Journal of Global Security Studies, 0(0), 2019, 1–19
doi: 10.1093/jogss/ogz009

The Strategic Logic of Ethnoterritorial Competition: Violence against Civilians in Africa's Civil Wars

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Abstract

This article develops and tests a new theory of violence against civilians during civil wars by combining geocoded data on African armed conflicts over the past two decades with a range of other geocoded information. The theory suggests a twofold logic of ethnic targeting aimed to enlarge the territory dominated by one's coethnics in the most effective way. First, rebels and government fighters kill civilians in areas populated in equal shares by their own and their adversary's coethnics because, in such areas, small amounts of violence suffice to tilt the local balance of power in their favor. Second, they target places close to the border between the settlement areas of their own and their adversary's coethnics as this will allow expanding the contiguous area under their control. We do not find empirical support for the three most prominent alternative theories, all of which assume that civilian victimization is independent of the political conflict over which the civil war is fought. Civilians are not more likely to be killed in areas where lootable natural resources can be found, in recently conquered territories where fighters are supposed to eliminate enemy collaborators, or where rebel forces who have established only weak control over their fighters operate.

Keywords: ethnic violence, Africa, civil wars, civilian victims

In the wake of Kalyvas's (2006) seminal study of the Greek civil war, scholars started to more systematically investigate why armed organizations intentionally kill unarmed civilians during the course of a civil war. This article makes a threefold contribution to this literature. First, it joins other recent work in providing evidence that the killing of civilians is linked to their ethnic background, and it specifies the precise logic of ethnic targeting. Previous case studies have shown that ethnic affiliations matter for understanding who kills whom.[1] Going beyond these individual cases, this article looks at the larger universe of African conflicts and shows that the logic of ethnic targeting is important for understanding where and when civilians are killed during civil war, even when other mechanisms are taken into account and when we include both ethnic as well as nonethnic armed conflicts into the picture.

Second, this article theoretically disentangles and empirically evaluates two distinct theoretical models of why and how ethnic targeting occurs. Fjelde and Hultman (2014) build on Valentino, Huth, and Balch-Lindsay (2004) to argue that armed groups attack their adversary's coethnic civilians in order to undermine its logistic and informational support base and thus gain an advantage in winning the civil war. Armed actors kill

1 For Darfur, see Olsson and Siba (2013); for Aceh, Czaika and Kis-Katos (2009); for Bosnia, Costalli and Moro (2010) and Weidmann (2011); for Guatemala, Sullivan (2012) and Schwartz and Straus (2018); for Northern Ireland, White (1993).

Wimmer, Andreas, and Chris Miner. (2019) The Strategic Logic of Ethnoterritorial Competition: Violence against Civilians in Africa's Civil Wars. *Journal of Global Security Studies*, doi: 10.1093/jogss/ogz009

civilians, in other words, to undermine the enemy's fighting capacities. They therefore should attack their opponent's coethnics where these are more numerous and thus easier to find and target.

We outline an alternative logic of ethnic targeting, knitting together various existing arguments into an integrated theoretical framework. Violence is about expanding the territory under the political control of one's coethnics, we argue, and is thus most intense where it is strategically most useful and most effective. Rather than weakening the enemy's civilian supporters where they are most numerous, violence is therefore more precisely and strategically focused on specific areas. Border zones between their own and their adversaries' coethnics are of greater strategic interest to armed groups than ethnoterritorial enclaves because fighters are interested in expanding the continuous territory controlled by supportive civilians (see, e.g., Melander 2007; Weidmann 2011). Moreover, in locales where opposing groups make up equal shares of the local population, small amounts of violence can tilt the local demographic and political balance of power in one's favor by intimidating the opposed group and encouraging them to flee, thus expanding the territory under the political control of coethnics in the most cost effective way. This second argument is derived from Balcells's (2011) study of the civil war in Spain.[2]

Killing civilians in order to expand the territory controlled by coethnics may be part of a broader and more radical strategy of ethnic cleansing: an attempt to create ethnically homogenous regions or states by terrorizing members of ethnic minorities such that they would flee or by actively deporting them (Petrovic 1994).[3] Unfortunately, we cannot determine whether ethnic targeting is part of such a broader strategy of ethnic cleansing because there is no systematic data on the war goals and strategic visions of armed actors.

The third contribution of this article is to evaluate three alternative theories of violence against civilians using varying datasets, samples, and definitions of the dependent variable to mirror as closely as possible the specific scope conditions and mechanisms foreseen by each of the three theories. In contrast to the model of ethnic targeting outlined above, these three alternative theories assume that killing civilians has little to do with ethnicity or, more generally, with the macrolevel political conflict over which a civil war is fought. Greed theories maintain that the population in resource-rich areas will be terrorized and victimized by armed groups who seek to establish or maintain control over these resources (Azam and Hoeffler 2002; Eyndre 2016; Bagozzi 2017; Koren and Bagozzi 2017). According to Weinstein (2006; see also Humphreys and Weinstein 2006), rebel organizations that initially relied on funding from natural resource extraction or from outside governments attract opportunistically motivated fighters who will be more likely to prey upon the civilian population (except if the outside government is a democracy, see Salehyan, Siroki, and Wood 2014). A second theory was proposed by Kalyvas (2006): rebels and governments act upon the denunciations of local villagers, he argues, to kill possible collaborators. They are most likely to do so when they do not yet fully control an area and thus are already able to search for and eliminate collaborators but have not yet killed all of them. Seen from these various perspectives, ethnicity does not define friends and foes in clear-cut terms, and "ethnic defections" are therefore thought to be frequent; armed organizations whose members share the same ethnic background sometimes fight each other (Christia 2008) or even kill coethnic civilians (see Kalyvas 2008; Lyall 2010).

Testing these various arguments, this article improves over other cross-national studies that either focus on only one specific theory (Wood 2010; Wood, Kathman, and Gent 2012; Fjelde and Hultman 2014; Salehyan et al. 2014) or test other propositions that are only tangentially related to these most widely discussed approaches.[4] We use different, perpetrator-specific

2 It is also impossible to explore possible symbolic and emotional forces, such as resentment, fear, and myths demonizing the ethnic enemy, that could motivate rank-and-file fighters to kill civilians (see Kaufman 2006; Petersen 2002).

3 Mann (2005), however, uses the term synonymously with genocides that aim at the physical destruction of a group.

4 A booming series of recent research explores additional, more fine-grained arguments about the characteristics of violence-prone rebel organizations, the conditions under which they resort to indiscriminate violence, and the effects of outside intervention. More precisely, recent scholarship finds that democratically oriented rebel organizations commit fewer acts of violence than religiously oriented organizations in the Middle East (Asal, Brown, and Schulzke 2015), that Communist organizations rape women less than other organizations (Hoover Green 2016), and that more civilians are killed by a rebel force after a competing rebel organization has emerged (Wood and Kathman 2015) or after the rebels have sustained major casualties at the hand of government forces (in Uganda and Africa more generally: Wood 2014). Somewhat counterintuitively, one-sided violence against civilians is more

definitions of the dependent variable. They are derived from either the Armed Conflict Location and Events Dataset (ACLED; Raleigh et al. 2010) or the Uppsala Conflict Data Program's Geo-Referenced Event Dataset (UCDP-GED; Sundberg, Lindgren, and Padskocimaite 2012) that cover the African continent from 1997 to 2011 and from 1989 to 2010, respectively. In combination with a variety of other geocoded datasets, most importantly the Ethnic Power Relations dataset (Geo-EPR; see Wucherpfennig et al. 2011), these data allow us to identify which armed actor intentionally killed civilians in which exact location, what the ethnic composition of that location is, and with which ethnic groups armed actors themselves identify.

