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Fighting for votes: theory and evidence on the causes of electoral violence*

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Abstract

Electoral violence is widespread in developing countries. However, its causes are poorly understood. I present a theoretical model of electoral competition in which electoral violence is more likely to emerge if (1) the electoral bases of leading parties are of similar size, implying that political competition is tight, and (2) polarization between violent supporters of leading parties is high. The relative importance of these two conditions varies with the type of electoral violence (e.g. clashes, intimidation or murders). The predictions of the model are tested and validated using a unique dataset on electoral violence during the 2010 elections in Burundi. I compare the incidence of electoral violence between neighboring municipalities, relying on the fact that neighboring municipalities more likely to have similar unobserved characteristics. In line with the theoretical model, I find that a one-standard-deviation increase in political competition induces a 35 to 66% increase in the predicted number of violent episodes. A one-standard-deviation increase in ex-rebels' polarization induces a 40 to 50% increase in the predicted number of violent episodes.

Keywords: Electoral violence, Polarization, Political competition, Demobilization, Burundi

JEL Classification: D74, H56, O12, O17, O55

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1 Introduction

> *"Democratic institutions and processes channel competing interests into arenas of discourse and provide means of compromise which can be respected by all participants in debates, thereby minimizing the risk that differences or disputes will erupt into armed conflict or confrontation."*
>
> Former U.N. Secretary-General Boutros Boutros-Ghali (1996)

Democratization has been widely promoted in developing countries after the end of the Cold War. As exemplified by Boutros-Ghali's quote, the prevailing idea has been that by increasing the legitimacy and the accountability of elected representatives, elections would de facto improve governance and thereby reduce the risk of conflict. Yet in spite of expectations, a majority of elections organized in recent democracies have been marked by violence (Bishop and Hoeffler 2014), with dramatic consequences for civilian populations and their economies (Dupas and Robinson 2012, 2010; Chauvet and Collier 2009; Collier and Hoeffler 2015). More than a thousand people died and over 500,000 people were forced to flee their homes following political and ethnic violence which sparked in the aftermath of the 2007 presidential elections in Kenya. In 2010, the presidential election in Ivory Coast also resulted in political turmoil, leading to over 1,000 deaths and 500,000 displaced. More recently, the candidacy of the Burundian president Pierre Nkurunziza for a third term triggered a violent political crisis in Burundi, resulting in hundreds of deaths and about 200,000 refugees who fled to neighboring Tanzania, Rwanda and Democratic Republic of Congo.

While electoral violence is pervasive, its causes and dynamics remain poorly understood. In this paper, I propose the first theoretical model of electoral violence which is tested and validated empirically. I study if electoral violence is driven by (i) political competition (ii) the distribution of violent supporters and (iii) the ethnic distribution.

In the theoretical model, two parties can engage in ideological campaigning and in electoral violence to gain a supplementary share of votes, or deter opponents from voting. The new theoretical model introduces five key innovations to the benchmark models of electoral violence proposed by Skaperdas and Grofman (1995), Chaturvedi (2005) and Collier and Vicente (2012). First, electoral competition takes the form of a *winner-takes-all* contest between the two parties. The second innovation is that the game is sequential. Parties first choose whether to participate to the electoral campaign. If they participate to the electoral campaign, parties then choose whether they engage in electoral violence. Third, the new model relaxes the assumption that the electoral gain from violence is necessarily proportional to the initial support of the rival party. In the new model, the electoral gain from violence is constant; I discuss how results change when this assumption is relaxed. Fourth, the new model takes into account the fact that electoral violence is

costly, both for the author and the victim of electoral violence, and that the outcome of violence is uncertain: the likelihood that a violent move is successful depends on the initial capacity of parties to engage in violence and on the type of violence. The violent capacity of parties is modeled as their number of violent supporters. The last innovation relates to the types of violent events analyzed. The model introduces the distinction between unilateral and bilateral acts of violence. On the one hand, one party alone can decide to engage in unilateral violence against its rival (e.g. murder of an opponent). In this case, the probability that a violent move is successful depends only on the violent capacity of the violent party, that is, on its own number of violent supporters. On the other hand, bilateral violence occurs when both parties engage in violent campaigning (e.g. clashes between rival parties). In this case, only one of the parties is successful and the probability that a party wins the violent contest increases with its violent capacity and decreases with the violent capacity of the rival.

The new model predicts that electoral violence is more likely to emerge if two conditions are jointly satisfied. First, political competition should be tight, such that violent parties expect to win the election if their violent move is successful. Second, parties only engage in violence if the likelihood to be successful is sufficiently high. A key implication is that bilateral violence is more likely to emerge if parties have similar violent capacities, such that both parties have a reasonable chance to win the violent contest. By contrast, electoral violence is unlikely in the presence of parties with very different violent capacities. This important and perhaps counter-intuitive finding follows from the two-stages structure of electoral competition: weak parties refrain from campaigning if they fear the harmful consequences of violent acts made by a much stronger rival party. Therefore, a necessary condition for the occurrence of electoral violence is that rival parties should be characterized by similar violent capacities. This condition is equivalent to saying that polarization between violent supporters should be high. For unilateral violence, the relationship between electoral violence and polarization between violent supporters is more tenuous, and it weakens with the cost of violence. Importantly, these results contrasts with the predictions of Skaperdas and Grofman (1995), Chaturvedi (2005) and Collier and Vicente (2012), who conclude that violence incidence is the highest in the presence of a party which is electorally weak, but which is strong in terms of violent capacity[1].

The predictions of the new theoretical model are tested using a unique dataset on electoral violence from the 2010 Burundian electoral process. The 2010 Burundian elections

[1]From a different but complementary perspective, the models of Wantchekon (1999) and Ellman and Wantchekon (2000) show that voters may support a violence-prone party to avoid the risk of post-electoral disruption. Robinson and Torvik (2009) theoretically shows that swing voters, rather than ideological voters, can be targeted by electoral violence if their voting preferences are highly dispersed, making it expensive to buy their votes. These later models bring crucial insights, yet they do not explain the causes of electoral violence; rather, they explain who is most at risk to be targeted by violence, and predict that voters may prevent electoral turmoil through strategic voting.

are of particular interest as they were the first elections to be organized after a 16-year long civil conflict[2]. Demobilized factions which were transformed into political parties at the end of the civil war were competing against parties of civilians in a context of widespread insecurity and extreme uncertainty about electoral outcomes. The empirical analysis examines whether electoral violence at the municipal level is correlated with political competition, polarization between violent supporters, and various control variables including ethnic fractionalization. In order to minimize the risk of omitted variable bias, the empirical analysis exploits differences in the intensity of electoral violence between neighboring municipalities, relying on the assumption that neighboring municipalities are more likely to share similar unobserved characteristics (Goldstein and Udry 2008; Naidu 2012; Huillery 2009). The present analysis extends the empirical work of Colombo et al. (2014) by distinguishing different types of electoral violence to compare the causes of bilateral violence (clashes) and unilateral violence (destruction, intimidation, assault and murders). This paper also relates to the empirical works of Dercon and Gutiérrez-Romero (2012) on the 2007 electoral process in Kenya, and of Collier and Vicente (2013) and Fafchamps and Vicente (2013) on an anti-violence community campaign in Nigeria. While providing interesting results, this novel yet still scarce empirical literature lacks theoretical foundation; it does not study the role played by political competition and by the distribution of violent supporters.

In line with the model, empirical results show, first, that political competition between parties is a key driver of electoral violence. A one-standard-deviation increase in political competition induces a 35 to 66% increase in the predicted number of violent episodes. This effect is stronger in the presence of numerous violent supporters. The second major finding is that violence is more likely to emerge in places where polarization between ex-rebel groups is high, that is, where parties have a similar potential for violence. A one-standard-deviation increase in ex-rebels' polarization induces a 40 to 50% increase in the predicted number of violent episodes. The latter effect is especially strong for bilateral violence. These findings are consistent with the model and robust to numerous specifications.

Interestingly, ethnic fractionalization is not correlated with the incidence of electoral violence in this case-study. This result contrasts with the common view that ethnic grievances usually play a key role in violence. Therefore, this study also contributes to the lively academic debate on the link between violence and the ethnic distribution by showing that it is the fractionalization between political parties and the polarization between demobilized rebels that favored electoral violence in Burundi in 2010, and not the much-studied indexes of ethnic fractionalization and polarization (see e.g. Esteban

[2]Elections were also organized in 2005 while a rebel group, the Palipehutu-FNL, was still fighting the government of transition.

et al. (2012), Esteban and Ray (2011), Garcia-Montalvo and Reynal-Querol (2005b), and Easterly and Levine (1997)). This paper also adds to the conflict trap literature (Blattman and Miguel 2010; Collier et al. 2003), by showing that the transformation of rebel groups into political parties may foster violence in post-war democracies. More generally, this study contributes to the literature on democracy and violence (Besley and Persson 2011; Collier and Rohner 2008).

The paper is organized as follows. The next section critically reviews the theoretical literature on the causes of electoral violence. Section 2 then introduces the new theoretical model, which is empirically tested and validated in section 3. Section 4 concludes.

2 Theoretical model

2.1 Set-up

Two parties, denoted by subscripts 1 and 2, compete for elections. Election is a *winner-takes-all* contest[3]. Winning the election brings a "payoff" B to the wining party, which is not restricted to some narrow monetary amount, but also includes non-economic returns such as political hegemony and prestige. The population is divided in groups depending on their initial support for parties before the electoral campaign. A share h_1 of the population (resp. h_2) is violent or *hard-core* supporters for party 1 (resp. 2). The rest, a share v_u of the population, is undecided and their voting choice depends on the campaign, with $h_1 + h_2 + v_u = 1$. The game is sequential.

In the first stage, parties can engage in ideological campaigning. Parties compete in ideological campaigning to convince undecided voters. If only one party engages in ideological campaigning, meaning that its rival does not compete for the elections, it gets all votes. If both parties engage in ideological campaigning, they gather a share $v_i = h_i + P(h_i, h_j, v_u...)$ of votes, with $(i, j) \in \{(1, 2), (2, 1)\}$. For the purpose of our analysis, I do not need to define the properties and the functional form of the function $P(h_i, h_j, v_u...)$. This function can be very general. It can depend on the number of violent supporters in each group (it does not have to) and on many other factors. What is only needed is the outcome of the ideological campaign, that is, the shares of votes v_1 and v_2.

In the second stage, parties can engage in conflictual campaigning. Engaging in conflictual campaigning induces a fixed cost D, for example in terms of resources or possible sanction[4]. A successful violent move gives its author a supplementary share δ of

[3]This assumption is consistent with the recent literature on African politics, see e.g. Mueller (2011), Baker et al. (2015) or Bratton et al. (2012).

[4]D is expected to be relatively low when institutions are weak. In contrast, D will be high in the presence of strong institutions, implying that violence is never an optimal strategy.

votes[5]. To define when a successful violent move is successful, I distinguish two types of electoral misconducts: bilateral and unilateral types of violence.

For bilateral violence to emerge, both parties should make a violent move. An example of bilateral violence involves clashes between parties. In this case, a conflictual contest occurs and the party i has a probability $Q(h_i, h_j)$ of wining the contest, with $Q(h_i, h_j) = 1-Q(h_j, h_i)$. In the case of a clash, it is intuitive that the likelihood that the party i wins a contest is increasing the number of its violent supporters h_i and decreasing in the number of its rivals' violent supporters. I therefore assume that $Q(h_i, h_j)$ is increasing in h_i and decreasing in h_j. In line with the mechanism proposed by Ellman and Wantchekon (2000), a conflictual contest induces transfer of δ votes from the losing party to the winning party and induces a loss C to the loser. The cost C includes for example the cost of humiliation or physical damage. If only one party makes a violent move, it also gains a share δ of votes.

Unilateral violence emerges even if only one party makes a violent move. Examples of unilateral violence include murders of opponents or intimidation. For this type of violence, the probability that the party i succeeds in its violent move only depends on its own number of violent supporters $q(h_i)$. It is intuitive to assume that $q(h_i)$ is strongly increasing in h_i for intimidation, but almost constant for murders. The sum of probabilities $q(h_1) + q(h_2)$ can differ from one. Facing a successful violent move induces a cost C and a transfer of votes δ from the victim to the violent party.

2.2 Solution

Bilateral violence The dynamic game is solved by backward induction, separately for bilateral and unilateral violence. For bilateral violence, I obtain the following proposition.

Proposition 1. *Electoral violence is the unique sub-game perfect Nash Equilibrium if political competition and competition between violent supporters are high such that the following two conditions are satisfied:*

$$\begin{cases} |v_1 - v_2| < 2\delta & (1) \\ \dfrac{C+D}{B+C} < Q(h_1, h_2) < 1 - \dfrac{C+D}{B+C}. & (2) \end{cases}$$

If these conditions are satisfied, engaging in violence is a dominant strategy for the electorally weakest party.

Proof. The proof is presented in appendix A. □

[5]The same results are obtained with the alternative assumption that a 2δ voters of the rival party are deterred from voting.

Condition (1) states that each group expects to win the election if it wins the conflictual contest. Indeed, it only makes sense to engage in violence if it can bring about the victory. This should be true for both parties. This condition is satisfied if the election is close or if the expected voting gain for the winner, δ, is high.

The second condition states that the probability that the party 1 wins the violent contest should be intermediate for bilateral violence to emerge. As $Q(h_1, h_2) = 1 - Q(h_2, h_1)$, this means that the same should be true for the probability that the party 2 wins. As the probability for a party to win a contest is increasing in its own number of violent supporters and decreasing in the rival's number of violent supporters, bilateral violence only emerges if both parties have a similar number of violent supporters; this number can be low or high. This key prediction follows from the two-stages structure of electoral competition and the assumptions that violence is costly both for authors and for victims. As a result, parties refrain from campaigning if they fear the harmful consequences of violent acts made by a much stronger party. In other words, bilateral violence only emerges in the presence of parties with similar violent capacities.

This equilibrium is illustrated in figure 1(a), in which the probability $Q(h_i, h_j)$ is modeled as a Tullock contest success function: $Q(h_i, h_j) = h_i/(h_i + h_j)$. It illustrates that bilateral violence only emerges if both parties have a similar number of violent supporters, implying that they both have a decent chance to win the violent contest.

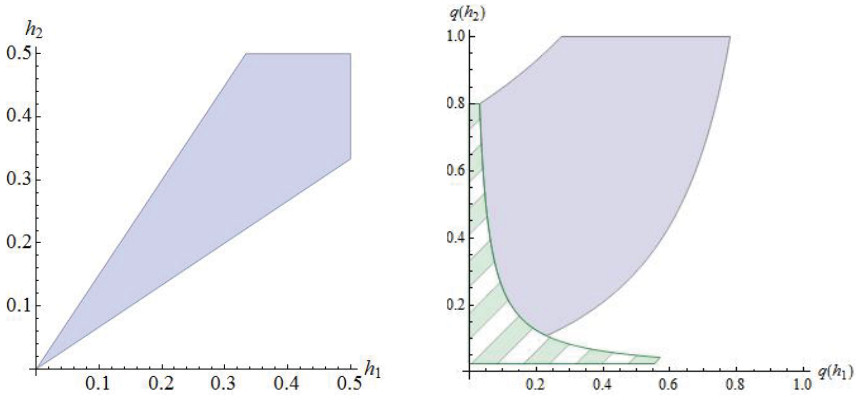
Said differently, figure 1(a) shows that bilateral violence emerges only if polarization between violent supporters is high. Consider a simple case where $Q(h_i, h_j)$ takes the form of a Tullock contest success function $Q(h_i, h_j) = h_i/(h_i + h_j) = \pi_i = 1 - \pi_j$ where π_i and π_j are the share of violent supporters associated with parties i and j respectively. Inequality (2) is then equivalent to:

$$\begin{aligned} &\pi_i \left| \frac{0.5 - \pi_i}{0.5} \right| + (1 - p_i) \left| \frac{0.5 - \pi_i}{0.5} \right| < 1 - 2\frac{C + D}{B + C} \\ &\Leftrightarrow P_S \equiv 1 - \sum_{k=1}^{N} \pi_k \left| \frac{0.5 - \pi_k}{0.5} \right| > 2\frac{C + D}{B + C} \end{aligned} \tag{3}$$

Interestingly, the left-hand side of inequality (3), denoted P_S, is very similar to the polarization index RQ proposed by Garcia-Montalvo and Reynal-Querol (2005b):

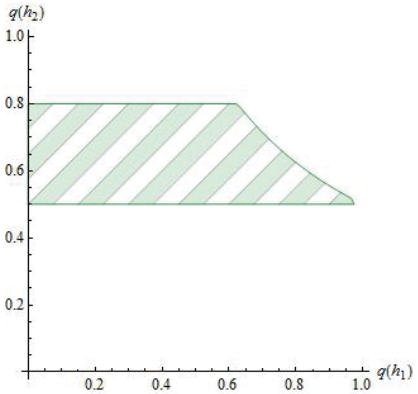
$$RQ = 1 - \sum_{k=1}^{N} \pi_k \left(\frac{0.5 - \pi_k}{0.5}\right)^2. \tag{4}$$

These two indicators are depicted on figure 2 as a function of the number of parties



(a) Bilateral violence

(b) Unilateral violence - low D



(c) Unilateral violence - high D

Figure 1: Electoral violence as a function of violent supporters distribution (B=4, C=1, D=1, low D = 0.1, high D = 2). The blue plain area depicts combinations of h_1 and h_2 such that both parties engage in violence. Only the weakest party in terms of violent capacity engages in violence in the green hatched area.

N with the same number of violent supporters. For the sake of comparison, the index of fractionalization is also depicted:

$$FRAC = \sum_{k=1}^{N} (1 - \pi_k)\, \pi_k. \tag{5}$$

It shows that the indexes P_S and RQ are both close to 1 when $N = 2$ and close to 0 when N approaches 1 and when N increases to infinity. Both indicators are measures polarization between violent supporters of parties. The only difference between these indexes of polarization is that the index proposed by Garcia-Montalvo and Reynal-Querol (2005b) is less sensitive to departures from the maximum in $N = 2$.

Unilateral violence The analysis for unilateral violence is slightly more complicated because this type of violence can emerge if only one party or if both parties have the incentive to engage in violence. These cases should be distinguished when solving the model. Without loss of generality, let us assume that $v_1 > v_2$. The following proposition

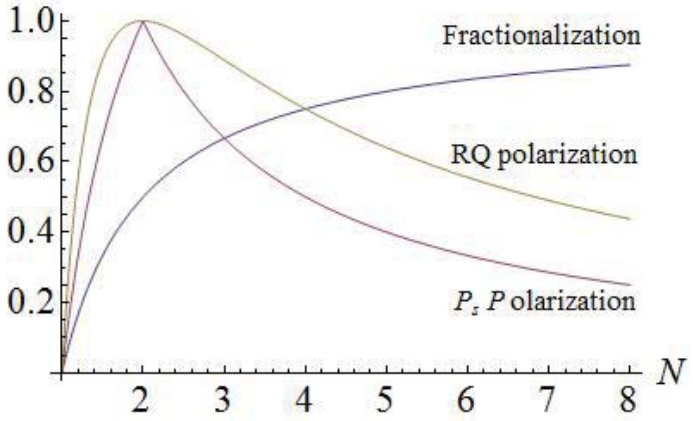


Figure 2: Indexes of fractionalization $FRAC$, polarization RQ from (3), and polarization P_S from inequality (3).

characterizes the sub-game perfect Nash Equilibrium of the game.

