its logged real per capita GDP and population figures (Gleditsch, 2002, 2013), polity score (Marshall et al., 2016), and the size of politically excluded ethnic groups (Vogt et al., 2015) as controls[10].

Before presenting the results of this analysis, it is necessary to discuss two shortcomings of this research design. First, some of the independent variables used here, most importantly the indicators of rebels' child soldiering and mobilization ability, are relatively time-invariant as they are not coded for each year but instead for conflict dyad-*periods* (see Cunningham et al. 2013: 519*)*. Dyad-period observations may thus cover multiple years and only end if either the conflict is inactive for at least two years or if there is a change in one of the variables coded in the NSA data. The two key independent variables employed here thus use the conflict dyad-period as original unit of observation, meaning that a reliance on the dyad-year as unit of observation is potentially problematic. Below, I thus also present cross-sectional analyses with one observation per dyad-period, for these I include the mean of otherwise time-variant, continuous variables, the median values of time-variant, categorical variables, and drop the dynamic control variables on violence in the dyad. As a result, these observations can be interpreted as average years within a dyad-period, making coefficients across the time-series cross-sectional and the cross-sectional models comparable. A second issue is that while the theoretical argument made above centers on child soldiers' use of violence, the outcome variable used in the quatitative analysis only measures group-level violence against civilians. Unfortunately, a lack of data specifically measuring child soldiers' use of violence makes this a caveat which I cannot adress empirically but discuss further in the conclusion.

5. Empirical Analysis

I test my hypothesis on how rebels' use of child soldiers affects the scale of their violence against civilian by running ZINB models. I focus on the negative binomial part of these models here and discuss their logit inflation component in the appendix. While models 2a and 4a test the hypothesized conditional effect of child soldiers on, respectively, the dyad-year and dyad-period data by interacting my measure of child soldier usage with *Mobilization*, models

1a and 3a examine whether there is any unconditional relationship between child soldiering and violence against civilians.

Columns 1a and 3a provide no evidence that rebel groups who recruit children exhibit higher levels of violence against civilians than groups that do not. While the effect of *Child Soldiers* is positive, it is not distinguishable from zero on conventional levels of statistical significance in either of the two models. This implies that child soldiering has no unconditional effect on rebel groups' propensity to victimize civilians, irrespective of whether the dyad-year or dyad-period data is used.

Dependent Variable: Rebel One-sided Violence	(1a) TSCS	(2a) TSCS	(3a) CS	(4a) CS
Rebel OSV (Lag)	0.000	0.000		
	(0.001)	(0.001)		
Child Soldiers	0.179	1.338***	0.787	1.513***
	(0.431)	(0.403)	(0.484)	(0.477)
Mobilization	-0.079	1.464***	0.293	1.372**
	(0.337)	(0.505)	(0.411)	(0.594)
*Child Soldiers*Mobilization*		-1.722***		-1.366*
		(0.653)		(0.769)
Rebel Strength	0.340	0.455	2.049**	2.151***
	(0.418)	(0.391)	(0.814)	(0.796)
Natural Resources	0.200	0.135	-0.007	-0.010
	(0.188)	(0.190)	(0.269)	(0.267)
Rebel External Support	0.359	0.222	0.141	0.026
	(0.291)	(0.306)	(0.384)	(0.391)
Conflict Intensity (Lag)	0.000*	0.000**		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000	0.000		
	(0.000)	(0.000)		
Population (LN)	-0.122	-0.080	-0.061	-0.056
	(0.103)	(0.104)	(0.198)	(0.172)
Conflict Duration	-0.032	-0.026	-0.034	-0.037
	(0.022)	(0.020)	(0.030)	(0.029)
GDP p.c. (LN)	-0.238*	-0.210*	-0.446*	-0.438**
	(0.139)	(0.124)	(0.232)	(0.194)
Polity2 Score	-0.089**	-0.099***	0.059	0.052
	(0.035)	(0.029)	(0.057)	(0.044)
Ethnically Excluded Pop. (%)	-1.436***	-1.482***	0.347	0.671
	(0.440)	(0.414)	(0.885)	(0.870)
Constant	7.518***	6.026***	7.376**	6.679***
	(1.754)	(1.432)	(2.907)	(2.330)
Observations	642	642	220	220
Alpha (ln)	0.481***	0.455***	1.180***	1.148***
	(0.090)	(0.090)	(0.319)	(0.306)

*Table Two: Negative Binomial Parts of Zero-inflated Negative Binomial Regressions. TSCS = Timeseries Cross-section, CS = Cross-section. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1.*

Columns 2a and 4a indicate that the unconditional specification of the relationship between child soldier usage and civilian victimization hides considerable differences between rebel

groups. Here, *Child Soldiers* exhibits a positive effect on rebel violence against civilians which is statistically significant on the 1%-level whereas the effect of the interactive term *Child Soldiers*Mobilization* can also be statistically distinguished from zero but is negative in both models. For rebel groups with low mobilization capabilities, child soldier usage is thus associated with increased civilian victimization whereas this relationship is dampened for groups that can mobilize locally. Civilian victimization is more prevalent in groups with low mobilization capabilities and child soldiers than in groups with similarly low support but only adult fighters. In contrast, these results indicate that child soldiering is not associated with a difference in the extent of civilian victimization perpetrated by groups with high mobilization capacities as the absolute value of the coefficient of the interactive term is very close to that of the constituent term *Child Soldiers.* At the same time, results for the zero inflation parts of these models indicate that child soldiering has no statistically significant effect on whether rebel groups engage in civilian victimization at all[11].

To examine these effects substantively, I present discrete first differences in figure one. These give the change in the predicted number of civilian casualties due to rebel child soldiering for groups with low and high mobilization abilities separately. In figure one, it is visible that groups who have children among their ranks but no local support are predicted to kill at least 60 civilians more than groups that are also unable to mobilize such support but do not employ children. In contrast, a group having a local support base makes this violence-increasing effect of child soldiering disappear. Depending on whether the dyad-year or dyad-period model is used, high mobilization groups with child soldiers are predicted to kill slightly more or even less civilians than groups with a similar level of support but no children among their ranks. However, the confidence intervals include zero in both cases. This indicates that rebel child soldiering only increases violence against civilians if the group employing children cannot mobilize local support[12].

These results suggest that child soldiering may indeed affect rebel violence against civilians but that this effect is moderated by rebels' local support. Child soldiering has no statistically significant effect on the number of civilians killed by rebel groups that have a moderate or high ability to mobilize local support. In contrast, rebel groups that lack this ability kill significantly more civilians if they employ children than if they do not.

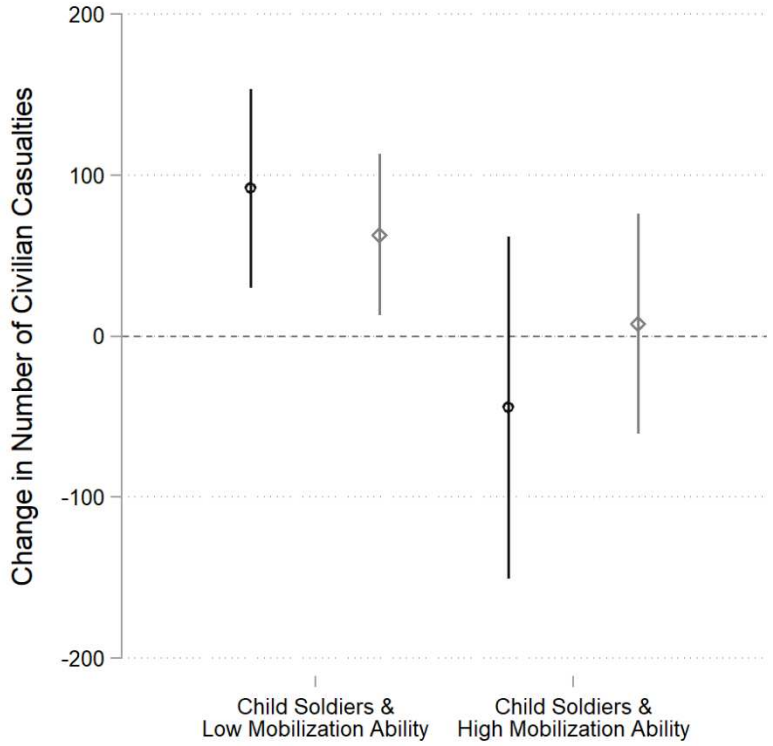

*Figure 1: Discrete first difference estimates for Child Soldier * Mobilization Interaction. Black circles represent effects from model 2a, grey diamonds from model 4a. Base category: Rebel groups without child soldiers and low mobilization ability. Whiskers represent 95% confidence intervals; dashed line represents zero difference; effects calculated while all other variables held at their mean.*

One possible issue with the results presented above is that they may be model-dependent and thus subject to change if variables' functional form is adjusted or controls are added or deleted. In addition, groups that employ children may systematically differ from ones that only employ adult combatants. Matching offers one way to alleviate these concerns (Ho et al., 2007) and I use coarsened exact matching (Iacus et al., 2012) to decrease imbalance between treated and control groups. The results of this additional analysis are presented in the appendix and in line with models one and two[13].