We specify logistic regressions with 0.25 degree hexagons (approx. 27.75 km^2) as units of observation and violence as the dichotomous dependent variable. Fixed effects control for unobserved characteristics at the country level, such as the nature of the conflict, levels of rule of law, and the like. We find strong and consistent support for the ethnoterritorial competition argument: violence against civilians is most likely in areas where the population size of the coethnics of rebels and those government elites reach parity as well as areas close to the border between the settlement areas of these two groups. Both findings indicate that expanding the territory dominated by one's coethnics is an important strategic aim when fighters kill civilians.[5] We do not find support for the idea—developed empirically by Fjelde and Hultman (2014)—that ethnic targeting aims at the opponent's coethnics where they are most numerous and thus easiest to find and target. We briefly summarize why Fjelde and Hultman, who use similar data sources and methods, arrive at different results and include more detail in Online Appendix 3.

The results also do not support the looting, loose control over fighters, and territorial control arguments and offer some evidence that contradicts these logics: civilians are not more likely to be victims of violence if they live close to lootable diamond fields, to other mining sites, or to oil wells. Weak control over rebel fighters or funding from natural resource extraction *decreases*—rather than increases—armed groups' propensity to kill civilians, while rebels' external funding is not associated with civilian victimization. Both government troops and rebels are more likely to kill civilians close to where they lost territory to their opponents (in line with Wood 2014), rather than where they gained it, as the Kalyvas (2006) model implies.

The article proceeds in a straightforward way. The following section discusses the various theories of violence against civilians in more detail and derives empirically testable hypotheses from them. Next, we introduce datasets and units of observation, define independent and dependent variables, and discuss model specifications. A section with results follows, and a final section concludes.

Arguments and Hypotheses

The Ethnopolitical Logics of Violence

This article joins a group of authors (Valentino et al. 2004; Balcells 2011; Hirose, Imai, and Lyall 2017; Schwartz and Straus 2018) who see violence against civilians as part and parcel of a broader conflict over political power, rather than a purely local issue of controlling rebel fighters, natural resources, or containing collaboration. We focus on conflicts where political goals and adversaries are defined in ethnic terms, rather than with reference to class, party, or ideology, mostly because data on party and class affiliation or the ideological orientation of the civilian population is hard to come by (for an example of what it takes to overcome these challenges, see the study on Afghanistan by Hirose et al. 2017). We do not imply that there must be something in the nature of ethnicity that makes it more likely that civilians are killed, nor that Africa is more prone to ethnic conflicts than other regions. We also do not assume that ethnic conflicts are generally more violent than other types of conflicts (a view disproven by Valentino et al. 2004).

We start from the assumption that ethnic conflicts are fought over the distribution of political power among ethnically defined alliance networks (in line with Wimmer 1997; Wimmer 2013). The following figure describes various such configurations of ethnopolitical power, modifying Tilly's (1978) well-known polity

frequent in conventional civil wars than in guerilla insurgencies (Krcmaric 2018). Regarding the effects of outside intervention, Hultman and Kathman (2013) have shown that United Nations peacekeeping missions reduce civilian victimization in Africa's civil wars while Wood and coauthors (Wood et al. 2012) find that armed intervention by outsiders decreases the killing of civilians by the supported civil war actor and increases victimization by the opponent. Finally, more civilians are killed when many years have passed since the ratification of the ICC convention, but not where the ICC is locally present (Bussmann and Schneider 2016).

5 Since the UCDP-GED data on civilian victims are limited to Africa, we are unable to evaluate whether these results would hold for Latin America, Europe, or Asia but note that past research on Bosnia (Weidmann 2011) and Spain (Balcells 2011) has led to similar conclusions.

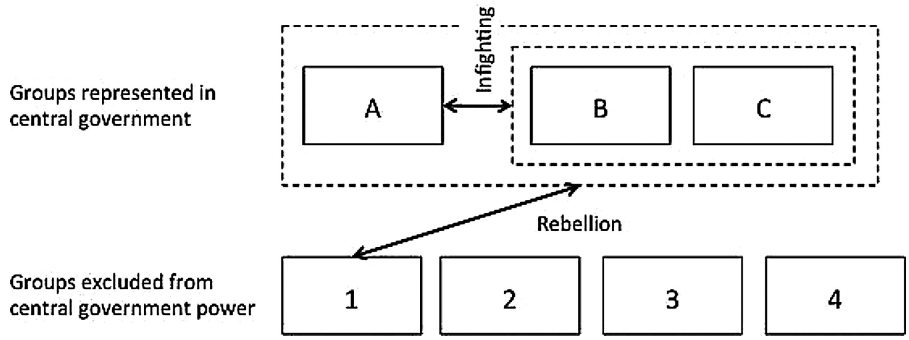

Figure 1. Ethnopolitical actors and conflicts

model. It distinguishes between ethnopolitical groups represented at the highest level of government (termed "included" groups A to C) and those that are not ("excluded groups" 1 to 4). This model allows to distinguish between two different types of conflict. First, a rebel organization claims to speak in the name of excluded group 1 and fights the central government, for example, over the neglect of its home region or the lack of representation in the inner circles of power. We call this type of conflict a "rebellion" (see Wimmer, Cederman, and Min 2009). A well-known example would be the various Darfurian guerillas that fought against the Arab-dominated Sudanese government.

Second, an army faction of group A members (to give an example) attempts to overthrow the existing government, claiming that the latter has delayed the promotion of A officers in the army or disempowered the ministries controlled by A. We call this type of conflict "infighting" (ibid.). An empirical example are the Diola of Senegal, representatives of whom are included in a power-sharing coalition since independence. From the mid-nineties onward, a separatist organization, largely dominated by Diola speakers, began to fight for the independence of the Casamançe region. On the basis of this basic model, we can now outline two different theories that predict which actors will target which civilian populations during an armed conflict.

Ethnoterritorial Competition

According the theory proposed here, fighters seek to maximize the territory under control of their coethnics, and they do so in a strategic way. Before we outline this argument in detail, we first clarify why ethnic ties are politically relevant and how local struggles for political power are intertwined with the macrolevel conflict over who controls the national government. The local population (group 1 in Figure 1) gains from supporting ethnic rebels who fight in their name because this increases the likelihood that they will be able to win the conflict and capture the state. This in turn will produce patronage and public goods benefits for the allied ethnic population (for evidence of ethnic favoritism in public goods provision, see Bannjerjee, Lakshimi, and Somanathan 2008, section 3.2.1; Grødeland, Miller, and Koshechkina 2000; Kramon and Posner 2016; de Luca et al. 2015; McClendon 2016). For the same reasons, the coethnics of ruling elites (groups A, B, and C in Figure 1) have an interest in maintaining their privileged relationship with the state apparatus and thus are more likely to support government troops than excluded populations.