Proposition 2. *Both parties engage in unilateral violence if:*

$$\begin{cases} 0.5 < v_1 < 0.5 + \delta & (6) \\ Bq(h_1)q(h_2) > D & (7) \\ B - D - q(h_2)C > B(1 - q(h_1))q(h_2) > D + q(h_1)C & (8) \end{cases}$$

Only the electorally weakest party (party 2) engages in unilateral violence if:

$$\begin{cases} 0.5 < v_1 < 0.5 + \delta & (9) \\ B/(B + C) > q(h_2) > D/B > q(h_1)q(h_2) & (10) \end{cases}$$

Proof. The proof is presented in appendix A. □

The set of conditions (6) to (8) are jointly satisfied if $q(h_1)$ and $q(h_2)$ are similar and high and if D is low. If D is high, condition 8 is never satisfied. In other words, both parties engage in unilateral violence if their chances of making a successful violent move are even and if the cost of engaging in violence is low. The conditions (9) and (10) are jointly satisfied if $q(h_2)$ is intermediate and $q(h_1)$ is low. In this case, only the electorally weakest party engages in unilateral violence. In contrast, the electorally strongest party never engages alone in unilateral violence as it does not need violence to win the election.

These conditions are illustrated graphically on figures 1(b) (low D) and 1(c) (high D). The (6) to (8) delimit the blue area, that is, the pairs $(q(h_1), q(h_2))$ for which both parties engage in unilateral violence. The green hatched area is delimited by conditions (9) and (10) and defines the set of pairs $(q(h_1), q(h_2))$ for which only party 2 engages in unilateral violence. If the cost of violence is low and if the probability of making a

successful violent move is an increasing function of the numbers of violent supporters, as for intimidation or assaults for example, unilateral violence emerges when polarization between violent supporters is intermediate (Figure 1(b)). Nevertheless, the correlation between electoral violence and violent supporters' polarization is lower than for bilateral violence. If the cost of violence is high or if the probability of making a successful violent move is not increasing in the numbers of violent supporters, as for murders for example, there is no correlation between unilateral violence and violent supporters' polarization (figure 1(c)). In this latter case, the electorally weakest party - party 2 here - engages in unilateral violence if $q(h_2)$ is intermediate.

2.3 Extension to $N > 2$ parties

This section examines how propositions 1 and 2 are affected if the model is extended to N parties. As explained by Esteban and Ray (1999), "*in general, the conflict distribution relationship is nonlinear and surprisingly complex*", implying that simplifying assumptions are usually needed to solve models with $N > 2$ players (Garcia-Montalvo and Reynal-Querol 2005a). With these limitations in mind, this section discusses the simpler case of bilateral violence, sticking to the same hypotheses as the $N = 2$ case as far as possible for the sake of comparison. It examines in turn how conditions (1) and (2) are changed in the presence of more than two parties.

If bilateral violence emerges, the winning party gets δ more votes, while all other parties lose δ votes[6]. The probability that party i wins a violent contest is determined by a function $Q(h_i, \sum_{j\in\Omega} h_j)$ where Ω is the set of other parties choosing to engage in violence. This probability is increasing in h_i and decreasing in h_j $\forall j \in \Omega$. An example of functional form is the Tullock contest success function $Q(h_i, h_j) = h_i/(h_i + \sum_{j\in\Omega} h_j)$.

As before, party i only engages in violence if (1) it expects to win the election in case of successful violent contest, that is, if $v_i + \delta > v_j - \delta$ $\forall j$ and (2) it expects to lose the election if it does not respond to violence, that is, if $\exists j$ $v_i - \delta < v_j + \delta$. A necessary condition for violence to emerge is: $\exists i, j$ such $|v_i - v_j| < 2\delta$ and $v_k + \delta > v_l - \delta$ for $k = i, j$ and $\forall l$. In words, political competition should be tight between parties which engage in violence. The higher the number of parties for which this condition is satisfied, the higher the likelihood that at least two parties want to engage in violence. Therefore, political competition is expected to be best captured by an index of fractionalization between political parties rather than an indicator of political polarization.

Condition (2) is modified in the presence of multiple parties. Without loss of gener-

[6]The total number of votes is then lower than 1 if $N > 2$, which is consistent with the hypothesis that some voters abstain from voting when elections turn violent (Chaturvedi 2005; Collier and Vicente 2012).

ality, let us assume $v_i > v_j \forall j$. In this case, violence is a dominant strategy for player j if $BQ(h_j, \sum_{k\in\Omega} h_k) - C(1 - Q(h_j, \sum_{k\in\Omega} h_k)) - D > 0$. The left-hand side of this inequality is a decreasing function of the number of parties which decide to engage in violence. The party i reacts by also engaging in violence if $BQ(h_i, \sum_{k\in\Omega} h_k) - C(1 - Q(h_i, \sum_{k\in\Omega} h_k)) - D > 0$. There may be many different sets of parties Ω for which at least two parties decide to engage in violence, making this problem complex to solve. Two specific cases will enlighten the main mechanisms at play.

Case 1 Let us follow Garcia-Montalvo and Reynal-Querol (2005a) and consider the simplifying assumptions that parties have the same numbers of violent supporters. In this case, the probability that a party wins the violent contest is given by $1/N$. Bilateral violence is a dominant strategy for parties if: $BQ(h_i, nh_i) - C(1 - Q(h_i, nh_i) - D > 0$. This inequality can be rewritten:

$$1/N > \frac{C + D}{B + C}. \tag{11}$$

The left-hand side of this inequality is a decreasing function of the number of parties, implying that violence is "more likely" to occur in the presence of only two parties of similar size. In this scenario, it is easy to show that inequality (3) is equivalent to (11):

$$\begin{aligned} P_S &\equiv 1 - \sum_{k=1}^{N} \pi_k \left| \frac{0.5 - \pi_k}{0.5} \right| > 2\frac{C + D}{B + C} \\ &\Leftrightarrow 1 - N\left(\frac{1}{N} \left| \frac{0.5 - 1/N}{0.5} \right| \right) > 2\frac{C + D}{B + C} \\ &\Leftrightarrow 1/N > \frac{C + D}{B + C}. \end{aligned}$$

Polarization between violent supporters rather their fractionalization is what triggers bilateral violence.

Case 2 Let us assume that $N > 2$ is fixed, that n parties have a positive a number of violent supporters equal to h_n, and that $N - n$ parties have no violent supporters. In this case, parties with violent supporters have a probability $1/n$ to win a bilateral contest, while parties with no violent supporters have no chance to win. Bilateral violence is a dominant strategy for parties with violent supporters if:

$$1/n > \frac{C+D}{B+C}. \tag{12}$$

As the left-hand side of this inequality is decreasing with n, the incentive to engage in bilateral violence is higher in the presence of fewer groups with violent supporters. Again, what matters is the polarization between violent supporters rather than their fractionalization. It is easy to show that inequality (3) is equivalent to (12) in this scenario.

2.4 Electoral gain from violence: the role of violent supporters

So far, it was assumed that the transfer of a share δ of votes from the loser to the winner of a violent contest was exogenously determined. This does not necessarily have to be the case. Relaxing this assumption and assuming for example that the winner i of a violent contest gets a share of votes which is proportional to v_i or v_j does not change the intuition of conditions (1), (6) and (9): electoral violence emerges if political competition is tight (see mathematical appendix for a formal derivation and illustrations).

A case which is interesting to explore in detail is when the transfer of votes to the winner is proportional to the total number of violent supporters who participate to the violent contest, $h_i + h_j$. This is likely to be the case for clashes for example: while a small fight between a few violent supporters is unlikely to generate a big effect, a large clash between numerous rival supporters is likely exacerbate fears and strategic voting. Condition (1) becomes $|v_i - 1/2| < \delta(h_i + h_j)$ (see mathematical appendix), implying that close political competition and a high number of violent supporters are complementary factors of electoral violence.

In the case of unilateral violence, an interesting scenario is when the transfer of votes is proportional to the number of violent supporters of the parties that make a successful violent move. For example, it is likely that intimidation is more powerful to gain votes if it is performed by numerous supporters. The presence of numerous supporters is therefore expected to soften conditions (6) and (9), thereby favoring the emergence of violence. Without loss of generality, assume that $v_i > v_j$. Condition (6) becomes (see mathematical appendix):

$$0.5 + \max\left(0, \delta(h_j - h_i)\right) < v_i < 0.5 + \delta h_j. \tag{13}$$

If $h_i > h_j$, the set of inequalities (13) is equivalent to $0.5 < v_i < 0.5 + \delta h_j$. This set of conditions becomes less stringent when h_j increases. On the contrary, if $h_j > h_i$,

the set of inequalities (18) is equivalent to $0.5 - \delta h_i < v_i - \delta h_j < 0.5$. In this case, this set of conditions becomes less restrictive when h_i increases. The impact of an increase in h_j is ambiguous and depends on the value of other parameters. However, the set of inequalities is unambiguously less restrictive if h_i and h_j increase by the same magnitude. Condition (9) becomes: $0.5 < v_i < 0.5 + \delta h_j$. This condition becomes less restrictive when h_j increases.

In general, the presence of numerous supporters is therefore expected to favor the emergence of violence, provided other conditions in proposition 2 are satisfied. In conclusion, tight political competition and a high number of violent supporters are complementary factors of unilateral violence when the electoral gain from violence is increasing in the number of supporters of the successful parties.

2.5 Summary of predictions

The predictions of the model are summarized in Table 1. It distinguishes three types of violence.

1. Clashes between parties fall into the bilateral violence category. For this type of violence, the transfer of votes from the loser to the winner of a violent contest is likely to be increasing with the total number of violent supporters. Clashes are therefore expected to take place in situations of close political competition with a high number of violent supporters whose distribution is polarized.

2. Intimidation and assault are unilateral acts of violence for which the cost of committing the act is relatively low. The transfer of votes to the winner is expected to be increasing in the number of violent supporters of the violent parties. The predictions of the model are similar than for clashes, except that the relationship between violence and polarization between supporters is more tenuous. The incidence of this type of violence also increases with political competition and the number of violent supporters.

3. Murders and attempted murders are categorized as unilateral violence with high expected cost to the author. The probability to make a successful violent move is only weakly increasing in the number of violent supporters. The relationship between violence and polarization between rival supporters vanishes for this type of electoral violence. Murders are more likely to occur when political competition is tight.

These predictions contrast with the conclusions of Skaperdas and Grofman (1995), Chaturvedi (2005) and Collier and Vicente (2012). The basic setup of their models is similar. Two parties can engage in violent campaigning or intimidation to deter rival's

	Correlation with:		
	Political Competition	Violent supporters Polarization	Pol. Comp × # supporters
Clashes	+	++	+
Intimidation	+	+	+
Murder	+	0	+
All types	+	+	+

Table 1: Main predictions of the model

supporters from voting. Their models also assume that each party is characterized by a productivity factor of engaging in violence, which can be interpreted as the efficiency of "strong men" Chaturvedi (2005) or "hard-core supporters" Collier and Vicente (2012). Nevertheless, their models reach opposite predictions: they conclude that violence incidence is the highest in the presence of a party which is electorally weak, but which is strong in terms of violent capacity. In other words, violent campaigning is more prevalent when polarization is low both in terms of votes and of violent capacity.

My model incorporates five key innovations explaining these differences. First, my model includes a contest success function for electoral violence, implying that not all violent moves are successful. It also assumes that violence is costly for the author and the victim. In contrast, Chaturvedi (2005) considers that the resources that a party invests in violent campaigning automatically deter a share of rival's voters from voting. Similarly, all soft-base voters abstain from voting in Collier and Vicente (2012) as long as one party engages in intimidation. The cost of intimidation is "set at an arbitrarily low level". The fact that parties are always successful in their violent move is not realistic. For example, attempted murders often fail and clashes between different parties generally result in a winner and a loser. The fact that violence is costly and uncertain in my model implies that parties refrain from violence if they have weak violent capacities, or if they are sure to win or lose the election.

The second innovation comes from the two-stage structure of the game, combined with the assumption that violence is costly for the victim. These assumptions imply that parties withdraw from the election if they expect to lose the election and be harmed by electoral violence. This mechanism explains why violence is unlikely to emerge in the presence of a party with much a stronger violent capacity.

The third innovation is to assume that the pay-off from the election is strongly increasing when a party obtains a majority of votes (e.g. winner-takes-all assumption). Fourth, I also relax the assumption that the gain from violence is necessarily proportional to the initial support of the rival party; this latter assumption indeed implies that electoral violence is more rewarding for parties that are electorally weak, against those

that are electorally strong. My benchmark model makes the alternative assumption that violence aims at attracting a supplementary share of voters which does not depends on rival's initial popularity (or deter them from voting). With these alternative assumptions, violence and intimidation are not strategies of the weak. Rather, violence and intimidation emerge in contexts of high political competition, that is, when the support bases of leading parties are similar in size.

The last innovation relates to the types of violent events analyzed. In particular, because bilateral violence requires the involvement of both parties, it implies that this type of violence only emerges if the above conditions are satisfied for both parties. This reinforces the requirement that parties should be similar both in terms of initial support and violent capacity for bilateral violence to emerge. This requirement is weaker for unilateral violence.

3 Empirical analysis: the 2010 elections in Burundi

In this section, I test and validate the predictions of the model using an original dataset on the 2010 elections in Burundi.

3.1 Historical background

Burundi is a small landlocked country situated in the Great Lakes region in sub-Saharan Africa. This densely populated country has about 10 million inhabitants, among whom 90% lives in rural areas. The Hutu and the Tutsi ethnic groups represent 82% and 17% of the population respectively[7]. According to the World Bank Indicators, the country's GDP per capita was USD 251 in 2012. Burundi is ranked 178 out of 187 countries according to the Human Development Index.

Since its independence from Belgium in 1961, Burundi has been shattered by ethnic-based violence between the Hutu majority and the Tutsi minority. Between 1966 and 1993, a group of Tutsi officers ruled the country and fiercely repressed any Hutu opposition. In 1993, following mounting international pressure, presidential elections were organized and won by the Hutu candidate, Melchior Ndadaye. His efforts to reform the Tutsi-controlled army led to his assassination amidst a failed military coup, after only three months in office. His assassination triggered a series of tit-for-tat massacres between Hutu and Tutsi and ultimately sparked a 16 years-long civil war (Lemarchand 1998; Falch 2009).

[7] Afrobarometer data (2012).

Despite a promising Peace and Reconciliation Agreement signed in Arusha in August 2000, the civil war still dragged on because the two largest Hutu rebel groups, the CNDD-FDD and the FNL-Palipehutu rejected the peace agreement. They continued to fight against the government of transition. In 2003, the CNDD-FDD rebel group signed a peace agreement and turned into a political party. Its combatants were either integrated into the national army, or they benefited from a generous demobilization program. Their leader Pierre Nkurunziza emerged victorious from the 2005 electoral process. It took until December 2008 to get a final agreement signed between the government and the last Hutu rebel group, the FNL-Palipehutu. In turn, the FNL-Palipehutu transformed itself into a political party and its combatants benefited from the a demobilization program (D'Aoust et al. 2013).

Elections were conducted in 2010 in a climate of uncertainty and violence. Five consecutive polls were organized to select municipal, presidential, parliamentary, senatorial and local representatives. At least five parties were thought to have a decent chance to win, among which the parties issued from the former Hutu rebel groups CNDD-FDD and FNL. Main parties in Burundi in 2010 are listed in Table 2, together with their ethnic orientation, their electoral results at the municipal election, and their number of demobilized combatants. As reported by Vandeginste (2011), elections were *"perceived by Burundi's elite as rewarding (and therefore encouraging) a governance system based on strong presidentialism and big man clientelism. Programmatic and ideological differences or debates about specific policy issues hardly played any role"*. Violence has been pervasive throughout the electoral process. In such a context, the CNDD-FDD party of the president Pierre Nkurunzia won the municipal ballot fairly handily with 64% of the votes. The FNL party of Agathon Rwasa received only 14% of the votes. Following their crushing defeat, opposition parties accused the CNDD-FDD of massive fraud and jointly decided to boycott the four following ballots. Left without credible opposition, the incumbent president was re-elected with 95% of the votes.

3.2 Data

The empirical analysis aims to assess how political competition and the distribution of violent supporters affected the incidence of violence at the municipal level during the 2010 elections in Burundi. I rely on different sources of data.

Electoral violence. Data on electoral violence was collected by the International Foundation for Election Systems (IFES) as part of the *Amatora mu Mahoro* - Elections in Peace - project (IFES 2010). This project uses the EVER methodology (Elections Violence Education and Resolution), which has been successful in monitoring and preventing

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%)	-

Table 2: Main parties and former rebel groups in 2010

election violence in over a dozen countries since 2003. About 450 field reporters were extensively trained in election monitoring. From the 26th of April to the 12th of September 2010, they verified and recorded 519 violent incidents[8]. The incidents include cases of physical violence, murder, intimidation, destruction and confrontations between groups. The empirical analysis relies on an aggregate measure of electoral violence as well as on disaggregated indicators for the different types of violent events[9]. Descriptive statistics are presented in Table 3.

Political competition. Following the discussion of section 2.3, political competition is best captured by an index of fractionalization between political parties:

$$\text{Political competition}_m = \sum_{i=1}^{N} (1 - \pi_i)\, \pi_i \tag{14}$$

where π_i is the proportion of people belonging to party i (Alesina et al. 2003). Political fractionalization can be interpreted as the probability that two randomly selected individuals from a given municipality voted for different parties in the municipal elections[10].

[8]Incidents were reported in three steps. First, field reporters had to send text messages in case of incident. The Ushahidi web platform - which was developed by Kenyans in response to the electoral violence that shook the country in 2007/2008 - was used for rapid sharing of information about incidents via SMS. Second, the data collecting agents who received the text messages had to call back the field reporters to gather for more information about the incident. A full report was written for the Ushaidi website. Finally, the field reporter who signaled the incident was requested to submit a detailed report of the incident after a week by filling out a form with specific information regarding to time, location and type of incident. The report Amatora Mu Mahoro (2010) provides more detail on data collection as well as a description of the violent events recorded.

[9]Information on the author(s) is unknown for the majority of violent acts, implying that this information is not used in the empirical analysis.

[10]Political polarization is not included in the regressions because this index is highly multicollinear with political fractionalization. The correlation between these two indicators is 0.79, showing that they capture the same dynamics. As a result, standard errors are increased and some coefficients become

The main indicator of political competition is constructed using the results of the 2010 municipal election. As explained in section 3.3, I also consider an indicator of political competition based on the results of the 2005 elections to mitigate the risk of reverse causality.

Polarization between violent supporters. In the context of Burundi, the role of violent supporters is likely to be played by ex-rebels who were demobilized at the end of the 1993-2009 civil war. Demobilized combatants have been reported to play an active role in the electoral violence: *"Since September 2009, Human Rights Watch has identified acts of violence initiated by supporters of several political parties, most often by members of their youth wings, which include large numbers of ex-combatants from the country's civil war. They are often persuaded—sometimes with party money—to intimidate political rivals with verbal threats, vandalism, and physical assaults."* (Human Rights Watch 2010). The polarization index P_s derived in inequality (3) is built using information on the affiliation of demobilized combatants and the location to which they returned. This information was gathered by the National Commission for Demobilization, Reinsertion and Reintegration[11]:

$$\text{Violent supporters polarization}_m = P_s = 1 - \sum_{i=1}^{N} \left| \frac{0.5 - \pi_i}{0.5} \right| \pi_i \tag{15}$$

where π_i is the proportion of ex-combatants from each demobilized group. For the sake of comparison, regressions also include a measure of the total number of demobilized combatants who returned in the municipalities, as well as an indicator of fractionalization between demobilized groups. Differences between fractionalization and polarization indexes are illustrated in figure 2.