Another potential key issue is whether *mobilization* is a good proxy measure of rebels' civilian support. For instance, its interpretation would become questionable if it captured not only voluntary but also coercive resource mobilization. It is further possible to think of situations where rebels may have substantial civilian support but low mobilization ability, for example when the potential costs of joining the rebels are very high, or where the opposite is the case, for instance when otherwise unpopular rebels can offer recruits access to resource rents. I thus re-estimate the main models controlling for rebels' engaging in forced recruitment but also while using alternative proxies of civilian support. First I replace *mobilization* with a variable indicating whether a group follows ethnonationalist goals as such groups are comparatively more likely to enjoy and explicitly seek civilian support due to

operating close to their claimed constituency and their goals of acquiring self-rule requiring them to show their ability to govern over and cooperate with civilians (see (Beardsley et al. 2015; Stewart 2018). And second, I replace *mobilization* with a dummy indicating whether rebels provide governance and social services to civilians as only groups valuing civilian support should engage in such actions which take away resources form their fighting effort. The results of all three additional analyses are substantively in line with those of the main models.

Finally, I further probe the robustness of my results. I re-run the main models using two alternative dependent variables. First, the number of civilians a group has killed *in the conflict country* and second, a censored version of my original variable as provided by the UCDP one-sided violence dataset where all casualty counts below 25 are set to zero. Next, I employ Haer and Böhmelt's (2016) ordinal indicator of child soldiering and drop possible outliers from the analysis. I then also re-run my main models while dropping all controls, controlling for other potential confounders such as governmental child soldiering or the number of rebel groups in a conflict, and using negative binomial estimators without zero inflation. Due to limited space, I report detailed justifications and results tables for these models in the appendix. Results mirror those obtained in the main analysis.

In summary, my statistical results indicate that there is a consistent link between rebel child soldiering and civilian victimization if rebel groups have no local support base. Accordingly, the use of children is found to have no effect on violence against civilians for rebel groups able to mobilize considerable local support. In contrast, the civilian death count for groups without such support is estimated to increase by over 50 additional casualties when they employ children.

6. Conclusion

The recruitment of children as combatants and the victimization of civilians represent two of the grimmest features of contemporary armed conflict. In this study, I have argued that the two phenomena are intimately related but that the link from children being enlisted as soldiers to civilians being killed is not an unconditional one and instead depends on the group recruiting these children.

This is because children have weak pre-existing norms and should thus be more likely to normalize the use of violence when exposed to it than adults. But for the same reason, they should also be more susceptible to rebels' efforts at controlling and directing their use of violence through education and training. If rebels thus have an incentive to institute and enforce norms against the victimization of civilians, child soldiers should adhere to them and

hence spare civilians. But if no such incentive exists, child soldiers will engage in substantial violence against civilians, making the effect of child soldiering on rebel violence against civilians ultimately conditional upon rebels' incentives for restraint. I thus expect that child soldiering increases civilian victimization only for groups who have little incentives for restraint towards civilians because they lack local support. In contrast, this should not be the case for groups who benefit from the support of a constituency which they should seek not to alienate through the use of violence. Results from statistical tests using conflict-level data from a global sample of conflicts, 1990-2010, and a battery of robustness checks provide support for my theoretical claims.

This finding is important for our theoretical understanding of child soldiering and armed conflict but also has policy implications. Child soldiering has recently come into focus as a determinant of conflict dynamics. This is an important development because it further allows us to understand what factors make armed conflict more likely, lethal, and durable, but also because it shines a light on why children are recruited in the first place. Here, I have developed an empirical implication of the notion that recruitment happens because minors are more likely to stay with and adhere to group norms than older recruits, namely that their effect on violence against civilians should depend on the characteristics of the recruiting group, and have found evidence supporting this expectation. This study thus complements and extends research that explains rebels' demand for child soldiers by claiming that they are comparatively cheap but effective combatants. Future studies may take up this proposition and develop it further regarding the effect of child soldiering on other conflict dynamics but also to examine whether group type moderates its effect on affected individuals' post-conflict well-being and prospects of re-integration. This is relevant in terms of policy as the effective re-integration of former child soldiers may depend on what norms they acquired during their time as combatants. My results suggest that especially for children recruited by groups with a weak support base, re-integration programs may need to focus on instilling norms against violence.

However, the results of this study can only serve as a first indication on the link between child soldiering and violence against civilians. Further research examining the precise theoretical mechanism behind the empirical relationship found here is necessary. I have offered one theoretical mechanism regarding a conditional effect of child soldiering on violence against civilians and the empirical results documented here are in line with it. However, one can also think of other mechanisms leading to the finding that child soldiering only increases violence against civilians by rebel groups lacking civilian support. For example, some groups lacking

civilian support may have certain unobservable values, which are not captured by any of the control variables included in my analysis, that make them choose to both recruit child soldiers and attack civilians. In contrast to the theory proposed above, the additional violence against civilians would thus not be perpetrated specifically by child soldiers but instead all group members; however, these mechanisms cannot be distinguished based on the empirical analysis presented here. Given the measure of civilian support used in the main analysis, one could also argue that rebel groups' higher mobilization capacity may lead to child soldiers accounting for a smaller relative share of a group's fighters, particularly if rebels favour adult over child recruits. If this is the case, child soldiers may always be more violent against civilians than adults, but this effect would only be detectable in groups with low mobilization capacities and hence a higher percentage of child soldiers. However, this alternative mechanism does not explain the substantively similar results using alternative proxies of civilian support presented in the appendix. As such, the empirical results presented here do allow adjudicating between some potential theoretical mechanisms but ultimately fall short of identifying what exactly is behind the empirical relationship documented here.

More research using more fine-grained, higher quality data is thus necessary. Time-varying data on rebel group membership and attributes will allow further testing the conditional relationship presented here and may provide some leverage on the role of rebel group values. The results presented here, suggesting that children commit violence in groups with little local support, rest on data which does not identify the perpetrators of violence within a group. Data on children's roles in rebel groups will thus be essential to trace whether it really is the child soldiers that perpetrate these acts and until such data is available, the results presented here must be considered preliminary. Finally, only the detailed study of one or few rebel groups using, for example, process tracing methods may allow distinguishing between the roles of different mechanisms underlying the effect of child soldiering on violence against civilians.

Endnotes

[1] One exception are studies that differentiate between recruits motivated by material and non-material incentives and examine how these individuals' decision to desert are affected by political training (Oppenheim et al., 2015; Weinstein, 2005, 2006).

[2] While these studies of rebels all rely on evidence that is anecdotal or based on small convenience samples, common experiences of violence have generally been found to instil in-group cohesion and out-group antagonism that may be detrimental in post-conflict contexts but highly suited to create an effective fighting force (See e.g. Cecchi et al., 2016; Miguel et al., 2011; Voors et al., 2012).

[3] This allows me to count smaller-scale violence against civilians and to differentiate between acts of one-sided violence committed inside and outside the conflict country. My main analysis employs a variable counting all violence against civilians. Results are robust to employing dependent variables counting violence in the conflict country only or using the UCDP 25 death threshold.

[4] While the one-sided violence data is organized in actor-years, many of my control variables have a dyadic format and the sample is defined as groups that achieve 25 battle-related deaths while fighting *one* specific government. Groups active in multiple states can thus fight in multiple dyads in one year.

[5] There is empirical support for using ZINBs instead of standard Negative Binomials (Greene, 2012: 861ff.; Hilbe, 2011: 371-379). In both main models, Vuong tests result in large and positive z-values, favouring the ZINB (Vuong, 1989; Greene, 2012: 863). As the Vuong test has been argued to be inappropriate for comparing overlapping models (Santos Silva et al., 2015; Wilson, 2015), I also use alternative HPC tests (Santos Silva et al., 2015), which favour the ZINB.

[6] Haer and Böhmelt also provide an ordinal indicator which codes child soldiering as non-existent (0), intermediate with children comprising less than 50% of a group's forces (1), or high with children outnumbering adults (2). However, this more differentiated variable appears to suffer from substantial coding issues (Haer and Böhmelt, 2017). Models using this alternative variable are presented in the appendix and mirror my main models in terms of their substantive results. This dataset has consequently also been expanded (Haer, Faulkner, and Whitaker 2019). However, this was done by differentiating by whether groups used forced or voluntary recruitment to enlist child soldiers, not by extending the period of observation. I hence use the original child soldiering dataset provided by Haer and Böhmelt.

[7] It is crucial that this cooperation and support is voluntary and not the result of coercion. To ensure that *mobilization* does not capture coercive actions by rebel groups, I present models in the appendix that explicitly control for rebels' use of forced recruitment.

[8] This observation is relevant as separatist groups are, all else equal, less likely to recruit children in the first place (Lasley and Thyne 2015).

[9] See e.g. Faulkner, Powell, and Thyne (2019), Haer, Faulkner, and Whitaker (2019), Lasley and Thyne (2015), Tynes and Early (2015), and Vargas and Restrepo-Jaramillo (2016).

[10] Summary statistics are reported in the appendix where the controls are also discussed in more detail.

[11] Models 2 and 4 also include some statistically significant results for control variables, most prominently *mobilization*. I refrain from interpreting these results because these model specifications were chosen with only the effect of child soldiers in mind. The control variables were hence selected to control only for confounders regarding the relationship between child soldiering and violence against civilians. The coefficient estimates of anything but child soldiering and the interaction term may hence result from omitted variable bias as no efforts were made to achieve unconfoundedness for these variables, making them substantively mostly meaningless (See Cinelli and Hazlett 2020: 44-45; Hünermund and Louw 2020).

[12] In addition, figure 1 also indicates that the number of civilians killed by groups that use child soldiers and can mobilize local support is lower and statistically distinguishable so from the number of civilians killed by groups who employ children but have no such support (Loftus and Masson 1994).