These national struggles over state power are then mirrored at the local level, where political factions and networks align with the ethnopolitical cleavage at the macrolevel, thus opposing representatives of group 1 against those of groups A, B, and C. Consequently, local struggles over political power—over "who rules this place"—become intertwined with national-level conflict over "who owns the state" (Wimmer 1997).

At the local level, fighting organizations kill civilians of the other side in order to tilt the balance of local political power and demographic weight in the favor of their own group, intimidating the enemy population or encouraging them to flee. They do so because they can count on the political loyalty and logistical support of their coethnics (cf. also Wood 2010, 602f.). The marginal utility of violence is highest in locales where it would suffice to expel (or kill) only a small number of civilians in order to become a local majority. Therefore, violence should be most likely in those areas where the population size of the coethnics of government elites and of rebels reach parity (Hypothesis 1).

For government violence, this means maximum polarization between groups 1 and ABC or between A and BC, for rebel violence between groups 1 and ABC, and for violence committed by infighters between A and BC.

Conversely, where the coethnics of fighters represent 90 percent of the population, it makes little sense to act violently against what most likely already is a quiescent and subdued minority. Where coethnics make up only 10 percent of the population, the amount of violence needed to expel at least 40 percent of the other group is prohibitive—and it might even be undesirable if the general public perceives these locales as part of the "homeland" of their enemies.

A similar argument was first developed in Balcell's (2010, 2011) study of the Spanish civil war fought in the Catalan and Aragon regions. We integrate it into our model of ethnoterritorial competition.[6] We also go one step beyond Balcell's model by taking into account a second strategic interest of fighting organizations. Armed groups are interested in establishing control over regions where the settlement areas of their coethnics and those of their opponents meet (i.e., in border areas [a more fine-grained version of this argument has been proposed for Bosnia by Melander 2007; Weidmann 2011]). The strategic utility of a coethnic village in a border zone is much higher than that of a coethnic exclave deep in territory populated by the opponent's coethnics. Thus, violence should be more intense the closer a locale lies to a border between the coethnics of rebels and government elites (Hypothesis 2; the border between 1 and ABC or A and BC for government violence, 1 and ABC for rebel violence, and A and BC for infighters).[7] These two hypotheses are markedly different from those derived from the "weakening the enemy" perspective, to which we now turn.

Weakening the Enemy's Ethnic Support Base

This second theory of ethnic targeting has been proposed by Fjelde and Hultman (2014). Armed groups attack their enemy's coethnics, they argue, in order to undercut its logistical, informational, and material support. This makes strategic sense since in ethnic conflicts, a civilian's ethnic background provides a good informational shortcut to determine their political leanings (ibid.; Olsson and Siba 2013; Sullivan 2012). In the setup described by Figure 1, government troops should therefore attack civilians of groups 1 and A (Hypothesis 3) while sparing civilians of groups BC. Rebels associated with group 1 in turn should attack all included groups ABC (Hypothesis 4) and avoid groups 1 to 4 (and especially 1), while infighters from group A should attack groups BC (Hypothesis 5) and avoid all others (especially their own group A). Since there are no further strategic considerations according to this theory, rebels and government troops should kill civilians of these target groups wherever they live. By implication, violence should be more intense the higher the share of the target population is in an area (which is roughly what Gulden [2001] finds for Guatemala).

Fjelde and Hultman (2014), using data sources similar to ours, test whether areas that contain at least *some* coethnics of the adversary see more violence than areas without any of the adversary's coethnics.[8] However, this does not adequately capture the supposed mechanism. If fighters seek to weaken their opponents' support base, they should kill more civilians the larger the local share of their opponents' ethnic base is in an area. We therefore test their theory with a dummy variable for hexagons *entirely* populated by the adversary's coethnics. Alternatively, we employ a continuous measurement (the percentage of the enemy's coethnic population), which yields substantially similar results (for details see Online Appendix 3).

Other Theories: Controlling Resources, Fighters, or Territory

We now briefly discuss the three major theories of civilian victimization, all of which claim that where and why civilians are killed has nothing to do with the political struggle between insurgents and governments and is thus entirely independent of civilians' stance in that macropolitical conflict. In other words, violence against civilians is supposed to follow a nonpolitical logic, determined by either economic considerations (gaining access to natural resources to enrich the fighters and/or fund their operations), organizational logics (whether or not rebel leaders can keep their fighters under control), or locally specific military tactics (eliminate possible collaborators in an area).

Looting

The looting argument derives from the greed school in the civil war literature (Le Billon 2001; Collier and

6 Weidmann (2011) confirmed the polarization hypothesis with regard to Bosnia, but argued that polarization drives violence because of local competition for jobs, public goods, and other local resources. For a critique of explaining ethnic conflicts with economic competition arguments, see Horowitz (1985,105–35); Wimmer (1997).

7 Border areas are also those where most polarized locales can be found (the average polarization index there is 0.28 compared to 0.0007 overall).

8 Using the percentage of enemy coethnics as an independent variable, Sullivan (2012) and Olsson and Siba (2013) arrive at similar conclusions for Guatemala and Darfur.

Hoeffler 2004), according to which governments and rebels fight to gain control over lootable resources, such as the famed "blood diamonds" of Sierra Leone, oil resources in the Nigerian delta, or the rare metals found in Eastern Congo. Azam (2002) has applied this mode of reasoning to violence against civilians (see also Hegre, Ostby, and Raleigh 2009; Querido 2009). In his game-theoretic model, violence against civilians represents a side effect of the struggle over lootable goods, which are needed to pay fighters. Once violence against civilians has set in, young men have incentives to join an army or rebel force rather than to farm their land, leading to a self-reinforcing equilibrium characterized by high levels of violence. The hypothesis derived from this perspective is straightforward: violence against civilians should be more frequent in areas with abundant lootable natural resources, including diamonds, oil, and minerals (Hypothesis 6).[9]

Loose Control over Fighters

Weinstein (2006) focuses on the initial conditions that shape a rebel organization and thus its subsequent behavior vis-à-vis the civilian population. Rebel organizations that were funded either by natural resources or by external actors such as a foreign government attracted more opportunistic fighters interested in immediate economic gains rather than in achieving a political goal. Such organizations will also exhibit a lower level of control over the rank-and-file and less hierarchical integration. As a consequence, these rebel forces are more likely to prey upon the local population and kill civilians (for Sierra Leone, see Humphreys and Weinstein 2006). Three hypotheses follow from this approach: rebel organizations that command less control over their fighters (Hypothesis 7) or rely on natural resources to fund their operations (Hypothesis 8) or on external financial support[10] (Hypothesis 9) should be more likely to commit violence against the civilian population.

