From Rebellion to Electoral Violence:

Evidence from Burundi[*]

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Abstract

What causes electoral violence in post-conflict countries? The theoretical literature empha-
sizes the potential role of (1) ethnic grievances, (2) political competition and (3) specialists
in violence. Our study is the first to test these three hypotheses simultaneously. Using a
unique dataset on electoral violence in Burundi, we study variations in the intensity of elec-
toral violence between neighboring municipalities, relying on the fact that these are more
likely to have similar unobservable characteristics. Interestingly, we find that electoral vi-
olence did not result from ethnic grievances, which goes against the commonly held view
that this factor necessarily plays a key role in violence in the region. Rather, we show that
electoral violence is higher in municipalities characterized by acute polarization between
demobilized rebel groups, fierce political competition and a high proportion of Hutu. The
effect of political competition is stronger in the presence of numerous demobilized rebels.

Keywords: Electoral violence, Polarization, Political competition, Demobilization, Bu-
rundi

JEL Classification: D74, O12, O17, O55

1   Introduction

"Democratic governance - by protecting minorities, encouraging political plural-
ism, and upholding the rule of law - can channel internal dissent peacefully, and
thus help avert civil wars. Conversely, authoritarian and highly personalized forms
of governance, ethnic discrimination, human rights violations and corruption are
among the root causes of many of today's internal conflicts."

U.N. Secretary-General Kofi Annan (2000)[1]

Promoting democratization and elections has been at the core of peace-building missions
in post-conflict societies since the end of the Cold War. Early post-war elections are indeed
expected to increase legitimacy and accountability of the newly elected governments and foster
social trust in war-torn societies, thus contributing to long-lasting peace and sustainable de-
velopment. Nonetheless, elections have failed to be properly implemented in a vast majority
of countries in Africa. From 1975-2011, no less than 80% of African polls were disturbed
by violence, bribery, intimidation or inequitable government interference, compared to 40% in
non-African countries (Bishop and Hoeffler, 2014). Developing a better understanding of the
causes of failed elections is all the more important in view of their devastating effects on the
living conditions of civilians. Furthermore, failed elections undermine the legitimacy of the
states, destroy social capital and result in poor economic and political performance, which can
ultimately plunge fragile countries back into war.[2]

In which context is electoral violence likely to emerge? This paper tests three hypotheses
that have already been discussed in the literature on civil conflict, but never tested simultane-
ously in the context of electoral violence: (1) ethnic composition and ethnic grievances, (2)
political competition and (3) the presence and distribution of "specialists in violence".

First, a vast literature has studied how ethnic grievances may foster violence and affect the
provision of public goods (see e.g. Easterly and Levine (1997); Alesina et al. (1999); Garcia-

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[1]Quote from the address delivered by Secretary-General Kofi Annan in Warsaw at the International Confer-
ence: "Towards a Community of Democracies".

[2]Electoral violence has been shown to have damaging consequences on civilians (see e.g. Dupas and Robinson
(2012, 2010) and Omotola (2010)), on legitimacy (Berman et al., 2014), on social capital (Dercon and Gutiérrez-
Romero, 2012), on economic and political consequences (Collier and Hoeffler, 2015; Kudamatsu, 2012; Chauvet
and Collier, 2009) and on relapse into conflict (Brancati and Snyder, 2012; Hegre et al., 2001; Henderson and
Singer, 2000).

Montalvo and Reynal-Querol (2005a)). Popular resentment is likely to be exacerbated during electoral periods as elites have been shown to exploit ethnic allegiances to seize political power (Eifert et al., 2010). Second, economists have shown theoretically that violent campaigning may be an optimal strategy for political actors, depending on their position (incumbent versus opponent) and their relative support among the population (Collier and Vicente, 2012; Robinson and Torvik, 2009; Chaturvedi, 2005; Ellman and Wantchekon, 2000). According to theory, violence is more likely to occur when political competition is intense such that intimidation and electoral violence can reverse electoral outcomes. Third, the theoretical literature has emphasized the important role played by "specialists in violence" (Chaturvedi, 2005) or "hardcore supporters" (Collier and Vicente, 2012). In post-conflict countries, demobilized combatants, whose factions often turn into political parties after civil war, are good candidates for playing such a role during electoral campaigns. As such, they might be more likely to resort to violence and rely on non-democratic persuasion tools, hence undermining the conduct of free and fair elections. Most theoretical papers on electoral violence have illustrated interesting case studies, but none of them had undertaken rigorous empirical analysis to test their predictions.

We test these three hypotheses in the context of the 2010 electoral cycle in Burundi. These elections were organized in a very volatile and dangerous political context. This constraint and the nature of our research question made a randomized controlled trial (RCT) virtually impossible. Our study exploits a unique dataset that combines information at the municipal level on electoral violence, ethnic composition, electoral results and the affiliation and distribution of demobilized rebels who fought during the 1993-2009 civil war. In line with the conflict literature, we use and compare different indexes of fractionalization and polarization.[3] The identification strategy exploits variations between neighboring municipalities, relying on the fact that these are more likely to have similar unobserved characteristics.

Three important conclusions can be drawn from our empirical analysis. First, ethnic grievances, while traditionally indicated as one of the main drivers of violence, are not significantly related to the incidence of electoral violence in 2010. Instead, electoral violence was higher in munic-

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[3]Fractionalization measures the probability that two individuals drawn at random from a community belong to two different groups. It is high in the presence of many groups of similar size. Polarization measures the distance of a particular distribution of groups from a bimodal distribution. It is high in the presence of two groups of similar size.

ipalities hosting a larger proportion of Hutu. Second, political competition between parties is a strong predictor of electoral violence. An increase of one standard deviation in political fractionalization leads to an increase in violent events ranging between 27% and 45%, depending on the specification. This relationship is stronger in places with numerous demobilized rebels: for political competition to turn violent, the presence of local perpetrators is necessary. Last, we find that polarization between ex-rebel groups is associated with more electoral violence. A one standard deviation increase in polarization among rebel groups leads to an increase in violent events ranging between 43% and 52%, depending on the specification. Namely, going from the lowest polarized municipality in Burundi to the highest leads to a four-fold increase in the incidence of violent events. Overall, the causes of tensions and violence in Burundi have evolved from an inter-ethnic to an intra-Hutu rivalry between ex-rebel groups and political parties that are competing for power. These results are robust to a variety of estimation strategies.

Our paper contributes to three strands in the literature. First, we complement the few empirical studies on electoral violence. Focusing on the 2007 elections in Kenya, Dercon and Gutiérrez-Romero (2012) find that violence emerged in areas prone to land disputes and with politically connected gangs. In the same context, Gutiérrez-Romero (2012) find that political parties had engaged in vote-buying in areas where they were less likely to win, in order *"to weaken the support of their political rivals and to mobilize their own."* Collier and Vicente (2014) evaluate a randomized anti-violence community campaign in Nigeria. They find that the intervention decreased the intensity of violence and increased voter turnout. Fafchamps and Vicente (2013) further show that the effects of the campaign were also transmitted indirectly through kinship and geographical proximity. Developing a better understanding of the causes of electoral violence should help in the design and targeting of anti-violence campaigns.

Second, our analysis contributes to the large literature studying how polarization and fractionalization between groups can foster conflict.[4] The explanatory power of fractionalization and polarization indexes have been compared in a few studies examining the link between

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[4]See Esteban and Ray (2008), Schneider and Wiesehomeier (2008) and Blattman and Miguel (2010) for reviews of the literature and Esteban and Ray (2008, 2011) for recent models comparing fractionalization and polarization indexes.

ethnic distribution and conflict (Garcia-Montalvo and Reynal-Querol, 2005a,b; Schneider and Wiesehomeier, 2008; Esteban et al., 2012a). To our knowledge, this paper is the first to use fractionalization and polarization indexes to capture tensions between ex-rebel groups. It is also the first to jointly test if electoral violence is affected by the relative distribution of ethnic groups, political parties and "hardcore supporters."

Finally, our study also contributes to the body of research that assesses the effectiveness of demobilization programs in post-conflict societies (D'Aoust et al., 2016; Gilligan et al., 2013; Verwimp and Bundervoet, 2009; Humphreys and Weinstein, 2007). Our paper is the first empirical study that evaluates the impact of ex-combatants' demobilization on the occurrence of violence.

In addition to these contributions, we emphasize the importance of understanding the causes of violence in Burundi. The history of the Great Lake region has shown that political instability in one country of the region may destabilize the whole area, with dramatic effects on the civilian population (Prunier, 2009). Like its neighbors, Rwanda and the DRC, Burundi has been plagued by violence and tensions between the Tutsi minority and the Hutu majority since its independence. As a matter of fact, the 1993 elections in Burundi - the first to be organized after a long Tutsi-led dictatorship - resulted in the assassination of the newly elected Hutu president by Tutsi officers during an attempted coup. The assassination triggered a long-lasting civil war leaving around 300,000 deaths, mostly civilian, and about 800,000 refugees who fled to the DRC, Rwanda and Tanzania. In the Eastern provinces of the DRC, refugee camps became military bases. These events exacerbated tensions in the Great Lake region, paving the way for the Rwandan Genocide and the Second Congo War (Lemarchand, 2009; Mamdani, 2001). The 2010 polls were the first to be organized after the civil war and the demobilization of all rebel groups in Burundi. As we write this paper, violence has erupted in the prelude to the 2015 elections, leading to hundreds of deaths and thousands of refugees, highlighting once again the importance of unveiling the mechanisms of electoral violence.

The paper is organized as follows. The history of Burundi and the context of the 2010 elections are introduced in Section 2. In Section 3, we lay out and justify research hypotheses by referring to the theoretical literature on conflict and electoral violence. Section 4 describes

the dataset and the econometric methods used in the empirical analysis. Results are presented in Section 5 and are discussed in Section 6. Section 7 concludes the study.

2 Historical background

Since its independence from Belgium in 1961, the political situation in Burundi has been unstable and disrupted by recurrent episodes of violence between the country's two major ethnic groups, the Hutu majority and the Tutsi minority.[5] After a short democratic transition, a group of Tutsi officers seized power in 1966 following contested elections won by the Hutu majority. From 1966 to 1988, three Tutsi presidents from the same party[6] and the same village in the Southwestern province of Bururi governed the country and violently repressed any Hutu rebellion.

In 1988, a democratization process was initiated under the pressure of the international community. A new constitution introduced multiparty competition after 20 years of Tutsi regime. Melchior Ndadaye, from the Hutu-based party FRODEBU[7], triumphed in the 1993 elections and set up a government of power-sharing. His assassination a few months later by Tutsi officers and the death of the *ad interim* President, Cyprien Ntaryamina in the 1994 plane crash in Rwanda[8] triggered a civil war opposing the Tutsi-controlled army and radical Hutu groups. The already doomed democratization process was definitely buried in July 1996 when the Tutsi-controlled army led by former Tutsi president Buyoya overthrew the power-sharing government.

A fragile peace was reached through the Arusha Peace and Reconciliation Agreement on August 28, 2000. The Arusha Agreement institutionalized power sharing across ethnic groups by designing an ethnically-mixed transitional government and imposing ethnic quotas in institutions and political parties.[9] However, the two largest Hutu rebel groups, the CNDD-FDD and

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[5]According to the 2012 Afrobarometer survey, the Hutu and the Tutsi represented 82% and 17% of the population respectively. A third group, the Twa, was reported to account for less than 1% of the population.

[6]The Union for National Progress (Union pour le Progrès National, or UPRONA)

[7]The Front for Democracy in Burundi (Front pour la Démocratie du Burundi)

[8]The airplane carrying the Burundian president Cyprien Ntaryamira and its Rwandan counterpart, Juvénal Habyarimana was shot down as it prepared to land in Kigali on April 6, 1994. This attack triggered the Rwandan Genocide.

[9]According to Van Acker (2015), "as much as political elites stirred and instrumentalized ethnic antagonism

the FNL-Palipehutu[10] rejected the peace accords and continued to fight the transitional government. The CNDD-FDD eventually signed a Comprehensive Ceasefire Agreement in 2003 and joined the power-sharing government. Combatants from the Burundian Armed Forces (Forces Armées Burundaise, or FAB) and from the CNDD-FDD were selected to form the new national army (National Defense Force or Forces de Défense Nationale (FDN)). Those who did not fulfill selection criteria based on age, health status and experience were demobilized according to a "Disarmament, Demobilization and Reinsertion" (DDR) program. Approximately 23,000 units from both sides (almost three demobilized soldiers per thousand inhabitants) benefited from a sequence of reinsertion and reintegration grants in order to be able *"to return to their community and to sustain themselves and their families for a limited period following demobilization"* (The World Bank Group, 2004).

The CNDD-FDD won the elections held in 2005, and its leader, Pierre Nkurunziza, became President. Despite the appointment of a Hutu exponent as head of the country, the FNL-Palipehutu continued to fight the government, definitively transforming what had been an inter-ethnic war into an intra-Hutu struggle for power.[11] After a first attempt at a ceasefire agreement in 2006, the FNL-Palipehutu finally agreed to give up its weapons and turned into a political party in 2009. Minor administrative posts were attributed to the FNL leadership. As for the CNDD-FDD four year earlier, its combatants either joined the national army or benefited from the DDR program.

Elections were scheduled in 2010, only few months after the epilogue of the civil war. Five consecutive ballots were organized, starting with the election of municipal representatives on May 24, 2010, followed by the presidential election on June 28, the parliamentary and senatorial elections at the end of July, and ending with the election of the hills' representatives in early September. Even if several opposition parties seemed confident in their success, the FNL

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during the violent conflict, growing inter-elite trust and socialization in the atmosphere of the post-conflict "spirit of Arusha" trickled down beyond formal state institutions as a driver of political and social reconciliation." In line with the Arusha Agreement, the 2005 constitution guarantees 60/40 percent representation of Hutu and Tutsi ethnic groups in Parliament, in the government, in the local administration, and a 50/50 percent representation in the army. The president must appoint two vice-presidents, one Hutu and the other Tutsi.

[10]The National Council for the Defense of Democracy - Forces for the Defense of Democracy (Conseil National de Défense de la Démocratie - Forces de Défense de la Démocratie, or CNDD-FDD) and the National Forces of Liberation (Forces Nationales de Libération, or FNL-Palipehutu)

[11]See e.g. Palmans (2012), Vandeginste (2011, 2012, 2014) and International Crisis Group (2011).

party was seen as the most serious opposition to the CNDD-FDD of the incumbent president Pierre Nkurunziza (International Crisis Group, 2011). Table 1 displays the names of main parties, their creation dates, their ethnic origin, their results at the 2010 municipal election and, for ex-rebels groups, their number of demobilized rebels.

Table 1: Parties and ex-rebel groups

Party	Year of creation	Ethnicity of leader	% of votes in 2010	Ex-rebel group	No. of demob. (share)	Correlation votes & share demob.
CNDD-FDD	1998	Hutu	64.03	Yes	6874 (39%)	0.59
FNL	1999	Hutu	14.15	Yes	6029 (34.2%)	0.57
UPRONA	1957	Tutsi	6.25	No		
FRODEBU	1986	Hutu	5.43	No		
MSD	2009	Tutsi	3.75	No		
UPD	2003	Hutu	2.21	No		
FRODEBU-Nyakuri	2008	Hutu	1.36	No		
CNDD	1994	Hutu	1.26	Yes	1372 (7.8%)	0.76
MRC	2001	Tutsi	0.62	No		
PALIPE-Agakiza	1980	Hutu	0.24	Yes	578 (3.3%)	0.02
FROLINA	1990	Hutu	0.20	Yes	540 (3.1%)	0.31
KAZE-FDD	2005	Hutu	0.00	Yes	361 (2%)	-0.04
FNL dissidents		Hutu	-	Yes	1594 (9%)	-
FNL Icanzo	2001	Hutu	-	Yes	278 (1.6%)	-

National Council for the Defense of Democracy-Forces for the Defense of Democracy, National Front for Liberation (FNL), Union for National Progress (UPRONA), Front for Democracy in Burundi (FRODEBU), Movement for Solidarity and Democracy (MSD), Union for Peace and Democracy-Zigamibanga (UPD), Front for Democracy in Burundi-Nyakuri (FRODEBU-Nyakuri), National Council for the Defense of Democracy (CNDD), Movement for the Rehabilitation of Citizens-Rurenzangemero (MRC), Party for the Liberation of People-Agakiza (PALIPE-Agakiza), National Liberation Front (FROLINA), Kaze-Forces for the Defense of Democracy (KAZE-FDD)

The pre-electoral climate was spoiled by numerous violent episodes, claims of intimidation and suspicions of fraud. In such a context, the CNDD-FDD party won the first municipal ballot outright, capturing 64% of the votes and 62% of the seats in municipal assemblies. The FNL ended up as the second largest force, with only 14% of the votes. FRODEBU and UPRONA obtained 5 and 6% of the votes, respectively. The international community recognized the electoral results to be free and fair. Nevertheless, the resounding defeat pushed the opposition parties to boycott the four following ballots, accusing Nkurunziza of massive fraud and irregularities (Vandeginste, 2012; International Crisis Group, 2011; Helbig de Balzac et al., 2011). The incumbent president, Nkurunziza, who was therefore the only candidate running for presidency, was re-elected with 95% of the votes. Violence continued to be pervasive until the end of the electoral process.

The 2010 elections legitimized a quasi-return to the single-party rule, with the CNDD-FDD

having obtained a three-quarters majority in the National Assembly.[12] The tensions that followed, however, were political, rather than ethnic, and lead to the resurgence of rebel groups - among whom were the FNL- aiming to fight the government (Van Acker, 2015; International Crisis Group, 2012). Many opposition leaders left the country after complaining about constant harassment and threats on their lives. Several of those who remained politically active were arrested or assassinated. Media and civil society were threatened, increasing the risk of instability and insecurity (Vandeginste, 2012). In this volatile context, the country went through a new electoral round in 2015.[13]

3   Conceptual framework

Our paper aims at understanding the causes of violence that perturbed the electoral process in Burundi in 2010. We test whether electoral violence was driven by (1) ethnic composition and ethnic grievances, (2) political competition or (3) the presence and the distribution of "specialists in violence." This section draws on the literature on conflicts and electoral violence to explain why these channels could be relevant in triggering electoral violence in Burundi.[14]

The literature on conflict has shown that ethnic distribution is likely to be correlated with violence. As explained in the previous section, the post-colonial history of Burundi has been plagued by ethnic tensions between the Hutu and the Tutsi. This inter-ethnic rivalry eventually triggered a bloody civil war in the nineties, partially resolved with the Arusha Peace Agreements. It is reasonable to assume that such deeply rooted ethnic cleavages survived the democratic transition and were exploited by the candidates during their electoral campaigns (Wilkinson, 2004; Eifert et al., 2010).

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[12]Despite the boycott, two parties decided to take part in the legislative elections in addition to the CNDD-FDD: Frodebu Nyakuri and UPRONA. They could send deputies at the National Assembly (Helbig de Balzac et al., 2011).

[13]On April 2015, the CNDD-FDD designated incumbent President Pierre Nkurunziza as its candidate for the forthcoming presidential elections, despite the fact that he had already completed the two terms in office allowed by the constitution. The announcement triggered demonstrations and violence, a failed coup d'etat, and repeated delays of the elections. It should be noted, however, that the political opposition to President Nkurunziza's third mandate transcended ethnic boundaries. The plotters of the failed coup d'etat, for instance, were a Hutu and former CNDD-FDD rebel, and a Tutsi and former minister of defense under President Pierre Buyoya. This anecdotal evidence reinforces a key argument of this paper: since 2005, identity politics in Burundi has unfolded along political partisanship rather than ethnic ties (Vandeginste, 2015).

[14]The literature supports the pivotal role of these three channels in triggering electoral violence. However, the three hypotheses do not provide an exhaustive list of possible channels of electoral violence.

Two mechanisms could be at play. First, the theoretical literature has shown that violence is more likely to emerge if the distribution of ethnic groups is either polarized or fractionalized (Esteban and Ray, 2008, 2011). The ethnic distribution is said to be polarized if there are only two groups of similar size, and fractionalized if there are many groups of similar importance. Empirical evidence is mixed. While Garcia-Montalvo and Reynal-Querol (2005a,b) argue that ethnic polarization best captures the likelihood of conflict, Schneider and Wiesehomeier (2008) and Esteban et al. (2012a,b) find that both ethnic fractionalization and ethnic polarization are conducive to conflict, depending on the political regime and the nature of the conflict.

However, a second mechanism could also be at play. Since around 85% of the population in Burundi is of the Hutu ethnic origin, a Hutu president is expected to rule the country after the elections.[15] Given the high stakes involved, electoral violence could be more likely in areas where the Hutu are the majority. This is also in line with the fact that the civil war in Burundi evolved from an inter-ethnic conflict to an intra-hutu struggle for power. On the contrary, Tutsi parties and Tutsi municipalities are less likely to be key in determining who would win the elections, making them less prone to engaging in violence.

We consider two indicators to capture the two mechanisms: an indicator of ethnic fractionalization[16] and the proportion of Hutu. If the first mechanism prevails, ethnic fractionalization should be positively correlated with violence. If the second mechanism dominates, violence should be positively correlated with the proportion of Hutu.