[13] See the appendix.

Appendix for "The Effect of Child Soldiers on Rebel Violence against Civilians"

In this appendix, I provide descriptive statistics and a series of additional analyses that complement and further support the main article's findings. These include the following sections:

A.1. **Summary Statistics** of Variables used in all models and discussion of controls.

A.2. **Zero-Inflation parts** of ZINB models in the main empirical analysis

A.3. **Matching**

A.4. Altered Dependent variable: **25 civilian casualties threshold**

A.5. Altered Dependent variable: **Civilian casualties in conflict country**

A.6. Main Independent Variables: **Ordinal child soldier variable**

A.7. Main Independent Variables: **Controlling for forced recruitment**

A.8. Main Independent Variables: **Ethnonationalism instead of mobilization ability**

A.9. Main Independent Variables: **Rebel governance instead of mobilization ability**

A.10. Main Independent Variables: **Dropping mobilization outliers**

A.11. Control Variables: **Number of rebel groups**

A.12. Control Variables: **Categorical regime type**

A.13. Control Variables: **Governmental child soldiering**

A.14. Control Variables: None, estimating **naïve models**

A.15. **Standard negative binomial**

A.1. Summary Statistics of Variables used in all models and discussion of controls

Variable	*Observations*	*Mean*	*SD*	*Min.*	*Max.*
Rebel OSV	1407	167.611	1009.694	0	30110
Child Soldiers	1036	.839	.368	0	1
Mobilization	1018	.423	.494	0	1
Rebel strength	1037	.087	.282	0	1
Nat. Resources	1037	2.300	1.157	0	4
Rebels External Support	984	.998	.924	0	2
Conflict Intensity (Lag)	910	1032.157	3882.607	25	68503
Gov. One-sided Violence (Lag)	910	86.371	311.653	0	5801
Population (LN)	1146	10.420	1.625	6.058	14.082
Conflict Duration	1407	5.530	6.582	1	42
GDP (LN)	1146	7.754	1.043	5.315	10.681
polity2 score	1005	1.226	6.040	-9	10
Excluded ethnic population	1235	.239	.232	0	.865
Rebel OSV (UCDP)	1407	166.042	1009.943	0	30110
Rebel OSV (Conflict only)	1407	85.630	848.168	0	30110
Forced Recruitment	908	.601	.490	0	1
Ethnonationalism (Polo & Gleditsch 2016)	1037	.500	.500	0	1
Ethnonationalism (Wood & Thomas 2017)	919	.519	.500	0	1
Rebel Governance	634	.221	.415	0	1
Child Soldiers: Index	1036	1.070	.622	0	2
Mobilization: medium only	984	.404	.491	0	1
Conflict Rebel Groups (#)	1407	1.610	.921	1	6
Regime Type	1407	1.382	.679	0	2

Table A1: Summary Statistics for all variables. OSV=One-sided Violence.

While the data and methodology section summarizes the controls included in my models, lack of space did not allow a closer discussion of how I picked them. I thus provide this discussion here, covering why they may be related to both the dependent variable violence against civilians and the use of child soldiers.

Beginning with further rebel attributes, it has been argued that armed groups that receive external support, have safe havens in another country or can access natural resources to finance themselves are more violent against civilians (Weinstein 2006; Salehyan et al. 2014; Steward and Liou 2017) and these same variables may also affect rebel groups' willingness to coerce children to fight for them (e.g. Faulkner et al. 2019; Haer et al. 2019). I employ two variables from the NSA data to account for the former and an additive index of the presence of drugs, petroleum, diamonds and gemstones in a country for the latter which was constructed by Haer and Böhmelt (2016) based on PRIO data (Buhaug and Lujala 2005;

Gilmore et al. 2005; Lujala et al. 2007; Lujala 2009). Turning to characteristics of the conflict dyad, rebel violence against civilians has been found to be affected by how intense fighting with the government is and to what extent opposing forces victimize civilians. These variables could similarly affect child soldiering by e.g. producing easy to mobilize orphaned and displaced children (Achvarina and Reich 2006). I, respectively, employ the number of battle-related deaths in the dyad (Pettersson and Eck 2018) and the number of targeted civilian casualties caused by opposing governmental forces (Sundberg and Melander 2013; Croicu and Sundberg 2017) to account for these factors, both are lagged by one year to ensure temporal order. In addition, a rebel group's ability to fight negatively affects its propensity of victimizing civilians but is also positively affected by its use of child soldiers (Haer and Böhmelt 2016), causing me to include a binary measure of relative rebel strength from the NSA data. Additionally, civilian victimization may grow worse over the duration over conflict and should be higher in more populated countries (Wood 2010, 2014). These variables can equally be expected to affect rebel groups' ability to find vulnerable children that can be mobilized (Tynes and Early 2015). I thus code how long a conflict-dyad has been active for in a given dyad-year from the UCDP Armed Conflict Data and include the log of Gleditsch's population measure (2013).

Finally, structural characteristics of the country a conflict is fought in and the government it is fought against may also affect both civilian victimization and the usage of child soldiers. First, an area's economic development and productiveness may be connected to the level of civilian victimization there while also influencing the recruitment of children (Vargas and Restrepo-Jaramillo 2016), I thus include a conflict-country's logged real per capita GDP (Gleditsch 2002, 2013) to account for this. Second, rebel groups use more targeted violence against civilians when fighting democratic governments and regime type may similarly affect to what extent rebel groups use children as combatants (Tynes and Early 2015; Lasley and Thyne 2015), leading me to include a conflict-country's polity score as a control (Marshall et al. 2016). Finally, rebel violence against civilians is more extreme when these civilians belong to ethnic groups associated with both the government and rebels or when rebels are internally ethnically polarized and politically salient ethnicity also influences child soldier usage (Lasley and Thyne 2015). I hence include the share of the population which belongs to politically excluded ethnic groups, taken from the Ethnic Power Relations Data (Vogt et al. 2015), as a final control.

A.2. Zero-Inflation parts of ZINB models in the main empirical analysis

A lack of space did not allow me to report and interpret the logit Inflation parts of the ZINB

models used in my analyses in the main text where I focused on the Negative Binomial parts of these models. I thus discuss them here as Table A2 presents the logit inflation parts of models 1a-4a presented in table one in the main empirical analysis. Columns 1b and 3b examine a linear effect of child soldiering, respectively employing dyad-year and dyad-period observations, while columns 2b and 4b present the full model with an interaction between child soldier usage and the ideology dummy to test my hypothesis.

Dependent Variable:	(1b)	(2b)	(3b)	(4b)
No Rebel One-sided Violence	Logit Inflate	Logit Inflate	Logit Inflate	Logit Inflate
Rebel OSV (Lag)	-0.009*	-0.010**		
	(0.005)	(0.005)		
Child Soldiers	-0.323	0.035	-0.557	-1.069
	(0.612)	(0.820)	(0.568)	(0.842)
Mobilization	-0.322	0.382	0.202	-0.634
	(0.347)	(0.913)	(0.604)	(1.058)
*Child Soldiers*Mobilization*		-0.822		1.146
		(0.997)		(1.102)
Rebel Strength	-0.383	-0.364	-0.647	-0.629
	(0.626)	(0.633)	(0.848)	(0.819)
Natural Resources	0.233	0.221	0.120	0.094
	(0.231)	(0.230)	(0.349)	(0.338)
Rebel External Support	0.230	0.191	-0.398	-0.418
	(0.407)	(0.392)	(0.492)	(0.502)
Conflict Intensity (Lag)	0.000	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	-0.000	-0.000		
	(0.000)	(0.000)		
Population (LN)	-0.187	-0.183	-0.122	-0.090
	(0.177)	(0.177)	(0.234)	(0.233)
Conflict Duration	-0.005	-0.003	-1.029**	-1.039**
	(0.027)	(0.026)	(0.441)	(0.413)
GDP p.c. (LN)	0.113	0.099	0.439*	0.469*
	(0.181)	(0.181)	(0.252)	(0.252)
Polity2 Score	-0.141***	-0.143***	-0.114**	-0.120**
	(0.040)	(0.038)	(0.053)	(0.052)
Ethnically Excluded Pop. (%)	-0.186	-0.129	-0.069	-0.142
	(0.805)	(0.797)	(1.123)	(1.115)
Years since no civilian casualties	-3.038***	-2.960***		
	(0.677)	(0.622)		
Years since no civilian casualties^2	0.421***	0.410***		
	(0.101)	(0.093)		
Years since no civilian casualties^3	-0.016***	-0.015***		
	(0.004)	(0.004)		
Constant	2.740	2.533	0.856	0.816
	(2.185)	(2.171)	(2.520)	(2.455)
Observations	642	642	220	220

*Table A2: Logit Inflation Parts of Zero-inflated Negative Binomial Regressions. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Before interpreting the results, it should be noted that here, the dependent variable is a dummy that takes the value 1 if the count of civilians killed by rebels is zero and the value 0 if that count is non-zero. Thus, coefficients in the logit inflation part have contrary interpretations to

those in the negative binomial: Positive (negative) effects indicate a lower (higher) probability of a group having used fatal violence against civilians in a given year.