Containing Collaboration

According to Kalyvas's (2006) well-known study of the Greek civil war, rebels and governments in irregular civil wars selectively kill civilians in order to eliminate collaborators and prevent future defections. Rebel and government soldiers kill civilians when they have not yet fully established control over a territory. They are less likely to do so when they have either no control (in contested areas) or have already fully established themselves and thus eliminated any opposition to their rule. Civilians, on the other hand, denounce each other to settle scores from local-level feuds again unrelated to the macroconflict. This is most risky if the area is heavily contested between war participants where civilians do not know who will eventually prevail. The combination of these two behavioral logics leads Kalyvas to expect that violence is highest where a good supply of denunciations meets a high demand for identifying collaborators, that is, in areas of intermediate control. Such intermediate levels of control should be found in areas where control recently shifted from one side to the other (Hypothesis 10) without, however, having shifted hands many times in the recent past. This latter situation would imply contestation, which according to Kalyvas should be less violence-prone.

The set of theories discussed so far represent the most widely cited and empirically specific approaches to violence against civilians in civil wars. Not all of them are incompatible with each other or mutually exclusive. For example, it is possible that a looting logic combines with that of ethnoterritorial competition. This article does not attempt to disentangle such complex causal relationships, but seeks to evaluate whether some of the basic observable implications of each theory hold empirically. Future work could certainly do more to discern possible interaction effects or to identify the scope conditions under which one or the other of these theories is more likely to hold, even if a general analysis does not produce statistically significant results in their support. The next section discusses the data and variables used to evaluate the various hypotheses introduced above.

9 Other authors have specified the looting argument differently and maintained that civilians are killed in areas with rich crop harvests (Koren and Bagozzi 2017), especially during periods of draught (Bagozzi 2017; for India, Eyndre 2016) or where aid organizations (Wood 2015) or national governments (Khannaa and Zimmerman 2017; for Columbia, Weintraub 2016) provide locals with lootable resources. In order not to complicate the picture and for reasons of data availability, we don't attempt to test these additional greed arguments but note here, en passant, that in the statistical models discussed below, violence is not less likely in places with sparse vegetation or where the soil quality is bad and thus less suitable for agriculture.

10 In an extension of the argument, Salehyan and coauthors (Salehyan et al. 2014) show at the level of rebel organizations that violence against civilians decreases if an organization is externally supported by a democratic regime and increases if the supporting state is not democratic. For data reasons we again refrain from testing this more nuanced version of the argument.

Data and Model Specification

Dependent Variables and Units of Observation

As indicated in the opening paragraphs of this article, there are two available datasets with geocoded information on violence against civilians (ACLED and UCDP GED). For reasons discussed below, we use the UCDP dataset for all analyses except to evaluate Kalyvas's theory, for which the ACLED dataset is more appropriate. The dependent variable in both datasets is defined as an event during which violence against unarmed civilians was committed intentionally by government soldiers, rebel forces, or militias—thus ignoring "collateral damage" of armed battles. Data on violent events is much more reliable than estimates of the number of deaths. We therefore define the dichotomous dependent variable as any event in which an armed group intentionally killed at least one civilian.[11] For robustness purposes, we run the main models with a count variable of the number of civilian deaths and report the results in Table 3.

The UCDP GED dataset is limited to Africa. It covers all years from 1989 to 2010 and all countries where armed groups killed at least twenty-five civilians. It can be linked to other datasets on armed conflict, conflict participants, their external support, their links to politicized ethnic groups, etc. Since all the theories discussed above relate to violence during civil war, we limit the universe of observations to years and countries during which an armed conflict was active (i.e. where at least twenty-five battle deaths were counted in the UCDP armed conflict dataset (Gleditsch et al. 2002).

The ACLED dataset includes some conflict-prone countries in the Middle East and Asia as well. It has been criticized for a number of reasons, most importantly in reference to the quality of the coding (Eck 2012; the recent updates by ACLED seem to have addressed these issues). Compared to UCDP, ACLED has the advantage of offering information on territorial gains and losses by rebels and government troops, which allows to evaluate Kalyvas's theory. For the rest of the analysis, however, we rely on UCDP data because, as mentioned above, it is linked with other datasets relevant for this study.

Both datasets identify perpetrators and we can therefore distinguish between violence committed by government or rebel organizations. In order to test the two ethnic targeting arguments, we need to further disaggregate the dependent variable and distinguish between violence committed by infighters and by rebels, and we need to identify the ethnic communities that each armed organization claims to represent. This is made possible thanks to the actor identification number offered in both the UCPD-GED and the EPR datasets (Wucherpfennig et al. 2012).

Both the ACLED and the UCDP datasets contain precise geocoding for events. In order to make this data usable for a cross-sectional time-series analysis, we overlay a grid of fixed territorial units in the form of hexagons of 27.75 km^2 size or one-quarter of a degree of latitude and longitude. We chose hexagons as units of observation, rather than settlement units such as villages and towns, because much of Africa's population south of the Sahara lives in sparsely populated and dispersed hamlets outside of towns and villages (Herbst 2000). More importantly, there are no data on each hamlet or village's ethnic composition and we thus have to rely on the coarser ethnic maps provided by the GeoEPR dataset (see below). The robustness section reports results from other specifications of the units of observation, such as larger rectangles or politically defined units of various size.

We disregarded the fine-grained day-by-day coding of violent events in both datasets and instead aggregated to the year—the level of granularity of many other independent variables. To explore Kalyvas's argument, however, a yearly data resolution might not be fine-grained enough. It may well be, for example, that government troops gain control of a territory in December and kill civilians during January—a link that will be lost in a dataset based on years. We therefore created a dataset with month-hexagons as units of observations, using the ACLED dataset for the reasons discussed above, and we then worked with one-, two-, and three-month lags of the independent variables.

Independent Variables

The following gives a short overview of the various independent variables coded for this project. We refer the reader to Online Appendix 1 for more detail on coding procedures and data sources. Online Appendix 2 provides summary statistics. To assess greed theories of violence against civilians, we focus on three different types of lootable resources: the number of active,

11 We prefer this dichotomous coding of the dependent variable over a count version since we are not theoretically interested in how *many* violent episodes a hexagon experiences, but in the more fundamental contrast between peace and violence. This also represents the explanatory focus of the theories we intend to evaluate. Moreover, some of the reliability problems in event counts based on media reports (see Weidmann 2012)—such as how to distinguish separate episodes from each other—are reduced when using a dichotomously coded variable.

on-shore oil wells (from Lujala, Gleditsch, and Gilmore 2005); whether or not there are diamond deposits in a hexagon (from Gilmore et al. 2005); and the number of economically significant mining sites (e.g., for Tungsten and other rare metals) per hexagon (data are from the National Minerals Information Center of the United States Geological Survey, see https://minerals.usgs.gov/minerals/pubs/country/data). Other codings of these variables (e.g., the km distance to natural resource sites) are used for robustness purposes and produced similar results.

To evaluate Weinstein's argument, we rely on Cunningham, Gleditsch, and Salehyan's (2009) dataset on rebel organizations to code a dichotomous variable indicating whether or not a rebel organization received any kind of financial support from actors situated outside of the focal country. The second variable measures the extent of control that rebel leaders exercise over the rank and file. We draw on a dataset by Rustad and Malmin Binningsbo (2012) for information regarding whether a rebel organization was funded by natural resources (including drugs). As with the external financing variable, there is no information on whether rebels relied on such resources when they first organized, once the conflict was underway, or both. We thus cannot test Weinstein's (2006) path dependency argument. To avoid confounding civilians killed by other rebel organizations with different internal organization or funding sources, we restrict the sample in these statistical models to areas within which a rebel organization operates.