We test political competition as a second potential channel of electoral violence. As explained in the historical review, the Arusha Agreements institutionalized power sharing across ethnicities and imposed ethnic quotas in political parties. The 2010 elections might therefore have been spoiled by intense political competition, rather than by ethnic tensions. As for ethnicity, two mechanisms may be at play. On one hand, parties might engage in violence if the political context is heavily fragmented or polarized. In these situations, violence or intimidation could indeed be beneficial in gaining a small political advantage, which can ultimately be

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[15]Palmans (2012) and Vandeginste (2011) report that *"for the majority of the population (an estimated 85% of whom are Hutu) legitimacy goes hand in hand with an ethnically representative leader."*

[16]There are only two main ethnic groups in Burundi: the Hutu and the Tutsi. The third ethnic group, the Twa, represents only 1% of the population. In the analysis, we only consider Hutu and Tutsi, implying that ethnic fractionalization and polarization indexes are proportional and hence perfectly multicollinear. Even if we would consider the Twa, it would not solve the multicollinearity problem as this group is marginally represented.

decisive for winning the elections (Sterck, 2015). On the other hand, the theoretical models of Collier and Vicente (2012) and Chaturvedi (2005) conclude that violent campaigning is used by a weak party to discourage the supporters of its rival from voting. In their framework, violent campaigning increases in the initial support for the rival. These two mechanisms lead to very different predictions regarding political competition, which we measure by polarization and fractionalization indexes. If the first mechanism is stronger, political competition should be positively correlated with electoral violence. On the contrary, political competition should be negatively correlated with electoral violence if the second mechanism prevails.

As for the third channel of electoral violence examined in this paper, we study the role played by "hardcore supporters" of parties or "specialists in violence." According to Chaturvedi (2005), Collier and Vicente (2012) and Sterck (2015), conflictual campaigning is more effective in the presence of numerous "specialists in violence." In the context of post-conflict Burundi, demobilized ex-combatants are likely to play this role. This is plausible for at least three reasons. After the civil war, most rebel groups turned into political parties, and the literature suggests that demobilized soldiers are active in the post-war political life of their country (Gilligan et al., 2013; Annan et al., 2011; Goose and Smyth, 1994). Demobilized ex-combatants might also be more likely to engage in violence given their past histories. Finally, in a context of widespread poverty and unemployment, they may have higher incentives to support their former leader (Human Rights Watch, 2010). We therefore test if the number and the distribution of demobilized ex-rebels is correlated with electoral violence. However, given the limitation of our data, we are not be able to determine when violence is used to gain electoral advantage, and when it is the mere consequence of frustrations among demobilized rebels that are resurfacing during the elections. We measure the distribution of former combatants by using indexes of polarization and fractionalization of demobilized combatants.

While the literature agrees that the distribution of religious, ethnic or political groups has an impact on the likelihood of conflict, it has not reached a consensus on whether conflict is the result of fractionalization or polarization.[17] In our paper, we therefore compare the predictive

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[17]Most of the theoretical literature has been written by Joan Esteban and Debraj Ray (see Esteban and Ray (2008, 2011) for recent examples comparing fractionalization and polarization indexes). See e.g. Esteban and Ray (2008), Schneider and Wiesehomeier (2008) and Blattman and Miguel (2010) for reviews of the literature. See Garcia-Montalvo and Reynal-Querol (2005a,b), Schneider and Wiesehomeier (2008) and Esteban et al. (2012a,b)

power of indexes of fractionalization and polarization related to political parties and demobilized rebel groups. The recent findings of Esteban and Ray (2011) and Esteban et al. (2012a,b) are however worth emphasizing. They show, theoretically and empirically, that polarization is more conducive of violence than fractionalization *"when the winners enjoy a public prize,"* such as political power or religious hegemony. The contrary is true when the prize is "private," such as looted resources.

4 Identification strategy

In order to test the three hypotheses, we estimate the following model:

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\begin{aligned}
\text{Violent episodes}_m = {} & \alpha_m + \beta_1 \text{ Hutu share}_m + \beta_2 \text{ ethnic frac.}_m \\
& + \phi_1 \text{ political pol.}_m + \phi_2 \text{ political frac.}_m \\
& + \gamma_1 \text{demob. rebels' pol.}_m + \gamma_2 \text{ demob. rebels' frac.}_m \\
& + \gamma_3 \text{ number demob. rebels'}_m + \mathbf{X}'_m \delta + Z_k + \epsilon_m,
\end{aligned}
\tag{1}
$$

where *Violent episodes$_m$* is the number of episodes of electoral violence that occurred in each municipality $m \in [1, 129]$. *Hutu share$_m$* and *ethnic frac.$_m$* capture the ethnic distribution between Hutu and Tutsi. Political competition is measured by fractionalization and polarization indexes based on the result of the 2010 municipal elections (*political frac.$_m$* and *political pol.$_m$*). *Demob. rebels' frac.$_m$* and *demob. rebels' pol.$_m$* are indexes of fractionalization and polarization between demobilized rebels at the municipal level. *Number demob. rebels'$_m$* captures the number of demobilized rebels who returned to the municipality per 1000 inhabitants. $\mathbf{X}_m$ is a vector of covariates which includes a median wealth index, population, population density and past violence[18]. Z_k are fixed effects. Summary statistics are shown in Table 2.

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for contradictory evidence on the effect of ethnic polarization and ethnic fractionalization on conflict.

[18]Past violence, population and population density are expressed in log given their high dispersion. The indexes of ethnic, political and ex-soldiers' fractionalization, the indexes of political and demobilized combatants' polarization, as well as the wealth index are standardized.

4.1 Data

Electoral violence. The measure of electoral violence is constructed using the Burundi *Ushahidi* electoral violence dataset. The *Ushahidi* ("testimony") software was developed to map reports of violence in Kenya after the post-election fallout in 2007-2008. It was then adapted to the Burundian context through the *Amatora mu Mahoro* ("Elections in Peace") project. It also draws on the Elections Violence Education and Resolution (EVER) project which gathers information on incidents of violence and peace activities and has been conducted in a dozen countries since 2003.

During the 2010 electoral process in Burundi, 450 well-vetted and trained monitors - on average 3.5 per municipality - had to verify and provide detailed information about violent incidents.[19] The procedure for reporting and registering such incidents involved three steps. First, election monitors witnessing a violent episode had to signal it by sending an SMS to the Ushahidi platform. After receiving the SMS, Ushahidi agents had to call the election monitors back to obtain more information about the incident. A detailed report was then written for the Ushaidi website. Finally, election monitors were requested to submit a form with detailed information on the timing, the location and type of incident within one week after the episode.[20] To ensure information accuracy, incidents had to be reported by at least two different sources to be recorded in the database.

Information about physical violence, destruction of property, clashes between groups and intimidation during the electoral cycle were recorded between April, 26 and September 12, 2010. In the majority of cases, monitors had been unable to identify the perpetrator. This is particularly true for cases of murder or attempted murder (n=67) and cases of destruction (n=62). In 25 municipalities no episodes of electoral violence were signaled. The dependent variable in our analysis is the total number of violent episodes that occurred at the municipal level. Descriptive statistics are presented in Table 2. The geographical distribution of the total number of episodes is additionally presented in Figure 1. We do not observe evidence of spatial

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[19]IFES endorsed the *"Declaraction of Global Principles for Non-Partisan Election Observation and Monitoring By Citizen Organizations"* and of the *"Code of Conduct for Non-Partisan Citizen Election Observers and Monitors"* which require the highest ethical standards for impartiality and accuracy in the witnessing, reporting and analysis of election processes and political environment.

[20]See NDI (2014) for more details on the methodology.

correlation in the dependent variable.

Table 2: Summary Statistics

	Mean	St. Dev.	Min	Median	Max	N
Violent episodes	4.02	4.52	0	3	21	129
Demobilized rebels						
Demobilized rebels' polarization	0.58	0.18	0	0.60	1	129
Demobilized rebels' fractionalization	0.54	0.16	0	0.58	0.78	129
Total no. demobilized rebels (/1000)	2.13	2.13	0.14	1.43	12.72	129
CNDD-FDD	53.29	61.08	0	35	350	129
CNDD	10.64	35.76	0	2	348	129
Palipe Agazika	4.48	11.66	0	0	74	129
Frolina	4.19	20.09	0	0	208	129
KAZE-FDD	2.80	6.23	0	1	58	129
FNL Icanzo	2.16	8.16	0	0	74	129
FNL - Rwasa	46.74	55.61	1	29	275	129
FNL Dissidents	12.36	37.42	0	3	326	129
Ethnic cleavages						
Hutu share	0.81	0.14	0.47	0.84	0.98	129
Ethnic fractionalization	0.27	0.14	0.03	0.27	0.50	129
Political competition						
2010 Political fractionalization	0.50	0.18	0.15	0.47	0.81	129
2010 Political polarization	0.44	0.13	0.15	0.43	0.87	129
2005 Political fractionalization	0.48	0.18	0.08	0.49	0.83	129
2005 Political polarization	0.48	0.17	0.08	0.50	0.92	129
Other covariates						
Median Wealth Index	-15144	91514	-55170	-41004	545315	128
Total violence (1997-2009)	20.40	37.68	0	9	357	129
Attacks on civilians (1997-2009)	10.97	21.09	0	3	177	129
Battles (1997-2009)	9.43	18.12	0	5	180	129
Population (2008 census)	62431	26454	17481	57284	155005	129
Population Density	1235	4174	72.34	352	33831	129

Ethnic cleavages. Ethnicity is a sensitive matter. It is therefore challenging to obtain ethnic data either because it is no longer collected or publicly released. According to the Belgian census of 1959, three ethnic groups coexist in Burundi: the Hutu (85%), the Tutsi (14%) and the Twa (1%). Data from this census is only available at the national level.

The 2012 Afrobarometer survey did, however, collect and release data on ethnicity in Burundi. The survey is representative at the province level. We thus proxy ethnic composition

Figure 1: Distribution of electoral violence

Total episodes (April to Sept. 2010)

- No incident
- 1 to 3 incidents
- 4 to 7 incidents
- 8 to 13 incidents
- 13 to 21 incidents
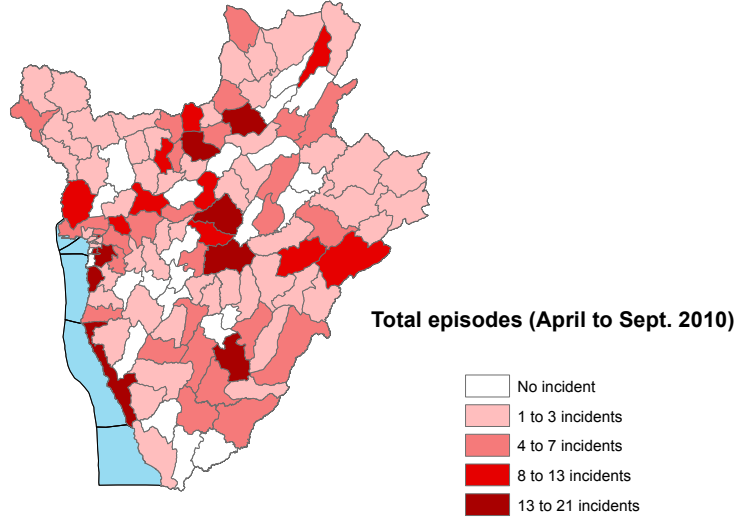
by taking the average proportion of Hutu at the province level.[21] Descriptive statistics in Table 2 show that the Afrobarometer figure for the proportion of Hutu - 81% - is close to the 85% reported in the 1959 Belgian census.

We use two indicators in order to capture ethnic tensions. First, we consider the proportion of Hutu itself. Second, we construct an index of ethnic fractionalization following Alesina et al. (2003):

$$\text{Ethnic Fractionalization}_m = \sum_{i=1}^{N} (1 - \pi_i) \pi_i \tag{2}$$

where π_i is the proportion of people belonging to ethnic group i. The index of ethnic fractionalization can simply be interpreted as the probability that two randomly selected individuals from a given municipality belong to different ethnic groups.[22]

Political competition. We construct an index of political fractionalization and an index of political polarization to capture the intensity of political competition at the municipal level. The index of political fractionalization is constructed according to equation (2) and can be interpreted as the probability that two randomly selected individuals from a given municipality

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[21]The 2012 Afrobarometer survey has data available for 111 out of 129 municipalities. In each municipality, between 8 and 32 individuals were interviewed. Given the low number of individuals interviewed in sampled municipalities, an indicator of ethnicity computed at the municipal level would suffer from a mismeasurement problem, leading to attenuation bias (Hausman, 2001).

[22]In our sample, N=2. Because $\pi_i = (1 - \pi_j)$, the formula becomes: ethnic frac. $= (1 - \pi_i)\pi_i + (1 - \pi_j)\pi_j = (1 - \pi_i)\pi_i + (1 - (1 - \pi_i))(1 - \pi_i) = 2(1 - \pi_i)\pi_i$.

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had voted for a different party in the municipal elections.

For the index of political polarization, we use the index of polarization derived by Sterck (2015): [23]

$$\text{Political polarization}_m = 1 - \sum_{i=1}^{N} \left| \frac{0.5 - \pi_i}{0.5} \right| \pi_i \tag{3}$$

where π_i is the proportion of votes obtained by each party. The index captures how far the political distribution is from being bipolar, with *Political polarization*$_m = 1$ indicating a bipolar political scenario.

To construct these indexes, we use electoral results from the 2005 and 2010 municipal elections. With data from the 2010 elections, estimates could potentially suffer from a reverse causality bias, as the occurrence of electoral violence before the municipal election may have affected voting behavior - and hence indexes of political competition - in a non-random way. We therefore rely on the data from the 2005 elections in our benchmark regressions. Nonetheless, we show that results are not significantly affected when political competition is measured using the results of the 2010 municipal elections.

Demobilized rebels' fractionalization, polarization and number. We construct fractionalization (equation (2)) and polarization (equation (3)) indexes based on ex-rebels' affiliations. We use data from official registers containing information on the return of approximately 30,000 combatants from 10 armed groups demobilized between 2004 and 2009.[24] We also control for the number of demobilized rebels per municipality per 1000 inhabitants.

Most of the rebels were demobilized from the traditionally Hutu CNDD-FDD, led by the incumbent President, Pierre Nkurunziza (12,000 demobilized soldiers).[25] The second largest

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[23]In the case of two parties 1 and 2 with voting shares π_1 and π_2 such that $\pi_1 + \pi_2 = 1$, elections are defined as close if π_1 and π_2 are sufficiently close to 50%, that is, if $|0.5 - \pi_1| = |0.5 - \pi_2| < \epsilon$. This is equivalent to: $\left| \frac{0.5-\pi_1}{0.5} \right| < 2\epsilon \Leftrightarrow \left| \frac{0.5-\pi_1}{0.5} \right| \pi_1 + \left| \frac{0.5-\pi_1}{0.5} \right| (1 - \pi_1) < 2\epsilon \Leftrightarrow \left| \frac{0.5-\pi_1}{0.5} \right| \pi_1 + \left| \frac{0.5-\pi_2}{0.5} \right| \pi_2 < 2\epsilon \Leftrightarrow 1 - \sum_{i=1,2} \left| \frac{0.5-\pi_i}{0.5} \right| \pi_i > 1 - 2\epsilon$. The left-hand side of the latter inequality is the indicator of polarization proposed by Sterck (2015). Similar results are obtained with the Garcia-Montalvo and Reynal-Querol (2005b) index of ethnic polarization, which consider the quadratic value of the term in the sum rather than its absolute value (Table A.9 in Appendix).

[24]The National Commission for Demobilization, Reinsertion and Reintegration kindly shared the data.

[25]It should be noted that most of the demobilized soldiers come from the former national army (FAB) and the current national forces of defense (FDN) (13,000 demobilized soldiers). Nevertheless, since FAB did not turn into a political party and its soldiers may be affiliated to different political group, we exclude these demobilized soldiers when we construct indexes of polarization and fractionalization. Controlling for the demobilization of

group was the FNL-Palipehutu, whose leader is Agathon Rwasa, Nkurunziza's main opponent. The remaining 4,500 demobilized ex-combatants are shared among the remaining six Hutu rebel groups.

Other covariates. We compute a median wealth index for each municipality from the household data from the 2010 Demographic and Health Survey (DHS).[26] The DHS wealth index uses information on the household's ownership of assets (e.g. bicycle and radios), environmental conditions and housing characteristics (e.g. type of water source, sanitation facilities, materials used for housing construction) and uses a principal components analysis to assign weights to the different components of the index (Rutstein and Johnson, 2004). We control for the history of violence experienced by the municipalities from 1997 to 2009 by relying on the Armed Conflict Location & Event Data (ACLED) dataset. ACLED contains records on 2669 events, among which are battles and attacks against civilians[27] that occurred throughout Burundi from 1997 to 2009 (Raleigh et al., 2010). Population size comes from the last available census, conducted in 2008 by the *Institut de Statistiques et d'Etudes Economiques du Burundi* (ISTEEBU).

4.2 Estimation method

Given the count and non-normal nature characterizing the occurrence of electoral violence, Hilbe (2011) recommends estimating equation (1) with Poisson or Negative Binomial models. A Poisson distribution assumes that the mean and the conditional variance of the dependent variable are equal. This assumption does not hold for the distribution of violent episodes. Its conditional variance is 20.41, which is five times higher than its conditional mean (4.02), indicating over-dispersion in the data. This diagnosis is confirmed by chi-square goodness-of-fit tests, which strongly reject the null hypothesis that the data follow a Poisson distribution (p-value = 0.00). Given strong over-dispersion in the dependent variable, we opt for a negative binomial regression model (Hilbe, 2011). The model specification is validated by Pearson's

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FAB and FDN does not significantly affect the results (Table A.18).

[26]The survey was conducted in 128 municipalities (out of 129). Sampling weights are accounted for.

[27]Battles are *"violent interaction between two politically organized armed groups at a particular time and location"*. We exclude non-violent events, riots and protests.

dispersion tests and link tests. Figure 2 plots the distribution of violent episodes against a Poisson distribution and a Negative Binomial distribution with the same mean and variance. It further confirms how the latter performs better than the former in explaining the data on electoral violence. OLS and Poisson estimates are nonetheless presented in the Appendix, and give similar results.

Figure 2: Goodness of fit of Negative Binomial and Poisson models

mean = 4.023; overdispersion = .9743
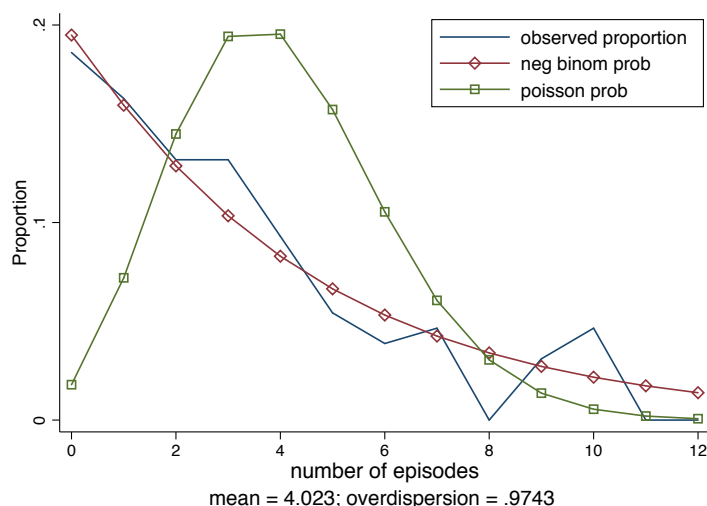
We undertake a matching exercise between neighboring municipalities to minimize the risk of omitted variable bias. We do so by constructing a database that identifies each neighborhood of municipalities by a dummy variable, which we then include as fixed effects in the regressions. These "geographic", or "tight", fixed effects should capture unobserved characteristics common among neighboring municipalities. This approach relies on the assumption that neighboring municipalities[28] are likely to be similar. This assumption is valid if unobservable characteristics are geographically distributed and if borders between municipalities are exogenous enough to ensure no important differences between unobservable characteristics of neighboring municipalities (Huillery, 2009).

We rely on three definitions of neighborhood to compute the fixed effects that are included in the model.[29]

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[28]Neighboring is defined as sharing a common border.

[29]Our approach is close to Naidu (2012) and Goldstein and Udry (2008) who take the difference of the variables from the mean of the adjacent administrative units. In our case, the differentiation would lead to negative outcome values, which cannot be fitted by a negative binomial regression.

All pairs. We built a new dataset by matching each municipality with each of its neighbors. Municipalities have between 2 and 10 neighbors (mean = 5.44 neighbors). This dataset contains 1404 observations, i.e. 702 pairs of neighbors.[30] Each pair is identified by a dummy. We then estimate equation (1) by including pair fixed effects. Since municipalities have many neighbors and are neighbors of many other municipalities, standard errors are clustered at three levels (Cameron et al., 2011). The first level is the neighborhood. The second level accounts for the fact that each municipality may be the neighbor of several other municipalities. The third level captures the fact that municipalities have duplicates in the sample.

Neighborhood. We define the neighborhood of municipality as its set of neighbors plus the municipality itself. We built a dataset listing all municipalities of the 129 neighborhoods; each neighborhood being then identified by a dummy variable. This new dataset contains 831 lines.[31] We then re-estimate equation (1) by including these neighborhood fixed effects. The estimation of this specification requires clustering standard errors at two levels to account for the fact that municipalities have multiple neighbors and are neighbors of multiple municipalities.