Control variables. The following control variables are included in the regressions to minimize the risk of omitted variable bias: population size and population density constructed with data from the 2008 Burundian census, a median wealth index based the 2010 Demographic and Health Survey (DHS), a measure of past violence relying on ACLED data, and measures of the share of Hutu living in municipalities and ethnic fractionalization based on Afrobarometer data[12].

insignificant at conventional levels if both fractionalization and polarization indexes are included in the regressions (appendix B). High multicollinearity between fractionalization and polarization indexes was also encountered by Alesina et al. (2003).

[11]The National Commission for Demobilization, Reinsertion and Reintegration kindly shared data on the affiliation, grade, location of return, location of origin and date of demobilization of 33,545 demobilized combatants.

[12]The 2012 Burundian Afrobarometer survey is representative at the provincial level. In order to avoid attenuation bias (Hausman 2001), variables related to ethnicity are therefore measured at the provincial level.

	Mean	St. Dev.	N	Min	Max	Total
Dependent variable - electoral violence						
Total	4.02	4.52	129	0	21	519
Clash	0.60	1.26	129	0	9	78
Destruction	0.48	0.82	129	0	4	62
Intimidation	1.05	1.45	129	0	6	136
Assaults	0.28	0.64	129	0	4	36
Murders & Attempts	0.52	1.05	129	0	5	67
Others (Irregularities, detention)	1.09	1.62	129	0	7	140
Political competition						
Political fractionalization 2010	0.50	0.18	129	0.15	0.81	
Political fractionalization 2005	0.48	0.18	129	0.07	0.82	
Demobilized combatants						
Demobilized polarization	0.58	0.18	129	0.00	1.00	
Demobilized fractionalization	0.54	0.16	129	0.00	0.78	
Demobilized per 1000 inhab.	2.13	2.13	129	0.14	12.72	
Ethnic distribution						
Proportion of Hutu	0.81	0.14	129	0.47	0.98	
Ethnic Fractionalization	0.27	0.14	129	0.03	0.50	
Other controls						
Past violence (ACLED data)	20.40	37.68	129	0	357	2,631
Wealth index (normalized)	0.00	1.00	128	-0.44	6.12	
Population size	62,431	26,454	129	17,481	155,005	8,053,574
Population density	1,235	4,174	129	72	33,831	

Table 3: Summary Statistics

3.3 Identification Strategy

The count nature of electoral violence data motivates the application of a count response model. A chi-square goodness-of-fit test strongly rejects the null hypothesis that electoral violence data follow a Poisson distribution (p-value = 0.00), indicating the presence overdispersion in the dependent variable. Consequently, throughout the paper, I employ the negative binomial regression model, which is more appropriate in the case of overdispersion (Hilbe 2011). I estimate the following equation:

$$E(\text{Electoral Violence}_m|X_m) = exp(\beta_0 + \beta_1 \text{Political Comp.}_m + \beta_2 \text{Demob. Polarization}_m + C'_m\delta) \tag{16}$$

The matrix of control variables C_m includes indicators of population size, population density, wealth, number of demobilized combatants, demobilized fractionalization, past

violence, Hutu share and ethnic fractionalization. The model specification is validated by Pearson's dispersion tests and link tests. In line with the predictions of the theoretical model, I test if $\beta_1 > 0$, $\beta_2 > 0$.

In a second step, I complement equation (16) with an interaction variable between the number demobilized combatants and political competition:

$$\begin{aligned} E(\text{Electoral Violence}_m|X_m) = & exp(\beta_0 + \beta_1 \text{Political Comp.}_m + \beta_2 \text{Demob. Polarization}_m \\ & + \beta_3 \#\text{Demob.}_m + \beta_4 \text{Political Comp.}_m \times \#\text{Demob.}_m + C'_m\delta) \end{aligned} \quad (17)$$

I test if $\beta_4 > 0$ to assess whether the electoral gain from violence is increasing with the number of violent supporters.

Cross-sectional regressions are vulnerable to the risk of omitted variable bias. This risk is minimized through a matching exercise between neighboring municipalities (Goldstein and Udry 2008; Naidu 2012; Huillery 2009). A database that identifies each pair of neighboring municipalities by a dummy variable was constructed. These "geographic" fixed effects are then included in the regressions to control for unobserved characteristics that are common among neighboring municipalities. This specification relies on the assumption that unobserved characteristics of neighboring municipalities are likely to be more alike. The 129 municipalities have on average 5.4 neighboring municipalities, implying that the new dataset has 1404 lines[13]. Standard errors are clustered at three levels in order to take into account for the fact that each municipality may have several neighbors and be the neighbor of several other municipalities, implying that observations are duplicated in the dataset[14]. Other matching methods lead to similar results (appendix B).

The main indicator of political competition is constructed using the results of the 2010 municipal election. However, this indicator could be vulnerable to reverse causality bias if political fractionalization was affected by pre-electoral violence in a non-random way. According to the theoretical model, electoral violence should indeed reduce political competition on average[15], implying that the coefficient associated with political fraction-

[13]There are 702 pairs of neighbors (129×5.44).

[14]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.

[15]According to the model, party i will only engage in violence if $0.5 - \delta < v_i < 0.5 + \delta$. After the violence and the transfer of votes δ, the possible range for v_i is $0.5 - 2\delta < v_i < 0.5 + 2\delta$. The latter range of value is larger, indicating that political competition is likely to be reduced on average after electoral violence.

alization in 2010 is expected to be downward biased. The benchmark regression will therefore underestimate the true effect of political competition on electoral violence.

I use two strategies to prevent reverse causality bias. First, political competition in 2010 will be proxied by an indicator of political fractionalization constructed using the results of the 2005 municipal elections[16]. This method could also be biased if the difference between the political competition in 2010 and political competition in 2005 is not a random variable independent of the true regressors (Frost 1979). A few important political parties were created between 2005 and 2010 (Table 2). This may have generated non-random differences in political competition which, in turn, could bias the estimates. This bias is however expected to be small, as the R^2 from a simple regression between political fractionalization in 2010 and political fractionalization in 2005 is as high as 0.70.

The second strategy used to circumvent reverse causality bias is to use political competition in 2005 to instrument for political competition in 2010. A control function approach is used for instrumental variable regressions: residuals from the first stage and their squared value are included in the negative binomial regression of the second stage (Hilbe 2011; Wooldridge 2010). The F-test of a simple regression between these variables is 306, indicating that political competition in 2005 is unlikely to be a weak instrument. The exclusion restriction of the instrumental variable approach is violated if (1) political fractionalization in 2005 is correlated to electoral violence in 2010 through a separate channel than political fractionalization in 2010 and (2) this channel is not captured by control variables and geographical fixed effects. One way to minimize this possibility is to control for the shares of municipal seats obtained by major parties in 2005[17]. As shown in appendix B, this does not significantly change the results, indicating that the exclusion restriction is likely to be satisfied.

Given the limitations of each strategy, I will compare the results of non-instrumented, reduced-form and instrumented regressions. Fortunately, similar results are obtained with the different strategies, suggesting that the endogeneity issues are marginal.

3.4 Empirical results

Results with the aggregate measure of electoral violence are presented in Table 4. The indicator of political competition is based on the results of the 2010 elections in column

[16]The 2010 political fractionalization index is constructed using the percentage of votes obtained by each parties. As this information is not available for 2005, the 2005 political fractionalization indicator is built using the number of municipal seats won by each party out of a total of 25 seats per municipality.

[17]Political fractionalization is a non-linear function of these shares. Controlling for these shares should capture most channels through which electoral results in 2005 affected electoral violence in 2010. For example, it would capture the fact that the CNDD-FDD-led government may have invested less in municipalities in which other parties obtained a high score in 2005, which in turn, may have increased the risk of violence in 2010.

(1) and on the results of the 2005 elections in column (2). In column (3), the indicator of political competition in 2010 is instrumented by political competition in 2005 in order to prevent problems of reverse causality. The Kleibergen-Paap F-statistic for weak identification is equal to 140, indicating that the instrument is strong. In columns (4) to (6), the baseline specification is supplemented with an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

In line with the predictions of the model, the coefficients associated with political competition are positive and significant with and without IV and in the reduced form estimate. A one-standard-deviation increase in political competition induces a 35 to 66% increase in the predicted number of violent episodes[18]. The coefficient measured is larger with the IV strategy, which is in accordance with expectations. As political competition should be reduced on average following electoral violence, reverse causality is expected to bias downward the coefficient associated with political competition in 2010 when this variable is not instrumented.

The coefficients associated with the index of polarization between demobilized rebels are also positive and significant in all specifications. An increase of one standard-deviation in ex-rebels' polarization induces a 40 to 50% increase in the number of episodes of electoral violence. On the contrary, the coefficients associated with the demobilized fractionalization index are small and not significant. In accordance with the model, electoral violence is more likely to emerge in the presence to two groups of violent supporters of similar size.

An interaction term between political competition and the number of demobilized combatants is included in columns (4) to (6) in order to test whether the impact of political competition is reinforced by the presence of numerous ex-combatants. As discussed in section 2, the coefficient associated with the interaction term is expected to be positive if the electoral gain from violence is increasing in the number of violent supporters. As predicted by the theory, the coefficient associated with the interaction term is positive and significant in all specifications. This relationship is represented on Figure 3(c): the predicted number of violent events (in log) is the highest when both political competition and the number of demobilized rebels are high. Figures 3(a) and 3(b) represent the marginal effect of the number of demobilized and of political competition. When one of these two factors is low, an increase in the second factor does not significantly increase the likelihood of electoral violence. However, when political competition or the number of demobilized rebels is high, an increase in the other variable significantly increases the likelihood of electoral violence, indicating that these two variables are complementary.

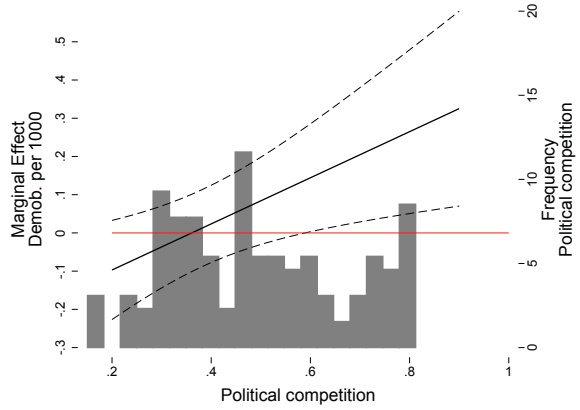
[18]The interpretation in percentage terms is derived from the formula $100 \times (e^{\beta} - 1)$.

Second-stage regressions - dependent variable: aggregated indicator of electoral violence						
	(1)	(2)	(3)	(4)	(5)	(6)
	2010	Reduced	IV	2010	Reduced	IV
Political comp. 2010 (st.)	0.369***		0.506***	0.195		0.360**
	(0.126)		(0.144)	(0.141)		(0.146)
Political comp. 2005 (st.)		0.303***			0.092	
		(0.083)			(0.097)	
Interaction				0.085**		0.109***
				(0.036)		(0.042)
Interaction 2005					0.135***	
					(0.045)	
Demob. polarization (st.)	0.337***	0.393***	0.342***	0.341***	0.407***	0.360***
	(0.102)	(0.107)	(0.103)	(0.105)	(0.108)	(0.107)
Demob. fractionalization (st.)	-0.056	-0.156	-0.065	-0.057	-0.163	-0.080
	(0.105)	(0.114)	(0.105)	(0.108)	(0.118)	(0.109)
Hutu share province, 2012	2.948**	2.769**	3.414***	3.323**	3.329***	4.148***
	(1.331)	(1.197)	(1.248)	(1.307)	(1.115)	(1.171)
Ethnic frac., 2012	0.126	0.139	0.157	0.172	0.221	0.236
	(0.167)	(0.167)	(0.166)	(0.158)	(0.155)	(0.151)
Total no. demob. (/1000)	0.020	0.030	0.041	0.045	0.097	0.081
	(0.062)	(0.063)	(0.062)	(0.054)	(0.063)	(0.058)
Past violence (log)	0.144	0.165*	0.126	0.155	0.179*	0.134
	(0.104)	(0.099)	(0.102)	(0.099)	(0.092)	(0.095)
Median Wealth Index (st.)	-0.118	-0.119	-0.136	-0.104	-0.140	-0.132
	(0.150)	(0.163)	(0.157)	(0.117)	(0.133)	(0.127)
Population (log)	1.076***	1.181***	1.102***	1.018***	1.081***	1.031***
	(0.223)	(0.227)	(0.218)	(0.218)	(0.211)	(0.209)
Population density (log)	0.131	0.161	0.141	0.136	0.256	0.181
	(0.200)	(0.213)	(0.208)	(0.164)	(0.187)	(0.182)
Observations	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	105	105	105	105
Violent ep.	519	519	519	519	519	519

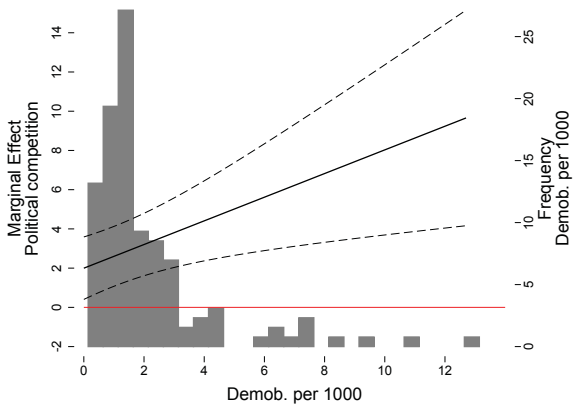
First-stage regressions	Pol. comp. 2010 (st.)	Pol. comp. 2010 (st.)	Inter-action
Political comp. 2005 (st.)	0.609***	0.562***	-0.931***
	(0.056)	(0.063)	(0.196)
Interaction 2005		0.029**	1.117***
		(0.015)	(0.079)
Controls	Yes	Yes	Yes
Kleibergen-Paap F-test	140.466	69.414	69.414

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. In columns (1) and (4), political competition is a fractionalization index built using results of the 2010 municipal elections. In columns (2) and (5), political competition is a fractionalization index built using results of the 2005 municipal elections. In columns (3) and (6), political competition in 2010 is instrumented by political competition in 2005. Columns (4) to (6) include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

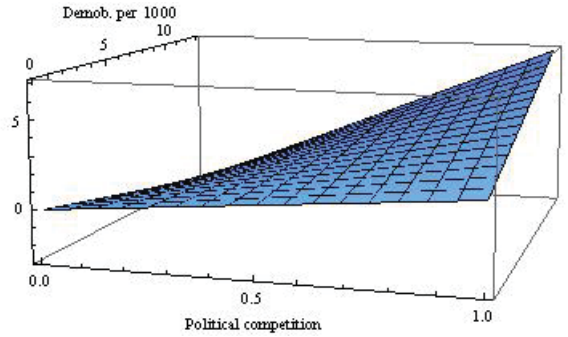
Table 4: Impact of political competition and ex-rebels' polarization on aggregated electoral violence



(a) Marginal effect of the number of demobilized as a function of political competition (95% CI)



(b) Marginal effect of political competition as a function the number of demobilized (95% CI)



(c) Joint predicted effect of ex-rebels' polarization and number of demobilized rebels

Figure 3: Interpretation of interaction term (based on Table 4 column (6))

As regards control variables, Table 4 shows that electoral violence was more likely to emerge in pro-Hutu municipalities. The coefficient associated with ethnic fractionalization is positive but not significantly different from zero. Unlike the 1993 civil conflict, the violence which disrupted the 2010 electoral process has been triggered by intra-Hutu rivalries and not by ethnic grievances between Hutu and Tutsi. In accordance with this finding, Vandeginste (2011) explains that *"this deethnicisation of electoral competition is largely due to the consociational power-sharing arrangement laid down in the Arusha Agreement of 2000 and in the constitution of 18 March 2005. [...] Sharply contrasting with the 1993 general elections, the 2010 elections have only very minimally been affected by ethnic discourse. Electoral competition is no longer primarily a matter of ethnic competition"*. It is not surprising that violence incidence is increasing with the proportion of Hutu. The stakes of the elections are indeed higher for the Hutu, who represent 85% of the population. Their expected gain from engaging in violence is therefore higher. There is weak evidence that electoral violence was more likely to emerge in areas which were already more affected by the civil war. There is also strong evidence that electoral violence incidence increases proportionally with population size.

The theoretical model of section 2 distinguished two types of violent acts: bilateral violence such as clashes between groups, and unilateral violence such as intimidation or murders. For both types of violence, high political competition is a necessary condition for electoral violence. The different predictions for unilateral and bilateral violence relates to the role of violent supporters, which is played by demobilized combatants in the context of Burundi. For bilateral violence, polarization between violent supporters is key to trigger violent contests. For unilateral violence, the importance of polarization between violent supporters diminishes with the cost of engaging in a violent move. The relationship also disappears if the probability to make a successful violent move does not depend on the number of violent supporters.

Table 5 distinguishes five types of violent events: clashes, destruction, intimidation, assaults and murders (or attempted murders). For each type of event, Table 5 reports the results of regressions with and without the interaction between political competition and the number of demobilized combatant. In Table 5, the indicator of political competition in 2010 is instrumented by political competition in 2005. Similar results are obtained without instrumentation or with the reduced form.

Results in columns (3) and (4) confirm that polarization between demobilized combatants is critical for triggering clashes. The coefficient associated with ex-rebels' polarization is positive and significantly different from zero at the 1% threshold. This coefficient is significantly higher than the coefficients associated with ex-rebels' polarization when the aggregated measure of electoral violence is considered, showing that violent supporters' polarization is pivotal for triggering bilateral violence. A one-standard-deviation increase in ex-rebels' polarization results in a 135% increase in the predicted numbers of clashes. The interaction between political competition and the number of demobilized rebels is positive and significant. Clashes between political actors are more likely to occur when political competition is tight and in the presence of numerous demobilized combatants.