Kalyvas's theory is the hardest to evaluate empirically because there is no data on actual levels of territorial control by specific actors. It is perhaps not too far-fetched, however, to assume that, in recently acquired territories, an armed group has not yet established full control but also no longer shares control with its adversary. Data on territorial gains and losses is available in ACLED, as discussed above. We create two count variables indicating how many times either government or rebels have gained territory on a hexagon, whether through battle or peacefully. To check for robustness, we also code a distance variable—assuming that the degree of control over territory monotonically decreases with distance to the location of a territory change. The results are substantially very similar.

To exclude the possibility that we are looking at contested territories that frequently switch back and forth between rebels and government troops (where civilians should be safer according to Kalyvas), we exclude hexagons with territorial gains in favor of *both* rebels and governments in the previous twelve months. To take two additional scope conditions of Kalyvas's theory into account, we exclude conventional civil wars from consideration (using the war typology in Kalyvas and Balcells 2010), since the theory applies to guerilla wars only. This reduced the number of events from 2,834 to 2,506. We also exclude events with more than five civilian deaths from the coding of the dependent variable because indiscriminate killings (such as massacres) are also not the focus of Kalyvas's argument (we adopt the threshold to define indiscriminate violence from Sullivan 2012). This means that we exclude an additional 983 events. For robustness purposes, we defined the dependent variable in a less restricted way to include contested territories, guerilla wars, and high levels of violence with more than five civilian victims. The results, shown in Table 3, are similar.

To evaluate the two ethnic targeting arguments, we rely on the Ethnic Power Relations (EPR) dataset (Wimmer, Cederman, and Min 2009), which also exists in a geocoded version for the subset of ethnic groups that have identifiable territories of settlement (Wucherpfennig et al. 2011; we use the EPR-ETH edition of the data). The EPR dataset identifies all politically relevant ethnic groups[12] and their position in the overall power config-

12 To be more precise, an ethnic category is politically relevant if at least one actor (a political movement, or a party, or an individual) with some minimal resonance in the national political arena claims to speak for this category or if outsiders consider the category to be relevant by discriminating against its members (see for the following, Wimmer, Cederman, and Min 2009). EPR does not code individuals, parties, or movements as "representing" an ethnic group if these actors cannot acknowledge their ethnic background in public or publicly pursue group interests. In line with constructivist notions of ethnicity, the list of relevant categories can change over time, and categories can fission or fuse. EPR is based on an encompassing definition of ethnicity (see, e.g., Wimmer, Cederman, and Min 2009) that includes groups with a distinctive religion, language, race, culture, or profession (as in caste systems).
EPR lists the political status of each ethnic category for each year by evaluating whether group members can be found at the highest levels of executive government, such as the cabinet in parliamentary democracies, the ruling circle of generals in military dictatorships, the politburo in communist countries, and so on. The measurement is thus independent from whether the regime is democratic or not. Levels of representation are measured through an ordinal scale. It ranges from monopoly power (total control of executive government by representatives of a particular group) to dominance (some

uration rendered in Figure 1. EPR also codes whether a rebel organization fights in the name of a particular ethnic group, providing a rebel identification number that links EPR to other datasets (Wucherpfennig et al. 2012).

This allows identifying the local, hexagon-specific population-shares needed to evaluate the two ethnic targeting arguments: the share of coethnics of government elites (ABC in Figure 1), of rebels (1), of infighters (A), of infighters' adversaries (BC), as well as the corresponding polarization figures. We use Montalvo and Reynal-Querol's (2005) well-known formula to calculate the latter. Finally, Geo-EPR allows to calculate the kilometer distance to the nearest border between the settlement territories of groups in conflict (i.e., the coethnics of rebels or infighters on the one hand and government's coethnics on the other hand) (for details see Online Appendix 1). Because the logic of ethnic targeting should not apply in areas where ethnicity is not a relevant factor for political competition, we restrict the sample to areas populated by at least one politically relevant ethnic group, but loosen this restriction when running robustness models.

The probability that armed groups kill civilians depends on other, theoretically less interesting factors that relate to the sheer number and accessibility of civilians. We experimented with a large number of variables from many different geocoded datasets and produced a series of baseline models that were then tested for multicollinearity. Online Appendix 1 describes these variables and the data sources.

To facilitate orientation, Table 1 gives an overview of the main arguments, hypotheses, the operational measurements, the datasets and their temporal resolution, as well as the exact specifications of the dependent variable.

Model Specifications

The data are arranged as a pooled time-series cross-sectional dataset with forty-three thousand year-hexagons (UCDP), or 344,000 month-hexagons (ACLED), used to test Kalyvas's argument. For the main analysis, we specify models as logistic regressions with violence against civilians as the dichotomous dependent variable, standard errors clustered on the hexagon, and controls for past violence as well as for violence in neighboring hexagons that might spill over into the focal hexagon. Country-fixed-effects models take into account time-invariant country characteristics such as levels of rule of law, the security forces' capacity to protect citizens from violence, the type of civil war, etc.

To check for robustness of the results to different specifications, we run all models without fixed effects and specify the final model with the rare events logit estimator provided by King and Zeng (2001), as well as a zero-inflated negative binomial regressions with the number of dead civilians as the dependent count variable.[13] Finally, we also rearranged the dataset into a cross-nested hierarchical model (with hexagons nested into countries and years). All these different model specifications produce substantially very similar results, as briefly discussed below.

Results

The dependent variable changes depending on the theory evaluated: all violence against civilians for the looting model; violence committed by rebel organizations when testing the loose control over the rank-and-file approach; by rebels or governments to evaluate the containing collaboration hypothesis; and by ethnic rebels, infighters, or government troops to test the two different theories of ethnic targeting. We therefore need to proceed in a step-wise fashion and evaluate each theory with its own models.

In a final step, we present two models that integrate all significant variables from either the UCDP or the ACLED datasets and define *any* violence against civilians as the dependent variable. This will allow testing whether the results of the previous, actor-specific models hold up when regressing on all violence committed by any kind of actor. It will also allow us to determine whether the ethnic targeting models can be confirmed when taking into account areas where ethnicity is not relevant and when controlling for mechanisms identified by other theoretical approaches.

Looting

The first model in Table 2 shows no support for the idea that violence against civilians is driven by competition for lootable natural resources (in line with Bellows and Miguel [2006] on Sierra Leone and Hegre et al. [2009] on Liberia). Civilians are not more likely to become victims of violence when they live in hexagons with many oil-producing wells, that contain a diamond deposit, or

members of other groups hold government positions), senior partner in a power-sharing arrangement, junior partner, representation at the regional level (e.g., in a provincial government), powerless, and discriminated against (i.e., targeted exclusion from any level of representation).