Random pairs. The third method uses the same sample as the "all pairs" fixed effects method. However, instead of considering all pairs of neighbors simultaneously, we constituted a subsample of pairs by matching each municipality with one of its neighbors, selected randomly. We then estimate equation (1) using this sample of 2×129 observations.[32] To avoid the effect being driven by particular neighborhood designs, we repeat the sampling procedure and re-estimate the regression 200 times. We report the average of estimated coefficients and standard errors. As the same municipality can appear within different pairs, we clustered standard

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[30]Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions controlling for wealth and with pairs fixed effects rely on 1388 observations. Pairs of observations in 112 of 702 clusters (7.98%) are characterized by the same number of violent episodes. For these observations, electoral violence is fully explained by the fixed effects. The intra-cluster correlation is not statistically different from 0, implying that fixed effects do not capture all the variation in the dependent variable.

[31]There are 129 municipalities having on average 5.44 neighbors. $129 + (5.44 \times 129) = 831$. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions controlling for wealth with neighborhood fixed effects rely on 822 observations. In all neighborhoods, there is variation in the number of violent episodes. The intra-cluster correlation is not statistically different from 0, implying that fixed effects only capture a small proportion of the variation in the dependent variable.

[32]Data on wealth is missing for one municipality, implying that regressions controlling for wealth with random pairs fixed effects rely on 128 observations.

errors at the municipal level.

In Tables A.23 and A.24 in the Appendix, we show that the inclusion of "geographic" fixed effects improves the balance on observables. We compare regressions of control variables on variables of interest with and without fixed effects matching. The absolute value of regression coefficients either decreases or is not significantly affected by the inclusion of fixed effects.[33] Even if the balance remains imperfect after fixed effect matching (some coefficients remain significant), which is not surprising given the absence of randomized treatment, these results show that municipalities with different "treatment intensity" look more similar with "geographic" fixed effects.[34]

4.3   Causal chain and bad controls

The three hypotheses are related to each other in the context of Burundi. As shown in Table 1, most political parties and rebel groups are ethnically rooted, and most parties are issued from demobilized rebel groups. Nevertheless, the three hypotheses capture different aspects of the political environment in Burundi that should be disentangled in the empirical analysis. The correlation between electoral results of former rebel groups and their share of demobilized rebels is high but far from perfect. Many parties have no demobilized ex-combatants and their ethnic orientations are heterogeneous. This implies that the correlations between our variables of interest are rather limited. For example, the correlation between political fractionalization and the proportion of Hutu at the municipal level is equal to -0.42. The correlation between political fractionalization and demobilized rebels' fractionalization is only equal to 0.01, and only 0.09 between political polarization and demobilized rebels' polarization (Figure A.1 in Appendix). The three hypotheses are therefore distinguished in the empirical analysis.

It is interesting to test the three hypotheses simultaneously as well as separately. Testing all hypotheses simultaneously limits the risk of omitted variable bias. However, it may also induce a problem of bad controls (Angrist and Pischke, 2008): a variable of interest X_i may

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[33]The balance is improved with fixed effects (that is, the absolute value of coefficients is reduced) for 77% of coefficients tested, although the difference is significant only for 7% of coefficients. For 23% of coefficients, the absolute value of coefficients increases but not significantly. While 68% of coefficients are significant at conventional levels without fixed effects matching, this proportion is reduced to 35% thanks to fixed effects.

[34]Spatial correlation across municipalities in terms of their soil and landform can be visualized in Figure A.x and A.x in Appendix. Such a geographic correlation further justifies the use of "geographic" fixed effects.

appear insignificant if another variable included in the regression, X_j, is in fact a channel of the impact of X_i rather than being a primary factor of violence. If hypotheses are tested separately, both variables X_i and X_j will appear to be significant. In this case, theoretical reasoning is needed to determine whether the correlation between X_i and electoral violence when X_j is not controlled for is due to omitted variable bias, or whether X_i is not significant when all hypotheses are tested simultaneously because X_j is actually a channel of the impact of X_i on electoral violence, that is, a bad control. In what follows, we test the three hypotheses separately and simultaneously, and compared regression coefficients across specifications.

We control for past violence and wealth in equation (1). These variables could also be considered as "bad controls." Violence during the civil war, for instance, was partly driven by ethnic grievances. If past violence triggered electoral violence in 2010, it could therefore be considered as a channel, or a bad control. Likewise, wealth, which could explain electoral violence, may have been affected by ethnic distribution. We therefore face a trade-off: on the one hand, the inclusion of past violence and wealth in the regressions may attenuate the impact of variables of interest; on the other hand, removing these variables from the list of controls could induce an omitted variable bias. We show that the problems from omitted variable bias and bad controls are marginal in our case study. The results do not significantly change when past violence and wealth are included in or removed from the list of controls.

5   Results

In Section 5.1, we examine if electoral violence is correlated with ethnic composition, political competition and the distribution of demobilized rebels. In Section 5.2, we study how these factors interact together to favor the emergence of electoral violence.

5.1   Benchmark results

In columns (1) to (8) of Table 3, we explore one-by-one the three hypotheses which may explain why violence spoiled the 2010 elections in Burundi. In columns (9) and (10), the three

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hypotheses are tested simultaneously.[35] Neighborhood fixed effects are included in these specifications.[36] Control variables include the number of demobilized combatants, population size and population density. In Table 4, we show that results are robust to the different types of fixed effects. We also show that controlling for past violence and for the wealth index do not significantly change the results, suggesting that the problem of "bad controls" is marginal for these variables.

In columns (1) and (2) of Table 3, we assess whether the ethnic composition of municipalities is correlated with the occurrence of electoral violence. From column (1), we see that the share of Hutu is positively correlated with electoral violence. The coefficient is large, but the relationship is not significant at conventional levels (p-value=0.14). As shown in columns (9) and (10), the coefficient becomes larger and significant when controlling for political competition. Indeed, the coefficient associated with the proportion of Hutu is likely to be downward biased when political fractionalization is omitted from the list of independent variables, as political fractionalization is positively correlated with electoral violence and negatively correlated with the proportion of Hutu.[37] Ethnic diversity, measured by ethnic fractionalization, is not correlated with electoral violence.

The relevance of political competition is examined in columns (3) to (6) of Table 3. Given the aforementioned risk of reverse causality, we compare indexes of political competition based on the results of the 2010 and 2005 municipal elections. Both political fractionalization and polarization have a positive and significant effect on electoral violence when they are considered separately. If both indicators are included in the regressions (columns (9) and (10)), the polarization index is significant when political competition is build on 2010 electoral data, while the fractionalization index captures most of the effect when political competition is measured

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[35]As mentioned in the conceptual framework, these three hypotheses do not provide an exhaustive list of possible channels of electoral violence. As a matter of fact, Tables A.1 and A.15 shows that the adjusted R-squared of OLS regressions ranges between 0.08 and 0.19 without fixed effects (between 0.21 and 0.33 with fixed effects). Such results show that our hypotheses are not exhaustive and part of the variation is left unexplained. The R-squared are nonetheless in line with those of similar papers (see e.g. Garcia-Montalvo and Reynal-Querol (2005b), in which pseudo R-squared range between 0.09 and 0.13).

[36]For the sake of brevity, we focus on neighborhood fixed effects, as this method leads to more conservative estimates, and no cluster of municipalities is excluded.

[37]In places where the proportion of Hutu is low, the political landscape is more fragmented because both Hutu and Tutsi parties obtain a high share of votes (e.g. in Bujumbura Mairie or in the provinces of Cankuzo and Mwaro).

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Table 3: Testing hypotheses separately and simultaneously

Dependent variable: total episodes of electoral violence

| | Ethnic grievances | | Political competition | | | | Demob. rebels | | All channels | |
| | | | 2010 | | 2005 | | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Hutu share 2012	1.212								2.074*	3.060***
	(0.822)								(1.129)	(1.071)
Ethnic fractionalization 2012 (st.)		-0.098							-0.024	0.139
		(0.104)							(0.130)	(0.134)
Political fractionalization 2010 (st.)			0.243**						0.100	
			(0.108)						(0.120)	
Political polarization 2010 (st.)				0.305***					0.264***	
				(0.089)					(0.099)	
Political fractionalization 2005 (st.)					0.192**					0.207
					(0.080)					(0.141)
Political polarization 2005 (st.)						0.225***				0.129
						(0.083)				(0.137)
Demob. rebels' polarization (st.)							0.217***		0.257**	0.342***
							(0.083)		(0.110)	(0.109)
Demob. rebels' fractionalization (st.)								0.095	-0.105	-0.209*
								(0.083)	(0.116)	(0.123)
Observations	831	831	831	831	831	831	831	831	831	831
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	NFE	NFE	NFE	NFE	NFE	NFE	NFE	NFE	NFE	NFE

Negative binomial regressions. Controls include the number of demobilized rebels per 1000 inhabitants, the log of population size, and the log of population density. All estimations include neighborhood fixed effects (NFE). Standard errors are robust and clustered at two levels as described in Section 4.2. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$.

using 2005 electoral data. These ambiguous results can be explained by the multicollinearity between political polarization and fractionalization: both indicators capture the same mechanism in this case study. Multicollinearity is not surprising given the high correlation between political fractionalization and polarization ($\rho =0.65$). The two variables are in fact very similar when fractionalization is below 0.6, which is the case for more than 75% of the observations (Figure A.2 in Appendix). Interestingly, Alesina et al. (2003) faced the same issue with indexes of ethnic, linguistic and religious fractionalization and polarization. In what follows, we focus on the political fractionalization index using 2005 data to mitigate multicollinearity and reverse causality.[38] Similar results are however obtained with the indicator of political polarization and when political competition indicators are constructed using data from the 2010 elections (Tables A.2 to A.7 in Appendix).

Columns (7) to (8) of Table 3 examine whether the distribution of demobilized rebels is correlated with electoral violence in Burundi. The coefficient associated with the polarization index is positive and significant at the 1% threshold. On the contrary, the coefficient associated with the rebels' fractionalization index is small and not significant. Similar results are obtained when the three hypotheses are tested simultaneously (columns (9) to (10)). Based on column (10), an increase of one standard deviation in demobilized rebels' polarization induces a 41% increase in the number of episodes of electoral violence.[39] These results show that demobilized rebel groups were more likely to be involved in electoral violence when competing with another group of similar size.

The three hypotheses are jointly tested in Table 4 without fixed effects (column (1)), with pair fixed effects (column (2)), with neighborhood fixed effects (column (3)) and with random pairs fixed effects (column (4)). Our findings are stronger when the three hypotheses are jointly tested, thereby minimizing the risk of omitted variable bias. In columns (5) to (8), the indicators of past violence and median wealth are included in the regressions to minimize omitted variable bias. Results are robust to these alternative specifications.

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[38]We focus on fractionalization rather than polarization because it is the fractionalization index which captures most of the effect when political competition is measured in 2005. Fractionalization is also negatively correlated with the proportion of Hutu in municipalities; ignoring this indicator may therefore bias downward the coefficient associated the proportion of Hutu.

[39]To interpret the results of the negative binomial regressions in percentage terms, one should take $\exp^{\beta} -1$.

Table 4: Benchmark regressions - comparison of different sets of controls and different sorts of geographic fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.615*	3.721***	3.351***	3.924***	1.253	2.236**	2.290**	2.485*
	(0.973)	(1.173)	(1.103)	(1.299)	(0.920)	(1.140)	(1.151)	(1.291)
Ethnic fractionalization 2012 (st.)	0.012	0.227	0.172	0.263	-0.020	0.049	0.056	0.085
	(0.129)	(0.159)	(0.140)	(0.167)	(0.122)	(0.161)	(0.144)	(0.169)
Political fractionalization 2005 (st.)	0.165*	0.348***	0.320***	0.369***	0.080	0.271***	0.241***	0.290***
	(0.100)	(0.087)	(0.091)	(0.106)	(0.099)	(0.080)	(0.088)	(0.103)
Demob. rebels' polarization (st.)	0.287**	0.393***	0.357***	0.397***	0.415***	0.417***	0.384***	0.418***
	(0.112)	(0.108)	(0.112)	(0.129)	(0.133)	(0.108)	(0.111)	(0.128)
Demob. rebels' fractionalization (st.)	-0.349***	-0.198	-0.213*	-0.193	-0.293**	-0.173	-0.199	-0.173
	(0.130)	(0.121)	(0.123)	(0.142)	(0.143)	(0.114)	(0.123)	(0.140)
No. demob. rebels (/1000)	0.030	0.046	0.037	0.069	-0.061	-0.025	-0.029	-0.013
	(0.056)	(0.059)	(0.058)	(0.059)	(0.056)	(0.053)	(0.057)	(0.054)
Population (log)	0.955***	1.444***	1.409***	1.467***	0.771***	0.827***	0.897***	0.875***
	(0.224)	(0.196)	(0.199)	(0.224)	(0.227)	(0.208)	(0.216)	(0.237)
Population density (log)	0.284***	0.198	0.204	0.129	0.304***	0.251	0.261*	0.191
	(0.097)	(0.205)	(0.165)	(0.192)	(0.102)	(0.160)	(0.136)	(0.179)
Past violence (log)					0.340***	0.405***	0.387***	0.395***
					(0.080)	(0.096)	(0.089)	(0.093)
Median Wealth Index (st.)					0.068	-0.001	0.081	-0.034
					(0.128)	(0.113)	(0.120)	(0.140)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

From Table 4, we conclude that ethnic grievances between Hutu and Tutsi did not cause electoral violence in 2010. Instead, violence was more likely to occur in municipalities characterized by a high proportion of Hutu. The coefficients associated with the share of Hutu are positive and large in all specifications. They are significant at the 5% threshold with all types of fixed effects but not significant at conventional thresholds in a simple cross-section regression when controlling for past violence and the median wealth index. Based on column (7), our model predicts an increase of about 5.3 violent events between the municipalities characterized by the lowest and the highest proportion of Hutu.

Political competition is also correlated with electoral violence. In Table 4, political competition is captured by the index of political fractionalization in 2005. The coefficients associated with political fractionalization are positive and significant at the 1% level when fixed effects are included in the regression. With fixed effects, the predicted effect of a one standard deviation increase in political fractionalization on electoral violence ranges between 27% to 45%, depending on the specification.

The coefficients associated with demobilized rebels' polarization are positive and strongly significant in all specifications. The size of the effect is similar to that of political fractionalization. With fixed effects, the predicted effect of a one standard deviation increase in demobilized rebels' polarization on violent events ranges between 43% and 52%, depending on the specification. This effect is large, representing a four-fold increase in the incidence of events between the lowest- and the highest-polarized municipalities (considering column (7)).

It is important to consider the simultaneous effect of demobilized rebels' fractionalization and polarization since both indicators are constructed based on the distribution of rebel groups. Figure 3 shows the number of predicted violent episodes in each municipality as a function of the number of groups of similar size.[40] The predicted number of episodes reaches its maximum when there are two groups of former rebels of similar size, i.e. when the distribution of demobilized rebels is polarized into two groups.

Importantly, the number of demobilized rebels that returned to the municipality is not associated with electoral violence. We conclude that the number of "hardcore supporters" does not directly explain the occurrence of electoral violence. Rather, electoral violence is more likely to occur in a municipality characterized by a bipolar distribution of demobilized rebel groups.

Table 4 also provides some evidence that past violence is positively correlated with the electoral violence in 2010. This relationship is in line with the reports from International Crisis Group (2012, 2011) which points out that, *"[...] rumors circulated from July about the presence of armed groups gradually settling themselves in Kibira forest, a traditional sanctuary for rebel movements.* These rumors where confirmed by households which reported looting, clashes between groups and attacks against the military.

The comparison between Tables 3 and 4 shows that ethnic composition, political competition and the distribution of demobilized rebels are separate factors of violence. The coefficients associated with the share of Hutu, political fractionalization and demobilized polarization are larger when the three hypotheses are tested simultaneously (although not significantly) and their p-values are lower, showing that these factors are not channels of impact or bad controls.

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[40]Considering n groups of similar size, the index of demobilized rebels' fractionalization as calculated in equation (2) would collapse to demobilized rebels' fractionalization$_m = \sum_{i=1}^{N}(1 - \pi_i)\pi_i = 1 - \frac{1}{n}$. Consequently, the "projected" number of groups of equal size in each municipality is given by $n = \frac{1}{(1-\text{frac})}$.
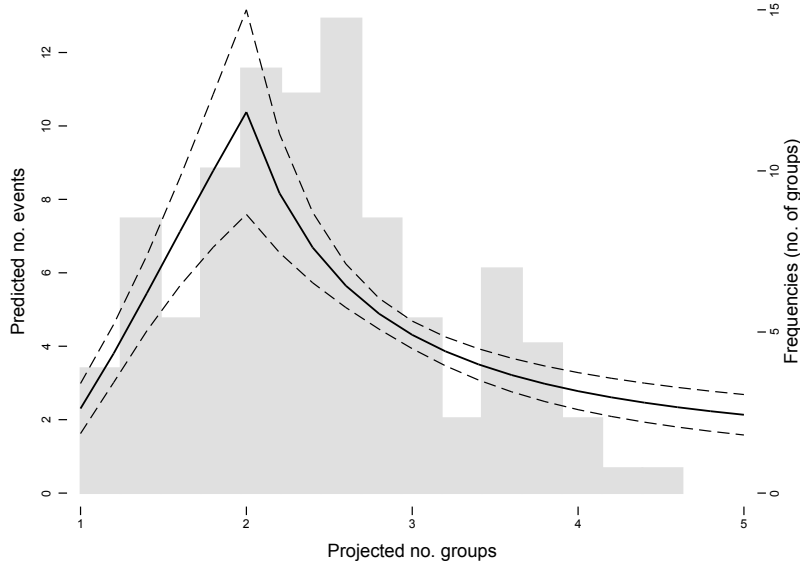
Note: this figure is based on the neighborhood fixed effect estimation (Table 4, Column (7))

Figure 3: Predicted number of events in function of projected number of groups of the same size

The inclusion of past violence (and the index of median wealth) in the list of controls slightly reduces the coefficients associated with the share of Hutu and political fractionalization, although these differences are not statistically significant (Table 4). Overall, this suggests that the problem of bad controls is marginal in our study.

5.2 Heterogenous effects

In this section, we allow for interactions between the variables of interest.[41] The results are shown in Table 5. Marginal and total predicted effects are represented graphically in the Appendix (from Figure A.3 to Figure A.6).

Demobilized rebels' polarization and proportion of Hutu. In line with the conceptual framework, it is intuitively plausible that polarization between demobilized rebel groups is a better predictor of electoral violence in pro-Hutu municipalities. The expected return from violence should indeed be higher in pro-Hutu municipalities as the Hutu are the majority and

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[41]We also tested the interactions between variables of interest and past violence, of which none are significant at conventional thresholds. In Table A.8 in Appendix, we conduct the same analysis with political competition constructed using data from the 2010 municipal election.

Table 5: Heterogenous effects

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)
Hutu share 2012	2.985**	2.695**	3.305***	3.661***	2.919**
	(1.214)	(1.220)	(1.104)	(1.076)	(1.240)
Ethnic fractionalization 2012 (st.)	0.154	0.090	0.192	0.220*	0.167
	(0.145)	(0.156)	(0.139)	(0.131)	(0.154)
Political fractionalization 2005 (st.)	0.311***	-0.719	0.285***	0.108	-0.500
	(0.091)	(0.548)	(0.093)	(0.109)	(0.473)
Demob. rebels' polarization (st.)	-0.144	0.353***	0.346***	0.372***	-0.058
	(0.610)	(0.111)	(0.107)	(0.110)	(0.605)
Demob. rebels' fractionalization (st.)	-0.233*	-0.220*	-0.211*	-0.228*	-0.245*
	(0.128)	(0.120)	(0.120)	(0.126)	(0.129)
No. demob. rebels (/1000)	0.034	0.021	0.026	0.097	0.069
	(0.057)	(0.054)	(0.057)	(0.060)	(0.063)
Population (log)	1.419***	1.434***	1.492***	1.326***	1.420***
	(0.202)	(0.204)	(0.204)	(0.199)	(0.210)
Population density (log)	0.170	0.181	0.171	0.248*	0.178
	(0.176)	(0.172)	(0.173)	(0.143)	(0.163)
Demob. rebels' polarization × Hutu share	0.619				0.514
	(0.761)				(0.759)
Political frac. × Hutu share		1.286*			0.741
		(0.681)			(0.611)
Demob. rebels' polarization × Political frac.			-0.118*		-0.089
			(0.063)		(0.061)
Demob. rebels (/1000) × Political frac.				0.127***	0.113**
				(0.046)	(0.048)
Observations	831	831	831	831	831
Fixed Effects	NFE	NFE	NFE	NFE	NFE

Negative binomial regressions. All estimations include neighborhood fixed effects (NFE). Standard errors are robust and clustered at two levels as described in Section 4.2. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

hence more likely to rule the country after the elections. We test this hypothesis by interacting demobilized rebels' polarization with the proportion of Hutu. We expect the marginal impact of the demobilized rebels' polarization index to be close to zero in Tutsi municipalities, and then to increase with the proportion of Hutu. Similarly, the marginal impact of the proportion of Hutu should be close to zero in municipalities that are not polarized, and increase with the demobilized rebels' polarization index. Results from column (1) of Table 5 confirm this intuition, although the coefficient of the interaction term is not significant at conventional thresholds. Demobilized rebels' polarization and the proportion of Hutu seem to be complementary explanations of electoral violence.