Columns (5) and (6) of Table 5 report the results for cases of destruction. In the classification proposed by IFES, destruction mainly refers to the destruction or burning of local party headquarters or flags, as illustrated by the two following examples: *"In Bugorora, a supporter of the CNDD-FDD party burned an emblem of the FNL party"* (6th of May 2010); *"During the night, local offices of CNDD-FDD have been damaged in the municipality of Gishubi, Murangara, Munyinya and Bukwavu. Perpetrators are not yet identified"* (29th of April 2010). The coefficients associated with political competition are positive, but not significant at conventional thresholds. As shown in section 3.5, this coefficient is significant when political competition is not instrumented. The coefficient associated with ex-rebels' polarization is large and significant. A one-standard-deviation increase in ex-rebels' polarization increases the likelihood of destruction by 81%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.506***	0.360**	-0.223	-0.575	0.305	0.228	0.562*	0.383	0.850**	0.429	1.557***	1.069***
	(0.144)	(0.146)	(0.308)	(0.370)	(0.364)	(0.398)	(0.294)	(0.291)	(0.428)	(0.491)	(0.246)	(0.215)
Interaction		0.109***		0.293***		-0.003		0.130**		0.319*		0.406**
		(0.042)		(0.099)		(0.090)		(0.061)		(0.190)		(0.181)
Demob. polarization (st.)	0.342***	0.360***	0.853***	1.028***	0.595**	0.606**	0.478**	0.522**	0.155	0.199	0.008	0.084
	(0.103)	(0.107)	(0.263)	(0.291)	(0.253)	(0.244)	(0.217)	(0.211)	(0.234)	(0.252)	(0.209)	(0.233)
Demob. fractionalization (st.)	-0.065	-0.080	-0.176	-0.273	-0.162	-0.183	-0.108	-0.135	0.140	0.030	0.128	-0.173
	(0.105)	(0.109)	(0.268)	(0.285)	(0.271)	(0.253)	(0.214)	(0.213)	(0.349)	(0.333)	(0.248)	(0.272)
Hutu share province, 2012	3.414***	4.148***	8.287***	10.004***	1.767	1.803	2.440	3.277*	4.173	5.762*	3.873**	6.096***
	(1.248)	(1.171)	(3.213)	(3.028)	(3.118)	(3.179)	(2.129)	(1.982)	(3.480)	(3.262)	(1.899)	(2.216)
Ethnic frac., 2012	0.157	0.236	0.301	0.505*	-0.201	-0.140	0.084	0.197	0.241	0.478	0.298	0.397**
	(0.166)	(0.151)	(0.326)	(0.287)	(0.374)	(0.391)	(0.297)	(0.304)	(0.399)	(0.368)	(0.211)	(0.193)
Total no. demob. (/1000)	0.041	0.081	0.118	0.151	-0.096	-0.113	0.077	0.133	-0.155	-0.136	0.162*	0.095
	(0.062)	(0.058)	(0.106)	(0.099)	(0.089)	(0.100)	(0.081)	(0.085)	(0.120)	(0.131)	(0.086)	(0.111)
Past violence (log)	0.126	0.134	-0.019	0.006	0.146	0.157	0.129	0.148	-0.109	-0.099	0.356***	0.321**
	(0.102)	(0.095)	(0.208)	(0.205)	(0.202)	(0.203)	(0.161)	(0.147)	(0.220)	(0.212)	(0.129)	(0.124)
Median Wealth Index (st.)	-0.136	-0.132	0.133	0.078	-1.674	-1.685	-0.220	-0.195	-0.972***	-0.921***	-0.215	-0.240
	(0.157)	(0.127)	(0.344)	(0.348)	(1.134)	(1.233)	(0.186)	(0.168)	(0.273)	(0.317)	(0.162)	(0.149)
Population (log)	1.102***	1.031***	1.112**	1.058**	1.262***	1.259***	1.229***	1.163***	0.772	0.583	0.552	0.429
	(0.218)	(0.209)	(0.469)	(0.479)	(0.467)	(0.473)	(0.384)	(0.364)	(0.602)	(0.581)	(0.379)	(0.368)
Population density (log)	0.141	0.181	0.294	0.424	0.033	0.087	-0.275	-0.163	1.194***	1.335***	0.253	0.491**
	(0.208)	(0.182)	(0.339)	(0.338)	(0.487)	(0.495)	(0.296)	(0.284)	(0.430)	(0.431)	(0.224)	(0.218)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table 5: Impact of political competition and ex-rebels' polarization on different types of violent events

Results for intimidation are presented in columns (7) and (8). Most events involving intimidation relate to demobilized combatants threatening the civilian population if they do not vote for their party. For example, a field reporter mentioned on the 24 of June that *"demobilized combatants from CNDD-FDD intimidate the population, saying that those who will not vote for presidential elections will be condemned to leave the country or be beheaded"*. Similarly, on the 27th of June, a field reporter explained that *"in the municipality of Gitora, zone Mugera, leaflets attached to a rifle bullet were discovered by the area chief. On it were written words intimidating the population, requiring not to participate to presidential election"*. Intimidation can be regarded as a form of unilateral violence with low fixed cost D (at least compared to murder). As predicted by the model, political competition is positively associated with intimidation, and a high number of demobilized combatants seems to reinforce this relationship. The coefficient associated with ex-rebels' polarization is also positive and significant, but it is lower than for clashes.

Columns (9) and (10) report the results for assaults and physical violence. Columns (11) and (12) focus on attempted murders (successful or not). These types of violence are classified as unilateral violence with high fixed cost D. Even if the total number of violent episodes categorized as "assault" is quite low, results show that assaults emerges as a result of high political competition. There is evidence that the number of demobilized magnifies the effect of political competition. Polarization between demobilized combatants does not seem to play a role for this type of violent act. For murders, the importance of political competition is very large. A one-standard-deviation increase in political competition increase the likelihood of murders and attempted murders by 374%. The coefficient associated with ex-rebels' polarization is low and not significant.

3.5 Robustness

Findings are robust across a variety of specifications. Detailed explanations and results of these robustness exercises are reported in appendix B. Differences between estimation strategies are highlighted.

In brief, similar conclusions are obtained if equation (16) is estimated using Poisson and Negative Binomial estimation methods, with alternative types of geographical fixed effects or controlling for spatial dependence (Conley 1999). However, a few coefficients become insignificant at conventional level if the model is estimated with OLS or without fixed effects and control variables.

Alternative functional forms for political competition and ex-rebels' polarization yield similar results. For example, findings do not change if political competition is proxied by an indicator of political polarization. Following inequality (1), political competition can also be measured by the difference in the percentage of votes obtained by the two most

important parties in municipalities: Political competition $= 1 - |v_i - v_j|^2$. Similarly, ex-rebels' polarization can be constructed following Garcia-Montalvo and Reynal-Querol (2005b) measure: $RQ = 1 - \sum_{k=1}^{N} \pi_k (\frac{0.5-\pi_k}{0.5})^2$. Overall, adding more control variables results in more precise estimates. The method proposed by Altonji et al. (2005) can be used to estimate the relative influence of unobserved variables. Applied to this study, it shows that unobservable factors are unlikely to drive the results.

The results associated with political competition are unlikely to be driven by reverse causality and omitted variable biases. Results do not change significantly if the political competition index is constructed using the results of the 2010 or the 2005 elections, or if political competition in 2010 is instrumented with political competition in 2005. This indicates that the risk of reverse causality bias is marginal. The coefficient associated with political competition could be biased by omitted variables if some unobserved characteristics A affected electoral violence, and influenced votes via a separate channel such as to alter political competition in a non-random way. Regressions in Table A.15 include the proportion of voters for each party in order to indirectly control for these factors A. This increases the point estimates of the political competition index.

Similarly, results associated with ex-rebels' polarization are unlikely to be biased by omitted variables. Two types of unobserved factors could generate a spurious correlation between ex-rebels' polarization and electoral violence. First, results would be biased if some unobserved variables B affected electoral violence, and impacted the size of demobilized rebel groups through a separate channel such that ex-rebels' polarization is affected in a non-random way. In this case, the coefficient associated with ex-rebels' polarization would partly capture the impact of unobserved factors B. In order to indirectly control for these factors, measures of the relative size of demobilized rebel groups are included in the vector of controls. This addition does not significantly affect the results. Second, coefficients associated with ex-rebels' polarization could be biased by some unobserved factors C which affected electoral violence and influenced the place of resettlement of demobilized combatants after the conflict via two separate routes of impact. This type of bias is expected to be marginal. A large majority of demobilized rebels, 83%, returned to their municipality of origin. Among those who did not return to their municipality of origin, 52% resettled in the capital Bujumbura Mairie. Excluding Bujumbura Marie from the sample does not significantly affect the coefficients associated with ex-rebels' polarization. The variability of the indicator of political competition is reduced with this smaller sample because political competition is the highest in the capital city. Consequently, the coefficient associated with political competition becomes insignificant at conventional levels for intimidation and assaults. Using information on the origin of demobilized rebels instead of their place of return does not affect the results.

4 Conclusion

This paper proposed a new model of electoral violence which was tested empirically using an original dataset on electoral violence in Burundi. According to the model, electoral violence emerges as a result of tight political competition between parties. In such a context, parties are tempted to engage in violence to gain votes if their likelihood to make a successful violent move is large enough. The model distinguishes bilateral and unilateral acts of violence. Bilateral violence is modeled as a violent contest between parties (e.g. clashes between parties). The probability that a party wins the violent contest is increasing in its number of violent supporters and decreasing in its rivals' number of violent supporters. The model predicts that bilateral violence is the unique sub-game perfect Nash equilibrium if polarization between violent supporters is high, such that both parties believe to have a fair chance to win the violent contest and hence to win the elections. Parties can also engage in unilateral acts of violence, which are modeled as a violent move from one party against a rival (e.g. intimidation, murder). The probability that a violent move is successful is increasing in the number of violent supporters of the violent party. The model also predicts that polarization between violent supporters is conducive to unilateral violence. However, this relationship becomes more tenuous as the expected cost of engaging in unilateral violence increases.

The predictions of the model are confirmed by the empirical analysis of the causes of electoral violence in Burundi in 2010. The 2010 elections in Burundi were the first to be organized after a long-lasting civil war and the demobilization of thousands of combatants. Most rebel groups which fought during the civil war were transformed into political parties. Empirical results confirm that electoral violence is more likely to occur when political competition is tight. The analysis also shows that the distribution of violent supporters - the ex-combatants in the context of Burundi - is correlated with electoral violence in two ways. First, the total number of demobilized combatants who returned in a municipality interacts positively with political competition to favor the emergence of electoral violence. The electoral gain from violence is indeed expected to increase with the number of violent supporters who engage in violence. Second, the analysis shows that violence is triggered by a high polarization between demobilized rebels. In line with the model, this latter effect is especially strong for bilateral violence, such as clashes, but not significant for unilateral violence with high fixed cost, such as murders and attempted murders.

These results call for further research. First, the predictions of the model should be tested in other contexts. Second, the model can be extended to capture dynamics of violence over time, space and networks. The model could also be adapted to the specific conditions of other case studies. Third, further research is needed to better understand the

role played by demobilized combatants and their motivation. In particular, assessing the impact of anti-violence campaigns targeted at demobilized rebels - and violent supporters in general - is much needed. Finally, this paper calls for more research on the causes of instability in Burundi, which is of particular importance for the stability of the African Great-Lake region. The recent political turmoil which surrounded the 2015 electoral process in Burundi left more than a hundred people dead, and about 200,000 people were forced to flee to neighboring countries, further fueling the already serious regional crisis. This dramatic situation is a sad illustration of the terrible consequences of electoral violence on the civilian population, and a strong reminder of the importance to understand and prevent electoral violence.

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APPENDIX

A Mathematical appendix

Bilateral violence Parties will only engage in bilateral violence if violence can be decisive for winning the elections. Party i will only engage in bilateral violence if winning the violent contest would provide enough votes to win the elections $v_i + \delta > 0.5$ and if it needs violence to win the elections if the other party is violent $v_i - \delta < 0.5$. These conditions should be satisfied for both parties. They can be rewritten $2\delta > |v_1 - v_2|$.

If this condition is satisfied, each party wins the election if it wins the violent contest. In this case, the dynamic game is represented in Figure 4 ($v_i > v_j$). Violence is a dominant strategy for player j if $BQ(h_j, h_i) - CQ(h_i, h_j) - D > 0$. In this case, party i reacts by also engaging in violence if $BQ(h_i, h_j) - CQ(h_j, h_i) - D > 0$. These conditions can be rewritten $\frac{C+D}{B+C} < Q(h_i, h_j) < 1 - \frac{C+D}{B+C}$. In this case, bilateral violence is the unique sub-game perfect Nash equilibrium.

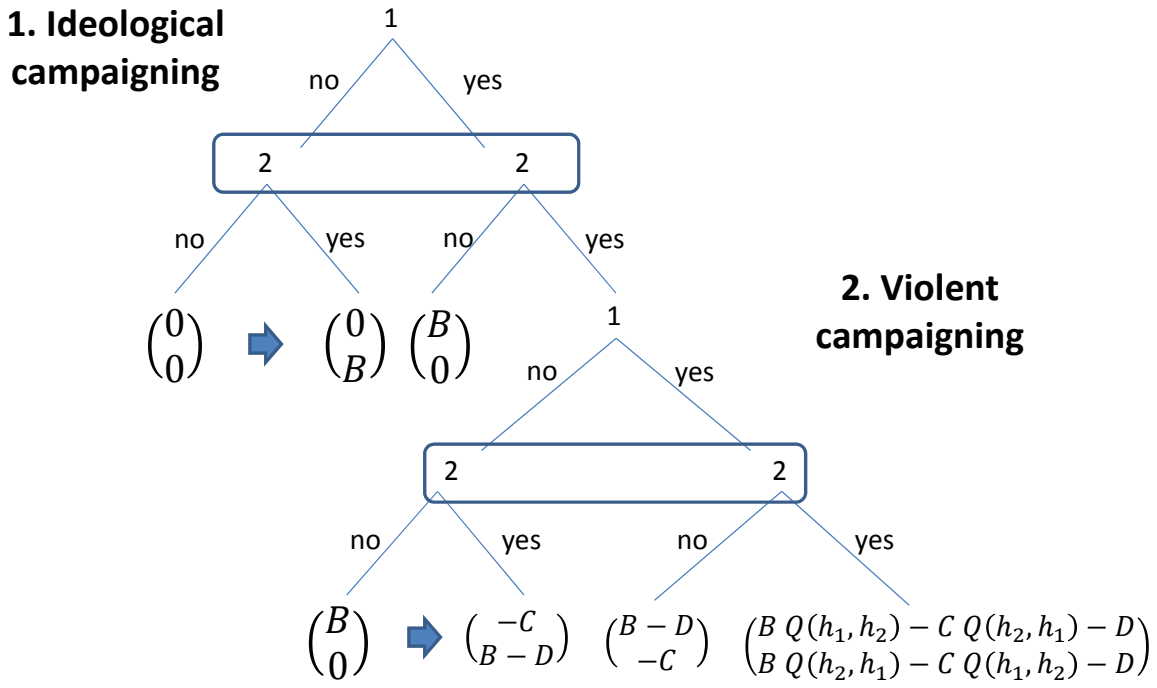


Figure 4: Bilateral violence: pay-offs of the dynamic game (Note: *proposition 1* is not affected if the costs C and/or D do not appear when only one of the parties chooses violence in the second stage).

Unilateral violence Without loss of generality, let us assume that $v_1 > v_2$. In this case, violence will only emerge if party 2 can win the elections by making a violent move,

that is, if $v_2 + \delta > 0.5$. Two cases should be distinguished, depending on whether party 1 responds to violence by also making a violent move or not.

First, both parties may try to make a violent move. We solve the problem by backward induction. In the second stage, violence is the unique Nash equilibrium if the following conditions are satisfied.

$$\begin{cases} q(h_2)B - D > 0 \\ [1 - q(h_2)(1 - q(h_1))]B - D - q(h_2)C > B(1 - q(h_2)) - q(h_2)C \\ q(h_2)(1 - q(h_1))B - D - q(h_1)C > -q(h_1)C \end{cases}$$

In the first stage, violence is the unique Nash equilibrium if:

$$\begin{cases} [1 - q(h_2)(1 - q(h_1))]B - D - q(h_2)C > 0 \\ q(h_2)(1 - q(h_1))B - D - q(h_1)C > 0 \end{cases}$$

These five conditions can be rewritten:

$$\begin{cases} Bq(h_1)q(h_2) > D \\ B - D - q(h_2)C > B(1 - q(h_1))q(h_2) > D + q(h_1)C \end{cases}$$

Both parties engaging in unilateral violence is the unique sub-game perfect Nash Equilibrium if these conditions are satisfied.

Second, only party 2 engages in violence if "ideological campaigning/violent campaigning" is the unique sub-game perfect Nash equilibrium. This will be the case in the second stage if:

$$\begin{cases} q(h_2)B - D > 0 \\ [1 - q(h_2)(1 - q(h_1))]B - D - q(h_2)C < B(1 - q(h_2)) - q(h_2)C \end{cases}$$

In the first stage, only party 2 engages in violence if:

$$\begin{cases} q(h_2)B - D > 0 \\ B(1 - q(h_2)) - q(h_2)C > 0 \end{cases}$$

Altogether, these four conditions can be rewritten $B/(B + C) > q(h_2) > D/B > q(h_1)q(h_2)$.

Electoral gain from violence: the role of violent supporters *Case 0 - transfer of δ votes to the winner i*: this is the benchmark case. For party i ($i \in 1, 2$), winning a violent contest is interesting (1) if it would lose the election without violence that is, $v_i < 1/2$ and (2) party i is expected to win the election if it wins the violent contest that is, $v_i + \delta > 1/2$. As $v_1 + v_2 = 1$, a necessary condition for violence to emerge is:

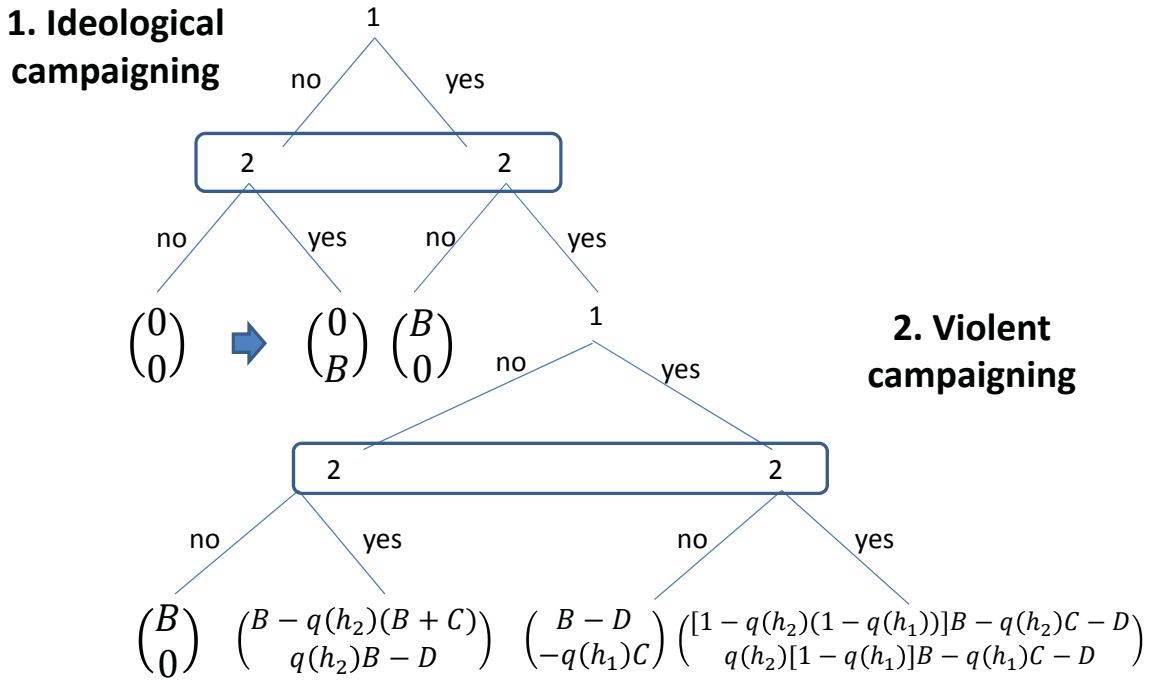


Figure 5: Unilateral violence: pay-offs of the dynamic game

$1/2 - \delta < v_i < 1/2 + \delta \Leftrightarrow |v_i - 1/2| < \delta$. This relationship is represented on figure 6(a), which shows that a necessary condition for electoral violence is that δ needs to be high or political competition needs to be tight.

Case 1 - transfer of δv_j votes to the winner i: The resolution is similar. For party i ($i \in 1, 2$), winning a violent contest is then interesting (1) if $v_i < 1/2$ and (2) $v_i + \delta v_j > 1/2$. As $v_1 + v_2 = 1$, a necessary condition for violence to emerge is: $(1-2\delta)/(2(1-\delta)) < v_i < 1 - (1-2\delta)/(2(1-\delta)) \Leftrightarrow |v_i - 1/2| < \delta/(2(1-\delta))$. This relationship is represented on figure 6(b). It shows that a necessary condition for electoral violence is that δ needs to be high or political competition needs to be tight.