13 Test statistics indicated that a zero-inflated model is to be preferred over others.

Table 1. Arguments, hypotheses, and measurements

	Looting	*Loose control*	*Containing collaboration*	*Weakening the enemy*	*Ethnoterritorial competition*
Main argument	Civilians who are in the way of accessing and exploiting lootable resources will be killed	Rebels relying on external aid or natural resource funding will have less control over rank and file and will kill more civilians	Civilians are killed where rebels or government soldiers haven't yet established full control	Civilians are killed if they share ethnic ties with the attacker's opponent	Civilians are killed in localities close to settlement borders between groups in conflict and where these reach parity
Main motivation for killing civilians	Control over resources	Looting by rank and file	Eliminating collaborators	Weaken civilian support of enemy	Expanding area under control of coethnics
Do political affiliations of victims matter?	No	No	No	Yes	Yes
Does ethnic background of victims matter?	No	No	No	Yes	Yes
Where the theory predicts civilian victims	1) Areas with many oil-producing wells	1) Area with rebels that receive outside financial support	1) Areas in which government acquired territory are targeted by government troops	1) Areas populated by the coethnics of rebels are targeted by government troops	1) Areas close to the settlement border between groups in conflict
	2) Areas with diamond deposits	2) Areas with rebels that are funded by natural resources	2) Areas in which rebels acquired territory are targeted by rebels	2) Areas populated by coethnics of governing elites are targeted by rebels	2) Areas with high levels of polarization between coethnics of governing elites and of rebels
	3) Areas with many economically significant mining sites	3) Areas with rebels that maintain weak control over rank and file			
Dataset to code-dependent variable	UCDP	UCDP	ACLED	UCDP	UCDP
Temporal resolution	Yearly	Yearly	Monthly	Yearly	Yearly
Sample restrictions	Only countries and years with an ongoing civil war	Only countries and years with an ongoing civil war	Only countries and years with an ongoing civil war fought as a guerilla (not conventional) war	Only countries and years with an ongoing civil war	Only countries and years with an ongoing civil war
		Only geographic areas where rebels are active		Only geographic areas with at least one politically relevant ethnic group	Only geographic areas with at least one politically relevant ethnic group
Dependent variable	All violence against civilians	Violence committed by rebel organizations	Violence committed by rebel organizations or governments (separate models)	Violence committed by ethnic rebels, infighters, or government troops (separate models)	Violence committed by ethnic rebels, infighters, or government troops (separate models)

Table 2. Logistic regressions on events of violence against civilians

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Dependent variable	*All violence*	*Rebel violence*	*Low-level gov. violence (ACLED)*	*Low-level rebel violence (ACLED)*	*Gov. violence*	*Rebel violence*	*Infighter violence*	*All violence*	*All violence*
Independent variables									
Presence of oil-producing wells	−0.1758								
(dummy)	(0.480)								
Presence of diamond deposit	0.0537								
(dummy)	(0.297)								
No. of economically significant	0.0348								
mining sites	(0.080)								
Strength of control over		0.0343							
rank-and-file rebel fighters		(0.073)							
Outside financial support for rebels		0.0511							
(dummy)		(0.140)							
Rebels funded by natural resources		−1.3305***							−1.1746***
(dummy)		(0.159)							(0.171)
No. of times gov. gained territory			0.2706	0.3496**					
			(0.217)	(0.156)					
No. of times rebels gained territory			0.4668***	0.1308					
			(0.125)	(0.193)					
Distance to any territory change								−0.5536***	
								(0.057)	
Entire hex population in rebellion					−0.2528				
					(0.656)				

Table 2. Continued

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Dependent variable	*All violence*	*Rebel violence*	*Low-level gov. violence (ACLED)*	*Low-level rebel violence (ACLED)*	*Gov. violence*	*Rebel violence*	*Infighter violence*	*All violence*	*All violence*
Entire hex population included in government						−0.8703***		0.1168	0.0890
						(0.318)		(0.123)	(0.125)
Entire hex pop included and not in rebellion							0.5480**		
							(0.263)		
Polarization btw. included and rebellious population					0.5566***	1.5486***	3.0695***	0.4494**	0.5050**
					(0.191)	(0.298)	(1.016)	(0.224)	(0.216)
Km distance to nearest border between groups in conflict (logged)					−0.0903**	−0.1011*	−0.6606***	−0.1053***	−0.1230***
					(0.037)	(0.055)	(0.118)	(0.032)	(0.029)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control variables	A	A	B	B	A	A	A	A	A
Observations	40,739	12,685	249,162	259,600	29,397	19,305	11,676	24,805	32,675
Notes on numbers of observations	Drops countries and years without violence	Conflict areas only; drops countries and years without any rebel violence	Drops countries with an ongoing conventional war, hexes without any violence, and hexes that changed hands between rebels and government past year		Drops hexes without at least 1 politically relevant ethnic group; drops countries and years without any violence			Only hexes with both ACLED and UCDP data; drops countries and years without any violence	Drops countries and years without any violence

Notes: (1) Robust standard errors in parentheses; statistical significance levels:*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. (2) A includes the following control variables: violence last year, violence in neighboring hexagons, close to border (dummy), distance to city, distance to capital, road length, urban population, roughness of terrain. (3) B includes the following control variables: distance to battle without change in territory, violence last month, violence in neighboring hexagons, urban population size, close to border (dummy), travel time to city, length of roads, sparsely vegetated surface, roughness of terrain.

where economically significant minerals are mined. The same holds true if we use alternative specifications of these variables: distance to production sites, number of such sites within a radius of 50 or 100 km, or a coding of conflict minerals (results not shown).[14]

Loose Control Over Fighters

Models 2 and 3 reduce the universe of observations to those geographic areas where rebel organizations have been active in order not to misattribute violence committed by a specific rebel group to another one with different organizational characteristics and sources of funding (using the UCDP GED Conflict Polygon dataset, see Croicu and Sundberg 2012). According to Model 2, the strength of hierarchical control over fighters is not associated with the propensity of a rebel organization to kill civilians.[15] Financial support by outsiders is also not correlated with the chances of civilian victimization—while additional results (not shown) demonstrate that providing rebels with troop support from the outside, a sanctuary, or weapons increases their propensity to kill civilians. In other words, rebels' military capacity to kill is more important than the source of their revenues, as maintained by the loose control theory. With regard to natural resource funding, we find the opposite of what the loose control argument predicts: rebel organizations that profit from the sale of natural resources are *less* likely to kill civilians than other organizations. Perhaps this is because such rebel organizations are simply not interested in establishing control over local populations because there is less need to rely on their economic support.

Containing Collaboration

In order to evaluate Kalyvas's theory of violence against civilians, we now shift to the ACLED hexagon-month dataset, for the reasons explained above. The number of observations is larger because the units of observations are now hexagon-months, rather than years. Model 3 indicates that government troops do not kill more civilians as they gain territory in a hexagon during the last month. However, they do cause more civilian deaths where they *lost* territory to rebels, possibly killing civilians while retreating or in areas adjacent to positions they lost (perhaps out of revenge, frustration, or rage). Model 4 suggests that rebels also kill where they *lose* terrain, rather than where they gain it. Note that these results remain similar if we use a two- or three-month lag or a hexagon-year version of the dataset without any lags (results not shown).