Political fractionalization and proportion of Hutu. A similar reasoning applies to the interaction between political fractionalization and the proportion of Hutu. The Hutu are the majority and have the most to gain or lose from electoral competition. It is therefore likely that the correlation between political competition and electoral violence will be higher in pro-Hutu municipalities and lower in pro-Tutsi municipalities. Results confirm this intuition: the coefficient of the interaction term in column (2) of Table 5 is positive and significant. Electoral violence is particularly high in Hutu strongholds where political competition is high, confirming the intra-Hutu dimension of post-war electoral competition.

Demobilized rebels' polarization and political fractionalization. In column (3) of Table 5, we investigate the extent to which the interaction between demobilized rebels' polarization and political fractionalization determines electoral violence. We have no prior assumptions about the sign of the interaction term. It could be positive if both factors are jointly required to generate electoral violence, or negative if only one of these factors is sufficient for causing violence. Results show that the coefficient associated with the interaction term is negative and significant. As shown in Figure A.5 in the Appendix, the total predicted effect of these two variables is similar if only demobilized rebel's polarization is high, if only political fractionalization is high or if both variables are high. Only one of these conditions is needed to increase the prevalence of electoral violence.

Number of demobilized rebels and political fractionalization. The literature suggests that the presence of "specialists in violence" or "hardcore supporters," such as demobilized rebels, is likely to increase the return from violent campaigning (Collier and Vicente, 2012; Chaturvedi, 2005). We therefore test whether the number of demobilized rebels and political competition are complementary explanations for electoral violence. In column (4) of Table 5, the coefficient associated with this interaction is positive and significant. The presence of demobilized rebels increases the likelihood of violence in places where political competition is intense.

6 Discussion

In this section, we further discuss the results and put them in perspective with the mechanisms identified in the conceptual framework. We then discuss whether electoral violence in 2010 is different from other types of violence. Finally, we show that our results are robust to alternative specifications.

6.1 Reconciling theoretical and empirical evidence

While the economic literature point to ethnic grievances in explaining violence, our results show that this explanation is not relevant for explaining electoral violence during the 2010 electoral process in Burundi. Violence rather emerged as a result of tensions between political parties and between demobilized rebel groups in pro-Hutu areas. As explained in the conceptual framework, the stakes of the election were indeed higher for Hutu parties, thereby generating higher incentives to engage in violent campaigning. Such outcomes were also described in the recent literature on the political landscape in Burundi, confirming the evolution from inter-ethnic conflict to an intra-Hutu competition for power.[42] Palmans (2012) writes *"unlike in 1993, electoral competition [in 2010] is no longer dominated by ethnic rivalry."* Similarly, Vandeginste (2014) reports that *"there is general agreement [...] that the 2010 Burundian elections were no longer a matter of primarily ethnic competition - which is quite an achievement in a country torn apart by politico-ethnic strife for decades."*

We also find that high political competition between parties increased the likelihood of electoral violence. Contrary to the theoretical predictions of Collier and Vicente (2012) and Chaturvedi (2005), illicit campaigning was not a strategy of weak parties against the strong ones during the 2010 elections in Burundi. Our results rather show that electoral violence emerged where electoral competition was tight, in line with the theoretical model of Sterck (2015). The effect of political competition is stronger in Hutu-dominated municipalities, showing that ethnic power-sharing, which has been institutionalized in Burundi through the Arusha peace agreement and the 2005 Constitution, *"contributed to reducing the ethnic divide in Burundian society which today is shaken by tensions based on what are essentially political cleavages*

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[42]See e.g. Palmans (2012), Vandeginste (2011, 2014) or International Crisis Group (2011).

within the Hutu majority" (International Crisis Group, 2011).

Finally, we find that "hardcore supporters," or "specialists in violence," played a role in sparking violence, as suggested by Collier and Vicente (2012) and Chaturvedi (2005). Our empirical analysis identifies two mechanisms. First, electoral violence is more likely to emerge in the presence of two main groups of demobilized rebels of similar size. Second, the presence of numerous demobilized rebels amplifies the impact of political competition on violence. The instability due to the presence of demobilized rebels and their association with parties has been reported by observers and NGOs on the ground. Human Rights Watch (2010) reports that *"The presence of partisan youth groups adds to political volatility. A number of parties have made significant efforts to recruit demobilized combatants, raising concerns that such youth could easily be manipulated into carrying out acts of violence."* In addition, many demobilized combatants were the victims of violence (Human Rights Watch, 2012; Amatora Mu Mahoro, 2010).

In line with the work of Horowitz (1985), we find that tensions between demobilized rebel groups are better captured by an indicator of polarization between demobilized groups than by an indicator of fractionalization. This is also in accordance with Esteban et al. (2012b) who conclude that polarization is more important *"when the winners enjoy a public prize (such as political power or religious hegemony)."* Our study is not as conclusive about the relative performance of political fractionalization and polarization indexes.[43]

6.2 Is electoral violence different from other types of violence?

To answer this question, we undertake a falsification exercise in which we replace the dependent variable, electoral violence, by other variables which are related in nature but which are not expected to be affected by the same regressors of interest. Results are presented in Table 6. This exercise does not aim to uncover causal relationships, but rather to provide suggestive evidence that electoral violence is different from other types of violence.

In columns (1) and (2), the dependent variables are respectively the attacks against civilians

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[43]As explained in Section 5, this is due to the high degree of multicollinearity between these two indicators in the context of Burundi. Interestingly, Alesina et al. (2003) encountered the same problem when studying the effects of ethnic, linguistic and religious heterogeneity on the quality of institutions and growth.

and battles[44] which occurred between 1997 and 2006, as recorded in ACLED data. In column (3), we used data from the 2010 DHS survey[45] to compute the proportion of individuals who think that domestic violence is justified in at least one of the five following situations: the wife goes out without telling her husband, she neglects children, she argues with her husband, she refuses to have sex with him or she burns the food. The last two falsification tests used proxies of crime prevalence based on the 2012 Afrobarometer survey. The first indicator measures how often households have feared crime in their own house.[46] The second indicator is the proportion of people that have reported "crime and security" as one of the three most important problems in Burundi.[47]

Electoral violence differs from other types of violence. Demobilized rebels' polarization is never significantly correlated with the five dependent variables. Contrary to our benchmark results, ethnic fractionalization is strongly correlated with battles, in line with the literature on ethnic grievances and civil war (Blattman and Miguel, 2010). The relationship between political fractionalization and other types of violence is ambiguous. The coefficient associated with political fractionalization is positive and significant for attacks against civilians and perception of criminality, and negative and significant for domestic violence. Overall, these regressions suggest that the determinants of electoral violence are different, particularly regarding the role played by demobilized groups and the absence of relationship with ethnic fragmentation.

6.3   Are the results robust?

We further tested the robustness of our results to numerous specifications. We estimated our model with OLS, Poisson and Negative Binomial estimation methods, with three sorts of "geographic fixed effects", with alternative vectors of covariates, without outliers, with standard-errors adjusted for spatial correlation following Conley (1999), and controlling for spatial dependence. Our results are robust to these alternative estimation strategies. In addition, placebo

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[44]Battles are defined as *"a violent interaction between two politically organized armed groups at a particular time and location"* (Raleigh et al., 2010).

[45]Results are available for 128 out of 129 municipalities.

[46]Possible responses are never, just once or twice, few times, many times or always. The construction of the proxy for crime, we created a dummy variable equal to one if they already feared crime at least a few times. Results are robust to the alternative definition measuring the proportion of people who had feared crime at least once (not shown).

[47]Only 111 municipalities were surveyed in the Afrobarometer.

Table 6: Falsification tests

	Attacks civilians (1)	Battles (2)	Domestic violence (3)	Fearing crime (4)	Crime issue (5)
Hutu share 2012	0.061	1.997	0.233	1.140	-0.561
	(0.993)	(1.317)	(0.344)	(1.105)	(0.908)
Ethnic fractionalization 2012 (st.)	0.087	0.409***	0.052	-0.027	-0.183*
	(0.112)	(0.117)	(0.043)	(0.124)	(0.100)
Political fractionalization 2005 (st.)	0.185*	0.025	-0.051**	-0.160*	0.177**
	(0.097)	(0.131)	(0.021)	(0.090)	(0.079)
Demob. rebels' polarization (st.)	-0.071	0.167	0.006	-0.033	0.120
	(0.093)	(0.115)	(0.026)	(0.124)	(0.074)
Demob. rebels' fractionalization (st.)	-0.120	-0.158	0.001	-0.018	-0.051
	(0.104)	(0.131)	(0.026)	(0.095)	(0.095)
No. demob. rebels (/1000)	0.079*	0.118***	0.013	0.029	0.000
	(0.044)	(0.045)	(0.011)	(0.031)	(0.023)
Population (log)	1.725***	1.687***	0.043	-0.415***	0.205
	(0.184)	(0.198)	(0.048)	(0.155)	(0.163)
Population density (log)	-0.052	-0.119	-0.021	-0.024	-0.167*
	(0.136)	(0.170)	(0.059)	(0.185)	(0.098)
Observations	779	779	822	725	725
Fixed Effects	NFE	NFE	NFE	NFE	NFE

Negative binomial regressions. The number of demobilized is by municipality of origin in columns (1) and (2), and by municipality of return in columns (3) to (5). Attacks against civilians and battles aggregate all ACLED records by type between 1997 and 2009. All estimations include neighborhood fixed effects (NFE). Standard errors are robust and clustered at two levels as described in Section 4.2. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

tests suggest that our results are not driven by the specific nature of our variable of interest. The description of these tests and their results are presented in Appendix A. We further show that results are unlikely to be driven by unobservable characteristics of municipalities.

7 Concluding remarks

In the last four decades, 80% of elections in Sub-Saharan Africa suffered from violence, bribery, intimidation or inequitable government interference (Bishop and Hoeffler, 2014). Using a unique dataset on electoral violence in Burundi in 2010, we tested whether electoral violence is driven by (1) ethnic composition and ethnic grievances, (2) political competition or (3) the presence and distribution of demobilized combatants. Understanding the causes of electoral misconduct in Burundi is of crucial importance for the stability of the Great Lake

region.

The nature of our research question made a randomized controlled trial (RCT) virtually impossible. To minimize the risk of bias, our identification strategy exploits variations between neighboring municipalities, relying on the fact that these are more likely to have similar unobserved characteristics. We show that electoral violence was more prevalent in municipalities with two equally large groups of demobilized rebels (a one standard deviation increase in polarization among rebel groups leads to a 43% to 52% increase in violent events, depending on the specification) and characterized by a fierce political competition (an increase of one standard deviation in political fractionalization leads to an increase in violent events ranging between 27% and 45%, depending on the specification). The latter effect is stronger in municipalities with numerous former rebels. Politicians willing to seize power through illicit means seem to have exploited their former allegiances with demobilized rebels to commit violence. Interestingly, cleavages between ethnic groups, which were the main causes of violence in post-independence Burundi, did not fuel electoral violence in 2010. Violent campaigning was rifer in municipalities populated by a high proportion of Hutu.

The findings of this study suggest several important avenues for future research. First, more theoretical work is needed to understand the determinant of electoral violence. In particular, the models of Collier and Vicente (2012) and Chaturvedi (2005) should be extended to meet our empirical findings: rather than being a desirable strategy of the weakest parties, electoral violence in Burundi emerged in places where political competition was tight. Second, empirical research should be conducted to test the external validity of our findings and to distinguish different types of electoral malpractices. Future analysis should also determine when intimidation and violence are used as electoral tools and when they are the mere consequence of frustrations that flare up when tensions run high during elections. Finally, more research is necessary to understand how prevention campaigns could successfully reduce the risk of electoral violence. Following our study, programs specifically targeted at demobilized combatants should be further evaluated.

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APPENDIX

A Robustness checks

Estimation methods and "geographic fixed effects." We estimated OLS and Poisson models (Tables A.15 and A.16), which do not change our conclusions. Our results are robust to all types of "geographic fixed effects," which control for the unobserved factors that are similar in neighboring municipalities. We obtain similar results with standard errors clustered at the provincial level, and when observations are weighted to take into account the fact that municipalities have multiple neighbors and that some observations are duplicated (Table A.17).[48]

Alternative set of controls. Results are not significantly affected when additional control variables are included in the regressions. In particular, results hold when we control for latitude and longitude and their powers, for electoral results, for the share of demobilized rebels from each group in the population, for the presence of demobilized soldiers from the national army (FAB and FDN) or for municipalities in the capital city.

Selection on observables and unobservables. Our regressions control for observed and unobserved heterogeneity thanks to control variables and geographic fixed effects. In spite of these precautions, we cannot completely rule out that some unobservable characteristics could bias the results in one way or another.

Two types of unobservable characteristics could induce a spurious correlation between demobilized rebels' polarization and electoral violence. First, some unobserved factors, A, may have directly affected electoral violence. If these factors were determinants of the size of demobilized rebel groups (e.g. reasons for joining the rebellion), such as to affect demobilized rebel polarization in a non-random way, the coefficient associated with demobilized rebels' polarization would partly capture the impact of these unobserved variables, A. One way to control for this is to include measures of the relative size of demobilized rebel groups in the model. By do-

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[48]For all pairs fixed effects, the weights associated with a municipality i and its neighbors are equal to the inverse of its number of neighbors times two. For neighborhood fixed effects, the weights associated with a municipality i and its neighbors are equal to the inverse its number of neighbors plus one. For random pairs fixed effects, the weights are equal to 1/2.

ing so, we indirectly control for all unobserved factors affecting the composition of demobilized rebel groups that could potentially impact electoral violence via another route. For example, this strategy allows us to control for factors explaining where the recruitment of ex-rebels took place. In Table A.10, the proportions of demobilized rebels belonging to each faction are included in the regressions. In Table A.11, the proportions of the population belonging to each faction are included in the regressions. Including these proportions as control variables does not change our results. The relationship between the polarization index of demobilized rebel groups and the occurrence of electoral violence remains positive and significant.

Second, some unobserved factors, B, may have influenced the location where demobilized combatants resettled after the conflict. If these factors also had a direct impact on the occurrence of electoral violence, the coefficient associated with demobilized rebels' polarization could partly capture the effect of unobserved variables, B. This type of bias is unlikely to affect our estimates for three reasons. First, a large majority of demobilized rebels, 83%, returned to their municipality of origin, and 86% of them returned to their province of origin. These statistics show that most demobilized combatants returned home after the conflict and that unobserved variables, B, only influenced a minority of them. Second, it is worth noting that 52% of those who did not return home went to Bujumbura Mairie.[49] In fact, 70% of those who returned to Bujumbura Mairie are originally from another municipality. In Table A.13, we test whether estimates are affected when the capital city is removed from the sample. The coefficient associated with demobilized rebels' polarization is not statistically different. The coefficient associated with political fractionalization is lower and not significant at conventional thresholds. Removing Bujumbura Mairie reduces the variability of political fractionalization as the stronghold of political competition is located in the capital: political fractionalization is on average 1.5 standard deviation higher in Bujumbura Mairie than in the rest of the country. Finally, we tested if the results change when information on the origin of demobilized rebels is used to compute fractionalization and polarization indexes. As shown in Table A.14, using the origin instead of the return municipality does not affect the significance nor the size of

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[49]The capital is very different from rural municipalities. It hosts most Burundian institutions as well as the headquarters of International Organizations working in Burundi. Municipalities located in Bujumbura Mairie are by far richer than rural ones ($p < 0.00$). It is also worth noting that municipalities of Bujumbura Mairie host on average more demobilized demobilized combatants than rural municipalities ($p = 0.079$).

the coefficient associated with demobilized rebels' polarization. We therefore conclude that the correlation between demobilized rebels' polarization and electoral violence is robust and unlikely to be driven by unobserved factors.

As for demobilized rebels' polarization, we also tested whether some unobservable characteristics, C, could have impacted electoral violence directly, and have influenced votes via a separate route. If votes are affected such as to alter political competition in a non-random way, our regressions could partly capture these unobserved factors, C. In order to test this hypothesis, we included the proportion of voters for each party in the regression (Table A.12). This increases the point estimates of the political competition index.[50]

More generally, Altonji et al. (2005) proposed a method for estimating the relative influence of unobservables by analyzing how coefficients of interest are affected by the inclusion of control variables. The method requires estimating a regression with a restricted set of control variables and one with the full set of controls. By denoting $\hat{\beta}_R$ as the coefficient of interest measured in the former regression, and $\hat{\beta}_F$ as the coefficient measured in the latter regression, the ratio $\hat{\beta}_F/(\hat{\beta}_R - \hat{\beta}_F)$ quantifies how strong the selection on unobservables should be relative to the selection on observables to explain away the estimated effect of the variable of interest (Bellows and Miguel, 2009; Nunn and Wantchekon, 2011). In our case, coefficients of interest measured in the regressions with control variables and fixed effects are higher than the coefficients measured in regressions with a restricted set of controls (Table A.19), leading to a negative ratio $\hat{\beta}_F/(\hat{\beta}_R - \hat{\beta}_F)$. Intuitively, controlling for more unobservables should result in higher coefficients of interest. Our estimates are therefore likely to be lower bounds.

Removing outliers. Our results are robust to the removal of outliers from the sample (Table A.20). Outliers are defined as the observations whose standardized deviance residuals are greater than two (Hilbe, 2011).

Spatial dependence. We also tested if spatial correlation in the dependent variable could bias our estimates and thereby drive the results (Tables A.21 and A.22). Figure 1 shows no evi-

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[50]By controlling for the proportion of voters, we include components of the political fractionalization index. This can cause multicollinearity, which explains the increase in standard errors and related loss of significance.

dence of spatial correlation in electoral violence, which is confirmed quantitatively by the negative and non-significant Moran's statistic, associated with the indicator of electoral violence (p-value=0.330). As a robustness check, we nevertheless estimated our model by accounting for spatial dependence. We are not aware of any studies that demonstrated how to obtain consistent estimates for negative binomial models with spatial correlation. We therefore relied on four second-best approaches. First, we controlled for geographic coordinates of municipalities and for their squares and cubes. Second, we assessed how results are affected by the introduction of a spatial lag in the negative binomial model (Neumayer and Plümper, 2010). Third, we estimated the models developed by Pisati (2010) for linear regression models. We used two different weighting matrices: one identifying neighboring municipalities and one based on latitude and longitude data. Fourth, we estimated the OLS model and adjusted standard-errors for spatial correlation (Conley, 1999). These different estimation strategies and the two different weighting matrices yield similar results. Overall, we do not find any evidence that spatial dependence drives the results.

Placebo test. We carried out placebo tests to check if our results are driven by the nature of our explanatory variables (Tables A.25 and A.26). The placebo test consists in replacing the main regressor of interest by a variable of similar nature (that is, polarization indexes), but which is not expected to have predictive power on the dependent variable. We used two different polarization indexes based on age-groups[51] and religion.[52] The former stems from the hypothesis that youth bulges may be a source of conflict (Urdal, 2006).[53] Religious diversity has been explored alongside ethnic diversity in the literature on the causes of civil conflict (Blattman and Miguel, 2010). Neither religious beliefs nor the resulting polarization index should affect electoral violence in the context of Burundi, where ethnicity rather than religion

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[51]In order to construct the age polarization index, we first divided the DHS sample into alternative age-group scenarios. Starting from individual ages, we assigned every individual in a group, and computed the proportion of individual in each group at the municipality level. These proportions were then used to compute an index of age polarization at the municipality level. Results are reported for a distribution of individuals according to the following categories: $[0, 15[, [15, 40[, [40, 60[, [60, 80[, [80, 99[$. Alternative scenarios give the same results.

[52]The religious polarization index also relies on DHS data, which classifies men and women into seven groups according to their religion (no religion, catholic, protestant, Muslim, adventist, jehova witness and other). It is computed at the municipality level by following the same steps as for age-group polarization.

[53]We additionally tested that it is not the bulge itself, by controlling for the number of young people, which had no impact on electoral violence when controlling for population size.

fueled violence in the past. Reassuringly, none of the placebo polarization indexes enter significantly in the regressions.

B   Supplementary tables

Table A.1: Testing hypotheses separately and simultaneously - OLS estimates

Dependent variable: total episodes of electoral violence (log)

	Ethnic grievances		Political competition 2010		2005		Demob. rebels		All channels	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Hutu share 2012	0.584								1.610	2.125**
	(0.714)								(1.028)	(1.041)
Ethnic fractionalization 2012 (st.)		-0.060							0.018	0.133
		(0.092)							(0.127)	(0.134)
Political fractionalization 2010 (st.)			0.227**						0.150	
			(0.093)						(0.099)	
Political polarization 2010 (st.)				0.224***					0.171*	
				(0.081)					(0.090)	
Political fractionalization 2005 (st.)					0.157**					0.204*
					(0.071)					(0.114)
Political polarization 2005 (st.)						0.135*				0.027
						(0.074)				(0.113)
Demob. rebels' polarization (st.)							0.124*		0.158*	0.211**
							(0.068)		(0.092)	(0.090)
Demob. rebels' fractionalization (st.)								0.048	-0.070	-0.127
								(0.067)	(0.090)	(0.092)
Observations	831	831	831	831	831	831	831	831	831	831
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	NFE	NFE	NFE	NFE	NFE	NFE	NFE	NFE	NFE	NFE
R^2	0.32	.32	.34	.36	.33	.33	.33	.32	.38	.36
$Adjusted R^2$	0.19	.19	.21	.23	.2	.2	.2	.19	.26	.24

Negative binomial regressions. Controls include the number of demobilized rebels per 1000 inhabitants, the log of population size, and the log of population density. All estimations include neighborhood fixed effects (NFE). Standard errors are robust and clustered at two levels as described in Section 4.2. $^* p < 0.10$, $^{**} p < 0.05$, $^{***} p < 0.01$.