In models 1b and 3b, testing an unconditional effect of child soldier usage on civilian victimization, results match those obtained in the negative binomial component. *Child Soldiers* has a negative effect on the likelihood of a group having killed zero civilians which is, however, statistically insignificant. But in contrast to the negative binomial component, this result stays substantively identical in models 2b and 4b which introduce the interaction between *Child Soldiers* and *Mobilization*. The constituent and the interaction term are oppositely signed but neither is even close to being statistically significant. This result indicates that child soldiering does not affect whether rebel groups use lethal violence against civilians but only to what extent.

A.3. Matching

One possible issue with the results presented in the main analysis is that they may be model-dependent and thus subject to change if variables' functional form is adjusted or controls are added or deleted. If treatment and control units significantly differ in their values in control variables, this imbalance can cause results to change substantially when e.g. the functional form of a variable is altered. Matching avoids this by excluding cases that lack a reasonably similar case in the other group, thus making the distributions of the controls more alike (Ho et al. 2007). I use coarsened exact matching which groups substantively similar values of variables into coarser categories (e.g. polity2 values from 7 to 10 as "democracy") and creates strata $s \in S$ in which units belong to the same coarsened categories of the covariates (Iacus et al. 2012). Matching weights are then assigned based on whether a unit has no match, i.e. its stratum includes only control or only treatment units (weight 0), is a control (weight $\frac{m_C m_T^s}{m_T m_C^s}$ where m_C and m_T are the total number of control and treatment units, respectively, and m_C^s and m_T^s their number in stratum *s*), or is a treated case (weight 1). One treatment unit can thus serve as match to multiple control units and vice versa. The actual analysis is then run by estimating the same model as employed otherwise, a ZINB regression in this case, while using the matching weights.

Matching comes with a possibly substantial reduction of sample size, the extent of which is positively related to the number of variables one matches on. Here, matching on all controls would result in very few observations. I thus examine which controls do not contribute to model quality using the Akaike (AIC) and Bayesian Information Criteria (BIC) to select a more parsimonious versions of model 2 which I can then re-evaluate using CEM. I stepwise

delete one control variable at a time, compare the AIC and BIC values for the resulting model with the baseline values from model 2 as well as previous steps, and choose the specification that maximizes model quality (Greene 2012: 179f.). Where dropping a variable results in both a lowered AIC and BIC, I exclude that variable from following steps. This process results in *Rebel Strength*, *Resources*, *Gov. Violence against Civilians, Population,* and *Conflict Duration* being dropped. Whereas model 2 from the main text has AIC and BIC values of 4516.475 and 4668.271, respectively, these values decrease to 4510.651 and 4617.801 for a model without these controls. However, the substantive results for child soldiering stay the same in this model (see model A1).

Coarsened exact matching (Iacus et al. 2012) allows the analyst to specify coarsening categories for individual variables based on the substantive meaning of values, otherwise coarsening is done automatically by an algorithm. Here, I specify that binary variables should be left unchanged, group alleged and explicit support to rebels together, and coarsen the polity2 scale into the three regime types autocracy, anocracy, and democracy. I use the automatic coarsening algorithm for all other controls. I carry out CEM using the *cem* Stata package (Blackwell et al. 2009), obtain the matching weights, and run regressions for the treatment *Child Soldiers*. Cases where no recruitment of children was coded form the control group. As a result of this matching process, samples should become less imbalanced. If this is not the case, matching was unsuccessful and results based on it may be discarded (Ho et al. 2007: 216). To assess this, I use the L_1 statistic which indicates the global imbalance over all variables used in the matching procedure. It measures by how much the multidimensional histograms of the data for treatment and control group overlap; lower values indicate more common support (Iacus et al. 2012: 6f.). Matching on *Mobilization*, *Rebels external support*, *Conflict Intensity*, *GDP p.c.*, *Polity2 Score*, and *Ethnically Excluded Population* decreased the L_1 statistic from 0.92646199 to 0.26202186, indicating that imbalance is substantially reduced. Table A2 presents the mean and standard deviation for the three key variables *Child Soldiers*, *Mobilization*, and *Rebel OSV*.

	Child Soldiers	Mobilization	Rebel OSV
Pre-matching (N = 642)	0.89 (0.32)	0.44 (0.50)	84.21 (278.49)
Post-matching (N = 101)	0.61 (0.49)	0.26 (0.44)	21.98 (57.51)

Table A3: Mean and standard deviations (in brackets) for key variables, before and after matching.

These summary statistics suggest that pruned observations are generally those where child soldiers were present and which exhibited high levels of violence against civilians. As one would expect, the standard deviations of *Mobilization* and particularly *Rebel OSV* are also

much smaller in the matched sample than in the unmatched one. By excluding over 500 observations, many of which exhibit child soldiering and high levels of violence against civilians, matching has thus resulted in a more balanced sample. The results from a ZINB regressions run on the resulting matched sample examining the effect of child soldier usage on violence against civilians are reported in model A2.

Dependent Variable: Rebel One-sided Violence	(A1a) Negative Binomial	(A1b) Logit Inflate	(A2a) Negative Binomial	(A2b) Logit Inflate	(A3) Negative Binomial
Rebel OSV (Lag)	0.000	-0.010**	0.006	0.038	0.006
	(0.001)	(0.005)	(0.006)	(0.040)	(0.005)
Child Soldiers	1.437***	0.015	14.067***	2.838**	5.603**
	(0.415)	(0.782)	(3.330)	(1.357)	(2.675)
Mobilization	1.694***	0.366	14.714***	-22.470*	5.445**
	(0.474)	(0.916)	(3.724)	(12.723)	(2.602)
*Child Soldiers*Mobilization*	-1.884***	-0.770	-13.626***	1.625	-4.326
	(0.642)	(0.981)	(3.348)	(1.809)	(3.001)
Rebel Strength					38.056**
					(16.425)
Natural Resources					-4.818
					(3.144)
Rebel External Support	0.133	0.040	-2.600***	-0.600	-0.438
	(0.275)	(0.374)	(0.888)	(1.629)	(1.046)
Conflict Intensity (Lag)	0.000*	0.000	-0.001	0.006***	0.001
	(0.000)	(0.000)	(0.001)	(0.002)	(0.001)
Gov. One-sided Violence (Lag)					-0.022***
					(0.008)
Population (LN)					2.791
					(1.846)
Conflict Duration					-0.218
					(0.251)
GDP p.c. (LN)	-0.267**	0.128	5.734***	-0.333	8.813*
	(0.129)	(0.173)	(1.583)	(1.257)	(4.930)
Polity2 Score	-0.113***	-0.146***	-0.678***	-0.155	0.379
	(0.032)	(0.035)	(0.161)	(0.118)	(0.389)
Ethnically Excluded Pop. (%)	-1.552***	-0.275	-38.325***	97.429*	-51.404*
	(0.465)	(0.654)	(10.418)	(55.279)	(27.569)
Years since no civilian casualties		-2.967***		-9.598***	
		(0.578)		(3.275)	
Years since no civilian casualties^2		0.420***		0.461**	
		(0.091)		(0.229)	
Years since no civilian casualties^3		-0.016***		0.007	
		(0.004)		(0.017)	
Constant	5.771***	0.977	-45.963***	-13.426**	-90.153*
	(1.080)	(1.488)	(13.148)	(5.268)	(52.401)
Matched Sample	No	No	Yes	Yes	Yes
Observations	642	642	101	101	101
Alpha (ln)	0.480***		-0.310		0.953**
	(0.095)		(0.322)		(0.457)

*Table A4: Zero-inflated Negative Binomial Regressions. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

They mirror those obtained in model 2. Child soldiering has a positive effect on violence against civilians committed by groups without a local support base. However, this is not the case for groups that do have such mobilization ability.

One remaining issue with the above analysis is that to successfully match, I first filtered out some of the previously used control variables, namely *Rebel Strength*, *Resources*, *Gov. Violence against Civilians, Population,* and *Conflict Duration*. But even with the reduced number of control variables, matching resulted in a significant loss of observations, making it necessary to also limit the number of control variables, particularly when specifying models with more than one stage such as the zero-inflated negative binomial models employed throughout this paper. As a result, I include only those control variables in A2 which I had previously also identified as being crucial in terms of their omission affecting model quality. But while the omission of *Rebel Strength*, *Resources*, *Gov. Violence against Civilians, Population,* and *Conflict Duration* does indeed not affect model quality as indicated by AIC and BIC and also does not alter my substantive results (see model A1), it is also clear that theoretically, these variables inclusion is justified. To ensure that their omission also does not affect my substantive results using the matched sample, I estimate model A3. There, all previously control variables are included while the matched sample is used; to make converge here possible I instead omit the zero-inflation stage and use a standard negative binomial model. This trade-off appears viable as at least in the main analysis, model choice does not affect my substantive results (see appendix section A15). And in line with the other models, the results in A3 again are in line with the argument that child soldiering increases rebel violence against civilians unless rebels enjoy local mobilization ability.

In summary, the analysis of data pre-processed using coarsened exact matching thus corroborates the results of the main analysis.

A.4. Altered Dependent variable: 25 civilian casualties threshold

To further probe robustness, I re-run my main models while dropping, replacing or including additional control variables, employing a standard Negative Binomial instead of ZINB as well as using different versions of both the dependent and main independent variables. First, my original dependent variable does not censor observations with less than 25 casualties as done by the UCDP one-side violence dataset used in many studies of violence against civilians (Eck and Hultman 2007), implying that my results may not be entirely comparable to those of earlier studies. I thus re-run my analysis with an alternative dependent variable where all values below 25 are set to zero. However, my substantive results are unchanged.