Case 2 - transfer of δv_i votes to the winner i: For party i ($i \in 1, 2$), winning a violent contest is then interesting (1) if $v_i < 1/2$ and (2) $v_i + \delta v_i > 1/2$. As $v_1 + v_2 = 1$, a necessary condition for violence to emerge is: $1/(2(1+\delta)) < v_i < 1 - 1/(2(1+\delta)) \Leftrightarrow |v_i - 1/2| < \delta/(2(1+\delta))$. This relationship is represented on figure 6(c). A necessary condition for electoral violence is that δ needs to be high and political competition needs to be close.

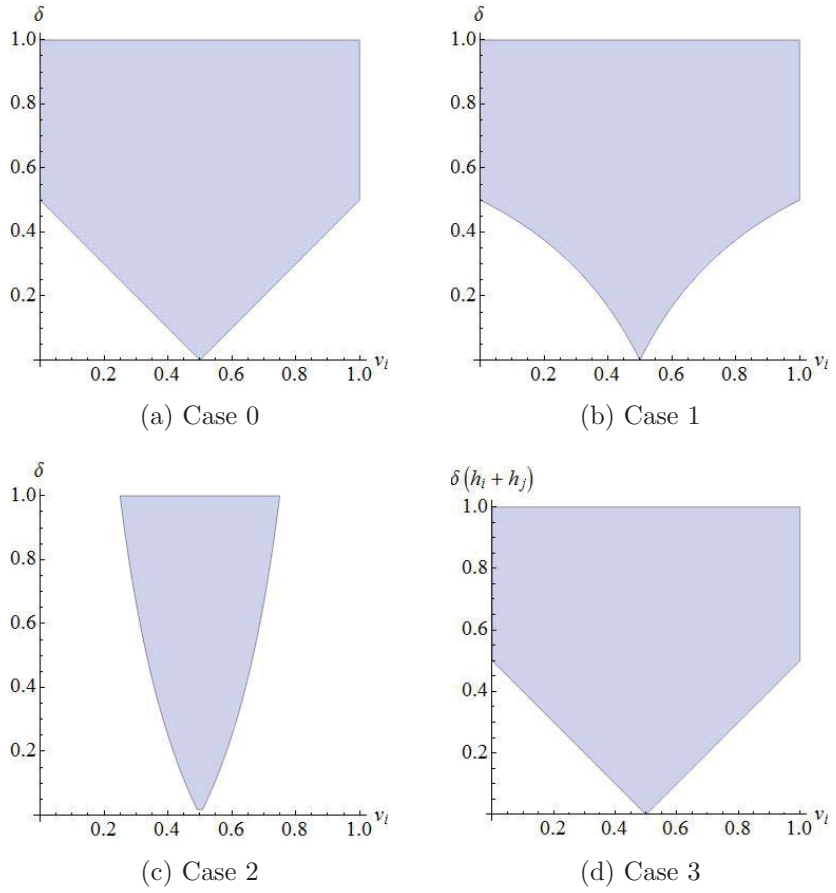
Case 3 - transfer of $\delta(h_i + h_j)$ votes to the winner i: This case is similar to *Case 0*. For party i ($i \in 1, 2$), winning a violent contest is then interesting (1) if $v_i < 1/2$ and (2) $v_i + \delta(h_i + h_j) > 1/2$. Then, a necessary condition for violence to emerge is: $1/2 - \delta(h_i + h_j) < v_i < 1/2 + \delta(h_i + h_j) \Leftrightarrow |v_i - 1/2| < \delta(h_i + h_j)$. This relationship is

represented on figure 6(d), which shows that δ and $h_i + h_j$ are complementary factors of violence. Again, a necessary condition for electoral violence is that political competition needs to be close or $\delta(h_i + h_j)$ needs to be high.

Case 4 - unilateral violence and transfer of δh_i votes to the winner(s) i: the objective is to determine how conditions (6) and (9) are affected when the transfer of votes is increasing with the number of violent supporters of the successful parties. Without loss of generality, we assume that $v_i > v_j$. On the one hand, party j will only engage in violence if it expects to win the election after a successful violent move, implying that: $v_j + \delta h_j > 0.5$. This inequality is equivalent to:$v_i < 0.5 + \delta h_j$. On the other hand, party i respond to violence if it expects to win the election if both parties make a successful violent move: $0.5 < v_i + \delta(h_i - h_j)$. Condition (6) becomes:

$$0.5 + \max(0, \delta(h_j - h_i)) < v_i < 0.5 + \delta h_j. \tag{18}$$

If $h_i > h_j$, the set of inequalities (13) is equivalent to $0.5 < v_i < 0.5 + \delta h_j$. This set of conditions becomes less stringent when h_j increases. On the contrary, if $h_j > h_i$, the set of inequalities (18) is equivalent to $0.5 - \delta h_i < v_i - \delta h_j < 0.5$. In this case, this set of conditions becomes less restrictive when h_i increases. The impact of an increase in h_j is ambiguous and depends on the value of other parameters. However, the set of inequalities is unambiguously less restrictive if h_i and h_j increase by the same magnitude. Condition (9) becomes: $0.5 < v_i < 0.5 + \delta h_j$. This condition becomes less restrictive when h_j increases.



(a) Case 0 (b) Case 1

(c) Case 2 (d) Case 3

Figure 6: Different specifications for the transfer of votes between the winning and the losing party of a violent contest

B Robustness

This appendix summarizes the method and results of different robustness exercises.

Estimation methods. As shown in Table 4, results with the aggregated measure of electoral violence do not vary much if political competition is measured in 2010, in 2005, or if political competition in 2010 is instrumented by political competition in 2005. Tables A.1, A.2 and A.3 compare these three estimation strategies when the dependent variables considered are the disaggregated measures of violence. Overall, results are similar with these three estimation methods. Without instrumentation, the coefficient associated with political competition becomes significant for destruction, but it becomes insignificant at conventional level for assaults.

Given the count and overdispersed nature of electoral violence data, equation (16) was estimated using the negative binomial regression model. Table A.4 shows that similar results are obtained with the Poisson model. Coefficients are less precisely measured with OLS (Table A.5). For intimidation and assaults, the coefficients associated with political competition and demobilized polarization become insignificant at conventional levels.

Geographical fixed effects. The results obtained are robust to the use of different fixed effects strategies to control for unobserved variables. The benchmark regressions use a dataset identifying each pair of neighboring municipalities by a dummy variable. These dummies are included in the regression to control for unobserved characteristics which are similar in neighboring municipalities. Another possibility is to construct a database that identifies each neighborhood of municipalities by a dummy variable. A neighborhood is defined as a municipality and its direct neighbors. The 129 municipalities have on average 5.5 neighboring municipalities. These geographic fixed effects are then included in the regressions. Standard errors are clustered at the level of the neighborhood and at the level of the municipality in order to take into account for the fact that each municipality may have several neighbors and be the neighbor of several other municipalities, implying that observations might be duplicated in the dataset. Results are presented in Table A.6.

An alternative to consider all pairs of neighboring municipalities is to randomly match each municipality with one of its neighbors. This matching procedure should be repeated multiple times to avoid obtaining results which are driven by a particular selection. Table A.7 reports the average of estimated coefficients and standard errors for 100 repetitions. As the same municipality can appear within different pairs, standard errors are clustered at the municipal level. Results are similar with this alternative matching procedure.

Another approach to control for unobserved variations is to include province fixed effects in cross-sectional regressions. Results are presented in Table A.8. For the sake

of comparison, regressions presented in Table A.9 include no fixed effect. Coefficients associated with political competition are in general lower without fixed effect.

Selection on observables and unobservables. The method proposed by Altonji et al. (2005) can be used to estimate the relative influence of unobserved variables by analyzing how coefficients of interest are affected by the inclusion of control variables. The method consists in comparing the coefficients $\hat{\beta}_R$ obtained in a regression with a restricted set of controls, and the coefficients $\hat{\beta}_F$ obtained with the full set of controls. The ratio $\hat{\beta}_F/(\hat{\beta}_R - \hat{\beta}_F)$ measures how strong the selection on unobservables should be relative to the selection on observables to wipe away the estimated effect of the variable of interest (Bellows and Miguel 2009; Nunn and Wantchekon 2011). Regressions without controls are presented in Table A.10 (restricted equation), and regressions with controls are presented in Table A.9 (no fixed effect) and Table 5 (with fixed effects). Coefficients of interest measured in the regressions with control variables and fixed effects are in general higher than the coefficients measured in regressions with a restricted set of controls, leading to a negative ratio $\hat{\beta}_F/(\hat{\beta}_R - \hat{\beta}_F)$. Intuitively, controlling for more unobserved variable should result in the measurement of higher coefficients of interest. Benchmark estimates are therefore likely to be lower bounds. As explained below, including more control variables most of the time increases coefficients associated with political competition and demobilized polarization.

Alternative vector of control variables. As shown in tables A.11 to A.15, results are not significantly different when additional control variables are included in the regression (i.e. the number or the proportion of demobilized ex-rebels, or the electoral results of parties parties in 2010 or 2005). Similar results are also obtained when the indicator of fractionalization between demobilized ex-rebels is removed from the sample (Table A.16).

Alternative functional forms. Similar results are also obtained when alternative functional forms are used for the construction of variables of interest. In the main analysis, political competition is measured by an indicator of fractionalization between political parties constructed using results of municipal elections in 2010 or 2005. Similar results are obtained if political competition is proxied by an indicator of polarization between political parties (tables A.17 and A.18). For assault however, the coefficient associated with political competition becomes insignificant at conventional thresholds.

Following equation (1), an alternative indicator of political competition can be constructed by taking the difference of vote shares between the most important parties in each municipalities. The model predicts that violence is more likely to emerge when the difference of vote shares exceed a certain threshold which is unknown ex-ante. To capture this threshold effect (non-linearity), the indicator is computed as the square of

the difference of vote shares between the first and second most important parties in each municipalities:

$$\text{Political competition}_m = 1 - (v_i - v_j)^2, \tag{19}$$

The minus sign aims at facilitating the interpretation of results (political competition is low when the indicator approach 0, and high when it is close to 1). Results with this alternative indicator are presented in tables A.17 and A.19. The coefficients associated with interaction terms between political competition and the number of demobilized ex-combatants become insignificant at conventional levels.

The fact that similar results are obtained with these three indicators of political competition is not surprising given their high correlation. The correlation between political fractionalization and political polarization is equal to 0.79, and the correlation between political fractionalization and $1-(v_i-v_j)^2$ is equal to 0.95. This indicates that the three measures of political competition capture the same dynamics. In consequence, problems of multicollinearity arise when the three variables are included in the same regression (columns (10) to (12) in Table A.17). In the main analysis, political competition is measured by the fractionalization indicator. Following section 2.3, violence is indeed more likely to emerge when many parties expect to win the election if they win the violent contest. Furthermore, it is the coefficient associated with fractionalization which is positive and significant in the reduced form and IV regressions when the three indicators are included as right-hand side variables.

As shown in Table A.20, similar results are obtained with the RQ index of Garcia-Montalvo and Reynal-Querol (2005b) (equation (4)). Estimates are not significantly different when information on the origin of demobilized rebels is used instead of their location of resettlement (Table A.21).

Bujumbura Mairie. Similar results are obtained when municipalities located in Bujumbura Mairie are excluded from the sample (Table A.22).

Spatial dependence. Spatial dependence is not an issue in this study. The Moran's statistic associated with the aggregated indicator of electoral violence is negative and not significant (p-value=0.330). Furthermore, the use of geographical fixed effects should capture a large part of the spatial correlation in the dependent variable. Following (Neumayer and Plümper 2010), Table A.23 controls for the average value of the dependent variable in neighboring municipalities (regression without fixed effect). This does not affect the results. Table A.24 presents the results of OLS regressions with standard errors adjusted for spatial correlation (Conley 1999) (this adjustment has not yet been implemented for the negative binomial regression model). While the use of OLS reduces the

precision of the estimates, the adjustment of standard errors does not affect much the significance of the results.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.369***	0.195	-0.184	-0.564*	0.723***	0.677**	0.441*	0.308	0.429	0.104	1.079***	0.604***
	(0.126)	(0.141)	(0.259)	(0.314)	(0.251)	(0.317)	(0.226)	(0.250)	(0.330)	(0.388)	(0.241)	(0.223)
Interaction		0.085**		0.174**		0.027		0.061		0.172		0.252**
		(0.036)		(0.069)		(0.072)		(0.045)		(0.130)		(0.110)
Demob. polarization (st.)	0.337***	0.341***	0.853***	0.957***	0.584**	0.586**	0.474**	0.479**	0.096	0.085	-0.069	-0.078
	(0.102)	(0.105)	(0.263)	(0.282)	(0.259)	(0.264)	(0.214)	(0.211)	(0.244)	(0.250)	(0.170)	(0.176)
Demob. fractionalization (st.)	-0.056	-0.057	-0.181	-0.219	-0.135	-0.135	-0.093	-0.096	0.180	0.142	0.247	0.139
	(0.105)	(0.108)	(0.263)	(0.271)	(0.275)	(0.277)	(0.206)	(0.204)	(0.347)	(0.335)	(0.254)	(0.269)
Hutu share province, 2012	2.948**	3.323**	8.393***	9.083***	2.967	3.003	2.035	2.225	2.499	2.832	3.227*	4.520**
	(1.331)	(1.307)	(3.140)	(3.252)	(2.921)	(2.959)	(2.138)	(2.074)	(3.565)	(3.489)	(1.788)	(2.077)
Ethnic frac., 2012	0.126	0.172	0.311	0.439	-0.152	-0.141	0.059	0.094	0.102	0.188	0.192	0.198
	(0.167)	(0.158)	(0.325)	(0.305)	(0.374)	(0.379)	(0.297)	(0.286)	(0.379)	(0.380)	(0.182)	(0.169)
Total no. demob. (/1000)	0.020	0.045	0.124	0.111	-0.047	-0.036	0.057	0.072	-0.195*	-0.177	0.068	0.003
	(0.062)	(0.054)	(0.101)	(0.091)	(0.086)	(0.091)	(0.068)	(0.063)	(0.112)	(0.116)	(0.074)	(0.096)
Past violence (log)	0.144	0.155	-0.023	0.002	0.074	0.074	0.146	0.158	-0.043	-0.018	0.439***	0.431**
	(0.104)	(0.099)	(0.210)	(0.209)	(0.187)	(0.187)	(0.162)	(0.164)	(0.217)	(0.211)	(0.168)	(0.173)
Median Wealth Index (st.)	-0.118	-0.104	0.130	0.147	-2.030	-1.955	-0.211	-0.175	-0.795***	-0.627***	-0.163	-0.160
	(0.150)	(0.117)	(0.345)	(0.316)	(1.280)	(1.333)	(0.185)	(0.159)	(0.247)	(0.236)	(0.144)	(0.128)
Population (log)	1.076***	1.018***	1.124**	1.064**	1.277***	1.271***	1.206***	1.183***	0.705	0.622	0.280	0.103
	(0.223)	(0.218)	(0.471)	(0.477)	(0.454)	(0.453)	(0.389)	(0.397)	(0.600)	(0.594)	(0.441)	(0.473)
Population density (log)	0.131	0.136	0.296	0.339	0.117	0.060	-0.278	-0.243	1.076***	0.940**	0.286	0.410**
	(0.200)	(0.164)	(0.340)	(0.299)	(0.515)	(0.534)	(0.291)	(0.273)	(0.412)	(0.394)	(0.210)	(0.190)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. The indicator of political competition is a fractionalization index constructed using the results of the 2010 municipal elections. Multiway clustered-robust standard errors are reported in parentheses. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.1: Robustness check Table 5: political competition in 2010 (no instrumental variable approach)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2005 (st.)	0.303***	0.092	-0.145	-0.593**	0.307	0.276	0.317*	0.090	0.514**	-0.037	0.811***	0.272
	(0.083)	(0.097)	(0.193)	(0.263)	(0.187)	(0.259)	(0.169)	(0.186)	(0.255)	(0.370)	(0.128)	(0.180)
Interaction		0.135***		0.287***		0.024		0.151**		0.359*		0.356***
		(0.045)		(0.102)		(0.112)		(0.064)		(0.203)		(0.120)
Demob. polarization (st.)	0.393***	0.407***	0.828***	0.973***	0.690**	0.690**	0.533**	0.561**	0.235	0.258	0.137	0.246
	(0.107)	(0.108)	(0.266)	(0.289)	(0.279)	(0.282)	(0.223)	(0.221)	(0.250)	(0.265)	(0.235)	(0.230)
Demob. fractionalization (st.)	-0.156	-0.163	-0.127	-0.198	-0.239	-0.236	-0.201	-0.224	-0.007	-0.093	-0.118	-0.379
	(0.114)	(0.118)	(0.282)	(0.294)	(0.288)	(0.286)	(0.231)	(0.231)	(0.359)	(0.349)	(0.258)	(0.264)
Hutu share province, 2012	2.769**	3.329***	8.661***	9.736***	2.776	2.777	1.557	2.197	3.138	4.254	0.716	1.779
	(1.197)	(1.115)	(3.095)	(3.093)	(2.968)	(2.996)	(1.985)	(1.823)	(3.288)	(2.958)	(1.899)	(1.853)
Ethnic frac., 2012	0.139	0.221	0.302	0.461	-0.053	-0.052	0.046	0.162	0.211	0.450	0.184	0.401*
	(0.167)	(0.155)	(0.329)	(0.309)	(0.349)	(0.348)	(0.304)	(0.291)	(0.402)	(0.363)	(0.240)	(0.222)
Total no. demob. (/1000)	0.030	0.097	0.120	0.185*	-0.114	-0.097	0.064	0.140*	-0.180	-0.092	0.108	0.205***
	(0.063)	(0.063)	(0.102)	(0.106)	(0.093)	(0.130)	(0.080)	(0.076)	(0.118)	(0.129)	(0.089)	(0.073)
Past violence (log)	0.165*	0.179*	-0.036	-0.006	0.165	0.164	0.170	0.193	-0.033	-0.021	0.432***	0.440***
	(0.099)	(0.092)	(0.204)	(0.202)	(0.181)	(0.180)	(0.152)	(0.144)	(0.217)	(0.209)	(0.117)	(0.122)
Median Wealth Index (st.)	-0.119	-0.140	0.125	0.046	-1.544	-1.501	-0.199	-0.175	-0.966***	-0.954***	-0.147	-0.189
	(0.163)	(0.133)	(0.341)	(0.338)	(1.024)	(1.007)	(0.195)	(0.158)	(0.287)	(0.300)	(0.171)	(0.162)
Population (log)	1.181***	1.081***	1.055**	0.956*	1.177**	1.172**	1.330***	1.250***	0.859	0.659	0.945**	0.833**
	(0.227)	(0.211)	(0.475)	(0.490)	(0.468)	(0.467)	(0.396)	(0.385)	(0.595)	(0.558)	(0.378)	(0.361)
Population density (log)	0.161	0.256	0.285	0.493	0.188	0.151	-0.263	-0.105	1.229***	1.515***	0.246	0.636**
	(0.213)	(0.187)	(0.339)	(0.335)	(0.550)	(0.520)	(0.311)	(0.284)	(0.434)	(0.399)	(0.244)	(0.266)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. The indicator of political competition is a fractionalization index constructed using the results of the 2005 municipal elections. Multiway clustered-robust standard errors are reported in parentheses. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.2: Robustness check Table 5: reduced form