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Table A.2: The results of Table 4 with political polarization only, constructed with 2005 data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.197	2.620**	2.286**	2.768**	1.102	1.547	1.597	1.725
	(1.010)	(1.271)	(1.158)	(1.307)	(0.942)	(1.295)	(1.240)	(1.348)
Ethnic fractionalization 2012 (st.)	-0.009	0.123	0.064	0.153	-0.020	-0.006	-0.006	0.022
	(0.131)	(0.156)	(0.139)	(0.161)	(0.125)	(0.161)	(0.150)	(0.169)
Political polarization 2005 (st.)	0.060	0.256***	0.244***	0.239***	-0.010	0.158**	0.134	0.127
	(0.094)	(0.086)	(0.090)	(0.092)	(0.099)	(0.078)	(0.090)	(0.090)
Demob. rebels' polarization (st.)	0.241**	0.354***	0.315***	0.345***	0.398***	0.385***	0.357***	0.380***
	(0.114)	(0.104)	(0.111)	(0.124)	(0.132)	(0.110)	(0.113)	(0.125)
Demob. rebels' fractionalization (st.)	-0.286**	-0.155	-0.169	-0.138	-0.245*	-0.128	-0.154	-0.110
	(0.129)	(0.122)	(0.124)	(0.138)	(0.141)	(0.118)	(0.125)	(0.138)
No. demob. rebels (/1000)	0.014	-0.009	-0.009	0.005	-0.069	-0.066	-0.063	-0.060
	(0.053)	(0.048)	(0.050)	(0.049)	(0.054)	(0.046)	(0.053)	(0.049)
Population (log)	0.843***	1.395***	1.348***	1.398***	0.718***	0.811***	0.869***	0.823***
	(0.216)	(0.187)	(0.193)	(0.219)	(0.223)	(0.223)	(0.224)	(0.246)
Population density (log)	0.296***	0.146	0.157	0.080	0.301***	0.226	0.228*	0.166
	(0.101)	(0.212)	(0.169)	(0.203)	(0.103)	(0.156)	(0.137)	(0.182)
Past violence (log)					0.348***	0.392***	0.378***	0.391***
					(0.079)	(0.103)	(0.095)	(0.102)
Median Wealth Index (st.)					0.089	0.059	0.128	0.026
					(0.119)	(0.100)	(0.112)	(0.142)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3: The results of Table 4 with political polarization only, constructed with 2010 data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.003	2.200*	1.673	2.532**	1.101	1.498	1.388	1.788
	(1.060)	(1.219)	(1.076)	(1.271)	(0.952)	(1.264)	(1.178)	(1.328)
Ethnic fractionalization 2012 (st.)	-0.065	0.007	-0.061	0.051	-0.030	-0.050	-0.062	-0.012
	(0.145)	(0.137)	(0.128)	(0.149)	(0.127)	(0.144)	(0.140)	(0.159)
Political polarization 2010 (st.)	0.204**	0.324***	0.306***	0.320***	0.041	0.181**	0.178**	0.168*
	(0.083)	(0.092)	(0.086)	(0.095)	(0.095)	(0.088)	(0.087)	(0.095)
Demob. rebels' polarization (st.)	0.227*	0.275***	0.248**	0.275**	0.392***	0.337***	0.318***	0.340***
	(0.117)	(0.099)	(0.109)	(0.122)	(0.136)	(0.108)	(0.116)	(0.126)
Demob. rebels' fractionalization (st.)	-0.277**	-0.070	-0.097	-0.059	-0.255*	-0.070	-0.114	-0.063
	(0.120)	(0.110)	(0.115)	(0.129)	(0.131)	(0.106)	(0.117)	(0.129)
No. demob. rebels (/1000)	0.000	-0.013	-0.010	0.001	-0.068	-0.063	-0.057	-0.055
	(0.049)	(0.047)	(0.050)	(0.047)	(0.053)	(0.048)	(0.053)	(0.049)
Population (log)	0.910***	1.341***	1.321***	1.353***	0.748***	0.820***	0.903***	0.844***
	(0.212)	(0.166)	(0.184)	(0.209)	(0.227)	(0.225)	(0.221)	(0.244)
Population density (log)	0.252**	0.048	0.057	-0.006	0.289***	0.168	0.170	0.118
	(0.101)	(0.183)	(0.159)	(0.189)	(0.109)	(0.148)	(0.135)	(0.179)
Past violence (log)					0.333***	0.355***	0.341***	0.354***
					(0.086)	(0.108)	(0.098)	(0.108)
Median Wealth Index (st.)					0.095	0.067	0.133	0.037
					(0.120)	(0.099)	(0.110)	(0.141)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4: The results of Table 4 with political fractionalization only, constructed with 2005 data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.615*	3.721***	3.351***	3.924***	1.253	2.236**	2.290**	2.485*
	(0.973)	(1.173)	(1.103)	(1.299)	(0.920)	(1.140)	(1.151)	(1.291)
Ethnic fractionalization 2012 (st.)	0.012	0.227	0.172	0.263	-0.020	0.049	0.056	0.085
	(0.129)	(0.159)	(0.140)	(0.167)	(0.122)	(0.161)	(0.144)	(0.169)
Political fractionalization 2005 (st.)	0.165*	0.348***	0.320***	0.369***	0.080	0.271***	0.241***	0.290***
	(0.100)	(0.087)	(0.091)	(0.106)	(0.099)	(0.080)	(0.088)	(0.103)
Demob. rebels' polarization (st.)	0.287**	0.393***	0.357***	0.397***	0.415***	0.417***	0.384***	0.418***
	(0.112)	(0.108)	(0.112)	(0.129)	(0.133)	(0.108)	(0.111)	(0.128)
Demob. rebels' fractionalization (st.)	-0.349***	-0.198	-0.213*	-0.193	-0.293**	-0.173	-0.199	-0.173
	(0.130)	(0.121)	(0.123)	(0.142)	(0.143)	(0.114)	(0.123)	(0.140)
No. demob. rebels (/1000)	0.030	0.046	0.037	0.069	-0.061	-0.025	-0.029	-0.013
	(0.056)	(0.059)	(0.058)	(0.059)	(0.056)	(0.053)	(0.057)	(0.054)
Population (log)	0.955***	1.444***	1.409***	1.467***	0.771***	0.827***	0.897***	0.875***
	(0.224)	(0.196)	(0.199)	(0.224)	(0.227)	(0.208)	(0.216)	(0.237)
Population density (log)	0.284***	0.198	0.204	0.129	0.304***	0.251	0.261*	0.191
	(0.097)	(0.205)	(0.165)	(0.192)	(0.102)	(0.160)	(0.136)	(0.179)
Past violence (log)					0.340***	0.405***	0.387***	0.395***
					(0.080)	(0.096)	(0.089)	(0.093)
Median Wealth Index (st.)					0.068	-0.001	0.081	-0.034
					(0.128)	(0.113)	(0.120)	(0.140)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.5: The results of Table 4 with political fractionalization only, constructed with 2010 data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.537	3.798***	3.142***	4.086***	1.126	2.240*	2.085*	2.513*
	(1.002)	(1.295)	(1.143)	(1.373)	(0.936)	(1.272)	(1.212)	(1.389)
Ethnic fractionalization 2012 (st.)	0.004	0.191	0.120	0.237	-0.021	0.030	0.016	0.069
	(0.134)	(0.159)	(0.139)	(0.165)	(0.124)	(0.159)	(0.148)	(0.169)
Political fractionalization 2010 (st.)	0.167*	0.408***	0.347***	0.427***	0.014	0.283**	0.250**	0.281**
	(0.094)	(0.119)	(0.112)	(0.139)	(0.108)	(0.123)	(0.110)	(0.142)
Demob. rebels' polarization (st.)	0.288**	0.330***	0.316***	0.335***	0.400***	0.362***	0.355***	0.368***
	(0.120)	(0.101)	(0.110)	(0.124)	(0.133)	(0.105)	(0.111)	(0.125)
Demob. rebels' fractionalization (st.)	-0.306**	-0.091	-0.126	-0.086	-0.253*	-0.077	-0.130	-0.076
	(0.125)	(0.111)	(0.116)	(0.133)	(0.137)	(0.106)	(0.118)	(0.131)
No. demob. rebels (/1000)	0.021	0.032	0.025	0.054	-0.068	-0.039	-0.038	-0.028
	(0.053)	(0.058)	(0.057)	(0.056)	(0.055)	(0.053)	(0.057)	(0.053)
Population (log)	0.922***	1.286***	1.281***	1.306***	0.729***	0.732***	0.819***	0.772***
	(0.211)	(0.181)	(0.191)	(0.218)	(0.224)	(0.213)	(0.216)	(0.238)
Population density (log)	0.268***	0.160	0.159	0.094	0.300***	0.217	0.223	0.160
	(0.103)	(0.188)	(0.157)	(0.185)	(0.104)	(0.153)	(0.136)	(0.180)
Past violence (log)					0.344***	0.386***	0.376***	0.377***
					(0.083)	(0.098)	(0.092)	(0.100)
Median Wealth Index (st.)					0.086	-0.002	0.070	-0.031
					(0.128)	(0.109)	(0.117)	(0.142)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.6: The results of Table 4 with both political polarization and fractionalization, constructed with 2005 data

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.775*	3.493***	3.060***	3.790***	1.362	2.225**	2.289**	2.504*
	(0.992)	(1.132)	(1.071)	(1.281)	(0.935)	(1.126)	(1.139)	(1.287)
Ethnic fractionalization 2012 (st.)	0.026	0.204	0.139	0.248	-0.013	0.049	0.055	0.085
	(0.131)	(0.150)	(0.134)	(0.163)	(0.122)	(0.159)	(0.143)	(0.169)
Political fractionalization 2005 (st.)	0.236	0.236*	0.207	0.298*	0.185	0.256**	0.239*	0.340**
	(0.165)	(0.139)	(0.141)	(0.156)	(0.156)	(0.124)	(0.128)	(0.146)
Political polarization 2005 (st.)	-0.089	0.129	0.129	0.086	-0.124	0.017	0.002	-0.058
	(0.152)	(0.136)	(0.137)	(0.135)	(0.152)	(0.122)	(0.130)	(0.130)
Demob. rebels' polarization (st.)	0.304***	0.382***	0.342***	0.393***	0.431***	0.416***	0.384***	0.427***
	(0.110)	(0.103)	(0.109)	(0.127)	(0.130)	(0.108)	(0.110)	(0.127)
Demob. rebels' fractionalization (st.)	-0.347***	-0.196	-0.209*	-0.196	-0.287**	-0.173	-0.199	-0.173
	(0.130)	(0.120)	(0.123)	(0.141)	(0.144)	(0.115)	(0.122)	(0.140)
No. demob. rebels (/1000)	0.041	0.030	0.022	0.056	-0.049	-0.027	-0.029	-0.008
	(0.063)	(0.053)	(0.056)	(0.057)	(0.060)	(0.052)	(0.056)	(0.055)
Population (log)	0.983***	1.442***	1.400***	1.472***	0.790***	0.831***	0.897***	0.866***
	(0.229)	(0.192)	(0.197)	(0.222)	(0.227)	(0.210)	(0.216)	(0.237)
Population density (log)	0.273***	0.187	0.190	0.123	0.303***	0.251	0.261*	0.192
	(0.101)	(0.205)	(0.164)	(0.194)	(0.102)	(0.159)	(0.134)	(0.178)
Past violence (log)					0.344***	0.403***	0.387***	0.402***
					(0.079)	(0.100)	(0.093)	(0.094)
Median Wealth Index (st.)					0.028	0.003	0.081	-0.051
					(0.133)	(0.110)	(0.118)	(0.145)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to "Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.7: The results of Table 4 with both political polarization and fractionalization, constructed with 2010 data

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.095	2.755**	2.074*	3.151**	1.067	2.009	1.827	2.376*
	(1.046)	(1.322)	(1.129)	(1.402)	(0.952)	(1.230)	(1.166)	(1.381)
Ethnic fractionalization 2012 (st.)	-0.058	0.055	-0.024	0.111	-0.032	-0.005	-0.023	0.046
	(0.146)	(0.143)	(0.130)	(0.157)	(0.127)	(0.143)	(0.137)	(0.164)
Political fractionalization 2010 (st.)	0.034	0.133	0.100	0.160	-0.023	0.166	0.146	0.201
	(0.113)	(0.114)	(0.120)	(0.159)	(0.125)	(0.127)	(0.122)	(0.174)
Political polarization 2010 (st.)	0.185*	0.272***	0.264***	0.253**	0.054	0.110	0.111	0.079
	(0.099)	(0.101)	(0.099)	(0.114)	(0.108)	(0.098)	(0.100)	(0.118)
Demob. rebels' polarization (st.)	0.239*	0.279***	0.257**	0.289**	0.386***	0.343***	0.330***	0.355***
	(0.124)	(0.097)	(0.110)	(0.123)	(0.139)	(0.105)	(0.115)	(0.127)
Demob. rebels' fractionalization (st.)	-0.286**	-0.073	-0.105	-0.068	-0.250*	-0.073	-0.123	-0.073
	(0.126)	(0.109)	(0.116)	(0.130)	(0.138)	(0.105)	(0.118)	(0.130)
No. demob. rebels (/1000)	0.003	0.002	0.000	0.020	-0.069	-0.047	-0.044	-0.033
	(0.051)	(0.050)	(0.053)	(0.051)	(0.055)	(0.051)	(0.055)	(0.053)
Population (log)	0.923***	1.324***	1.315***	1.343***	0.743***	0.786***	0.878***	0.818***
	(0.218)	(0.164)	(0.182)	(0.211)	(0.227)	(0.221)	(0.219)	(0.240)
Population density (log)	0.251**	0.071	0.074	0.018	0.287***	0.188	0.189	0.138
	(0.102)	(0.183)	(0.158)	(0.190)	(0.107)	(0.150)	(0.137)	(0.181)
Past violence (log)					0.333***	0.361***	0.348***	0.358***
					(0.086)	(0.107)	(0.098)	(0.106)
Median Wealth Index (st.)					0.103	0.031	0.101	-0.004
					(0.130)	(0.107)	(0.116)	(0.146)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to "Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: The results of Table 5 with political competition in 2010

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)
Hutu share 2012	2.740**	1.371	3.130***	3.306***	1.553
	(1.223)	(1.371)	(1.122)	(1.103)	(1.442)
Ethnic fractionalization 2012 (st.)	0.102	-0.114	0.146	0.141	-0.042
	(0.142)	(0.176)	(0.140)	(0.130)	(0.179)
Political fractionalization 2010 (st.)	0.346***	-2.215***	0.330***	0.160	-1.820**
	(0.113)	(0.805)	(0.113)	(0.132)	(0.803)
Demob. rebels' polarization (st.)	-0.327	0.309***	0.356***	0.316***	-0.112
	(0.637)	(0.108)	(0.106)	(0.107)	(0.634)
Demob. rebels' fractionalization (st.)	-0.155	-0.109	-0.119	-0.130	-0.128
	(0.123)	(0.110)	(0.115)	(0.116)	(0.120)
No. demob. rebels (/1000)	0.023	0.009	0.021	0.051	0.024
	(0.056)	(0.050)	(0.055)	(0.052)	(0.053)
Population (log)	1.298***	1.199***	1.355***	1.220***	1.240***
	(0.196)	(0.189)	(0.199)	(0.195)	(0.200)
Population density (log)	0.118	0.164	0.141	0.138	0.106
	(0.166)	(0.165)	(0.162)	(0.136)	(0.162)
Demob. rebels' polarization × Hutu share	0.798				0.556
	(0.798)				(0.784)
Political frac. × Hutu share		3.077***			2.429**
		(0.966)			(0.989)
Demob. rebels' polarization × Political frac.			-0.165**		-0.129**
			(0.068)		(0.062)
Demob. rebels (/1000) × Political frac.				0.090**	0.064
				(0.039)	(0.041)
Observations	831	831	831	831	831
Fixed Effects	NFE	NFE	NFE	NFE	NFE

Negative binomial regressions. Past violence and wealth are excluded from the list of controls. All estimations include neighborhood fixed effects (NFE). Standard errors are robust and clustered at two levels as described in Section 4.2. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9: The results of Table 4 using Garcia-Montalvo and Reynal-Querol (2005b) Index

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.533	3.308***	3.071***	3.480***	1.078	1.821	1.918*	2.032
	(0.936)	(1.170)	(1.103)	(1.302)	(0.885)	(1.114)	(1.137)	(1.275)
Ethnic fractionalization 2012 (st.)	0.000	0.189	0.151	0.220	-0.043	0.013	0.019	0.038
	(0.125)	(0.153)	(0.138)	(0.164)	(0.120)	(0.148)	(0.141)	(0.162)
Political fractionalization 2005 (st.)	0.157	0.330***	0.308***	0.353***	0.078	0.253***	0.233***	0.275***
	(0.100)	(0.086)	(0.091)	(0.105)	(0.099)	(0.081)	(0.090)	(0.105)
Demob. rebels' polarization (st.)	0.300***	0.333***	0.327***	0.333***	0.412***	0.341***	0.347***	0.347***
	(0.112)	(0.102)	(0.104)	(0.127)	(0.127)	(0.100)	(0.105)	(0.127)
Demob. rebels' fractionalization (st.)	-0.368**	-0.176	-0.212	-0.166	-0.312**	-0.138	-0.199	-0.140
	(0.145)	(0.129)	(0.131)	(0.148)	(0.156)	(0.114)	(0.130)	(0.144)
No. demob. rebels (/1000)	0.023	0.035	0.026	0.058	-0.070	-0.036	-0.041	-0.024
	(0.056)	(0.058)	(0.057)	(0.057)	(0.055)	(0.051)	(0.056)	(0.052)
Population (log)	0.940***	1.404***	1.375***	1.429***	0.740***	0.789***	0.848***	0.828***
	(0.223)	(0.197)	(0.195)	(0.224)	(0.226)	(0.214)	(0.214)	(0.237)
Population density (log)	0.283***	0.174	0.189	0.103	0.314***	0.221	0.243*	0.164
	(0.096)	(0.200)	(0.163)	(0.185)	(0.102)	(0.159)	(0.135)	(0.174)
Past violence (log)					0.331***	0.393***	0.385***	0.390***
					(0.080)	(0.092)	(0.089)	(0.092)
Median Wealth Index (st.)					0.035	-0.018	0.056	-0.053
					(0.133)	(0.115)	(0.118)	(0.138)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.10: The results of Table 4 controlling for the proportion of ex-combatants from each faction

	Dependent variable: total episodes of electoral violence							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.515	3.359***	2.932**	3.371**	1.375	2.166*	2.220*	2.258*
	(1.105)	(1.295)	(1.164)	(1.388)	(1.046)	(1.166)	(1.167)	(1.326)
Ethnic fractionalization 2012 (st.)	-0.099	0.126	0.069	0.147	-0.104	-0.044	-0.036	-0.012
	(0.135)	(0.168)	(0.142)	(0.171)	(0.140)	(0.154)	(0.144)	(0.166)
Political fractionalization 2005 (st.)	0.264**	0.332***	0.335***	0.375***	0.149	0.249***	0.226**	0.277**
	(0.105)	(0.079)	(0.089)	(0.103)	(0.106)	(0.086)	(0.093)	(0.109)
Demob. rebels' polarization (st.)	0.230*	0.554***	0.433***	0.547***	0.474***	0.622***	0.528***	0.643***
	(0.137)	(0.135)	(0.127)	(0.167)	(0.161)	(0.140)	(0.131)	(0.166)
Demob. rebels' fractionalization (st.)	-0.255	-0.380**	-0.298*	-0.344*	-0.391*	-0.445**	-0.403**	-0.456**
	(0.206)	(0.181)	(0.180)	(0.205)	(0.212)	(0.182)	(0.184)	(0.203)
No. demob. rebels (/1000)	0.052	0.062	0.054	0.097	-0.063	-0.010	-0.016	0.008
	(0.056)	(0.066)	(0.061)	(0.064)	(0.065)	(0.065)	(0.066)	(0.062)
Population (log)	1.094***	1.516***	1.498***	1.580***	0.878***	0.893***	0.947***	0.996***
	(0.222)	(0.176)	(0.178)	(0.213)	(0.243)	(0.199)	(0.203)	(0.236)
Population density (log)	0.231*	0.165	0.173	0.078	0.291**	0.217	0.258*	0.151
	(0.129)	(0.213)	(0.175)	(0.201)	(0.139)	(0.158)	(0.137)	(0.171)
Past violence (log)					0.339***	0.415***	0.396***	0.414***
					(0.085)	(0.084)	(0.087)	(0.088)
Median Wealth Index (st.)					0.080	0.094	0.166	0.087
					(0.135)	(0.124)	(0.118)	(0.136)
CNDD	-1.344	-1.193	-1.020	-1.155	-0.717	-1.041	-0.305	-0.886
	(0.911)	(0.893)	(0.929)	(0.957)	(0.996)	(0.928)	(1.041)	(1.014)
FNL - Rwasa	0.772	1.116**	1.037**	1.466**	0.488	1.177**	1.169**	1.487**
	(0.529)	(0.538)	(0.507)	(0.628)	(0.538)	(0.587)	(0.556)	(0.654)
FNL Dissidents	-3.825*	-0.430	-1.513	-1.103	-1.722	0.602	-0.142	0.419
	(2.015)	(2.069)	(1.951)	(2.350)	(2.154)	(2.042)	(2.070)	(2.244)
FNL Icanzo	8.416	11.439***	9.311**	12.553***	11.919**	11.871***	11.028***	13.823***
	(5.978)	(4.014)	(4.337)	(4.439)	(5.115)	(3.668)	(3.876)	(4.252)
Frolina	0.950	1.749**	1.446**	1.806**	1.383**	1.962**	1.975**	2.212**
	(0.725)	(0.739)	(0.656)	(0.908)	(0.628)	(0.924)	(0.778)	(1.043)
KAZE-FDD	1.234	3.856	3.021	3.244	1.473	4.157*	3.661	4.087
	(2.364)	(2.530)	(2.363)	(2.916)	(2.324)	(2.419)	(2.239)	(2.851)
Palipe Agazika	-3.517***	-1.227	-2.206	-1.304	-1.967	-0.663	-1.395	-0.332
	(1.251)	(1.347)	(1.404)	(1.487)	(1.594)	(1.524)	(1.533)	(1.582)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.11: The results of Table 4 controlling for the proportion of the population being demobilized