Dependent Variable: Rebel One-sided Violence (min. 25 deaths)	(A4a) Negative Binomial TSCS	(A4b) Logit Inflate TSCS	(A5a) Negative Binomial CS	(A5b) Logit Inflate CS
Rebel OSV (Lag)	0.000***	-0.015***		
	(0.000)	(0.005)		
Child Soldiers	1.348***	-0.252	1.780***	-0.666
	(0.380)	(0.460)	(0.493)	(0.884)
Mobilization	1.335***	-0.470	1.597***	-0.602
	(0.512)	(0.621)	(0.619)	(1.084)
*Child Soldiers*Mobilization*	-1.615***	0.439	-1.646**	0.773
	(0.617)	(0.670)	(0.804)	(1.144)
Rebel Strength	0.559*	-0.405	2.272***	-0.459
	(0.321)	(0.568)	(0.841)	(0.842)
Natural Resources	0.064	0.016	-0.008	0.124
	(0.116)	(0.159)	(0.267)	(0.367)
Rebel External Support	-0.017	-0.644**	0.004	-0.477
	(0.233)	(0.295)	(0.414)	(0.551)
Conflict Intensity (Lag)	0.000	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000***	-0.000		
	(0.000)	(0.000)		
Population (LN)	-0.032	0.134	-0.070	-0.138
	(0.071)	(0.128)	(0.169)	(0.250)
Conflict Duration	-0.032***	-0.003	-0.038	-1.108**
	(0.010)	(0.021)	(0.029)	(0.475)
GDP p.c. (LN)	-0.043	0.513***	-0.462**	0.461*
	(0.105)	(0.163)	(0.201)	(0.271)
Polity2 Score	-0.066***	-0.056*	0.049	-0.122**
	(0.020)	(0.031)	(0.045)	(0.055)
Ethnically Excluded Pop. (%)	-1.001***	0.080	0.454	-0.507
	(0.333)	(0.715)	(0.949)	(1.165)
Years since no civilian casualties		-1.049***		
		(0.219)		
Years since no civilian casualties^2		0.131***		
		(0.037)		
Years since no civilian casualties^3		-0.005***		
		(0.002)		
Constant	4.939***	-2.196	6.793***	1.348
	(1.204)	(1.777)	(2.376)	(2.755)
Observations	642	642	220	220
Alpha (ln)	-0.263**		1.281***	
	(0.104)		(0.327	

*Table A5: Zero-inflated Negative Binomial Regression. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

A.5. Altered Dependent variable: Civilian casualties in conflict country

Second, I employ the number of civilians killed by a rebel group in a given year as the dependent variable in my main analyses. This includes victims in the conflict country but also in other, contiguous and possibly even non-contiguous countries. This may be problematic as many of the indepent variables are focused on the conflict country and it has been found that rebels behave differently in the area of conflict and in safe havens (Steward and Liou 2017). I thus re-run my main model using a dependent variable identically constructed to the original

one but counting only those civilian killings comitted in the country where a rebel group was also coded as engaging in armed conflict. Again, the substantive results remain unchanged.

Dependent Variable: Rebel One-sided Violence (in conflict country)	(A6a) Negative Binomial TSCS	(A6b) Logit Inflate TSCS	(A7a) Negative Binomial CS	(A7b) Logit Inflate CS
Rebel OSV (Lag)	0.000	-0.016*		
	(0.000)	(0.009)		
Child Soldiers	1.161***	0.022	1.480***	-0.872
	(0.347)	(0.851)	(0.469)	(0.816)
Mobilization	1.272***	0.321	1.420**	-0.424
	(0.473)	(1.069)	(0.580)	(1.072)
*Child Soldiers*Mobilization*	-1.398**	-0.692	-1.337*	1.272
	(0.596)	(1.140)	(0.760)	(1.099)
Rebel Strength	0.471	-0.492	2.170***	-1.052
	(0.379)	(0.647)	(0.819)	(0.973)
Natural Resources	0.165	0.207	0.005	0.023
	(0.187)	(0.228)	(0.259)	(0.391)
Rebel External Support	0.357	0.345	-0.057	-0.650
	(0.288)	(0.431)	(0.399)	(0.599)
Conflict Intensity (Lag)	0.000***	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000	-0.000		
	(0.000)	(0.000)		
Population (LN)	-0.093	-0.185	-0.089	-0.126
	(0.101)	(0.174)	(0.166)	(0.270)
Conflict Duration	-0.027	-0.002	-0.033	-1.191**
	(0.019)	(0.029)	(0.029)	(0.528)
GDP p.c. (LN)	-0.219*	-0.004	-0.460**	0.406
	(0.127)	(0.201)	(0.193)	(0.271)
Polity2 Score	-0.094***	-0.145***	0.063	-0.121**
	(0.025)	(0.039)	(0.042)	(0.055)
Ethnically Excluded Pop. (%)	-1.395***	0.164	0.511	0.510
	(0.432)	(0.845)	(0.942)	(1.200)
Years since no civilian casualties		-2.208***		
		(0.601)		
Years since no civilian casualties^2		0.116		
		(0.077)		
Years since no civilian casualties^3		-0.000		
		(0.004)		
Constant	6.120***	3.221	7.154***	1.933
	(1.399)	(2.277)	(2.267)	(2.580)
Observations	642	642	220	220
Alpha (ln)	0.516***		1.189***	
	(0.087)		(0.350)	

*Table A6: Zero-inflated Negative Binomial Regression. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

A.6. Main Independent Variables: Ordinal child soldier variable

The main analysis uses a binary measure of child soldiering even though the authors of this variable, Haer and Böhmelt (2016) also provide an ordinal version which differentiates between groups that use some and many child soldiers. This is done due to coding issues with the ordinal version (Haer and Böhmelt 2017). I replicate the main models using the ordinal

measure of child soldiering instead of the binary one. Results stay consistent but imply that particularly a higher use of child soldiers may result in more violence against civilians.

Dependent Variable: Rebel One-sided Violence	(A8a) Negative Binomial TSCS	(A8b) Logit Inflate TSCS	(A9a) Negative Binomial CS	(A9b) Logit Inflate CS
Rebel OSV (Lag)	0.000	-0.007		
	(0.001)	(0.005)		
Child Soldiers: Some	0.976**	0.318	0.279	-0.835
	(0.429)	(0.836)	(0.333)	(0.676)
Child Soldiers: Many	1.697***	-2.141**	1.769***	-2.610***
	(0.415)	(1.065)	(0.450)	(0.803)
Mobilization	1.224**	0.430	0.794*	-0.472
	(0.531)	(0.948)	(0.425)	(0.817)
Child Soldiers: Some Mobilization*	-1.562**	-0.802	-0.453	1.001
	(0.714)	(1.073)	(0.565)	(0.957)
*Child Soldiers: Many*Mobilization*	-1.691**	0.048	-0.852	-0.030
	(0.777)	(1.283)	(0.718)	(1.120)
Rebel Strength	0.736*	-0.399	1.837***	-0.545
	(0.421)	(0.570)	(0.518)	(0.574)
Natural Resources	0.046	0.267	-0.098	0.020
	(0.173)	(0.245)	(0.192)	(0.234)
Rebel External Support	0.466	0.225	0.494*	-0.445
	(0.340)	(0.414)	(0.298)	(0.380)
Conflict Intensity (Lag)	0.000**	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000**	-0.000		
	(0.000)	(0.000)		
Population (LN)	0.007	-0.272	-0.025	-0.208
	(0.099)	(0.188)	(0.121)	(0.170)
Conflict Duration	-0.018	-0.017	0.018	-0.103*
	(0.022)	(0.028)	(0.027)	(0.061)
GDP p.c. (LN)	-0.115	0.013	-0.334**	0.157
	(0.133)	(0.170)	(0.161)	(0.200)
Polity2 Score	-0.087***	-0.143***	0.058*	-0.095**
	(0.029)	(0.040)	(0.033)	(0.042)
Ethnically Excluded Pop. (%)	-1.045**	0.120	0.831	-0.616
	(0.461)	(0.820)	(0.716)	(0.838)
Years since no civilian casualties		-2.954***		
		(0.611)		
Years since no civilian casualties^2		0.407***		
		(0.091)		
Years since no civilian casualties^3		-0.015***		
		(0.004)		
Constant	4.299***	4.015*	5.807***	3.323
	(1.534)	(2.135)	(1.825)	(2.114)
Observations	642	642	220	220
Alpha (ln)	0.431***		0.074	
	(0.085)		(0.165)	

*Table A7: Zero-inflated Negative Binomial Regression. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

A.7. Main Independent Variables: Controlling for forced recruitment

I next turn to the conditioning variable, local civilian support. In the main analysis, this concept is measured using a rebel groups mobilization capability as reported in the Non-State Actor dataset. One potential challenge to doing so is that, even though the variable description and personal communication with one of the dataset's authors speak against this, the variable may pick up rebel groups *coercive* mobilization.