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.506***	0.360**	-0.223	-0.575	0.305	0.228	0.562*	0.383	0.850**	0.429	1.557***	1.069***
	(0.144)	(0.146)	(0.308)	(0.370)	(0.364)	(0.398)	(0.294)	(0.291)	(0.428)	(0.491)	(0.246)	(0.215)
Interaction		0.109***		0.293***		-0.003		0.130**		0.319*		0.406**
		(0.042)		(0.099)		(0.090)		(0.061)		(0.190)		(0.181)
Demob. polarization (st.)	0.342***	0.360***	0.853***	1.028***	0.595**	0.606**	0.478**	0.522**	0.155	0.199	0.008	0.084
	(0.103)	(0.107)	(0.263)	(0.291)	(0.253)	(0.244)	(0.217)	(0.211)	(0.234)	(0.252)	(0.209)	(0.233)
Demob. fractionalization (st.)	-0.065	-0.080	-0.176	-0.273	-0.162	-0.183	-0.108	-0.135	0.140	0.030	0.128	-0.173
	(0.105)	(0.109)	(0.268)	(0.285)	(0.271)	(0.253)	(0.214)	(0.213)	(0.349)	(0.333)	(0.248)	(0.272)
Hutu share province, 2012	3.414***	4.148***	8.287***	10.004***	1.767	1.803	2.440	3.277*	4.173	5.762*	3.873**	6.096***
	(1.248)	(1.171)	(3.213)	(3.028)	(3.118)	(3.179)	(2.129)	(1.982)	(3.480)	(3.262)	(1.899)	(2.216)
Ethnic frac., 2012	0.157	0.236	0.301	0.505*	-0.201	-0.140	0.084	0.197	0.241	0.478	0.298	0.397**
	(0.166)	(0.151)	(0.326)	(0.287)	(0.374)	(0.391)	(0.297)	(0.304)	(0.399)	(0.368)	(0.211)	(0.193)
Total no. demob. (/1000)	0.041	0.081	0.118	0.151	-0.096	-0.113	0.077	0.133	-0.155	-0.136	0.162*	0.095
	(0.062)	(0.058)	(0.106)	(0.099)	(0.089)	(0.100)	(0.081)	(0.085)	(0.120)	(0.131)	(0.086)	(0.111)
Past violence (log)	0.126	0.134	-0.019	0.006	0.146	0.157	0.129	0.148	-0.109	-0.099	0.356***	0.321**
	(0.102)	(0.095)	(0.208)	(0.205)	(0.202)	(0.203)	(0.161)	(0.147)	(0.220)	(0.212)	(0.129)	(0.124)
Median Wealth Index (st.)	-0.136	-0.132	0.133	0.078	-1.674	-1.685	-0.220	-0.195	-0.972***	-0.921***	-0.215	-0.240
	(0.157)	(0.127)	(0.344)	(0.348)	(1.134)	(1.233)	(0.186)	(0.168)	(0.273)	(0.317)	(0.162)	(0.149)
Population (log)	1.102***	1.031***	1.112**	1.058**	1.262***	1.259***	1.229***	1.163***	0.772	0.583	0.552	0.429
	(0.218)	(0.209)	(0.469)	(0.479)	(0.467)	(0.473)	(0.384)	(0.364)	(0.602)	(0.581)	(0.379)	(0.368)
Population density (log)	0.141	0.181	0.294	0.424	0.033	0.087	-0.275	-0.163	1.194***	1.335***	0.253	0.491**
	(0.208)	(0.182)	(0.339)	(0.338)	(0.487)	(0.495)	(0.296)	(0.284)	(0.430)	(0.431)	(0.224)	(0.218)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.3: Robustness check Table 5: political competition in 2010 instrumented by political competition in 2005

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp.	0.508***	0.345**	-0.223	-0.575	0.305	0.228	0.562*	0.383	0.850**	0.429	1.557***	1.069***
	(0.148)	(0.148)	(0.308)	(0.370)	(0.364)	(0.398)	(0.294)	(0.291)	(0.428)	(0.491)	(0.246)	(0.215)
Interaction		0.120***		0.293***		-0.003		0.130**		0.319*		0.406**
		(0.040)		(0.099)		(0.090)		(0.061)		(0.190)		(0.181)
Demob. polarization (st.)	0.345***	0.371***	0.853***	1.028***	0.595**	0.606**	0.478**	0.522**	0.155	0.199	0.008	0.084
	(0.106)	(0.109)	(0.263)	(0.291)	(0.253)	(0.244)	(0.217)	(0.211)	(0.234)	(0.252)	(0.209)	(0.233)
Demob. fractionalization (st.)	-0.066	-0.090	-0.176	-0.273	-0.162	-0.183	-0.108	-0.135	0.140	0.030	0.128	-0.173
	(0.107)	(0.109)	(0.268)	(0.285)	(0.271)	(0.253)	(0.214)	(0.213)	(0.349)	(0.333)	(0.248)	(0.272)
Hutu share province, 2012	3.370***	4.179***	8.287***	10.004***	1.767	1.803	2.440	3.277*	4.173	5.765*	3.873**	6.096***
	(1.246)	(1.151)	(3.213)	(3.028)	(3.118)	(3.179)	(2.129)	(1.982)	(3.480)	(3.262)	(1.899)	(2.216)
Ethnic frac., 2012	0.130	0.228	0.301	0.505*	-0.201	-0.140	0.084	0.197	0.241	0.478	0.298	0.397**
	(0.169)	(0.153)	(0.326)	(0.287)	(0.374)	(0.391)	(0.297)	(0.304)	(0.399)	(0.367)	(0.211)	(0.193)
Total no. demob. (/1000)	0.048	0.087	0.118	0.151	-0.096	-0.113	0.077	0.133	-0.155	-0.135	0.162*	0.095
	(0.064)	(0.058)	(0.106)	(0.099)	(0.089)	(0.100)	(0.081)	(0.085)	(0.120)	(0.131)	(0.086)	(0.111)
Past violence (log)	0.132	0.142	-0.019	0.006	0.146	0.157	0.129	0.148	-0.109	-0.099	0.356***	0.321**
	(0.103)	(0.095)	(0.208)	(0.205)	(0.202)	(0.203)	(0.161)	(0.147)	(0.220)	(0.212)	(0.129)	(0.124)
Median Wealth Index (st.)	-0.178	-0.148	0.133	0.078	-1.673	-1.686	-0.220	-0.195	-0.972***	-0.920***	-0.215	-0.240
	(0.163)	(0.124)	(0.344)	(0.348)	(1.134)	(1.233)	(0.186)	(0.168)	(0.273)	(0.317)	(0.162)	(0.149)
Population (log)	1.063***	1.006***	1.112**	1.058**	1.262***	1.259***	1.229***	1.163***	0.772	0.583	0.552	0.429
	(0.219)	(0.207)	(0.469)	(0.479)	(0.467)	(0.473)	(0.384)	(0.364)	(0.602)	(0.581)	(0.379)	(0.368)
Population density (log)	0.169	0.211	0.294	0.424	0.034	0.087	-0.275	-0.163	1.194***	1.335***	0.253	0.491**
	(0.215)	(0.176)	(0.339)	(0.338)	(0.487)	(0.495)	(0.296)	(0.284)	(0.430)	(0.431)	(0.224)	(0.218)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports Poisson estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.4: Robustness check Table 5: Poisson regression

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.374**	0.311*	-0.029	-0.075	0.112	0.104	0.202	0.172	0.093	0.075	0.315***	0.296***
	(0.171)	(0.177)	(0.131)	(0.141)	(0.102)	(0.112)	(0.178)	(0.187)	(0.112)	(0.118)	(0.098)	(0.099)
Interaction		0.046		0.033*		0.006		0.021		0.013		0.014
		(0.032)		(0.020)		(0.012)		(0.023)		(0.012)		(0.019)
Demob. polarization (st.)	0.209*	0.202*	0.153*	0.148*	0.137*	0.136	0.146	0.142	-0.002	-0.004	-0.033	-0.036
	(0.108)	(0.109)	(0.088)	(0.088)	(0.083)	(0.084)	(0.107)	(0.107)	(0.045)	(0.045)	(0.066)	(0.067)
Demob. fractionalization (st.)	-0.015	0.004	-0.018	-0.005	-0.038	-0.036	-0.030	-0.022	0.042	0.047	0.018	0.024
	(0.105)	(0.108)	(0.088)	(0.090)	(0.089)	(0.089)	(0.091)	(0.094)	(0.047)	(0.050)	(0.062)	(0.066)
Hutu share province, 2012	2.533*	2.817*	1.706*	1.911*	1.118	1.155*	0.688	0.820	0.032	0.110	0.707	0.793
	(1.498)	(1.462)	(1.024)	(1.016)	(0.688)	(0.689)	(1.344)	(1.278)	(0.778)	(0.752)	(0.952)	(0.877)
Ethnic frac., 2012	0.162	0.188	0.090	0.109	0.057	0.060	-0.015	-0.003	-0.021	-0.013	0.019	0.027
	(0.196)	(0.185)	(0.119)	(0.116)	(0.083)	(0.086)	(0.185)	(0.179)	(0.116)	(0.112)	(0.135)	(0.123)
Total no. demob. (/1000)	0.016	0.042	0.018	0.036	0.002	0.005	0.011	0.023	-0.005	0.002	0.018	0.026
	(0.070)	(0.067)	(0.046)	(0.045)	(0.024)	(0.025)	(0.052)	(0.051)	(0.027)	(0.024)	(0.026)	(0.026)
Past violence (log)	0.084	0.081	0.004	0.002	0.007	0.007	0.056	0.054	0.011	0.010	0.064	0.063
	(0.119)	(0.116)	(0.084)	(0.082)	(0.046)	(0.046)	(0.110)	(0.108)	(0.041)	(0.039)	(0.040)	(0.040)
Median Wealth Index (st.)	-0.033	-0.036	0.018	0.015	0.042	0.041	-0.055	-0.057	-0.086	-0.087	-0.035	-0.036
	(0.168)	(0.150)	(0.117)	(0.104)	(0.050)	(0.048)	(0.113)	(0.110)	(0.066)	(0.057)	(0.111)	(0.103)
Population (log)	0.998***	0.981***	0.334	0.322	0.449***	0.447***	0.586**	0.578**	0.114	0.110	0.260	0.255
	(0.258)	(0.255)	(0.205)	(0.201)	(0.142)	(0.143)	(0.269)	(0.267)	(0.154)	(0.152)	(0.217)	(0.222)
Population density (log)	0.007	-0.009	0.033	0.022	0.024	0.022	-0.119	-0.126	0.041	0.036	0.078	0.073
	(0.211)	(0.190)	(0.110)	(0.097)	(0.055)	(0.055)	(0.147)	(0.148)	(0.084)	(0.071)	(0.119)	(0.108)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports OLS estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. The dependent variables are transformed by a log function: $log(x + 1)$. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.5: Robustness check Table 5: OLS with dependent variables in log