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.931*	4.626***	3.930***	4.677***	2.095*	3.074***	3.186***	3.254**
	(1.062)	(1.161)	(1.076)	(1.562)	(1.086)	(1.178)	(1.139)	(1.308)
Ethnic fractionalization 2012 (st.)	-0.080	0.219	0.138	0.224	-0.032	0.043	0.066	0.061
	(0.146)	(0.147)	(0.129)	(0.187)	(0.148)	(0.153)	(0.139)	(0.162)
Political fractionalization 2005 (st.)	0.258**	0.393***	0.360***	0.430***	0.164	0.311***	0.277***	0.337***
	(0.101)	(0.089)	(0.092)	(0.127)	(0.101)	(0.091)	(0.092)	(0.108)
Demob. rebels' polarization (st.)	0.277**	0.542***	0.442***	0.560***	0.461***	0.560***	0.491***	0.586***
	(0.125)	(0.138)	(0.128)	(0.175)	(0.152)	(0.129)	(0.130)	(0.152)
Demob. rebels' fractionalization (st.)	-0.399***	-0.397***	-0.367***	-0.407**	-0.408***	-0.365***	-0.375***	-0.393**
	(0.143)	(0.150)	(0.139)	(0.174)	(0.156)	(0.140)	(0.145)	(0.166)
No. demob. rebels (/1000)	0.071	0.130	0.081	0.132	-0.019	0.061	-0.004	0.037
	(0.120)	(0.115)	(0.110)	(0.134)	(0.116)	(0.115)	(0.117)	(0.114)
Population (log)	1.058***	1.530***	1.443***	1.596***	0.869***	0.951***	0.978***	1.056***
	(0.231)	(0.189)	(0.189)	(0.317)	(0.253)	(0.212)	(0.219)	(0.249)
Population density (log)	0.218*	0.078	0.111	0.021	0.270**	0.155	0.190	0.088
	(0.117)	(0.155)	(0.155)	(0.202)	(0.130)	(0.131)	(0.137)	(0.172)
Past violence (log)					0.302***	0.356***	0.331***	0.358***
					(0.085)	(0.092)	(0.087)	(0.092)
Median Wealth Index (st.)					0.115	-0.015	0.109	-0.027
					(0.123)	(0.104)	(0.111)	(0.136)
CNDD	-0.745**	-0.716**	-0.582**	-0.766*	-0.566*	-0.644	-0.420	-0.731*
	(0.301)	(0.357)	(0.281)	(0.405)	(0.330)	(0.400)	(0.275)	(0.416)
FNL - Rwasa	0.220	-0.081	0.031	0.043	0.030	-0.162	-0.006	0.001
	(0.290)	(0.281)	(0.278)	(0.303)	(0.284)	(0.273)	(0.285)	(0.262)
FNL Dissidents	-1.750**	-1.581***	-1.491***	-1.673***	-1.443**	-1.158***	-1.179***	-1.292***
	(0.786)	(0.332)	(0.454)	(0.478)	(0.669)	(0.353)	(0.451)	(0.448)
FNL Icanzo	5.755*	5.509***	5.281**	5.867***	5.589**	4.195**	4.651**	4.991***
	(3.395)	(1.685)	(2.073)	(1.741)	(2.767)	(1.690)	(2.004)	(1.740)
Frolina	0.718**	0.833***	0.845***	0.980**	0.697***	0.730**	0.795***	0.906**
	(0.295)	(0.284)	(0.262)	(0.440)	(0.255)	(0.350)	(0.281)	(0.412)
KAZE-FDD	1.311	1.993***	1.749**	2.030**	1.333	1.753**	1.618**	1.992**
	(0.964)	(0.757)	(0.793)	(0.908)	(0.907)	(0.735)	(0.783)	(0.858)
Palipe Agazika	-0.483	0.142	0.131	-0.007	0.076	0.197	0.420	0.072
	(0.649)	(0.603)	(0.607)	(0.597)	(0.635)	(0.467)	(0.563)	(0.520)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.12: The results of Table 4 with the proportion of voters for each parties

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.556	2.621**	2.149**	3.227**	2.036*	1.796*	1.760	2.295*
	(0.951)	(1.113)	(1.004)	(1.290)	(1.053)	(1.068)	(1.112)	(1.263)
Ethnic fractionalization 2012 (st.)	-0.013	0.124	0.069	0.202	0.090	0.037	0.044	0.104
	(0.139)	(0.153)	(0.139)	(0.164)	(0.139)	(0.156)	(0.152)	(0.168)
Political fractionalization 2005 (st.)	0.077	0.351***	0.342**	0.333**	0.019	0.271**	0.198	0.252
	(0.175)	(0.128)	(0.150)	(0.152)	(0.185)	(0.137)	(0.154)	(0.157)
Demob. rebels' polarization (st.)	0.325***	0.410***	0.365***	0.441***	0.466***	0.436***	0.408***	0.456***
	(0.105)	(0.112)	(0.116)	(0.137)	(0.119)	(0.115)	(0.116)	(0.135)
Demob. rebels' fractionalization (st.)	-0.342***	-0.236*	-0.253*	-0.216	-0.314**	-0.200	-0.232*	-0.177
	(0.131)	(0.130)	(0.135)	(0.151)	(0.134)	(0.123)	(0.132)	(0.151)
No. demob. rebels (/1000)	0.052	0.055	0.040	0.088	-0.029	-0.013	-0.024	0.010
	(0.062)	(0.058)	(0.059)	(0.060)	(0.061)	(0.057)	(0.061)	(0.059)
Population (log)	1.002***	1.406***	1.390***	1.472***	0.776***	0.835***	0.888***	0.927***
	(0.227)	(0.185)	(0.190)	(0.214)	(0.220)	(0.198)	(0.210)	(0.233)
Population density (log)	0.173	0.101	0.106	0.035	0.327**	0.189	0.229	0.114
	(0.122)	(0.185)	(0.161)	(0.188)	(0.129)	(0.165)	(0.142)	(0.189)
Past violence (log)					0.389***	0.393***	0.381***	0.380***
					(0.076)	(0.088)	(0.093)	(0.094)
Median Wealth Index (st.)					0.099	0.007	0.103	-0.050
					(0.151)	(0.117)	(0.125)	(0.147)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.13: The results of Table 4 without Bujumbura Mairie

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	4.193**	6.838***	6.243***	6.460**	2.082	5.257**	4.707**	5.625**
	(1.642)	(2.367)	(1.974)	(2.792)	(1.599)	(2.133)	(1.923)	(2.482)
Ethnic fractionalization 2012 (st.)	0.300	0.567**	0.503**	0.505	0.054	0.388	0.334	0.414
	(0.192)	(0.278)	(0.244)	(0.316)	(0.203)	(0.261)	(0.243)	(0.291)
Political fractionalization 2005 (st.)	0.084	0.311***	0.279***	0.319***	0.011	0.156*	0.158*	0.191*
	(0.100)	(0.093)	(0.092)	(0.104)	(0.103)	(0.081)	(0.087)	(0.103)
Demob. rebels' polarization (st.)	0.317***	0.427***	0.376***	0.465***	0.454***	0.476***	0.435***	0.512***
	(0.117)	(0.117)	(0.117)	(0.139)	(0.140)	(0.118)	(0.117)	(0.140)
Demob. rebels' fractionalization (st.)	-0.218	-0.158	-0.147	-0.171	-0.225	-0.105	-0.139	-0.123
	(0.153)	(0.145)	(0.141)	(0.164)	(0.162)	(0.137)	(0.140)	(0.162)
No. demob. rebels (/1000)	-0.037	-0.047	-0.040	-0.025	-0.109*	-0.099**	-0.089	-0.067
	(0.058)	(0.049)	(0.054)	(0.056)	(0.059)	(0.048)	(0.055)	(0.057)
Population (log)	1.052***	1.482***	1.472***	1.454***	0.665**	0.769***	0.874***	0.857***
	(0.252)	(0.223)	(0.239)	(0.252)	(0.262)	(0.239)	(0.261)	(0.275)
Population density (log)	0.049	0.292	0.246	0.278	0.328	0.213	0.215	0.165
	(0.241)	(0.354)	(0.315)	(0.375)	(0.246)	(0.326)	(0.287)	(0.340)
Past violence (log)					0.338***	0.404***	0.373***	0.377***
					(0.088)	(0.117)	(0.106)	(0.120)
Median Wealth Index (st.)					0.059	0.088	0.100	0.083
					(0.094)	(0.082)	(0.087)	(0.082)
Observations	116	1282	757	238	115	1266	748	236
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.14: The results of Table 4 with demobilized rebels' variables constructed using the municipality of origin of demobilized rebels

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.691*	2.992***	2.759***	3.119**	1.266	1.836*	1.949*	2.262
	(0.927)	(1.133)	(1.048)	(1.485)	(0.907)	(1.101)	(1.101)	(1.450)
Ethnic fractionalization 2012 (st.)	0.034	0.193	0.140	0.206	-0.000	0.056	0.051	0.084
	(0.126)	(0.153)	(0.135)	(0.196)	(0.119)	(0.151)	(0.137)	(0.193)
Political fractionalization 2005 (st.)	0.156	0.341***	0.314***	0.333***	0.081	0.274***	0.236***	0.280**
	(0.108)	(0.085)	(0.091)	(0.120)	(0.102)	(0.075)	(0.086)	(0.116)
Demob. rebels' polarization (st.)	0.296***	0.414***	0.381***	0.391***	0.403***	0.388***	0.372***	0.365***
	(0.101)	(0.112)	(0.106)	(0.142)	(0.122)	(0.105)	(0.107)	(0.141)
Demob. rebels' fractionalization (st.)	-0.297**	-0.206*	-0.220*	-0.159	-0.236*	-0.157	-0.171	-0.120
	(0.135)	(0.109)	(0.114)	(0.149)	(0.140)	(0.105)	(0.116)	(0.149)
No. demob. (/1000)	0.002	0.015	0.006	0.042	-0.090	-0.049	-0.057	-0.023
	(0.064)	(0.058)	(0.061)	(0.072)	(0.058)	(0.049)	(0.057)	(0.064)
Population (log)	0.870***	1.373***	1.353***	1.356***	0.668***	0.758***	0.817***	0.806***
	(0.222)	(0.190)	(0.192)	(0.251)	(0.228)	(0.214)	(0.220)	(0.275)
Population density (log)	0.295***	0.163	0.173	0.110	0.285***	0.218	0.231*	0.182
	(0.098)	(0.221)	(0.172)	(0.233)	(0.108)	(0.161)	(0.135)	(0.203)
Past violence (log)					0.340***	0.395***	0.381***	0.371***
					(0.079)	(0.087)	(0.086)	(0.102)
Median Wealth Index (st.)					0.048	0.026	0.083	0.020
					(0.132)	(0.129)	(0.124)	(0.164)
Observations		1404	831	258		1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.15: The results of Table 4 using OLS estimation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	0.672	2.522*	2.173**	2.621*	0.660	1.731	1.617	1.861
	(0.829)	(1.392)	(1.070)	(1.474)	(0.780)	(1.402)	(1.064)	(1.484)
Ethnic fractionalization 2012 (st.)	0.033	0.182	0.139	0.204	0.014	0.091	0.073	0.106
	(0.107)	(0.193)	(0.137)	(0.203)	(0.104)	(0.190)	(0.137)	(0.206)
Political fractionalization 2005 (st.)	0.092	0.270***	0.227***	0.273**	0.019	0.208**	0.173**	0.218*
	(0.075)	(0.096)	(0.077)	(0.113)	(0.076)	(0.098)	(0.077)	(0.116)
Demob. rebels' polarization (st.)	0.168*	0.252**	0.215**	0.255**	0.251**	0.243**	0.233**	0.242*
	(0.093)	(0.110)	(0.093)	(0.125)	(0.101)	(0.116)	(0.096)	(0.127)
Demob. rebels' fractionalization (st.)	-0.216**	-0.118	-0.130	-0.114	-0.180*	-0.081	-0.113	-0.082
	(0.096)	(0.114)	(0.093)	(0.132)	(0.101)	(0.115)	(0.094)	(0.133)
No. demob. rebels (/1000)	0.018	0.020	0.005	0.036	-0.050	-0.025	-0.036	-0.011
	(0.045)	(0.065)	(0.050)	(0.063)	(0.045)	(0.063)	(0.049)	(0.061)
Population (log)	0.759***	1.216***	1.173***	1.194***	0.640***	0.823***	0.820***	0.818***
	(0.204)	(0.235)	(0.193)	(0.242)	(0.200)	(0.247)	(0.200)	(0.253)
Population density (log)	0.164*	0.032	0.072	-0.013	0.173*	0.097	0.133	0.048
	(0.089)	(0.221)	(0.163)	(0.196)	(0.101)	(0.184)	(0.131)	(0.186)
Past violence (log)					0.265***	0.280***	0.277***	0.264***
					(0.064)	(0.097)	(0.077)	(0.094)
Median Wealth Index (st.)					0.080	0.034	0.077	-0.008
					(0.113)	(0.148)	(0.115)	(0.150)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random
R-squared	.14	.63	.36	.63	.25	.67	.43	.66
Adj. R-squared	.08	.25	.24	.21	.19	.33	.31	.27

OLS regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.16: The results of Table 4 using Poisson estimation

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.545	3.882***	3.208**	4.112***	0.985	2.210**	2.011*	2.478*
	(1.411)	(1.153)	(1.247)	(1.312)	(1.113)	(1.127)	(1.155)	(1.285)
Ethnic fractionalization 2012 (st.)	0.033	0.221	0.133	0.262	-0.059	0.043	-0.016	0.081
	(0.159)	(0.160)	(0.152)	(0.171)	(0.133)	(0.153)	(0.145)	(0.167)
Political fractionalization 2005 (st.)	0.136	0.338***	0.272***	0.367***	0.050	0.271***	0.206**	0.291***
	(0.094)	(0.087)	(0.089)	(0.107)	(0.101)	(0.080)	(0.092)	(0.102)
Demob. rebels' polarization (st.)	0.277**	0.393***	0.312***	0.400***	0.389***	0.419***	0.381***	0.420***
	(0.112)	(0.109)	(0.113)	(0.134)	(0.120)	(0.108)	(0.123)	(0.128)
Demob. rebels' fractionalization (st.)	-0.383***	-0.190	-0.173	-0.192	-0.312**	-0.174	-0.184	-0.175
	(0.134)	(0.123)	(0.124)	(0.147)	(0.137)	(0.114)	(0.127)	(0.141)
No. demob. rebels (/1000)	0.021	0.053	0.032	0.076	-0.074	-0.025	-0.026	-0.013
	(0.051)	(0.062)	(0.058)	(0.059)	(0.058)	(0.052)	(0.055)	(0.053)
Population (log)	1.058***	1.410***	1.376***	1.454***	0.809***	0.819***	0.832***	0.867***
	(0.272)	(0.189)	(0.169)	(0.224)	(0.275)	(0.210)	(0.206)	(0.236)
Population density (log)	0.302***	0.247	0.259	0.168	0.300***	0.254	0.269**	0.194
	(0.105)	(0.204)	(0.180)	(0.202)	(0.106)	(0.159)	(0.136)	(0.179)
Past violence (log)					0.350***	0.410***	0.390***	0.400***
					(0.094)	(0.089)	(0.089)	(0.091)
Median Wealth Index (st.)					0.047	-0.004	0.049	-0.036
					(0.146)	(0.114)	(0.117)	(0.140)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Poisson regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.17: The results of Table 4 clustering standard errors at the provincial level and weighting observations

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.615	3.688***	3.279***	3.900***	1.253	2.239**	2.226**	2.432*
	(1.124)	(0.856)	(0.940)	(1.319)	(0.822)	(0.923)	(0.983)	(1.361)
Ethnic fractionalization 2012 (st.)	0.012	0.228**	0.170	0.265	-0.020	0.044	0.049	0.083
	(0.147)	(0.114)	(0.131)	(0.167)	(0.100)	(0.128)	(0.120)	(0.170)
Political fractionalization 2005 (st.)	0.165	0.356***	0.324***	0.364***	0.080	0.294***	0.249***	0.286**
	(0.105)	(0.087)	(0.097)	(0.124)	(0.081)	(0.106)	(0.090)	(0.129)
Demob. rebels' polarization (st.)	0.287**	0.381***	0.352**	0.387**	0.415***	0.396***	0.379***	0.412***
	(0.124)	(0.126)	(0.138)	(0.156)	(0.133)	(0.131)	(0.133)	(0.157)
Demob. rebels' fractionalization (st.)	-0.349**	-0.184	-0.214	-0.189	-0.293**	-0.163	-0.201	-0.168
	(0.167)	(0.133)	(0.146)	(0.171)	(0.146)	(0.124)	(0.132)	(0.162)
No. demob. rebels (/1000)	0.030	0.068	0.054	0.067	-0.061	-0.007	-0.013	-0.018
	(0.067)	(0.089)	(0.090)	(0.095)	(0.063)	(0.077)	(0.083)	(0.082)
Population (log)	0.955***	1.418***	1.408***	1.449***	0.771**	0.837***	0.911***	0.853***
	(0.274)	(0.222)	(0.209)	(0.266)	(0.300)	(0.268)	(0.245)	(0.311)
Population density (log)	0.284**	0.137	0.172	0.151	0.304***	0.192	0.231	0.204
	(0.115)	(0.208)	(0.207)	(0.235)	(0.081)	(0.197)	(0.181)	(0.214)
Past violence (log)					0.340***	0.384***	0.377***	0.402***
					(0.095)	(0.104)	(0.100)	(0.121)
Median Wealth Index (st.)					0.068	-0.040	0.065	-0.035
					(0.072)	(0.082)	(0.092)	(0.104)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the provincial level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.18: The results of Table 4 controlling for share of demobilized combatants from the army and the police