Dependent Variable: Rebel One-sided Violence	(A10a) Negative Binomial TSCS	(A10b) Logit Inflate TSCS	(A11a) Negative Binomial CS	(A11b) Logit Inflate CS
Rebel OSV (Lag)	0.000	-0.010*		
	(0.001)	(0.005)		
Child Soldiers	1.162**	0.716	3.028***	0.555
	(0.520)	(0.945)	(0.949)	(1.748)
Mobilization	1.316**	0.324	2.379**	-2.050
	(0.564)	(1.084)	(1.167)	(4.228)
Child Soldiers Mobilization*	-1.614**	-0.746	-2.421*	2.926
	(0.695)	(1.153)	(1.409)	(5.376)
Rebel Strength	0.329	-0.283	1.701**	-1.350
	(0.388)	(0.775)	(0.731)	(2.269)
Natural Resources	0.116	0.185	0.140	0.064
	(0.196)	(0.240)	(0.286)	(1.038)
Rebel External Support	0.275	0.455	-0.274	-0.038
	(0.300)	(0.411)	(0.410)	(0.540)
Conflict Intensity (Lag)	0.000**	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000	-0.000		
	(0.000)	(0.000)		
Population (LN)	-0.022	-0.300	-0.147	-0.068
	(0.136)	(0.210)	(0.231)	(0.397)
Conflict Duration	-0.028	0.009	-0.027	-0.943
	(0.020)	(0.026)	(0.037)	(0.914)
GDP p.c. (LN)	-0.228*	0.193	-0.345	0.219
	(0.127)	(0.179)	(0.225)	(0.331)
Polity2 Score	-0.099***	-0.122***	0.007	-0.156*
	(0.028)	(0.040)	(0.073)	(0.091)
Ethnically Excluded Pop. (%)	-1.456***	0.341	0.880	-0.898
	(0.458)	(0.867)	(0.866)	(2.726)
Forced recruitment	0.199	-1.104**	-1.061	-1.424
	(0.435)	(0.482)	(0.649)	(1.746)
Years since no civilian casualties		-2.859***		
		(0.618)		
Years since no civilian casualties^2		0.395***		
		(0.094)		
Years since no civilian casualties^3		-0.015***		
		(0.004)		
Constant	5.612***	2.700	6.077**	1.319
	(1.515)	(2.583)	(3.027)	(3.855)
Observations	607	607	154	154
Alpha (ln)	0.462***		1.148*	
	(0.093)		(0.606)	

*Table A8: Zero-inflated Negative Binomial Regressions. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

In other words, rebels may have a high capacity to mobilize resources and recruits not because they receive support from civilians but because they force civilians to provide these goods. Under this scenario, rebels would have little incentive to spare civilians but may instead even use (the threat of) violence to coerce them into handing over resources. To ensure that my results are not driven by this alternative reading of the mobilization variable, I re-estimate my main models while explicitly controlling for a rebel groups use of forced recruitment. This variable is a binary indicator taken from the WARD dataset (Wood and Thomas 2017). The results of this analysis are presented in table A8 and indicate that controlling for rebels' use of coercive mobilization leaves my substantive results unaffected.

A.8. Main Independent Variables: Ethnonationalism instead of mobilization ability

As discussed in the main paper, rebels' mobilization ability is conceptually closely related to, but by no means the same as their extent of civilian support. It is possible to imagine groups having substantial civilian support but a low ability to mobilize, for instance when the potential costs of joining the rebels are very high. And similarly, it is also possible to imagine cases where groups do not enjoy widespread civilian support but are nonetheless able to mobilize a relevant number of fighters, this may e.g. be the case when rebels can offer access to resource rents. While *mobilization* can thus be viewed as a valid proxy for rebels' civilian support, it is also clear that the two concepts do not perfectly match. To ensure that my results are not simply driven by the choice of this proxy for civilian support, I next re-estimate my main models using two alternative proxies for the concept. Doing so shows that my results do not depend on the choice of the proxy used for civilian support. As also discussed in the main paper, the substantively unchanged results obtained from these additional analyses also allow me to reject some possible alternative explanations for the conditional relationship between child soldiering and violence against civilians.

First, I replace the dummy measuring a group's ability to localize mobilize with a binary item that indicates whether a group is ethnonationalist or not. Such groups claim to represent a specific part of a country's population and usually operate close to this constituency (Beardsley et al. 2015). All else being equal, ethnonationalist groups are thus more likely to enjoy but also explicitly seek the support of civilians in their areas of operation, particularly as their goals of acquiring self-governance or secession require them to show both domestic and international audiences their ability to govern over and cooperate with civilians in their areas of control (see e.g. Stewart 2018). At the same time, some ethnonationalist groups are so closely defined as to exclude most civilians and are prone to target out-group civilians. Ethnonationalism is thus not a perfect proxy of civilian support as, again, some

ethnonationalist groups may be very unpopular among the civilian population while some groups with another ideology may also enjoy high levels of support. That being said, it may be reasonable to suggest that ethnonationalist groups have both a high potential to and relevant interest in mobilizing civilian support, making ethnonationalism a viable alternative proxy. I thus re-estmate my main models while replacing *Mobilization* with *Ethnonationalist* dummys sourced from two coding efforts of group ideologies (Polo ad Gleditsch 2016; Wood and Thomas 2017). My substantive results are unchanged.

Dependent Variable: Rebel One-sided Violence	(A12a) Negative Binomial	(A12b) Logit Inflate	(A13a) Negative Binomial	(A13b) Logit Inflate
Rebel OSV (Lag)	0.000	-0.010*	0.000	-0.011*
	(0.001)	(0.005)	(0.001)	(0.006)
Child Soldiers	0.763*	0.185	1.073**	-0.491
	(0.445)	(0.719)	(0.422)	(0.799)
Ethnonationalist	1.014	1.684**	1.390***	0.273
	(0.734)	(0.854)	(0.538)	(1.044)
Child Soldiers Ethnonationalist*	-1.125	-1.119	-1.201**	0.732
	(0.794)	(0.954)	(0.604)	(1.092)
Rebel Strength	0.368	-0.570	0.170	-0.470
	(0.404)	(0.681)	(0.467)	(0.656)
Natural Resources	0.167	0.229	0.253	0.304
	(0.184)	(0.228)	(0.212)	(0.227)
Rebel External Support	0.389	0.195	0.256	0.493
	(0.280)	(0.387)	(0.306)	(0.423)
Conflict Intensity (Lag)	0.000*	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Gov. One-sided Violence (Lag)	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Population (LN)	-0.132	-0.243	-0.130	-0.307
	(0.095)	(0.189)	(0.121)	(0.196)
Conflict Duration	-0.032	-0.008	-0.026	-0.008
	(0.022)	(0.028)	(0.022)	(0.029)
GDP p.c. (LN)	-0.199	0.177	-0.262*	0.008
	(0.164)	(0.176)	(0.139)	(0.188)
Polity2 Score	-0.085**	-0.144***	-0.101***	-0.135***
	(0.033)	(0.038)	(0.038)	(0.039)
Ethnically Excluded Pop. (%)	-1.287***	-0.432	-1.418***	-0.542
	(0.402)	(0.908)	(0.443)	(0.829)
Years since no civilian casualties		-3.073***		-2.794***
		(0.750)		(0.741)
Years since no civilian casualties^2		0.424***		0.387***
		(0.109)		(0.110)
Years since no civilian casualties^3		-0.016***		-0.014***
		(0.004)		(0.004)
Constant	6.778***	2.034	6.711***	3.974
	(1.788)	(2.267)	(1.766)	(2.417)
Observations	648	648	614	614
Alpha (ln)	0.484***		0.481***	
	(0.099)		(0.099)	
Ethnonationalist Source	Polo and Gleditsch 2016		Wood and Thomas 2017	

*Table A9: Zero-inflated Negative Binomial Regressions, TSCS data. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Dependent Variable: Rebel One-sided Violence	(A14a) Negative Binomial	(A14b) Logit Inflate	(A15a) Negative Binomial	(A15b) Logit Inflate
Child Soldiers	1.395***	1.222	2.152***	1.816
	(0.512)	(1.039)	(0.671)	(2.104)
Ethnonationalist	0.793	0.601	1.844**	1.380
	(0.660)	(0.865)	(0.906)	(2.056)
Child Soldiers Ethnonationalist*	-2.046***	-2.604*	-2.121**	-0.773
	(0.746)	(1.560)	(0.834)	(2.181)
Rebel Strength	2.344***	-1.096	2.380**	-1.116
	(0.686)	(0.703)	(0.956)	(0.937)
Natural Resources	-0.017	-0.146	0.177	0.226
	(0.212)	(0.415)	(0.270)	(0.434)
Rebel External Support	-0.055	-0.830	-0.241	-0.231
	(0.354)	(0.667)	(0.463)	(0.604)
Population (LN)	-0.101	-0.120	-0.079	-0.182
	(0.149)	(0.294)	(0.173)	(0.277)
Conflict Duration	-0.012	-1.866***	-0.042	-0.981*
	(0.032)	(0.673)	(0.028)	(0.524)
GDP p.c. (LN)	-0.580***	0.162	-0.390*	0.120
	(0.208)	(0.259)	(0.202)	(0.274)
Polity2 Score	0.097**	-0.095	0.040	-0.129**
	(0.049)	(0.067)	(0.068)	(0.064)
Ethnically Excluded Pop. (%)	1.993**	2.235	0.520	-0.713
	(0.853)	(1.488)	(0.930)	(1.503)
Constant	8.334***	4.155	5.859**	1.221
	(2.558)	(2.786)	(2.608)	(2.827)
Observations	230	230	166	166
Alpha (ln)	1.396***		1.178***	
	(0.288)		(0.358)	

*Table A10: Zero-inflated Negative Binomial Regressions, CS data. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

A.9. Main Independent Variables: Rebel governance instead of mobilization ability

Second, I use rebels' provision of governance and social services to civilians as a proxy for their civilian support. Here, the idea is that only rebel groups which value civilian support will engage in such actions as providing these goods takes away resources form their fighting effort. In other words, local governance is costly to rebels and detracts from their war effort, meaning that they should only engage in it if they are interested in civilian support. At the same time, proxying local civilian support with rebel governance also comes with problems as some rebels may simply be too weak to provide social services but may still enjoy some local civilian support. I thus also re-estimate my main models while replacing *Mobilization* with a *Rebel Governance* dummy which takes the value one if rebels provide social services to civilians and is taken from Stewart (2020). The results of these additional models are again in line with my expectations, further suggesting that my substantive results do not depend on how civilian support is operationalized.