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp.	0.375***	0.206	-0.074	-0.455	0.064	-0.009	0.463*	0.258	0.430	-0.006	1.198***	0.944***
	(0.144)	(0.146)	(0.318)	(0.370)	(0.282)	(0.311)	(0.270)	(0.281)	(0.389)	(0.470)	(0.235)	(0.253)
Interaction		0.113***		0.218***		0.016		0.123**		0.285*		0.228*
		(0.041)		(0.072)		(0.092)		(0.061)		(0.165)		(0.132)
Demob. polarization (st.)	0.325***	0.343***	0.692***	0.788***	0.500**	0.522**	0.438**	0.463**	-0.029	0.020	-0.099	-0.107
	(0.110)	(0.114)	(0.220)	(0.227)	(0.238)	(0.249)	(0.208)	(0.202)	(0.234)	(0.252)	(0.249)	(0.272)
Demob. fractionalization (st.)	-0.128	-0.142	-0.149	-0.182	-0.164	-0.186	-0.186	-0.184	0.119	0.023	0.031	-0.028
	(0.114)	(0.115)	(0.228)	(0.225)	(0.243)	(0.231)	(0.196)	(0.190)	(0.267)	(0.257)	(0.218)	(0.232)
Hutu share province, 2012	2.840**	3.265***	10.060***	10.752***	1.803	1.538	1.719	2.209	2.271	2.778	2.602	4.099
	(1.241)	(1.211)	(2.558)	(2.614)	(2.355)	(2.469)	(1.986)	(1.957)	(4.017)	(4.037)	(2.351)	(2.640)
Ethnic frac., 2012	0.088	0.130	0.491*	0.586**	0.052	0.063	-0.038	0.025	-0.065	-0.022	0.072	0.078
	(0.155)	(0.145)	(0.255)	(0.251)	(0.236)	(0.238)	(0.273)	(0.271)	(0.432)	(0.423)	(0.257)	(0.241)
Total no. demob. (/1000)	0.028	0.072	0.108	0.176**	-0.062	-0.111	0.080	0.109	-0.110	-0.076	0.107	0.065
	(0.061)	(0.059)	(0.091)	(0.088)	(0.095)	(0.140)	(0.081)	(0.095)	(0.117)	(0.130)	(0.076)	(0.092)
Past violence (log)	0.118	0.125	-0.103	-0.076	0.068	0.072	0.101	0.108	-0.036	-0.030	0.217	0.177
	(0.106)	(0.100)	(0.172)	(0.167)	(0.180)	(0.177)	(0.159)	(0.149)	(0.157)	(0.131)	(0.135)	(0.131)
Median Wealth Index (st.)	-0.013	-0.025	0.333	0.318	-0.806	-0.881	-0.050	-0.042	-0.531**	-0.511**	0.034	-0.000
	(0.154)	(0.130)	(0.308)	(0.252)	(0.750)	(0.923)	(0.183)	(0.164)	(0.262)	(0.253)	(0.141)	(0.132)
Population (log)	1.131***	1.056***	1.109***	1.017**	1.083***	1.155***	1.230***	1.195***	0.963	0.735	1.305***	1.202***
	(0.227)	(0.222)	(0.419)	(0.415)	(0.412)	(0.427)	(0.359)	(0.350)	(0.643)	(0.663)	(0.399)	(0.396)
Population density (log)	0.155	0.156	0.546*	0.538*	0.180	0.094	-0.142	-0.167	0.696*	0.716**	0.154	0.222
	(0.154)	(0.148)	(0.319)	(0.293)	(0.350)	(0.341)	(0.242)	(0.227)	(0.376)	(0.360)	(0.250)	(0.242)
Observations	822	822	822	822	822	822	822	822	822	822	822	822
Neighborhood Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each neighborhood of municipalities by a dummy variable (129 neighborhood of 6.5 municipalities on average). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 822 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.6: Robustness check Table 5: neighborhood fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.563***	0.432**	-0.088	-0.175	0.383	0.403	0.504	0.475	1.191*	0.742	1.756***	1.380***
	(0.189)	(0.201)	(0.467)	(0.529)	(0.478)	(0.562)	(0.329)	(0.346)	(0.692)	(0.827)	(0.452)	(0.437)
Interaction		0.091**		0.197*		-0.020		0.063		0.379		0.398**
		(0.042)		(0.108)		(0.134)		(0.064)		(0.239)		(0.174)
Demob. polarization (st.)	0.338***	0.384***	0.971***	1.084***	0.660**	0.743**	0.466**	0.471**	0.180	0.178	-0.114	0.040
	(0.126)	(0.130)	(0.339)	(0.362)	(0.320)	(0.311)	(0.233)	(0.231)	(0.414)	(0.429)	(0.293)	(0.331)
Demob. fractionalization (st.)	-0.046	-0.083	-0.244	-0.411	-0.176	-0.192	-0.059	-0.085	0.168	0.005	0.240	-0.156
	(0.134)	(0.137)	(0.350)	(0.382)	(0.344)	(0.321)	(0.243)	(0.241)	(0.513)	(0.507)	(0.360)	(0.406)
Hutu share province, 2012	4.115***	4.750***	11.075**	12.812**	8.331	7.678	3.252	2.926	7.248	6.525	4.044	7.743**
	(1.515)	(1.493)	(4.988)	(5.049)	(7.992)	(7.772)	(2.653)	(2.404)	(7.044)	(9.168)	(3.105)	(3.364)
Ethnic frac., 2012	0.219	0.280	0.597	0.813*	0.346	0.300	0.157	0.146	0.492	0.750	0.340	0.619*
	(0.182)	(0.178)	(0.482)	(0.465)	(0.949)	(0.920)	(0.331)	(0.315)	(0.701)	(0.914)	(0.320)	(0.352)
Total no. demob. (/1000)	0.064	0.094*	0.165	0.220	-0.072	-0.022	0.066	0.100	-0.134	-0.072	0.187	0.141
	(0.063)	(0.057)	(0.135)	(0.145)	(0.187)	(0.187)	(0.093)	(0.092)	(0.193)	(0.221)	(0.119)	(0.140)
Past violence (log)	0.130	0.123	-0.056	-0.057	0.165	0.232	0.146	0.132	-0.242	-0.251	0.332**	0.314*
	(0.098)	(0.099)	(0.216)	(0.214)	(0.253)	(0.252)	(0.148)	(0.150)	(0.313)	(0.316)	(0.163)	(0.168)
Median Wealth Index (st.)	-0.160	-0.167	0.104	0.113	-2.639	-2.581	-0.296	-0.266	-1.597**	-1.552	-0.292	-0.277
	(0.171)	(0.144)	(0.472)	(0.473)	(1.696)	(1.656)	(0.240)	(0.251)	(0.717)	(0.953)	(0.205)	(0.200)
Population (log)	1.064***	1.019***	1.212**	1.207**	1.432**	1.486**	1.271***	1.253***	0.981	0.978	0.483	0.391
	(0.248)	(0.243)	(0.595)	(0.600)	(0.589)	(0.612)	(0.400)	(0.395)	(0.816)	(0.832)	(0.522)	(0.519)
Population density (log)	0.060	0.153	0.428	0.556	0.040	0.019	-0.430	-0.374	1.697*	1.859*	0.117	0.451
	(0.228)	(0.193)	(0.527)	(0.526)	(0.755)	(0.778)	(0.348)	(0.334)	(0.904)	(0.999)	(0.301)	(0.309)
Observations	256	256	256	256	256	256	256	256	256	256	256	256
Fixed Effects	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random	Random
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The unit of observation is the municipality. Each municipality is matched with one of its neighbor chosen at random. Dummy variables identifying selected pairs are included in negative binomial regressions. This process is repeated 100 times. This table reports the mean coefficients and, in parentheses, the mean clustered-robust standard errors (clustering at the municipal level). Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.7: Robustness check Table 5: random pair fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp.	0.526**	0.340	0.222	-0.320	0.297	0.534	0.521	0.235	0.781*	0.544	1.332***	1.258***
	(0.218)	(0.256)	(0.411)	(0.534)	(0.387)	(0.536)	(0.345)	(0.413)	(0.471)	(0.582)	(0.363)	(0.450)
Interaction		0.091*		0.205**		-0.130		0.115*		0.133		0.082
		(0.047)		(0.099)		(0.175)		(0.062)		(0.113)		(0.102)
Demob. polarization (st.)	0.284**	0.301**	0.714***	0.731***	0.689***	0.662**	0.387*	0.363*	-0.035	-0.028	-0.292	-0.246
	(0.118)	(0.118)	(0.246)	(0.244)	(0.257)	(0.267)	(0.206)	(0.195)	(0.314)	(0.329)	(0.226)	(0.247)
Demob. fractionalization (st.)	-0.041	-0.051	-0.121	-0.099	-0.207	-0.182	-0.095	-0.056	-0.008	-0.070	0.495*	0.369
	(0.128)	(0.123)	(0.242)	(0.242)	(0.225)	(0.227)	(0.194)	(0.188)	(0.313)	(0.292)	(0.269)	(0.264)
Total no. demob. (/1000)	0.085	0.110*	0.278**	0.243*	0.139	0.164	0.110	0.170*	-0.026	-0.061	0.077	0.032
	(0.067)	(0.065)	(0.118)	(0.127)	(0.165)	(0.230)	(0.104)	(0.092)	(0.121)	(0.131)	(0.082)	(0.102)
Past violence (log)	0.028	0.072	-0.238	-0.180	-0.026	-0.052	-0.016	0.039	-0.150	-0.113	0.180	0.159
	(0.109)	(0.128)	(0.162)	(0.168)	(0.226)	(0.243)	(0.122)	(0.125)	(0.168)	(0.164)	(0.122)	(0.122)
Median Wealth Index (st.)	-0.034	-0.047	0.493	0.544	-0.803	-0.872	-0.047	-0.070	-0.670*	-0.566*	-0.179*	-0.160
	(0.160)	(0.158)	(0.389)	(0.334)	(0.968)	(1.085)	(0.206)	(0.204)	(0.355)	(0.311)	(0.105)	(0.117)
Population (log)	1.453***	1.310***	1.229**	0.967*	1.120**	1.283**	1.595***	1.438***	1.899***	1.827***	1.431***	1.490***
	(0.301)	(0.334)	(0.510)	(0.551)	(0.462)	(0.551)	(0.374)	(0.367)	(0.649)	(0.661)	(0.455)	(0.459)
Population density (log)	0.009	0.096	0.834*	0.900**	0.382	0.362	-0.268	-0.217	-0.118	-0.118	-0.367	-0.297
	(0.237)	(0.259)	(0.462)	(0.416)	(0.525)	(0.556)	(0.307)	(0.314)	(0.369)	(0.364)	(0.323)	(0.304)
Observations	128	128	128	128	128	128	128	128	128	128	128	128
Province Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports the results of negative binomial regressions with province fixed effects. The unit of observation is the municipality. Robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.8: Robustness check Table 5: province fixed effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.058	-0.172	-0.007	-0.352	-0.038	0.001	0.014	-0.292	0.276	-0.243	0.435*	-0.012
	(0.120)	(0.141)	(0.234)	(0.303)	(0.230)	(0.297)	(0.166)	(0.194)	(0.314)	(0.461)	(0.238)	(0.298)
Interaction		0.121**		0.185**		-0.046		0.150**		0.288*		0.258*
		(0.047)		(0.088)		(0.120)		(0.068)		(0.149)		(0.138)
Demob. polarization (st.)	0.349***	0.355***	0.578***	0.641***	0.397**	0.416**	0.427**	0.435**	0.191	0.211	0.204	0.140
	(0.125)	(0.130)	(0.215)	(0.247)	(0.198)	(0.205)	(0.197)	(0.200)	(0.223)	(0.244)	(0.235)	(0.246)
Demob. fractionalization (st.)	-0.286**	-0.277**	-0.272	-0.278	-0.198	-0.240	-0.390*	-0.371*	-0.279	-0.236	-0.350	-0.317
	(0.129)	(0.130)	(0.226)	(0.251)	(0.209)	(0.207)	(0.205)	(0.201)	(0.270)	(0.278)	(0.275)	(0.266)
Hutu share province, 2012	0.985	1.271	7.709***	8.511***	-0.347	-0.638	-1.120	-0.745	1.946	2.516	2.278	2.457
	(0.970)	(0.977)	(2.275)	(2.168)	(1.991)	(1.942)	(1.543)	(1.547)	(2.810)	(2.921)	(1.981)	(2.183)
Ethnic frac., 2012	-0.080	-0.046	0.284	0.386	-0.082	-0.084	-0.303	-0.247	0.058	0.129	0.018	-0.003
	(0.131)	(0.132)	(0.292)	(0.259)	(0.206)	(0.201)	(0.213)	(0.211)	(0.340)	(0.345)	(0.219)	(0.218)
Total no. demob. (/1000)	-0.011	0.016	0.031	0.026	-0.172	-0.254	0.018	0.068	-0.011	-0.008	0.021	0.085
	(0.062)	(0.084)	(0.099)	(0.131)	(0.105)	(0.199)	(0.074)	(0.114)	(0.080)	(0.120)	(0.078)	(0.112)
Past violence (log)	0.174*	0.183*	-0.018	0.001	0.136	0.145	0.156	0.168	-0.058	-0.021	0.301**	0.287*
	(0.093)	(0.095)	(0.192)	(0.181)	(0.157)	(0.166)	(0.121)	(0.121)	(0.152)	(0.155)	(0.148)	(0.147)
Median Wealth Index (st.)	0.045	0.024	0.285	0.307	-1.008	-1.208	0.031	0.019	-0.355	-0.321	0.220	0.099
	(0.148)	(0.143)	(0.279)	(0.222)	(0.965)	(1.145)	(0.175)	(0.164)	(0.351)	(0.360)	(0.218)	(0.217)
Population (log)	0.745***	0.681***	0.605	0.598	0.944**	1.002**	0.695**	0.641*	1.348**	1.186**	1.063**	0.906*
	(0.247)	(0.257)	(0.486)	(0.465)	(0.445)	(0.440)	(0.348)	(0.354)	(0.605)	(0.602)	(0.499)	(0.507)
Population density (log)	0.263**	0.243**	0.500**	0.422**	0.057	0.120	0.017	-0.006	0.697***	0.610**	0.565***	0.620***
	(0.116)	(0.117)	(0.203)	(0.203)	(0.357)	(0.357)	(0.162)	(0.156)	(0.254)	(0.257)	(0.201)	(0.215)
Observations	128	128	128	128	128	128	128	128	128	128	128	128
Fixed Effects	No	No	No	No	No	No	No	No	No	No	No	No
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports the results of negative binomial regressions without fixed effect. The unit of observation is the municipality. Robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.9: Robustness check Table 5: selection on observed and unobserved variables (Altonji et al. 2005) - unrestricted, no fixed effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	-0.040	-0.351**	-0.219	-0.682**	-0.264*	-0.312	-0.047	-0.414**	-0.081	-0.608	0.510***	0.104
	(0.128)	(0.159)	(0.176)	(0.273)	(0.150)	(0.234)	(0.136)	(0.187)	(0.317)	(0.448)	(0.176)	(0.273)
Interaction		0.148***		0.214***		0.018		0.170***		0.271**		0.199**
		(0.044)		(0.082)		(0.093)		(0.063)		(0.131)		(0.098)
Demob. polarization (st.)	0.172	0.175	0.395*	0.398**	0.242	0.249	0.254	0.264*	0.088	0.077	-0.091	-0.109
	(0.127)	(0.123)	(0.204)	(0.203)	(0.186)	(0.189)	(0.165)	(0.152)	(0.214)	(0.224)	(0.201)	(0.203)
Demob. fractionalization (st.)	-0.117	-0.125	-0.073	-0.069	-0.013	-0.033	-0.201	-0.208	0.073	0.085	-0.092	-0.087
	(0.131)	(0.122)	(0.210)	(0.203)	(0.182)	(0.180)	(0.177)	(0.162)	(0.204)	(0.216)	(0.234)	(0.238)
Total no. demob. (/1000)	0.028	0.030	0.045	0.041	-0.179*	-0.199	0.049	0.074	0.017	-0.036	0.082	0.058
	(0.053)	(0.065)	(0.087)	(0.129)	(0.100)	(0.136)	(0.062)	(0.100)	(0.067)	(0.113)	(0.073)	(0.111)
Observations	129	129	129	129	129	129	129	129	129	129	129	129
Fixed Effects	No	No	No	No	No	No	No	No	No	No	No	No
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates with no control variable and no fixed effect. Robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.10: Robustness check Table 5: selection on observed and unobserved variables (Altonji et al. 2005) - restricted, no fixed effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.399**	0.104	-0.135	-0.945*	1.071**	1.552***	0.243	-0.059	0.330	-0.565	1.972***	0.718
	(0.197)	(0.242)	(0.466)	(0.530)	(0.467)	(0.557)	(0.387)	(0.419)	(0.610)	(0.796)	(0.440)	(0.457)
Interaction		0.161**		0.528***		-0.338*		0.178*		0.543*		0.561***
		(0.071)		(0.168)		(0.189)		(0.099)		(0.290)		(0.190)
Demob. polarization (st.)	0.539***	0.578***	0.936***	1.206***	0.237	0.242	0.782***	0.820***	0.168	0.252	0.314	0.399
	(0.123)	(0.128)	(0.306)	(0.325)	(0.316)	(0.287)	(0.274)	(0.272)	(0.330)	(0.381)	(0.245)	(0.283)
Demob. fractionalization (st.)	-0.303**	-0.339**	-0.443	-0.674**	0.330	0.325	-0.353	-0.391	0.431	0.320	-0.212	-0.320
	(0.130)	(0.138)	(0.316)	(0.334)	(0.364)	(0.340)	(0.286)	(0.298)	(0.426)	(0.463)	(0.245)	(0.303)
Hutu share province, 2012	5.586***	6.119***	12.521***	15.137***	1.871	0.568	4.327**	4.896***	7.955**	11.587***	7.235***	8.180***
	(1.061)	(1.092)	(3.576)	(3.299)	(3.561)	(3.717)	(1.826)	(1.809)	(3.319)	(4.455)	(2.493)	(2.758)
Ethnic frac., 2012	0.274**	0.376***	0.635**	0.888***	-0.557	-0.740*	0.165	0.255	0.383	0.885*	0.495*	0.737**
	(0.132)	(0.123)	(0.285)	(0.252)	(0.378)	(0.398)	(0.221)	(0.218)	(0.423)	(0.487)	(0.277)	(0.292)
Total no. demob. (/1000)	0.656***	0.502***	1.322***	0.766	-0.008	-0.100	1.229***	1.155***	-0.388	-0.841	0.837**	0.052
	(0.170)	(0.184)	(0.469)	(0.527)	(0.464)	(0.487)	(0.286)	(0.307)	(0.639)	(0.752)	(0.393)	(0.396)
Past violence (log)	0.075	0.096	-0.201	-0.150	0.033	0.096	0.156	0.187	0.025	0.023	0.371**	0.423**
	(0.097)	(0.094)	(0.227)	(0.217)	(0.196)	(0.204)	(0.153)	(0.149)	(0.264)	(0.269)	(0.183)	(0.184)
Median Wealth Index (st.)	-0.053	-0.076	0.267	0.108	-1.327**	-1.472**	-0.126	-0.180	-1.173**	-1.093***	-0.017	-0.129
	(0.119)	(0.109)	(0.358)	(0.385)	(0.518)	(0.642)	(0.182)	(0.180)	(0.497)	(0.395)	(0.167)	(0.179)
Population (log)	2.236***	1.775***	3.261***	1.931	1.479	1.698	3.395***	3.028***	0.759	-0.594	2.109**	0.161
	(0.446)	(0.540)	(1.197)	(1.350)	(0.984)	(1.086)	(0.811)	(0.813)	(1.674)	(1.872)	(0.821)	(0.943)
Population density (log)	0.121	0.169	0.425	0.613*	-0.068	0.116	-0.022	0.057	1.800***	2.002***	0.432	0.660**
	(0.150)	(0.161)	(0.310)	(0.320)	(0.513)	(0.509)	(0.289)	(0.319)	(0.658)	(0.612)	(0.286)	(0.323)
CNDD	-0.023***	-0.023***	-0.027***	-0.029***	-0.012	-0.005	-0.023***	-0.026***	-0.035	-0.034	-0.023	-0.013
	(0.007)	(0.006)	(0.009)	(0.010)	(0.013)	(0.015)	(0.006)	(0.007)	(0.024)	(0.024)	(0.015)	(0.014)
CNDD-FDD	-0.010***	-0.006	-0.022**	-0.009	0.012	0.011	-0.017***	-0.014**	0.018	0.028	-0.010	0.005
	(0.004)	(0.004)	(0.009)	(0.010)	(0.011)	(0.011)	(0.006)	(0.006)	(0.015)	(0.018)	(0.008)	(0.009)
FNL - Rwasa	-0.013***	-0.011***	-0.014	-0.008	0.001	0.002	-0.033***	-0.033***	-0.015	-0.006	-0.018***	-0.007
	(0.004)	(0.003)	(0.009)	(0.010)	(0.011)	(0.011)	(0.007)	(0.008)	(0.010)	(0.012)	(0.007)	(0.006)
FNL Dissidents	-0.022***	-0.013**	-0.026**	-0.005	-0.090*	-0.107***	-0.019	-0.008	-0.026	0.005	-0.030**	-0.010
	(0.005)	(0.006)	(0.010)	(0.013)	(0.046)	(0.039)	(0.013)	(0.016)	(0.017)	(0.019)	(0.015)	(0.017)
FNL Icanzo	0.074***	0.070***	0.049	0.048	-0.207**	-0.190**	0.068	0.056	0.095	0.078	0.017	0.011
	(0.023)	(0.023)	(0.045)	(0.043)	(0.096)	(0.095)	(0.054)	(0.056)	(0.060)	(0.056)	(0.065)	(0.055)
Frolina	0.014***	0.011***	0.013**	0.009	0.019***	0.023***	0.017***	0.016***	0.003	-0.006	-0.208***	-0.194***
	(0.004)	(0.003)	(0.006)	(0.006)	(0.007)	(0.008)	(0.005)	(0.005)	(0.017)	(0.016)	(0.066)	(0.068)
KAZE-FDD	0.012	0.016	-0.014	0.015	0.017	0.026	-0.056**	-0.053**	0.028	0.053	0.046*	0.075**
	(0.012)	(0.012)	(0.061)	(0.054)	(0.038)	(0.032)	(0.023)	(0.023)	(0.032)	(0.040)	(0.024)	(0.029)
Palipe Agazika	-0.004	-0.006	-0.032*	-0.038*	-0.072	-0.041	-0.009	-0.010	-0.005	-0.008	0.031*	0.021
	(0.008)	(0.008)	(0.018)	(0.021)	(0.045)	(0.045)	(0.015)	(0.015)	(0.022)	(0.023)	(0.018)	(0.014)
FAB	-0.001	-0.001	-0.004	-0.008	-0.002	-0.001	0.002	0.002	-0.005	-0.007	0.014*	0.014**
	(0.003)	(0.003)	(0.007)	(0.007)	(0.005)	(0.005)	(0.004)	(0.005)	(0.008)	(0.008)	(0.007)	(0.007)
FDN	0.004	0.006*	0.011	0.019**	-0.003	-0.010	0.002	0.004	0.014	0.018*	-0.016**	-0.012*
	(0.004)	(0.004)	(0.009)	(0.010)	(0.010)	(0.010)	(0.006)	(0.006)	(0.010)	(0.011)	(0.007)	(0.006)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.11: Robustness check Table 5: controlling for the number of demobilized from each group