As discussed above, the codings of independent and dependent variables used in Models 3 and 4 take the scope conditions of Kalyvas' theory into account as well as possible. Specifically, they exclude contested territories that shift "sides" more than once during the last twelve months (and where civilians should be safer according to the theory); events with more than five civilian deaths (which are unlikely to represent selective targeting); and those occurring in the midst of conventional wars. Models 1 and 2 in Table 3 show the results when we loosen these restrictions and take all violence in all kinds of civil wars into account. The results remain broadly similar, except that rebel forces now also target civilians where they recently acquired territory (in line with Kalyvas's theory; but they still kill civilians where they lost territory as well).

What emerges from these results is that civilians are more likely to become victims the closer they live to actual fighting, and the more accessible they therefore are to fighters. All signs of the coefficients of the territory change variables are positive if they are significant. Even more importantly, the coefficient for the number of battles *without* territory changes is also associated with civilian deaths in statistically significant ways (not shown). In the final models, we therefore need to control for the distance to any kind of territory change to account for the simple effects of proximity to troops and rebels that fight each other.

Ethnic Targeting

Models 5 to 7 in Table 2 evaluate the two competing ethnic targeting arguments. Each model refers to a different perpetrator-victim dyad, and, accordingly, we use three different dependent variables: government violence against civilians (Model 5); violence committed by rebels (Model 6); and violence by "infighters" (Model 7). We do not find consistent support for the idea that armed groups attack their adversaries' coethnics where these are most numerous, in contrast to Fjelde and Hultman (2014). Government troops do not target hexagons entirely populated by the coethnics of rebels or infighters more than they do other hexagons (Model 5). Rebel fighters even significantly *avoid*, rather than target, hexagons exclusively populated by the coethnics of government elites (Model 6). We arrive at the same conclusions if we use

14 We also do not find any association with opium or cannabis (data from Buhaug and Lujala 2005).

15 We obtain the same results if we include the relative military strength of rebels (in contrast to Wood 2010) or a variable coding whether or not they effectively control territory—two other variables that capture the military capacity of rebel organizations to kill civilians.

Table 3. Different model specifications

	Diff. specifications of Models 3 and 4 in Table 2		*Diff. specifications of Model 9 in Table 2*		
	1	*2*	*3*	*4*	
Dependent variables	*Gov. violence (ACLED)*	*Rebel violence (ACLED)*	*Rare events logit*	*0-inflated negative binomial regression DV: number of events during which civilians were killed*	
Independent variables				>0	0
No. of times government gained territory	0.1705	0.2571***			
	(0.151)	(0.098)			
No. of times rebels gained territory	0.3344***	0.2169***			
	(0.074)	(0.070)			
No. of oil production sites			−0.8542*	−1.5118***	0.3012
			(0.505)	(0.539)	(0.564)
Natural resource funding of rebels			−0.7738***	0.2495	1.6489***
			(0.170)	(0.342)	(0.270)
Polarization btw. included and rebellious population			0.7104***	2.2412***	0.0894
			(0.149)	(0.385)	(0.348)
Distance to border between ethnic groups (in km, logged)			−0.1038***	−0.1891***	0.0726**
			(0.022)	(0.054)	(0.035)
Country fixed effects	Yes	Yes	No	No	
Control variables	A	A	B	B	
Observations	314,832	307,476	33,106	33,106	33,106
Notes on no. of observations	Drops countries and years without any violence				

Notes: (1) Robust standard errors in parentheses; statistical significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. (2) A includes the following control variables: violence last month, violence in neighboring hexagons, close to border (dummy), distance to city, length of roads, urban population, roughness of terrain, distance to battles without territory change. (3) B includes the following control variables: violence last year, violence in neighboring hexagons, close to border (dummy), distance to city, distance to capital, road length, urban population, roughness of terrain.

a share of the enemy's coethnics as an independent variable (results not shown). Both results together allow us to conclude that neither rebels nor governments attack their enemy's coethnics where they are more numerous and thus easiest to target. Only in models of violence committed by infighters does the strategic logic of attacking one's enemy's support base appear to be at work (Model 7).

In Online Appendix 3, we offer a detailed explanation for why our findings diverge from those of Fjelde and Hultman (2014), who use similar data sources. In the case of government violence, Fjelde and Hultman's omission of polarization and distance from their models explain the different results. Regarding rebel violence, the findings become consistent with the ones presented here if we drop some of their (highly collinear) control variables, or if we use the substantially more meaningful share of the included population as an independent variable, rather than a dummy for the presence of *any* members of the included group.

The ethnoterritorial competition argument, on the other hand, predicts that levels of polarization between groups in rebellion and those in power should determine the likelihood of violence against civilians. Indeed, the sign of the polarization measure is significant in the expected direction and at the highest level in all models. The effect is also substantially important: increasing polarization by one standard deviation increases the probability of violence by about 0.45. We also find evidence for the second mechanism driving ethnoterritorial competition: competing fighting organizations attempt to expand the continuous territory under the control of coethnics by focusing violence on the borders between ethnic settlement areas. The variable that measures the kilometer distance to the nearest boundary between ethnic group(s) represented in government and those in rebellion is statistically significant in all models. A one standard-deviation increase in this distance decreases the probability of violence by approximately 0.2—a magnitude in the order of some of the more important control variables. Thus, in line with the ethnoterritorial competition model, civilians are killed in areas that allow fighting organizations to expand the territory under control of coethnics where this is strategically most useful and at the same time most effective.

Spuriousness and Endogeneity

It could be, however, that the relationship between polarization and violence is spurious because we do not have any information on the ethnic background of victims and thus cannot exclude that an armed group attacks its own coethnics, rather than those of its adversary. Additional analysis (not shown here) demonstrates that "neutral" populations (groups 2–4 in Figure 1 for rebellion and groups 1–4 for infighting) are significantly *less* likely to be targeted by government troops and rebels (these results do not hold up for infighters, however). We also find that neither rebels nor infighters specifically target their own coethnic civilians. It is therefore less likely that the association between polarization and violence is spurious.

Additional support for the idea of ethnic targeting comes from country-level studies for which information on the ethnic background of villages, which are often ethnically homogenous, is available. They show that armed organizations rarely attack their coethnic populations (for Olsson and Siba 2013; for Guatemala, Sullivan 2012). One of the rare datasets with information on the ethnic background of individual victims comes from Northern Ireland. A full 74 percent of all individuals killed by Protestant paramilitaries, for example, were Catholic civilians. By contrast, only 16 percent of the victims were Protestant civilians (e.g., family members of rival paramilitaries or "traitors").

It is also possible that polarization as well as the distance to settlement border simply pick up the difference between *any* mixed territory and monoethnic hexagons, rather than specifically a polarized ethnodemographic configuration and the continuous distance to where territories overlap. To evaluate this possibility, we coded more empirically intuitive variables indicating whether 0–10 percent of the population belongs to rebellious groups,11–20 percent, 21–30 percent, etc. The results show that most of the government violence occurs when its coethnic population in a hexagon reaches between 50 and 60 percent of the total population. For rebel violence, a share of the coethnic population, between 60 and 70 percent of the total population yields the most violence. It thus seems that both government and rebels are more likely to attack civilians where their coethnic population is already in a slight demographic majority—quite in line with the general thrust of the ethnoterritorial competition argument. Note, however, that these results look different without country fixed effects, and we therefore should perhaps not rely too much on them.