Dependent Variable: Rebel One-sided Violence	(A16a) Negative Binomial TSCS	(A16b) Logit Inflate TSCS	(A17a) Negative Binomial CS	(A17b) Logit Inflate CS
Rebel OSV (Lag)	0.000*	-0.016*		
	(0.000)	(0.009)		
Child Soldiers	0.536	-0.691	0.716*	-1.238*
	(0.514)	(0.601)	(0.403)	(0.660)
Rebel Governance	0.556	1.417	0.873	-0.440
	(0.451)	(1.415)	(0.562)	(1.441)
Child Soldiers Rebel Governance*	-1.929**	-0.061	-2.050**	2.902
	(0.973)	(1.787)	(0.847)	(2.048)
Rebel Strength	0.287	-0.883	1.691**	-1.351*
	(0.347)	(0.969)	(0.765)	(0.757)
Natural Resources	0.075	0.091	0.057	
	(0.197)	(0.269)	(0.252)	
Rebel External Support	0.499	-0.080	0.545*	-0.218
	(0.405)	(0.448)	(0.307)	(0.532)
Conflict Intensity (Lag)	0.000*	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	-0.001	0.000		
	(0.001)	(0.000)		
Population (LN)	-0.160	-0.114	-0.257	-0.360**
	(0.147)	(0.227)	(0.203)	(0.183)
Conflict Duration	-0.028	0.025	0.012	-0.013
	(0.021)	(0.031)	(0.031)	(0.042)
GDP p.c. (LN)	-0.389	0.109	-0.696***	
	(0.264)	(0.215)	(0.244)	
Polity2 Score	-0.061	-0.120**	0.075	-0.022
	(0.049)	(0.048)	(0.052)	(0.062)
Ethnically Excluded Pop. (%)	-0.953	-0.086	1.843*	
	(0.703)	(0.970)	(1.105)	
Years since no civilian casualties		-1.868***		
		(0.508)		
Years since no civilian casualties^2		0.257***		
		(0.077)		
Years since no civilian casualties^3		-0.010***		
		(0.003)		
Constant	9.001***	2.081	10.655***	4.560**
	(2.874)	(2.771)	(2.936)	(1.854)
Observations	367	367	93	93
Alpha (ln)	0.329***		-0.057	
	(0.097)		(0.223)	

*Table A11: Zero-inflated Negative Binomial Regressions, CS data. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

A.10. Main Independent Variables: Dropping mobilization outliers

The item measuring local mobilization ability in the main analysis collapses an ordinal, three-category variable from the Non-State Actor Dataset (Cunningham et al. 2009, 2013) into a binary indicator where groups receive a zero if they have no or low mobilization ability (n=587) and a 1 if they have medium (n=397) or high mobilization ability (n=34). I chose to collapse the latter two categories into one as there are only few observations of groups with a

high ability to mobilize. However, this may create some heterogeneity between groups receiving a one on the mobilization dummy. To check whether this heterogeneity drives results, I re-estimate my main models while dropping groups with high mobilization ability from the analysis. However, results stay substantively the same.

Dependent Variable: Rebel One-sided Violence	(A18a) Negative Binomial TSCS	(A18b) Logit Inflate TSCS	(A19a) Negative Binomial CS	(A19b) Logit Inflate CS
Rebel OSV (Lag)	0.000	-0.009**		
	(0.001)	(0.004)		
Child Soldiers	1.330***	-0.033	1.195***	-1.247*
	(0.403)	(0.849)	(0.358)	(0.695)
Mobilization: medium	1.449***	0.405	1.018**	-0.818
	(0.512)	(0.941)	(0.467)	(0.855)
Child Soldiers Mob.: medium*	-1.694**	-0.940	-0.699	0.747
	(0.671)	(1.022)	(0.639)	(0.948)
Rebel Strength	0.444	-0.261	1.912**	-0.668
	(0.390)	(0.685)	(0.758)	(0.540)
Natural Resources	0.143	0.334	-0.051	0.246
	(0.192)	(0.245)	(0.283)	(0.254)
Rebel External Support	0.232	0.240	0.187	-0.274
	(0.312)	(0.398)	(0.345)	(0.356)
Conflict Intensity (Lag)	0.000**	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000*	-0.000		
	(0.000)	(0.000)		
Population (LN)	-0.082	-0.177	-0.080	-0.215
	(0.104)	(0.175)	(0.166)	(0.170)
Conflict Duration	-0.027	-0.011	-0.011	-0.257**
	(0.021)	(0.026)	(0.037)	(0.128)
GDP p.c. (LN)	-0.210*	0.140	-0.515***	0.325
	(0.124)	(0.200)	(0.154)	(0.200)
Polity2 Score	-0.099***	-0.155***	0.039	-0.113**
	(0.029)	(0.043)	(0.038)	(0.045)
Ethnically Excluded Pop. (%)	-1.484***	0.228	0.141	-0.527
	(0.416)	(0.812)	(0.781)	(0.810)
Years since no civilian casualties		-2.923***		
		(0.580)		
Years since no civilian casualties^2		0.404***		
		(0.088)		
Years since no civilian casualties^3		-0.015***		
		(0.004)		
Constant	6.037***	1.870	7.934***	1.888
	(1.423)	(2.329)	(1.975)	(2.145)
Observations	621	621	209	209
Alpha (ln)	0.445***		0.460**	
	(0.088)		(0.224)	

*Table A12: Zero-inflated Negative Binomial Regressions. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

A.11. Control Variables: Number of rebel groups

Next, I include the number of rebel groups active in a conflict as an additional control variable because this was found to positively affect rebels' violence against civilians (Wood and

Kathman 2015; Raleigh and Choi 2016). In addition, a higher number of groups may positively affect demand for recruits, thus also increasing child soldiering. The variable is coded from the dyadic version of the UCDP Armed Conflict dataset (Pettersson and Eck 2018; Harbom, Melander, and Wallensteen 2008). The substantive results of child soldiering on violence against civilians are unchanged.

Dependent Variable: Rebel One-sided Violence	(A20a) Negative Binomial TSCS	(A20b) Logit Inflate TSCS	(A21a) Negative Binomial CS	(A21b) Logit Inflate CS
Rebel OSV (Lag)	0.000	-0.010*		
	(0.000)	(0.005)		
Child Soldiers	1.548***	0.037	2.055***	-1.102
	(0.378)	(0.833)	(0.595)	(0.890)
Mobilization	1.877***	0.387	1.901**	-0.700
	(0.532)	(0.920)	(0.772)	(1.034)
Child Soldiers Mobilization*	-2.261***	-0.824	-2.800**	1.085
	(0.667)	(1.015)	(1.159)	(1.137)
Rebel Strength	0.695	-0.365	3.101***	-0.547
	(0.431)	(0.634)	(0.940)	(0.727)
Natural Resources	0.095	0.221	-0.276	0.049
	(0.186)	(0.230)	(0.320)	(0.345)
Rebel External Support	0.241	0.197	-0.186	-0.372
	(0.283)	(0.388)	(0.399)	(0.476)
Conflict Intensity (Lag)	0.000*	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000	-0.000		
	(0.000)	(0.000)		
Population (LN)	-0.112	-0.185	-0.059	-0.088
	(0.102)	(0.181)	(0.171)	(0.228)
Conflict Duration	-0.023	-0.002	-0.040	-0.995***
	(0.020)	(0.026)	(0.031)	(0.301)
GDP p.c. (LN)	-0.153	0.107	-0.019	0.530**
	(0.120)	(0.179)	(0.255)	(0.248)
Polity2 Score	-0.097***	-0.142***	0.022	-0.119**
	(0.027)	(0.038)	(0.043)	(0.052)
Ethnically Excluded Pop. (%)	-1.440***	-0.148	0.872	0.046
	(0.380)	(0.797)	(0.846)	(1.132)
Rebel Group Number	-0.287**	-0.007	-1.182**	-0.081
	(0.145)	(0.176)	(0.552)	(0.433)
Years since no civilian casualties		-2.954***		
		(0.611)		
Years since no civilian casualties^2		0.409***		
		(0.092)		
Years since no civilian casualties^3		-0.015***		
		(0.004)		
Constant	6.253***	2.503	5.899***	0.504
	(1.335)	(2.308)	(2.169)	(2.475)
Observations	642	642	220	220
Alpha (ln)	0.438***		1.060***	
	(0.090)		(0.276)	

*Table A13: Zero-inflated Negative Binomial Regression. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

A.12. Control Variables: Categorical regime type

I also use a three-category regime type variable which based on the polity2 score codes whether a government is an autocracy ($polity2 \leq -6$), anocracy ($-6 < polity2 < 6$) or democracy ($polity2 \geq 6$). I do so as the link between regime type and rebel violence against civilians may not be linear, for instance anocracies may be less sensitive to civilian casualties than democracies but not more than autocracies. I use autocracy as baseline category.