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.567	3.518***	3.027***	3.842***	1.146	1.525	1.596	1.924
	(1.048)	(1.192)	(1.119)	(1.407)	(1.046)	(1.189)	(1.219)	(1.388)
Ethnic fractionalization 2012 (st.)	0.026	0.199	0.128	0.251	-0.031	-0.038	-0.037	0.017
	(0.134)	(0.161)	(0.148)	(0.175)	(0.145)	(0.168)	(0.159)	(0.178)
Political fractionalization 2005 (st.)	0.123	0.376***	0.366***	0.383***	0.081	0.351***	0.321***	0.354***
	(0.157)	(0.120)	(0.129)	(0.132)	(0.136)	(0.102)	(0.119)	(0.125)
Demob. rebels' polarization (st.)	0.295**	0.389***	0.353***	0.396***	0.416***	0.415***	0.382***	0.415***
	(0.115)	(0.107)	(0.110)	(0.130)	(0.133)	(0.107)	(0.111)	(0.128)
Demob. rebels' fractionalization (st.)	-0.324**	-0.202	-0.219*	-0.196	-0.291**	-0.190	-0.214*	-0.188
	(0.139)	(0.123)	(0.126)	(0.146)	(0.146)	(0.117)	(0.126)	(0.143)
No. demob. rebels (/1000)	0.026	0.030	0.012	0.059	-0.066	-0.062	-0.066	-0.043
	(0.066)	(0.065)	(0.062)	(0.066)	(0.063)	(0.056)	(0.060)	(0.058)
Population (log)	0.939***	1.435***	1.377***	1.460***	0.758***	0.804***	0.841***	0.858***
	(0.217)	(0.203)	(0.204)	(0.228)	(0.231)	(0.217)	(0.221)	(0.241)
Population density (log)	0.260***	0.187	0.188	0.127	0.300***	0.225	0.228*	0.166
	(0.101)	(0.198)	(0.155)	(0.193)	(0.105)	(0.152)	(0.135)	(0.179)
FAB	-0.001	-0.001	-0.001	-0.000	-0.000	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
FDN	0.001	0.000	0.000	0.000	0.000	-0.001	-0.000	-0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Past violence (log)					0.338***	0.429***	0.398***	0.408***
					(0.078)	(0.101)	(0.090)	(0.097)
Median Wealth Index (st.)					0.053	-0.010	0.041	-0.053
					(0.141)	(0.115)	(0.123)	(0.155)
Observations	129	1404	831	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.19: Selection on observables and unobservables following the method of Altonji et al. (2005)

| | Restricted | Unrestricted | | | | | | | |
| | No FE | Without violence and wealth | | | | With violence and wealth | | | |
Dependent variable: total episodes of electoral violence	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Hutu share 2012	0.518	1.615*	3.721***	3.351***	3.924***	1.253	2.236**	2.290**	2.485*
	(1.050)	(0.973)	(1.173)	(1.103)	(1.299)	(0.920)	(1.140)	(1.151)	(1.291)
Ethnic fractionalization 2012 (st.)	-0.074	0.012	0.227	0.172	0.263	-0.020	0.049	0.056	0.085
	(0.135)	(0.129)	(0.159)	(0.140)	(0.167)	(0.122)	(0.161)	(0.144)	(0.169)
Political fractionalization 2005 (st.)	-0.011	0.165*	0.348***	0.320***	0.369***	0.080	0.271***	0.241***	0.290***
	(0.112)	(0.100)	(0.087)	(0.091)	(0.106)	(0.080)	(0.080)	(0.088)	(0.103)
Demob. rebels' polarization (st.)	0.180	0.287**	0.393***	0.357***	0.397***	0.415***	0.417***	0.384***	0.418***
	(0.132)	(0.112)	(0.108)	(0.112)	(0.129)	(0.133)	(0.108)	(0.111)	(0.128)
Demob. rebels' fractionalization (st.)	-0.124	-0.349***	-0.198	-0.213*	-0.193	-0.293**	-0.173	-0.199	-0.173
	(0.141)	(0.130)	(0.121)	(0.123)	(0.142)	(0.143)	(0.114)	(0.123)	(0.140)
No. demob. rebels (/1000)		0.030	0.046	0.037	0.069	-0.061	-0.025	-0.029	-0.013
		(0.056)	(0.059)	(0.058)	(0.059)	(0.056)	(0.053)	(0.057)	(0.054)
Population (log)		0.955***	1.444***	1.409***	1.467***	0.771***	0.827***	0.897***	0.875***
		(0.224)	(0.196)	(0.199)	(0.224)	(0.227)	(0.208)	(0.216)	(0.237)
Population density (log)		0.284***	0.198	0.204	0.129	0.304***	0.251	0.261*	0.191
		(0.097)	(0.205)	(0.165)	(0.192)	(0.102)	(0.160)	(0.136)	(0.179)
Past violence (log)						0.340***	0.405***	0.387***	0.395***
						(0.080)	(0.096)	(0.089)	(0.093)
Median Wealth Index (st.)						0.068	-0.001	0.081	-0.034
						(0.128)	(0.113)	(0.120)	(0.140)
Observations	129	129	1404	831	258	128	1388	822	256
Fixed Effects	.	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. Column (1) shows the restricted model, without controls and fixed effects. In columns (2) to (5), we control for the number of demobilized rebels per 1000 inhabitants, the log of population size, and the log population density, as well as for the different types of geographic fixed effects. In columns (6) to (8), we further control for past violence and wealth. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.20: The results of Table 4 without outliers

Dependent variable: total episodes of electoral violence

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.759*	4.061***	3.442***	4.223***	1.482*	2.446**	2.578**	2.793**
	(0.952)	(1.092)	(1.033)	(1.296)	(0.896)	(1.088)	(1.116)	(1.231)
Ethnic fractionalization 2012 (st.)	0.063	0.202	0.148	0.229	-0.029	0.015	0.038	0.085
	(0.117)	(0.148)	(0.126)	(0.164)	(0.118)	(0.148)	(0.140)	(0.164)
Political fractionalization 2005 (st.)	0.196**	0.381***	0.340***	0.400***	0.095	0.287***	0.261***	0.301***
	(0.092)	(0.079)	(0.084)	(0.102)	(0.095)	(0.079)	(0.085)	(0.102)
Demob. rebels' polarization (st.)	0.306***	0.436***	0.368***	0.457***	0.487***	0.482***	0.438***	0.518***
	(0.106)	(0.092)	(0.099)	(0.124)	(0.126)	(0.099)	(0.104)	(0.125)
Demob. rebels' fractionalization (st.)	-0.420***	-0.326***	-0.313***	-0.343**	-0.337**	-0.232**	-0.240**	-0.268*
	(0.123)	(0.106)	(0.113)	(0.139)	(0.139)	(0.106)	(0.117)	(0.139)
No. demob. rebels (/1000)	0.099**	0.089	0.073	0.123**	-0.061	-0.006	-0.008	0.005
	(0.050)	(0.062)	(0.056)	(0.057)	(0.052)	(0.052)	(0.054)	(0.053)
Population (log)	1.105***	1.413***	1.385***	1.467***	0.749***	0.880***	0.916***	0.957***
	(0.205)	(0.173)	(0.176)	(0.214)	(0.219)	(0.201)	(0.208)	(0.230)
Population density (log)	0.321***	0.330*	0.293**	0.253	0.348***	0.314**	0.327**	0.305*
	(0.087)	(0.168)	(0.146)	(0.171)	(0.082)	(0.144)	(0.129)	(0.171)
Past violence (log)					0.335***	0.377***	0.363***	0.351***
					(0.079)	(0.087)	(0.087)	(0.089)
Median Wealth Index (st.)					0.098	-0.049	0.037	-0.069
					(0.103)	(0.111)	(0.122)	(0.147)
Observations	122	1318	780	245	122	1348	798	245
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.21: Robustness to spatial dependence, without controlling for past violence and wealth

	Negative binomial				(Spatial) linear regressions								
	Benchmark	Polynomial coord.	Spatial lag violence	Spatial lag coord.	Benchmark OLS	WM neighbor Lag	WM neighbor Error	WM coord. Lag	WM coord. Error	Conley 5km	Conley 5km	Conley 10km	Conley 10km
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
main													
Hutu share 2012	1.765* (1.026)	2.246 (1.401)	1.840* (1.027)	1.777* (1.032)	0.858 (0.894)	0.869 (0.859)	0.880 (0.954)	0.916 (0.881)	0.879 (0.865)	0.858 (0.816)	0.858 (0.778)	0.858 (0.816)	0.858 (0.778)
Ethnic fractionalization 2012 (st.)	0.044 (0.138)	0.145 (0.151)	0.049 (0.138)	0.045 (0.138)	0.072 (0.116)	0.073 (0.112)	0.074 (0.114)	0.078 (0.113)	0.075 (0.112)	0.072 (0.101)	0.072 (0.091)	0.072 (0.101)	0.072 (0.091)
Political fractionalization 2005 (st.)	0.142 (0.103)	0.181 (0.117)	0.119 (0.107)	0.142 (0.102)	0.068 (0.079)	0.064 (0.076)	0.072 (0.088)	0.066 (0.077)	0.067 (0.077)	0.068 (0.068)	0.250** (0.096)	0.068 (0.069)	0.250*** (0.084)
Demob. rebels' polarization (st.)	0.297*** (0.112)	0.322** (0.136)	0.295*** (0.113)	0.297*** (0.112)	0.181* (0.093)	0.181** (0.090)	0.183* (0.098)	0.184** (0.090)	0.184** (0.092)	0.181** (0.089)	0.220** (0.102)	0.181** (0.090)	0.220* (0.114)
Demob. rebels' fractionalization (st.)	-0.340*** (0.130)	-0.206 (0.148)	-0.348*** (0.132)	-0.339*** (0.130)	-0.211** (0.096)	-0.215** (0.094)	-0.209** (0.099)	-0.210** (0.093)	-0.212** (0.092)	-0.211** (0.092)	-0.062 (0.088)	-0.211** (0.100)	-0.062 (0.093)
No. demob. rebels (/1000)	0.033 (0.057)	0.032 (0.061)	0.035 (0.057)	0.033 (0.057)	0.021 (0.045)	0.022 (0.044)	0.021 (0.044)	0.020 (0.043)	0.021 (0.044)	0.021 (0.047)	0.085 (0.063)	0.021 (0.050)	0.085* (0.049)
Population (log)	1.014*** (0.234)	1.294*** (0.225)	0.968*** (0.248)	1.024*** (0.244)	0.824*** (0.210)	0.818*** (0.203)	0.831*** (0.223)	0.848*** (0.204)	0.835*** (0.206)	0.824*** (0.202)	1.201*** (0.186)	0.824*** (0.200)	1.201*** (0.185)
Population density (log)	0.261** (0.104)	0.290* (0.151)	0.280** (0.109)	0.250 (0.163)	0.138 (0.106)	0.142 (0.105)	0.137 (0.104)	0.096 (0.140)	0.122 (0.124)	0.138* (0.075)	-0.042 (0.175)	0.138*** (0.045)	-0.042 (0.154)
Spatial lag log total episodes			-0.155 (0.154)	0.000 (0.000)									
Latitude		0.145 (0.192)											
Latitude²		0.058 (0.085)											
Latitude³		-0.031 (0.053)											
Longitude		-0.389* (0.211)											
Longitude²		-0.178** (0.077)											
Longitude³		0.050 (0.052)											
Observations	128	128	128	128	128	128	128	128	128	128	128	128	128
Fixed Effects	.	.	.	.	.	.	.	.	.	.	Province	.	Province

Negative binomial regressions in columns (1) to (4). Linear regressions in columns (5) to (13). No fixed effects are included in columns (1) to (10) and in column (12). Province fixed effects are included in columns (11) and (13). Results of the benchmark negative binomial regression without fixed effects are presented in column (1). In column (2), we control for geographical coordinates of municipalities and their power. In columns (3) and (4), we control for the lagged dependent variable, which was constructed using two different weighting matrices: one identifying neighboring municipalities (column (3)) and one based on latitude and longitude data (column (4)). The benchmark OLS regression without fixed effects is presented in column (5). In columns (6) to (8), linear spatial lag and spatial error models are estimated using the two weighting matrices. In columns (9) to (13), the standard errors of the OLS model are adjusted for spatial correlation following Conley (1999), for different distance cutoffs. Standard errors are robust. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.22: Robustness to spatial dependence, controlling for past violence and wealth

Column groups — Negative binomial: (1)–(4); (Spatial) linear regressions: (5)–(13). Conley covers (10)–(13) with 5km = (10)(11) and 10km = (12)(13).

main	Benchmark (1)	Polynomial coord. (2)	Spatial lag violence (3)	Spatial lag coord. (4)	Benchmark OLS (5)	WM neighbor Lag (6)	WM neighbor Error (7)	WM coord. Lag (8)	WM coord. Error (9)	Conley 5km (10)	Conley 5km (11)	Conley 10km (12)	Conley 10km (13)
Hutu share 2012	1.253 (0.920)	1.459 (1.401)	1.301 (0.922)	1.250 (0.925)	0.660 (0.780)	0.667 (0.744)	0.657 (0.787)	0.713 (0.758)	0.649 (0.745)	0.660 (0.694)	0.660 (0.619)	0.660 (0.619)	0.660 (0.619)
Ethnic fractionalization 2012 (st.)	-0.020 (0.122)	0.003 (0.161)	-0.017 (0.122)	-0.021 (0.122)	0.014 (0.104)	0.015 (0.100)	0.014 (0.100)	0.020 (0.101)	0.013 (0.099)	0.014 (0.092)	0.014 (0.071)	0.014 (0.071)	0.014 (0.071)
Political fractionalization 2005 (st.)	0.080 (0.099)	0.177 (0.113)	0.067 (0.099)	0.080 (0.098)	0.019 (0.076)	0.016 (0.072)	0.018 (0.078)	0.017 (0.073)	0.020 (0.073)	0.019 (0.068)	0.244** (0.096)	0.019 (0.070)	0.244*** (0.079)
Demob. rebels' polarization (st.)	0.415*** (0.133)	0.347** (0.144)	0.413*** (0.133)	0.415*** (0.133)	0.251** (0.101)	0.251*** (0.097)	0.251*** (0.097)	0.253*** (0.097)	0.250*** (0.098)	0.251*** (0.095)	0.224** (0.098)	0.251** (0.098)	0.224** (0.108)
Demob. rebels' fractionalization (st.)	-0.293** (0.143)	-0.234 (0.151)	-0.298** (0.147)	-0.293** (0.144)	-0.180* (0.101)	-0.182* (0.099)	-0.180* (0.101)	-0.179* (0.097)	-0.179* (0.098)	-0.180* (0.096)	-0.066 (0.084)	-0.180* (0.099)	-0.066 (0.089)
No. demob. rebels (/1000)	-0.061 (0.056)	-0.035 (0.061)	-0.059 (0.056)	-0.061 (0.055)	-0.050 (0.045)	-0.049 (0.044)	-0.050 (0.044)	-0.051 (0.043)	-0.050 (0.044)	-0.050 (0.049)	0.052 (0.063)	-0.050 (0.052)	0.052 (0.051)
Past violence (log)	0.340*** (0.080)	0.359*** (0.104)	0.337*** (0.080)	0.340*** (0.080)	0.265*** (0.064)	0.265*** (0.062)	0.265*** (0.062)	0.265*** (0.061)	0.266*** (0.062)	0.265*** (0.065)	0.221*** (0.076)	0.265*** (0.061)	0.221*** (0.071)
Median Wealth Index (st.)	0.068 (0.128)	0.093 (0.123)	0.072 (0.127)	0.070 (0.203)	0.080 (0.113)	0.082 (0.107)	0.080 (0.107)	0.056 (0.152)	0.084 (0.132)	0.080 (.)	0.011 (0.029)	0.080** (0.036)	0.011 (0.041)
Population (log)	0.771*** (0.227)	0.845*** (0.249)	0.747*** (0.235)	0.769*** (0.239)	0.640*** (0.200)	0.637*** (0.194)	0.640*** (0.193)	0.661*** (0.194)	0.635*** (0.200)	0.640*** (0.190)	0.918*** (0.175)	0.640*** (0.194)	0.918*** (0.182)
Population density (log)	0.304*** (0.102)	0.283** (0.138)	0.314*** (0.106)	0.306** (0.154)	0.173* (0.101)	0.175* (0.099)	0.173* (0.098)	0.135 (0.127)	0.181 (0.111)	0.173* (0.068)	0.007 (0.131)	0.173*** (0.048)	0.007 (0.122)
Spatial lag log total episodes			-0.091 (0.162)	-0.000 (0.000)									
Latitude		0.098 (0.195)											
Latitude²		-0.109 (0.089)											
Latitude³		0.019 (0.053)											
Longitude		-0.035 (0.198)											
Longitude²		-0.115 (0.082)											
Longitude³		0.028 (0.047)											
Observations	128	128	128	128	128	128	128	128	128	128	128	128	128
Fixed Effects	.	.	.	.	.	.	.	.	.	.	Province	.	Province

Negative binomial regressions in columns (1) to (4). Linear regressions in columns (5) to (13). No fixed effects are included in columns (1) to (10) and in column (12). Province fixed effects are included in columns (11) and (13). Results of the benchmark negative binomial regression without fixed effects are presented in column (1). In column (2), we control for geographical coordinates of municipalities and their power. In columns (3) and (4), we control for the lagged dependent variable, which was constructed using two different weighting matrices: one identifying neighboring municipalities (column (3)) and one based on latitude and longitude data (column (4)). The benchmark OLS regression without fixed effects is presented in column (5). In column (6) to (8), linear spatial lag and spatial error models are estimated using the two weighting matrices. In columns (9) to (13), the standard errors of the OLS model are adjusted for spatial correlation following Conley (1999), for different distance cutoffs. Standard errors are robust. * $p < 0.05$, ** $p < 0.05$, *** $p < 0.01$.

Table A.23: Balancing test - regressions of variables of interest on controls, with and without geographic fixed effects

	Demob. polarization				Demob. fractionalization			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No. demob. rebels (/1000)	0.058	-0.034	-0.013	-0.036	0.092**	-0.013	0.006	-0.017
	(0.040)	(0.048)	(0.040)	(0.050)	(0.039)	(0.045)	(0.037)	(0.043)
		[0.702]	[0.428]	[0.732]		[0.187]	[0.112]	[0.199]
Past violence (log)	-0.266***	-0.038	-0.092	-0.010	-0.208***	-0.030	-0.071	-0.002
	(0.076)	(0.066)	(0.068)	(0.078)	(0.075)	(0.066)	(0.063)	(0.073)
		[0.025]	[0.09]	[0.02]		[0.077]	[0.164]	[0.051]
Median Wealth Index (st.)	-0.079	0.132	0.101	0.099	0.090	0.233**	0.205***	0.213**
	(0.103)	(0.121)	(0.079)	(0.120)	(0.072)	(0.092)	(0.063)	(0.094)
		[0.739]	[0.866]	[0.9]		[0.223]	[0.232]	[0.301]
Population (log)	0.234	0.124	0.108	0.066	0.857***	0.410*	0.417*	0.392
	(0.280)	(0.253)	(0.263)	(0.270)	(0.228)	(0.243)	(0.231)	(0.243)
		[0.771]	[0.743]	[0.667]		[0.182]	[0.178]	[0.165]
Population density (log)	0.173*	0.060	0.094	0.030	0.085	0.215*	0.232**	0.205
	(0.100)	(0.151)	(0.112)	(0.175)	(0.079)	(0.113)	(0.095)	(0.132)
		[0.534]	[0.6]	[0.479]		[0.348]	[0.236]	[0.437]
Observations	128	1388	822	256	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

OLS regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are reported in parenthesis; they are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). In brackets, we report the p-value of a t-test assessing if the absolute value of coefficients without and with fixed effects are different . * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.24: Balancing test - regressions of variables of interest on controls, with and without geographic fixed effects

	Hutu share				Ethnic fractionalization				Political fractionalization			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
No. demob. rebels (/1000)	0.007*	0.001	0.003	0.001	-0.119***	-0.074	-0.100***	-0.069	-0.074*	-0.150***	-0.135***	-0.154***
	(0.004)	(0.006)	(0.004)	(0.005)	(0.035)	(0.057)	(0.038)	(0.054)	(0.039)	(0.032)	(0.031)	(0.036)
		[0.407]	[0.481]	[0.351]		[0.502]	[0.714]	[0.439]		[0.134]	[0.223]	[0.134]
Past violence (log)	-0.004	-0.001	-0.002	-0.003	0.151**	0.098	0.126**	0.095	0.064	0.029	0.030	0.037
	(0.007)	(0.007)	(0.006)	(0.008)	(0.075)	(0.069)	(0.060)	(0.068)	(0.080)	(0.075)	(0.067)	(0.071)
		[0.762]	[0.829]	[0.925]		[0.604]	[0.795]	[0.581]		[0.75]	[0.745]	[0.801]
Median Wealth Index (st.)	-0.027***	-0.019	-0.022***	-0.015	-0.199**	-0.190***	-0.202***	-0.168**	0.374***	0.369***	0.357***	0.316***
	(0.009)	(0.012)	(0.008)	(0.012)	(0.080)	(0.056)	(0.045)	(0.069)	(0.102)	(0.106)	(0.075)	(0.119)
		[0.595]	[0.679]	[0.425]		[0.927]	[0.974]	[0.77]		[0.973]	[0.893]	[0.712]
Population (log)	0.091***	0.053**	0.061***	0.049*	-0.764***	-0.404*	-0.481**	-0.352	-0.393*	-0.343	-0.422**	-0.324
	(0.027)	(0.021)	(0.021)	(0.027)	(0.227)	(0.223)	(0.194)	(0.228)	(0.207)	(0.222)	(0.199)	(0.224)
		[0.269]	[0.382]	[0.273]		[0.26]	[0.345]	[0.203]		[0.869]	[0.92]	[0.821]
Population density (log)	-0.040***	-0.028	-0.035**	-0.024	0.161**	-0.144	-0.102	-0.138	0.004	0.097	0.071	0.064
	(0.013)	(0.020)	(0.015)	(0.021)	(0.079)	(0.101)	(0.084)	(0.123)	(0.086)	(0.179)	(0.125)	(0.166)
		[0.616]	[0.802]	[0.518]		[0.895]	[0.61]	[0.875]		[0.64]	[0.66]	[0.749]
Observations	128	1388	822	256	128	1388	822	256	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random	.	All	NFE	Random

OLS regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are reported in parenthesis; they are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). In brackets, we report the p-value of a t-test assessing if the absolute value of coefficients without and with fixed effects are different. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.25: Placebo tests - The results of Table 4 replacing demobilized rebels' polarization by age groups' polarization