Finally, we briefly address concerns about reverse causation. Could it be that violent cleansings *produce* a polarized local settlement pattern by driving out members of the opposed ethnic group until they approximate half of the population—a relationship that is masked by the yearly resolution of the data? The temporal order of how independent and dependent variables were measured makes this rather unlikely: much of the African geocoding of EPR relies on maps drawn by

Soviet ethnographers in the 1960s, long before the recent wave of civil wars and long before the data series on violence against civilians started in 1989. In some cases of massive population shifts, Geo-EPR offers different maps for different periods. We made sure that our ethnic settlement maps refer to periods *before* the conflict data series sets in. In other words, temporal ordering mitigates against some of the most obvious reverse causation problems.

Final Models of All Violence Committed by Any Actor in Any Conflict

The preceding analysis refers to violence committed by either government, or rebels, or infighters. Correspondingly, the universe of cases varies quite dramatically. How can we bring the three different ways of behaving toward civilians into one model that uses the entire range of observations? And how can we also bring back into the picture the other variables that proved to be significantly associated with violence against civilians in previous models, in order to see whether the logic of ethnoterritorial competition actually operates even when taking other mechanisms into account? And finally, does ethnic targeting show up as a significant predictor of civilian victimization even if we include areas where ethnicity is not politically relevant, thus extending the sample to all countries and areas under civil war?

Models 8 and 9 in Table 2 offer such a more encompassing view. The dependent variable is *all* violence against civilians. In Model 8, we include a variable that measures the distance to a territory change from the ACLED dataset because we have seen above that *any* kind of territory change (in whoever's favor) is associated with an increased likelihood of violence. Unfortunately, combining ACLED with UCDP data would reduce the number of observations since ACLED contains data from 1997 onward only. We therefore run a separate model with the ACLED-based territory change variable (Model 8) and another one (Model 9) with an additional UCDP-based independent variable that proved to be significant in previous models: the natural resource funding of rebels.

In both Models 8 and 9, we evaluate the logic of ethnic targeting with a term that measures the degree of polarization between any group in rebellion (whether rebels or infighters) and the included population. This variable allows us to capture the targeting logic of governments, rebels, and infighters alike. We now code 0 on the polarization variable for all those hexagons without any politically relevant ethnic groups—while these areas were dropped in the ethnic targeting models described above (Models 5 to 7). The same goes for the distance to a border between groups in conflict variable, which for the purposes of Models 8 and 9 is coded as the distance between included groups and *any* group in rebellion.

The results of both models are encouraging. Ethnopolitical polarization and distance to ethnic settlement borders are significant factors to understand violence against civilians, even if we include in our analysis countries and periods where ethnic politics is not a major driving factor, when we control for rebels' capacity to kill, the effects of natural resource funding, and the distance to territory changes between rebels and government troops.

Robustness Checks

For robustness purposes, we run Model 9 as a rare event logistic regression as well as a zero-inflated negative binomial with a count of the number of killed civilians as the dependent variable. The results (see Models 3, 4, and 5 in Table 3) are substantially very similar. We conduct a second robustness check by using 50 km squares as units of observation and recoding all variables accordingly (on the modifiable areal unit problem, see Schutte and Weidman 2011). Results (not shown here) remain substantially identical—except that in Models 6 and 8 the polarization variable does not achieve standard levels of significance since coarser units of observation loose much of the empirical information contained in the ethnic settlement maps. A third robustness tests reconstitutes the entire dataset with third-level administrative units (or counties) as units of observation in order to check whether using more politically meaningful units changes any of the main results. We find that this is not the case (results again not shown).

Finally, we evaluate whether the results presented in Table 2 rest on a small number of observations only. For models that are restricted to hexagons in countries and years in which ethnicity is politically relevant (Models 5 to 7 in Table 2), we find that five hexagons from Mali, Uganda, Rwanda, and the DRC had either high residual or high leverage values. Removing them from the dataset did not change anything, nor did running the analysis deleting individual countries from the analysis.

Conclusions

A booming strand of research on civil wars seeks to understand when civilians will be killed by combatants. Geocoded datasets allow linking the occurrence of such events to other features of the same localities and the actors operating in them. This article shows that, contrary to popular perceptions and much of the policy discourse,

civilians in areas rich in diamonds, oil, or conflict minerals are not more likely to become victims of violence. Furthermore, rebels funded by natural resources are *less* likely to kill civilians, while rebels with higher organizational capacity seem to use it to kill civilians as well—rather than to constrain the looting of their rank-and-file fighters. Finally, containing and preventing collaboration in areas not yet fully controlled by armed groups, as during the Greek civil war and in Vietnam (Kalyvas and Kocher 2009), does not seem to motivate armed groups in Africa—at least as far as we can tell given the crude measurement of territorial control that we encountered in existing data.

We do find, however, consistent support for a more political view of violence against civilians. Specifically, violence is part of a strategic struggle over local and national-level political power—rather than over who can control natural resources, collaborators, or fighters. In conflicts where political cleavages align with ethnic divisions, both local populations and national-level political-military organizations fight over which group is entitled and empowered to dominate the political arena. In such environments, governments and rebels have incentives to target the strategically most useful areas where the settlement areas of their affiliated populations meet and where they can therefore expand the territory continuously populated by their own coethnics. Armed groups do so especially when these populations are roughly of equal size and the local balance of power can thus be tilted in one's favor with the least effort. This twofold dynamic of ethnoterritorial competition is an important part of the puzzle to understand violence against civilians.

There are ample opportunities for future research to go beyond what has been achieved in this article. Most importantly, causal inference is limited because we do not have information on the ethnic background of the individuals killed. As such, we do not know whether or not government and rebels are indeed targeting those exact populations foreseen by our theoretical model. While there are strong indications that they are in fact doing so, as discussed in the spuriousness and endogeneity section, producing a dataset with a coverage similar to ACLED or UCDP-GED that contains more information on the individuals killed and those who perpetrated the violence would represent an important step forward. Obviously, assembling such a dataset amounts to a herculean task given the paucity of information in the news reports on which event datasets rely.

Finally, our theory of the political dynamics of ethnoterritorial competition was limited to ethnic conflicts. However, as Laia Balcell's work on the Spanish civil war has shown, very similar mechanisms are present where political cleavages and rebel-civilian relationships are based on shared political ideology (see also on Afghanistan, Hirose et al. 2017). It would represent a significant, but very demanding improvement if the Ethnic Power Relations dataset, including its geocoded version, could be expanded to include other politically relevant, relatively stable political cleavages. The analysis could then go beyond deciphering the logic of ethnic targeting and reach for a more general understanding of the political dynamic underlying violence against civilians.

Acknowledgements

The authors would like to thank audiences at the workshop "Bridging Micro and Macro Approaches to Civil War and Political Violence" organized in Barcelona by Laia Balcells, at the Graduate Institute in Geneva, and at the department of sociology at Princeton University.

Supplementary Information

Supplementary information is available at the *Journal of Global Security Studies* data archive.

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