Dependent Variable: Rebel One-sided Violence	(A22a) Negative Binomial TSCS	(A22b) Logit Inflate TSCS	(A23a) Negative Binomial CS	(A23b) Logit Inflate CS
Rebel OSV (Lag)	0.000	-0.009*		
	(0.001)	(0.005)		
Child Soldiers	1.670***	-0.048	0.768	-1.045
	(0.435)	(0.800)	(0.686)	(0.875)
Mobilization	1.868***	0.324	1.036	-0.751
	(0.532)	(0.900)	(0.761)	(1.087)
Child Soldiers Mobilization*	-2.188***	-0.851	-1.234	1.049
	(0.691)	(0.991)	(0.815)	(1.125)
Rebel Strength	0.430	-0.445	2.456***	-0.622
	(0.386)	(0.619)	(0.626)	(0.787)
Natural Resources	0.165	0.171	-0.018	0.084
	(0.193)	(0.235)	(0.208)	(0.308)
Rebel External Support	0.281	0.239	0.441	-0.287
	(0.295)	(0.404)	(0.342)	(0.490)
Conflict Intensity (Lag)	0.000*	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000	-0.000		
	(0.000)	(0.000)		
Population (LN)	-0.080	-0.230	0.139	-0.157
	(0.111)	(0.175)	(0.148)	(0.230)
Conflict Duration	-0.028	-0.006	-0.022	-1.031**
	(0.021)	(0.028)	(0.026)	(0.406)
GDP p.c. (LN)	-0.218*	0.037	-0.167	0.448*
	(0.131)	(0.191)	(0.196)	(0.232)
Anocracy	-0.175	-0.939**	1.901***	-1.170
	(0.422)	(0.464)	(0.404)	(0.737)
Democracy	-1.191**	-1.831***	0.870*	-1.933**
	(0.497)	(0.601)	(0.527)	(0.970)
Ethnically Excluded Pop. (%)	-0.911**	-0.031	0.821	0.196
	(0.403)	(0.863)	(0.901)	(1.022)
Years since no civilian casualties		-3.094***		
		(0.727)		
Years since no civilian casualties^2		0.422***		
		(0.106)		
Years since no civilian casualties^3		-0.015***		
		(0.004)		
Constant	5.936***	4.571**	1.593	2.731
	(1.701)	(2.089)	(2.307)	(2.316)
Observations	642	642	220	220
Alpha (ln)	0.473***		1.027***	
	(0.089)		(0.311)	

*Table A14: Zero-inflated Negative Binomial Regression. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Substantive results remain unchanged in the TSCS model while in the purely cross-sectional model, both *child soldiers* and the interaction term lose their statistical significance while their coefficient estimates remain substantively unchanged.

A.13. Control Variables: Governmental child soldiering

Dependent Variable: Rebel One-sided Violence	(A24a) Negative Binomial TSCS	(A24b) Logit Inflate TSCS	(A25a) Negative Binomial CS	(A25b) Logit Inflate CS
Rebel OSV (Lag)	0.000	-0.010*		
	(0.001)	(0.005)		
Rebel Child Soldiers	1.602***	0.120	1.566***	-0.757
	(0.492)	(0.837)	(0.553)	(0.878)
Mobilization	1.992***	0.492	1.416*	-0.404
	(0.707)	(0.924)	(0.746)	(1.313)
Rebel Child Soldiers Mobilization*	-2.242**	-0.963	-1.372	0.975
	(0.912)	(1.010)	(0.915)	(1.202)
Rebel Strength	0.402	-0.377	2.043**	-0.823
	(0.387)	(0.634)	(0.849)	(1.327)
Natural Resources	0.211	0.267	-0.010	0.115
	(0.192)	(0.234)	(0.276)	(0.454)
Rebel External Support	0.117	0.187	0.012	-0.424
	(0.306)	(0.399)	(0.408)	(0.631)
Conflict Intensity (Lag)	0.000	0.000		
	(0.000)	(0.000)		
Gov. One-sided Violence (Lag)	0.000*	-0.000		
	(0.000)	(0.000)		
Population (LN)	-0.139	-0.241	-0.052	-0.105
	(0.110)	(0.185)	(0.176)	(0.314)
Conflict Duration	-0.023	-0.003	-0.035	-1.264
	(0.019)	(0.025)	(0.031)	(0.980)
GDP p.c. (LN)	-0.247*	0.081	-0.479*	0.433
	(0.136)	(0.181)	(0.245)	(0.296)
Polity2 Score	-0.107***	-0.147***	0.057	-0.147**
	(0.030)	(0.040)	(0.050)	(0.065)
Ethnically Excluded Pop. (%)	-1.371***	-0.020	0.610	-0.083
	(0.457)	(0.809)	(0.928)	(1.333)
Gov. Child Soldiers	-0.362	-0.332	0.012	-1.186
	(0.347)	(0.521)	(0.445)	(0.995)
Years since no civilian casualties		-2.975***		
		(0.647)		
Years since no civilian casualties^2		0.411***		
		(0.096)		
Years since no civilian casualties^3		-0.015***		
		(0.004)		
Constant	6.784***	3.337	6.862***	2.214
	(1.682)	(2.422)	(2.491)	(3.352)
Observations	642	642	220	220
Alpha (ln)	0.450***		1.227**	
	(0.089)		(0.489)	

*Table A15: Zero-inflated Negative Binomial Regression. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

While this paper is first and foremost concerned with rebels' use of children and combatanats, governments also regularly recruit minors to serve in their fighting forces. For instance, Tynes and Early (2015) report that in their sample of conflicts, over 50% saw both sides employ child soldiers while in an additional 25% and 7%, this was done by only rebels and only the government, respectively. As the opponents often react to each others' strategies of fighting, particulalry regarding violence against civilians (see e.g. Raleigh and Choi 2017), governmental child soldiering may thus be a previously omitted confounder. As a result, I re-analyse the main models while also controlling for this variable using a dummy from Tynes and Early (2015) which indicates governments' use of underage fighters. Reassuringly, including this additional control does not affect my substantive results.

A.14. Control Variables: None, estimating naïve models

Next, I drop all control variables and present naïve ZINB models where I regress violence against civilians only on child soldiering and mobilization as the inclusion of controls may bias estimates (Clarke 2005). The results of the analysis using dyad-year observations mirror those obtained in the main analysis. In contrast, in the cross-sectional analysis, *Child Soldiers* is found to have a positive and statistically significant effect whereas that of the interaction term is statistically indistinguishable from zero but also wrongly signed.

Dependent Variable: Rebel One-sided Violence	(A26a) Negative Binomial TSCS	(A26b) Logit Inflate TSCS	(A27a) Negative Binomial CS	(A27b) Logit Inflate CS
Child Soldiers	1.893***	-0.180	1.349**	-1.542**
	(7.148)	(-0.220)	(2.243)	(-2.509)
Mobilization	1.613***	-0.083	0.778	-0.738
	(2.944)	(-0.083)	(1.056)	(-0.976)
Child Soldiers Mobilization*	-1.595**	-0.269	1.106	0.733
	(-2.370)	(-0.252)	(0.970)	(0.878)
Years since no civilian casualties		-4.314***		
		(-6.292)		
Years since no civilian casualties^2		0.585***		
		(4.672)		
Years since no civilian casualties^3		-0.022***		
		(-3.722)		
Constant	3.054***	1.994***	3.325***	1.654***
	(78.991)	(2.648)	(6.100)	(2.879)
Observations	642	642	220	220
Alpha (ln)	0.884***		1.163***	
	(7.699)		(3.620)	

*Table A16: Zero-inflated Negative Binomial Regression. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

A.15. Standard negative binomial

Finally, I also re-estimate my main model using count estimators that have no zero-inflation. This is done even though both Vuong and HPC tests indicate that my dependent variable,

rebel violence against civilians, has an excess number of zeroes and that modelling with zero-inflated count model is thus the best choice. To do so, I use standard negative binomial regression. However, the results of interest remain unchanged, implying that they do not depend on model choice.

Dependent Variable: Rebel One-sided Violence	(A28) Negative Binomial TSCS	(A29) Negative Binomial CS
Rebel OSV (Lag)	0.003	
	(0.002)	
Child Soldiers	1.668**	1.999***
	(0.828)	(0.570)
Mobilization	1.666*	1.290*
	(0.901)	(0.726)
Child Soldiers Mobilization*	-1.652	-0.898
	(1.059)	(0.852)
Rebel Strength	0.610	1.958***
	(0.523)	(0.703)
Natural Resources	-0.055	-0.135
	(0.226)	(0.307)
Rebel External Support	-0.133	0.556
	(0.313)	(0.397)
Conflict Intensity (Lag)	0.000	
	(0.000)	
Gov. One-sided Violence (Lag)	0.000	
	(0.000)	
Population (LN)	-0.031	-0.056
	(0.138)	(0.181)
Conflict Duration	0.011	0.165**
	(0.021)	(0.075)
GDP p.c. (LN)	-0.216	-0.704***
	(0.158)	(0.190)
Polity2 Score	0.001	0.120***
	(0.043)	(0.046)
Ethnically Excluded Pop. (%)	-1.378*	0.235
	(0.743)	(0.917)
Constant	4.428**	6.577***
	(2.198)	(2.224)
Observations	642	220
Alpha (ln)	1.771***	2.497***
	(0.153)	(0.136)

*Table A17: Negative Binomial Regression. Standard Errors clustered on the Rebel Group in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

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