	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.325	2.568**	2.588**	2.726*	0.563	1.016	1.314	1.508
	(1.042)	(1.278)	(1.209)	(1.445)	(0.972)	(1.311)	(1.274)	(1.525)
Ethnic fractionalization 2012 (st.)	0.038	0.188	0.168	0.201	-0.023	-0.016	0.001	0.016
	(0.133)	(0.163)	(0.153)	(0.172)	(0.128)	(0.160)	(0.156)	(0.173)
Political fractionalization 2005 (st.)	0.087	0.263***	0.254***	0.296***	0.018	0.224***	0.205**	0.243**
	(0.102)	(0.084)	(0.091)	(0.105)	(0.105)	(0.084)	(0.091)	(0.105)
Age polarization (st.)	0.044	-0.080	-0.059	-0.061	-0.044	-0.098	-0.096	-0.085
	(0.112)	(0.100)	(0.092)	(0.098)	(0.098)	(0.095)	(0.090)	(0.098)
Demob. rebels' fractionalization (st.)	-0.105	0.156*	0.089	0.143	0.021	0.163**	0.100	0.158
	(0.100)	(0.090)	(0.094)	(0.109)	(0.102)	(0.083)	(0.090)	(0.101)
No. demob. rebels (/1000)	0.006	0.034	0.028	0.060	-0.066	-0.031	-0.037	-0.012
	(0.062)	(0.060)	(0.061)	(0.059)	(0.063)	(0.053)	(0.059)	(0.053)
Population (log)	0.836***	1.441***	1.404***	1.413***	0.692**	0.847***	0.874***	0.823***
	(0.288)	(0.268)	(0.253)	(0.272)	(0.272)	(0.283)	(0.266)	(0.283)
Population density (log)	0.307***	0.122	0.153	0.065	0.330***	0.153	0.198	0.092
	(0.109)	(0.198)	(0.171)	(0.179)	(0.114)	(0.169)	(0.144)	(0.176)
Past violence (log)					0.290***	0.386***	0.384***	0.376***
					(0.085)	(0.095)	(0.094)	(0.095)
Median Wealth Index (st.)					-0.009	-0.057	0.012	-0.094
					(0.144)	(0.123)	(0.123)	(0.143)
Observations	128	1388	822	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.26: Placebo tests - The results of Table 4 replacing demobilized rebels' polarization by religious polarization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: total episodes of electoral violence							
	Without violence and wealth				With violence and wealth			
Hutu share 2012	1.224	2.825**	2.662**	3.292**	0.681	1.491	1.646	1.898
	(1.006)	(1.247)	(1.170)	(1.446)	(0.929)	(1.171)	(1.165)	(1.379)
Ethnic fractionalization 2012 (st.)	0.029	0.197	0.168	0.248	-0.017	0.013	0.026	0.047
	(0.138)	(0.162)	(0.151)	(0.178)	(0.131)	(0.153)	(0.148)	(0.170)
Political fractionalization 2005 (st.)	0.105	0.270***	0.259***	0.297***	0.046	0.230***	0.206**	0.252**
	(0.111)	(0.083)	(0.090)	(0.103)	(0.109)	(0.083)	(0.090)	(0.105)
Religious polarization (st.)	-0.039	-0.034	-0.057	-0.018	-0.095	-0.023	-0.052	-0.012
	(0.107)	(0.088)	(0.091)	(0.102)	(0.090)	(0.082)	(0.084)	(0.094)
Demob. rebels' fractionalization (st.)	-0.113	0.144	0.074	0.148	-0.004	0.145*	0.080	0.159
	(0.114)	(0.092)	(0.096)	(0.108)	(0.110)	(0.086)	(0.093)	(0.102)
No. demob. rebels (/1000)	0.017	0.029	0.025	0.052	-0.067	-0.036	-0.042	-0.016
	(0.059)	(0.056)	(0.057)	(0.058)	(0.060)	(0.050)	(0.056)	(0.053)
Population (log)	0.906***	1.388***	1.387***	1.389***	0.746***	0.779***	0.839***	0.795***
	(0.278)	(0.238)	(0.235)	(0.267)	(0.269)	(0.245)	(0.246)	(0.275)
Population density (log)	0.298***	0.127	0.159	0.056	0.332***	0.171	0.214	0.120
	(0.102)	(0.208)	(0.174)	(0.189)	(0.115)	(0.165)	(0.143)	(0.175)
Past violence (log)					0.292***	0.383***	0.376***	0.367***
					(0.089)	(0.095)	(0.094)	(0.095)
Median Wealth Index (st.)					0.025	-0.016	0.059	-0.068
					(0.156)	(0.126)	(0.127)	(0.139)
Observations	128	1388	822	258	128	1388	822	256
Fixed Effects	.	All	NFE	Random	.	All	NFE	Random

Negative binomial regressions. No fixed effects are signaled by a dot. "All" refers to "All pairs", "NFE" to Neighborhood Fixed Effects", and "Random" to random pairs. Standard errors are robust and clustered at the level relevant to the fixed effects included in the regression (as described in Section 4.2). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C Supplementary figures

Figure A.1: Correlation matrix between variables of interest
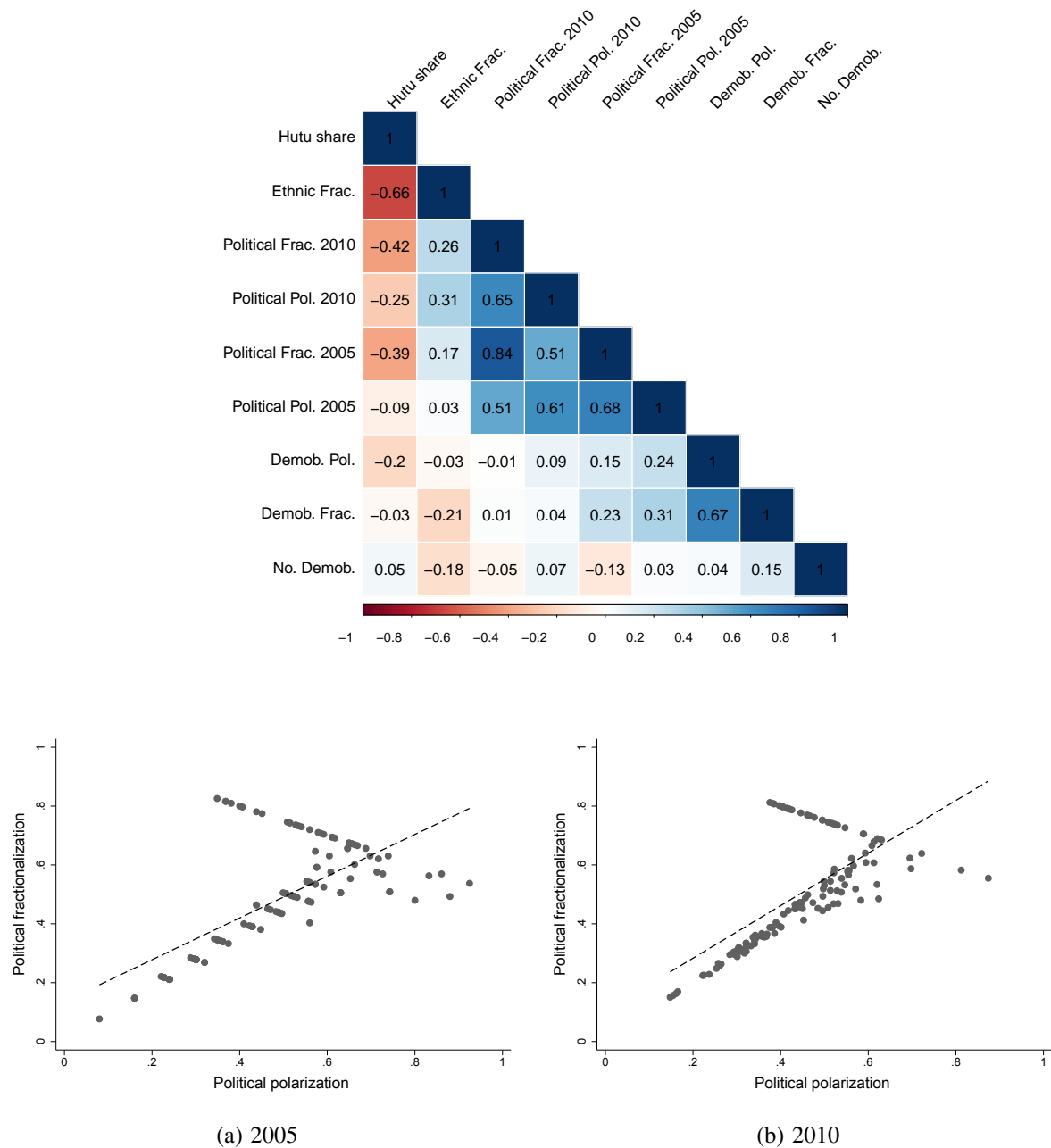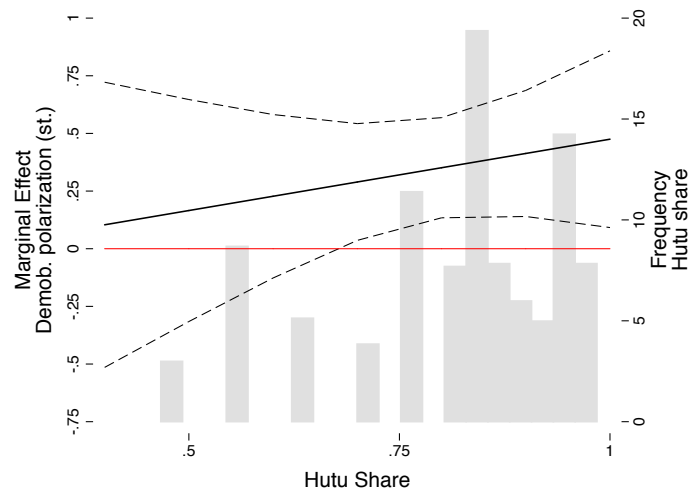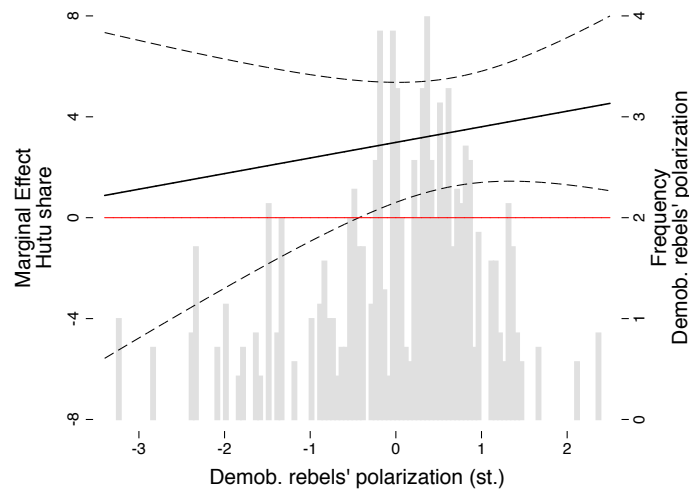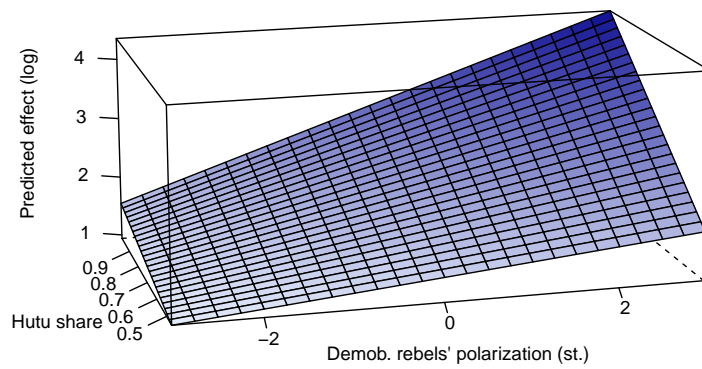

(a) 2005   (b) 2010

Figure A.2: Relationship between political fractionalization and political polarization

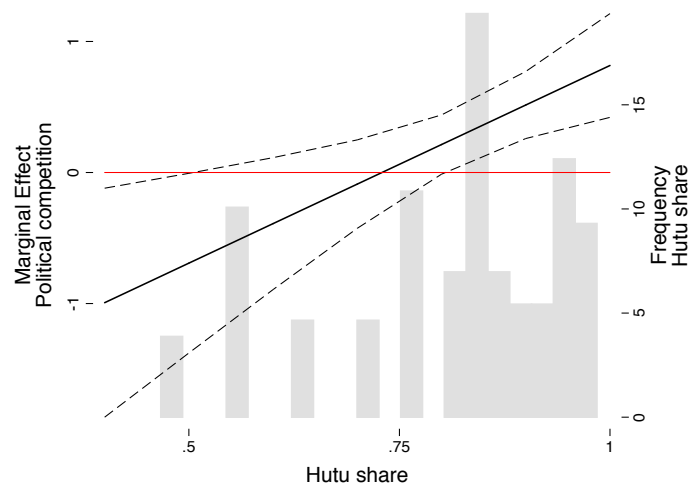(a) Marginal effect of demob. rebels' polarization as a function of Hutu share (95% CI)

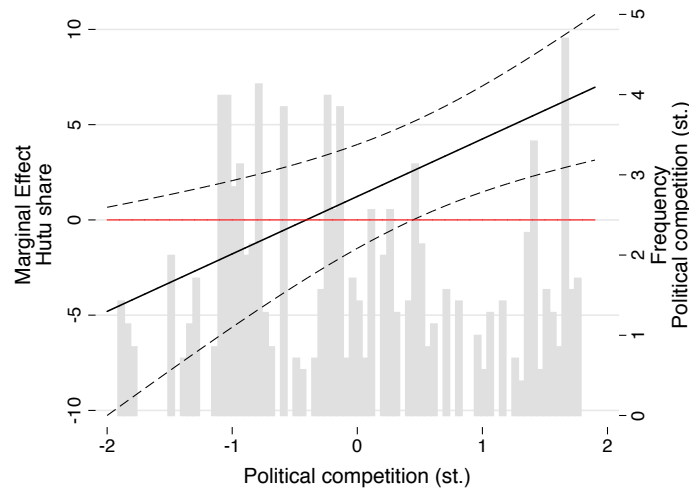(b) Marginal effect of Hutu share as a function of demob. rebels' polarization (95% CI)

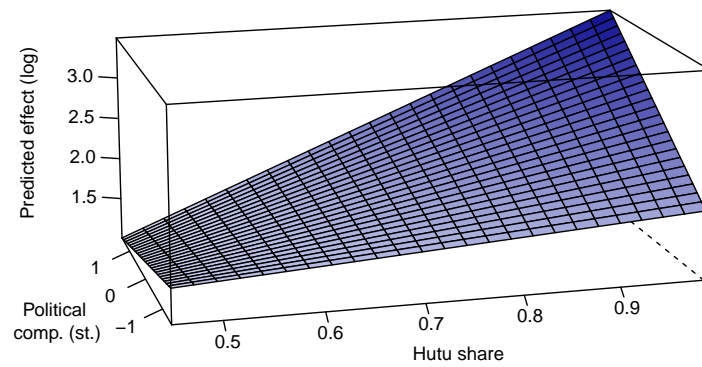(c) Joint predicted effect of Hutu share and demob. rebels' polarization

Figure A.3: Interactions: demob. rebels' polarization and Hutu share

(a) Marginal effect of political competition as a function of Hutu share (95% CI)

(b) Marginal effect of Hutu share as a function of political competition (95% CI)

(c) Joint predicted effect of Hutu share and political competition

Figure A.4: Interactions: Political competition and Hutu share
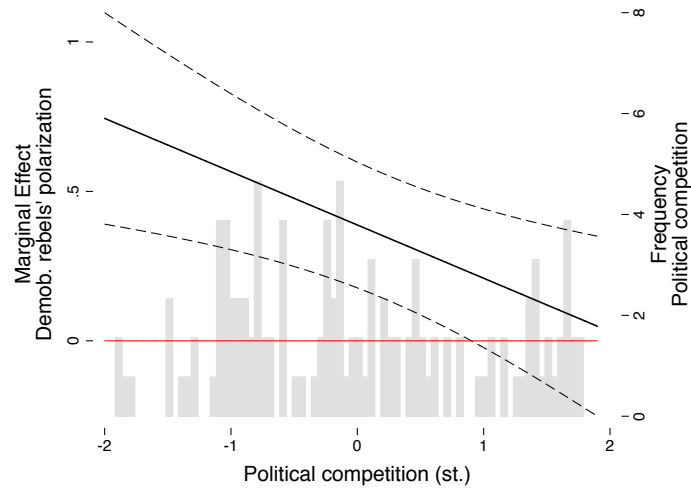
(a) Marginal effect of demob. rebels' polarization as a function of political competition (95% CI)
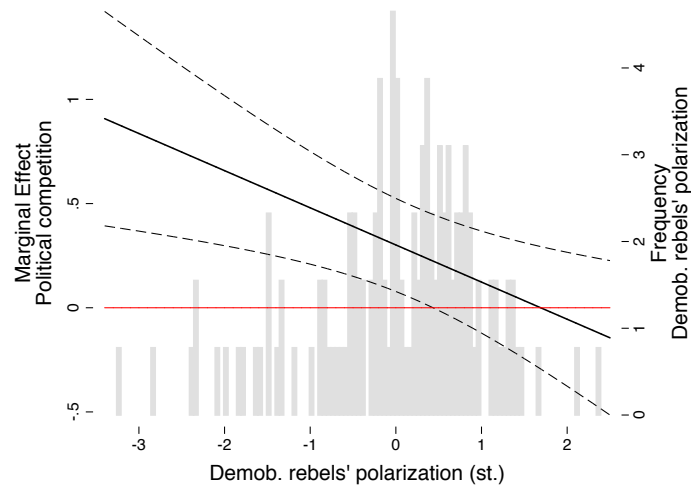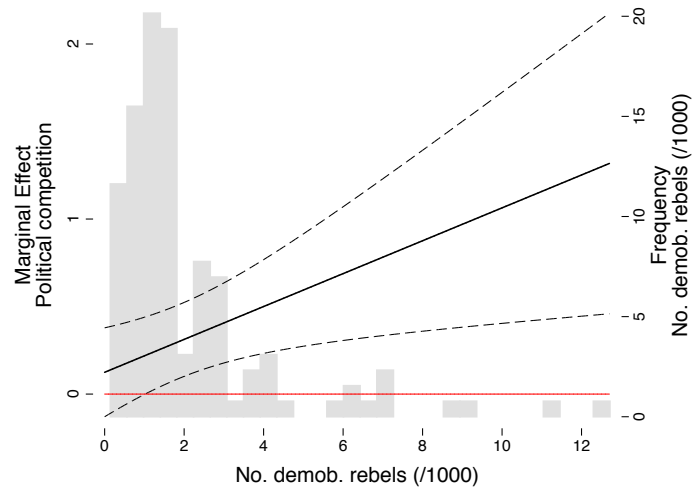

(b) Marginal effect of political competition as a function of demob. rebels' polarization (95% CI)
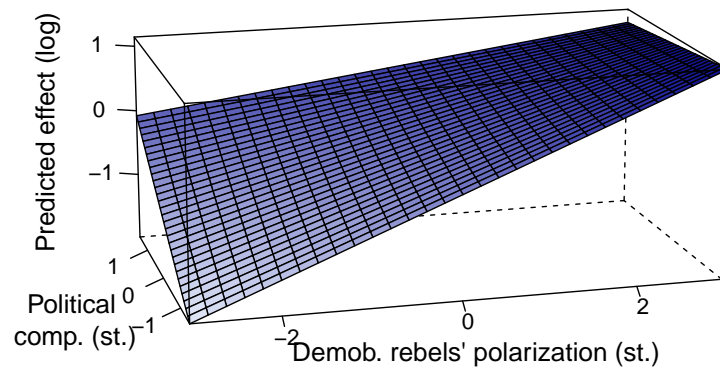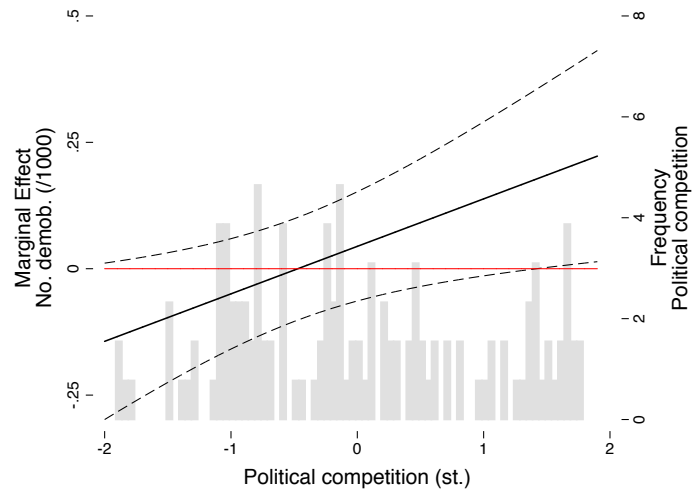

(c) Joint predicted effect of demobilized rebels' polarization and political competition
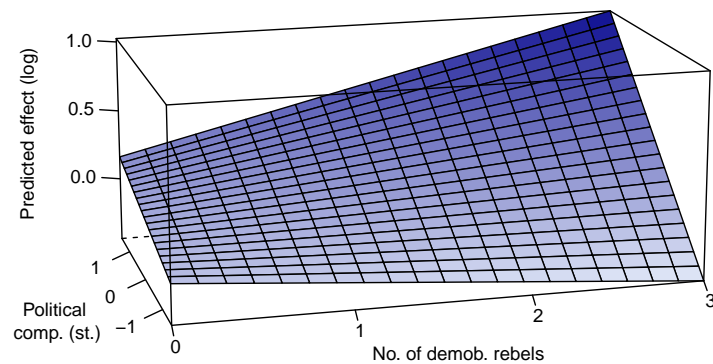
Figure A.5: Interactions: demob. rebels' polarization and political competition

(a) Marginal effect of political competition as a function of the no. of demob. rebels. (95% CI)

(b) Marginal effect of the no. of demob. rebels as a function of political competition (95% CI)

(c) Joint predicted effect of demobilized rebels' polarization and political competition

Figure A.6: Interactions: number of demobilized rebels and political competition