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.528***	0.381**	-0.077	-0.472	0.393	0.283	0.661**	0.500	0.989**	0.698	1.962***	1.461***
	(0.159)	(0.160)	(0.328)	(0.411)	(0.435)	(0.461)	(0.317)	(0.316)	(0.448)	(0.514)	(0.293)	(0.252)
Interaction		0.109**		0.300***		0.032		0.123**		0.167		0.360**
		(0.043)		(0.105)		(0.092)		(0.060)		(0.154)		(0.162)
Demob. polarization (st.)	0.493***	0.560***	1.023***	1.303***	0.574***	0.592***	0.583**	0.665**	0.121	0.290	0.328	0.529
	(0.143)	(0.144)	(0.315)	(0.347)	(0.218)	(0.230)	(0.290)	(0.300)	(0.455)	(0.461)	(0.356)	(0.357)
Demob. fractionalization (st.)	-0.244	-0.340*	-0.420	-0.682*	-0.363	-0.390	-0.159	-0.242	0.256	-0.030	-0.280	-0.784
	(0.197)	(0.188)	(0.371)	(0.390)	(0.326)	(0.340)	(0.353)	(0.356)	(0.803)	(0.796)	(0.493)	(0.521)
Hutu share province, 2012	3.602***	4.295***	6.808**	8.806***	0.640	0.488	2.960	3.968**	2.916	3.907	6.014**	7.348***
	(1.258)	(1.176)	(3.022)	(3.091)	(4.382)	(4.344)	(2.051)	(1.976)	(3.055)	(3.340)	(2.347)	(2.667)
Ethnic frac., 2012	0.087	0.160	-0.002	0.212	-0.427	-0.402	0.146	0.256	0.150	0.294	0.368	0.476*
	(0.165)	(0.153)	(0.319)	(0.300)	(0.489)	(0.475)	(0.286)	(0.308)	(0.340)	(0.351)	(0.271)	(0.277)
Total no. demob. (/1000)	0.060	0.099	0.124	0.148	-0.015	-0.002	0.045	0.095	-0.191	-0.164	0.133	0.054
	(0.071)	(0.070)	(0.125)	(0.121)	(0.115)	(0.141)	(0.095)	(0.098)	(0.137)	(0.152)	(0.099)	(0.095)
Past violence (log)	0.100	0.110	-0.064	-0.043	0.122	0.133	0.114	0.135	-0.062	-0.031	0.336**	0.338***
	(0.109)	(0.102)	(0.196)	(0.195)	(0.228)	(0.229)	(0.158)	(0.145)	(0.233)	(0.222)	(0.131)	(0.128)
Median Wealth Index (st.)	-0.068	-0.049	0.156	0.121	-1.851	-1.785	-0.345*	-0.318*	-1.110***	-0.953**	-0.292*	-0.335**
	(0.160)	(0.120)	(0.333)	(0.339)	(1.341)	(1.218)	(0.198)	(0.168)	(0.360)	(0.405)	(0.168)	(0.159)
Population (log)	1.199***	1.158***	1.433***	1.386***	1.870***	1.859***	1.266***	1.208***	1.217*	1.110	0.522	0.440
	(0.204)	(0.198)	(0.466)	(0.475)	(0.549)	(0.559)	(0.369)	(0.356)	(0.689)	(0.703)	(0.363)	(0.422)
Population density (log)	0.116	0.151	0.103	0.244	-0.137	-0.167	-0.288	-0.178	1.140***	1.167**	0.358	0.559*
	(0.193)	(0.164)	(0.304)	(0.322)	(0.524)	(0.593)	(0.284)	(0.284)	(0.426)	(0.513)	(0.241)	(0.295)
CNDD Nyangoma prop.	-1.769*	-1.630*	-1.813	-1.660	0.851	0.968	-1.280	-1.292	-8.931**	-7.538*	-5.712**	-4.209
	(0.995)	(0.898)	(1.721)	(1.656)	(1.572)	(1.504)	(1.416)	(1.283)	(4.138)	(4.163)	(2.762)	(2.703)
FNL Agathon Rwasa prop.	0.899	0.929	1.733	1.503	2.765**	2.886**	-1.361	-1.431	-1.712	-1.581	-1.516	-1.810
	(0.632)	(0.615)	(1.188)	(1.240)	(1.225)	(1.208)	(1.131)	(1.139)	(1.408)	(1.390)	(1.156)	(1.124)
FNL Dissidents prop.	-0.949	0.643	1.051	3.534	5.170	5.333	0.328	1.637	2.457	4.579	-0.221	3.643
	(2.265)	(2.276)	(4.542)	(4.954)	(5.271)	(5.735)	(3.436)	(3.738)	(6.285)	(6.823)	(4.615)	(4.870)
FNL Icanzo prop.	12.158***	12.745***	12.987***	16.487***	-10.923	-10.199	13.108	13.843	10.923	12.713	16.979*	15.249**
	(3.560)	(3.638)	(4.456)	(4.587)	(7.319)	(7.294)	(8.916)	(8.973)	(8.175)	(7.870)	(8.809)	(7.635)
FROLINA prop.	1.377*	1.492*	1.012	1.366	2.681	2.709	-0.733	-0.639	1.617	2.737	-27.000***	-23.622***
	(0.837)	(0.812)	(1.697)	(1.615)	(1.947)	(2.003)	(1.241)	(1.186)	(4.142)	(5.001)	(7.835)	(8.295)
KAZE-FDD prop.	3.802	3.617	-0.591	0.672	2.645	2.616	-4.273	-4.150	-1.305	0.703	13.560***	15.703***
	(2.481)	(2.511)	(8.308)	(9.007)	(4.241)	(4.194)	(4.076)	(4.058)	(6.831)	(7.069)	(3.833)	(5.437)
Palipe Agakiza prop.	-1.192	-1.097	-2.980	-3.592	-23.055*	-22.645*	-1.077	-1.014	-6.968	-4.977	1.749	2.793
	(1.463)	(1.454)	(2.524)	(2.387)	(12.343)	(11.929)	(2.486)	(2.361)	(5.363)	(5.035)	(2.976)	(2.774)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.12: Robustness check Table 5: controlling for the proportion of demobilized from each rebel group (number of demobilized divided from one group divided by total number of demobilized)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.370*	-0.068	-0.153	-1.131**	0.624	1.111**	0.374	-0.116	0.163	-0.748	1.855***	0.641
	(0.191)	(0.202)	(0.407)	(0.487)	(0.409)	(0.546)	(0.338)	(0.370)	(0.442)	(0.592)	(0.413)	(0.399)
Interaction		0.241***		0.631***		-0.348*		0.301***		0.516**		0.669***
		(0.065)		(0.151)		(0.192)		(0.106)		(0.244)		(0.208)
Demob. polarization (st.)	0.525***	0.629***	0.944***	1.359***	0.397	0.389	0.571**	0.702**	0.298	0.379	0.235	0.286
	(0.133)	(0.140)	(0.309)	(0.352)	(0.299)	(0.269)	(0.264)	(0.276)	(0.368)	(0.369)	(0.295)	(0.342)
Demob. fractionalization (st.)	-0.227	-0.341**	-0.342	-0.764**	0.052	0.064	-0.027	-0.185	0.423	0.291	0.160	0.023
	(0.143)	(0.153)	(0.330)	(0.352)	(0.335)	(0.314)	(0.284)	(0.315)	(0.450)	(0.451)	(0.267)	(0.374)
Hutu share province, 2012	5.530***	6.625***	11.676***	15.967***	1.900	1.263	3.722*	4.642**	5.316	7.835*	5.657**	7.452***
	(1.216)	(1.216)	(3.627)	(3.823)	(4.002)	(4.135)	(2.142)	(1.988)	(3.405)	(4.163)	(2.664)	(2.890)
Ethnic frac., 2012	0.268*	0.435***	0.515	0.918***	-0.415	-0.481	0.151	0.321	0.155	0.601	0.405	0.645**
	(0.147)	(0.129)	(0.333)	(0.283)	(0.479)	(0.485)	(0.256)	(0.252)	(0.395)	(0.472)	(0.338)	(0.318)
Total no. demob. (/1000)	0.192	0.228**	0.255	0.399*	0.262	0.081	0.592***	0.673***	0.500*	0.629**	0.501***	0.529**
	(0.122)	(0.093)	(0.227)	(0.233)	(0.270)	(0.281)	(0.167)	(0.189)	(0.274)	(0.275)	(0.194)	(0.219)
Past violence (log)	0.100	0.124	-0.045	-0.059	0.052	0.124	0.155	0.198	0.071	0.101	0.406**	0.482**
	(0.103)	(0.096)	(0.242)	(0.221)	(0.188)	(0.203)	(0.161)	(0.149)	(0.258)	(0.272)	(0.179)	(0.213)
Median Wealth Index (st.)	-0.144	-0.180	0.151	-0.033	-2.139*	-2.160*	-0.301	-0.369**	-1.772*	-1.545**	0.022	-0.095
	(0.147)	(0.117)	(0.359)	(0.397)	(1.227)	(1.229)	(0.208)	(0.183)	(0.965)	(0.774)	(0.246)	(0.234)
Population (log)	1.196***	1.062***	1.075*	1.053*	1.373***	1.383***	1.336***	1.143***	1.318	1.109	1.127***	0.685
	(0.200)	(0.201)	(0.585)	(0.620)	(0.486)	(0.503)	(0.363)	(0.345)	(0.856)	(0.803)	(0.431)	(0.496)
Population density (log)	0.089	0.235	0.383	0.822**	-0.218	-0.122	-0.149	0.057	1.683**	1.859***	0.144	0.541
	(0.154)	(0.159)	(0.339)	(0.353)	(0.510)	(0.523)	(0.262)	(0.295)	(0.803)	(0.684)	(0.283)	(0.352)
CNDD Nyangoma/pop.	-0.730	-1.031***	-0.558	-1.462***	-0.464	0.095	-0.763**	-1.231***	-5.350***	-6.409***	-2.278***	-4.592**
	(0.453)	(0.381)	(0.343)	(0.422)	(0.389)	(0.495)	(0.318)	(0.313)	(2.060)	(2.239)	(0.839)	(2.283)
FNL Agathon Rwasa/pop.	-0.278	-0.385**	-0.041	-0.476	-0.120	-0.011	-1.137***	-1.340***	-1.588**	-1.753***	-0.583*	-0.772**
	(0.294)	(0.190)	(0.471)	(0.469)	(0.543)	(0.558)	(0.428)	(0.433)	(0.806)	(0.634)	(0.348)	(0.363)
FNL dissidents/pop.	-1.664***	-0.544	-1.931**	0.023	-3.451*	-4.772**	-2.263**	-0.671	-2.599**	-0.468	-2.448**	-1.552
	(0.351)	(0.458)	(0.879)	(0.888)	(2.029)	(1.915)	(0.908)	(1.115)	(1.214)	(1.437)	(1.001)	(1.269)
FNL Icanzo/pop.	5.327***	4.495***	4.477	4.353*	-13.324**	-12.946*	5.687*	4.200	6.130*	3.919	4.807*	0.694
	(1.613)	(1.531)	(2.751)	(2.618)	(5.708)	(6.637)	(3.401)	(3.569)	(3.348)	(3.462)	(2.510)	(2.700)
FROLINA/pop.	0.744**	0.443	0.896**	0.196	1.495**	2.236***	-0.284	-0.660	-0.736	-1.114	-15.384***	-16.003***
	(0.316)	(0.357)	(0.416)	(0.525)	(0.645)	(0.736)	(0.466)	(0.468)	(0.908)	(0.960)	(5.425)	(5.455)
KAZE-FDD/pop.	2.021***	1.725**	0.380	0.556	1.440	1.980*	-1.241	-1.464	-0.236	0.240	3.708***	4.007***
	(0.726)	(0.748)	(3.899)	(3.704)	(1.482)	(1.162)	(1.652)	(1.699)	(1.965)	(1.908)	(0.945)	(1.256)
Palipe-Agakiza/pop.	0.307	-0.152	0.496	-1.341	-4.839	-2.484	-1.038	-1.600	-2.002*	-3.042**	0.532	-0.926
	(0.592)	(0.549)	(0.911)	(1.212)	(3.796)	(3.833)	(1.120)	(1.279)	(1.186)	(1.416)	(1.614)	(1.699)
FAB/pop.	-0.027	-0.048	-0.179	-0.215	-0.404	-0.384	0.124	0.072	-0.426	-0.413	0.621	0.704*
	(0.185)	(0.174)	(0.362)	(0.386)	(0.277)	(0.272)	(0.261)	(0.248)	(0.340)	(0.401)	(0.460)	(0.398)
FDN/pop.	0.264	0.389**	0.399	0.780	0.522	0.162	0.114	0.245	1.077**	1.175**	-0.609	-0.536
	(0.223)	(0.192)	(0.469)	(0.478)	(0.601)	(0.610)	(0.284)	(0.270)	(0.438)	(0.481)	(0.405)	(0.348)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.13: Robustness check Table 5: controlling for the density of demobilized from each rebel group (number of demobilized divided by population size)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.576**	0.073	0.705	0.001	0.560	0.481	0.796*	0.192	2.250***	1.398	2.643***	1.740***
	(0.276)	(0.283)	(0.546)	(0.659)	(0.581)	(0.648)	(0.473)	(0.570)	(0.844)	(1.036)	(0.559)	(0.587)
Interaction		0.178***		0.348***		0.033		0.206***		0.315		0.376**
		(0.063)		(0.112)		(0.104)		(0.077)		(0.257)		(0.177)
Demob. polarization (st.)	0.348***	0.423***	0.840***	0.982***	0.726**	0.731**	0.458**	0.551***	-0.350	-0.219	-0.388**	-0.146
	(0.112)	(0.125)	(0.269)	(0.297)	(0.312)	(0.317)	(0.208)	(0.207)	(0.279)	(0.281)	(0.187)	(0.214)
Demob. fractionalization (st.)	-0.086	-0.098	-0.203	-0.239	-0.277	-0.276	-0.087	-0.130	0.626	0.502	0.273	0.000
	(0.117)	(0.123)	(0.267)	(0.292)	(0.326)	(0.325)	(0.237)	(0.238)	(0.438)	(0.382)	(0.275)	(0.306)
Hutu share province, 2012	3.003**	4.635***	8.929***	11.399***	7.456	7.557*	3.039	4.749***	3.613	5.710	3.525*	5.864**
	(1.252)	(1.407)	(3.396)	(3.553)	(4.565)	(4.546)	(2.009)	(1.732)	(3.903)	(4.352)	(2.012)	(2.436)
Ethnic frac., 2012	0.156	0.366**	0.278	0.638*	0.141	0.157	0.219	0.467*	0.259	0.541	0.225	0.508**
	(0.167)	(0.166)	(0.327)	(0.331)	(0.490)	(0.491)	(0.291)	(0.255)	(0.483)	(0.468)	(0.212)	(0.222)
Total no. demob. (/1000)	0.056	0.160**	0.146	0.259**	-0.114	-0.096	0.093	0.224**	-0.317***	-0.221*	0.134*	0.113
	(0.064)	(0.080)	(0.111)	(0.122)	(0.105)	(0.124)	(0.087)	(0.099)	(0.115)	(0.121)	(0.080)	(0.100)
Past violence (log)	0.108	0.156*	-0.079	0.003	0.167	0.171	0.156	0.208	-0.023	0.018	0.287**	0.346**
	(0.108)	(0.093)	(0.201)	(0.203)	(0.192)	(0.194)	(0.156)	(0.140)	(0.250)	(0.252)	(0.143)	(0.142)
Median Wealth Index (st.)	-0.142	-0.169	-0.063	-0.234	-1.031	-1.010	-0.304	-0.262	-2.748**	-2.815**	-0.379**	-0.376**
	(0.163)	(0.145)	(0.342)	(0.354)	(0.806)	(0.821)	(0.248)	(0.204)	(1.137)	(1.405)	(0.179)	(0.185)
Population (log)	1.107***	1.055***	1.129***	1.073**	1.130**	1.127***	1.204***	1.184***	0.211	0.170	0.309	0.257
	(0.210)	(0.191)	(0.423)	(0.424)	(0.439)	(0.434)	(0.377)	(0.363)	(0.648)	(0.676)	(0.401)	(0.378)
Population density (log)	0.038	0.082	0.047	0.088	0.018	-0.009	-0.484	-0.387	1.232***	1.265***	0.004	0.234
	(0.207)	(0.164)	(0.353)	(0.327)	(0.520)	(0.523)	(0.331)	(0.277)	(0.461)	(0.477)	(0.246)	(0.229)
CNDD-FDD2005	-1.180	-2.170	10.070**	9.213**	2.609	2.557	-1.191	-2.916	8.270	6.076	-1.046	-2.336
	(2.302)	(2.122)	(4.216)	(4.311)	(4.177)	(4.174)	(3.339)	(3.353)	(7.435)	(6.571)	(4.122)	(4.036)
uprona2005	-1.147	-0.821	4.339	5.245	-0.681	-0.652	-4.077	-3.904	-10.602	-10.985	-9.634**	-9.140**
	(2.329)	(2.218)	(4.368)	(4.447)	(4.910)	(4.921)	(3.419)	(3.429)	(7.461)	(7.778)	(4.438)	(4.245)
frodebu2005	-1.020	-2.148	9.736**	8.285**	3.123	3.105	-2.358	-4.014	3.640	2.161	-1.766	-4.062
	(2.147)	(1.978)	(3.995)	(4.035)	(3.879)	(3.814)	(3.058)	(3.198)	(6.912)	(6.052)	(3.619)	(3.671)
cndd2005	-3.729*	-4.802**	4.128	2.361	3.940	3.883	-4.944*	-7.110**	-5.132	-5.731	-8.671*	-10.540**
	(2.071)	(1.899)	(3.367)	(3.696)	(4.051)	(3.959)	(2.888)	(3.235)	(7.098)	(6.967)	(4.534)	(4.333)
mrc2005	-5.563*	-5.134	10.812	10.743	12.910**	13.185**	-8.449	-9.567*	-5.905	-2.755	-11.057	-11.299
	(2.962)	(3.196)	(6.720)	(7.184)	(6.043)	(6.182)	(5.424)	(5.055)	(12.250)	(12.140)	(7.250)	(7.053)
parena2005	2.904	5.382	11.136	18.207**	-8.958	-8.284	6.239	8.971*	29.441***	31.078**	6.032	5.792
	(3.519)	(3.561)	(7.977)	(8.417)	(7.565)	(7.816)	(5.345)	(4.839)	(10.776)	(12.410)	(4.410)	(4.370)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.14: Robustness check Table 5: controlling for the share of votes obtained by each party in 2005

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	1.020***	0.472	0.273	-0.584	1.102*	1.340	0.763*	0.132	1.767***	0.626	3.436***	2.222***
	(0.269)	(0.310)	(0.535)	(0.810)	(0.624)	(0.826)	(0.428)	(0.535)	(0.641)	(0.910)	(0.480)	(0.524)
Interaction		0.170***		0.387***		-0.096		0.204**		0.429*		0.531**
		(0.059)		(0.142)		(0.145)		(0.086)		(0.255)		(0.212)
Demob. polarization (st.)	0.303**	0.339***	0.860***	1.065***	0.474	0.489*	0.462**	0.492**	0.036	0.080	-0.764***	-0.535**
	(0.122)	(0.121)	(0.265)	(0.308)	(0.294)	(0.286)	(0.194)	(0.191)	(0.358)	(0.404)	(0.260)	(0.269)
Demob. fractionalization (st.)	-0.071	-0.055	-0.215	-0.333	-0.088	-0.122	-0.113	-0.085	0.195	0.157	0.341	0.109
	(0.123)	(0.122)	(0.301)	(0.366)	(0.324)	(0.322)	(0.198)	(0.205)	(0.474)	(0.456)	(0.273)	(0.301)
Hutu share province, 2012	1.362	2.910***	3.010	7.095**	0.403	0.232	1.885	3.583*	4.470	7.720*	-1.449	2.200
	(1.179)	(1.081)	(3.498)	(3.348)	(4.043)	(4.352)	(2.082)	(1.905)	(4.116)	(4.180)	(2.083)	(3.063)
Ethnic frac., 2012	-0.029	0.181	-0.153	0.377	-0.258	-0.266	0.025	0.286	0.247	0.691	-0.420	-0.044
	(0.161)	(0.144)	(0.358)	(0.314)	(0.453)	(0.474)	(0.278)	(0.266)	(0.431)	(0.432)	(0.304)	(0.372)
Total no. demob. (/1000)	0.026	0.134*	0.055	0.214*	-0.101	-0.177	0.048	0.195*	-0.146	0.024	0.047	-0.003
	(0.067)	(0.075)	(0.109)	(0.125)	(0.102)	(0.131)	(0.081)	(0.101)	(0.132)	(0.154)	(0.112)	(0.146)
Past violence (log)	0.117	0.172**	-0.126	-0.018	0.087	0.073	0.103	0.159	0.014	0.089	0.463***	0.660***
	(0.092)	(0.080)	(0.209)	(0.220)	(0.217)	(0.222)	(0.131)	(0.124)	(0.229)	(0.213)	(0.136)	(0.114)
Median Wealth Index (st.)	-0.290*	-0.305**	-0.143	-0.229	-1.157	-1.124	-0.370**	-0.356**	-1.222***	-1.257***	-0.604***	-0.878***
	(0.160)	(0.131)	(0.382)	(0.371)	(0.725)	(0.689)	(0.187)	(0.158)	(0.391)	(0.473)	(0.166)	(0.204)
Population (log)	1.202***	1.131***	1.198**	1.160**	1.707***	1.736***	1.347***	1.291***	1.184*	1.085*	0.624	0.455
	(0.208)	(0.190)	(0.495)	(0.501)	(0.534)	(0.558)	(0.332)	(0.316)	(0.665)	(0.616)	(0.390)	(0.357)
Population density (log)	-0.001	0.027	0.042	0.302	0.414	0.512	-0.582**	-0.500**	1.282**	1.402***	-0.376*	-0.305
	(0.179)	(0.144)	(0.384)	(0.364)	(0.461)	(0.479)	(0.256)	(0.238)	(0.514)	(0.505)	(0.219)	(0.191)
CNDD-FDD	3.126	0.433	29.306	26.249	-4.923	-3.078	56.786***	51.900***	-6.561	-3.444	0.462	4.815
	(8.630)	(8.304)	(23.171)	(22.420)	(18.501)	(19.541)	(16.236)	(15.364)	(28.478)	(29.966)	(18.628)	(17.793)
FNL	3.449	0.670	31.750	27.187	-2.921	-1.143	57.038***	52.141***	-9.888	-5.684	-0.423	1.658
	(8.543)	(8.239)	(23.503)	(22.733)	(17.462)	(18.299)	(16.305)	(15.635)	(28.009)	(29.757)	(18.875)	(17.998)
UPRONA	-2.088	-2.871	27.744	28.847	-5.190	-3.724	51.850***	49.514***	-11.829	-4.067	-15.855	-10.780
	(8.496)	(8.123)	(24.213)	(23.683)	(16.890)	(17.379)	(16.727)	(15.852)	(28.719)	(30.419)	(19.685)	(19.108)
MSD	6.172	6.418	32.154	31.894	-7.525	-7.440	62.659***	61.036***	-6.221	4.510	5.434	14.649
	(8.803)	(8.475)	(23.291)	(22.696)	(19.408)	(19.886)	(16.260)	(15.627)	(28.775)	(29.941)	(18.782)	(17.652)
FRODEBU	-6.068	-10.106	24.620	16.037	-14.048	-11.215	50.718***	43.092***	-18.405	-16.250	-30.381	-30.699
	(9.247)	(8.979)	(23.473)	(22.332)	(20.158)	(21.396)	(16.636)	(15.857)	(31.303)	(32.721)	(20.192)	(20.759)
FRODEBU NYAKURI	0.706	1.705	26.476	27.165	0.593	0.635	55.140***	54.381***	-22.106	-13.025	-11.623	-6.938
	(9.776)	(9.442)	(25.208)	(24.311)	(19.878)	(19.959)	(16.488)	(15.734)	(28.335)	(28.165)	(20.388)	(19.257)
UPD ZIGAMIBANGA	-6.495	-6.737	15.758	14.863	-53.113**	-54.515**	57.283***	55.619***	-21.795	-14.632	-8.367	-6.128
	(9.637)	(8.540)	(27.476)	(25.604)	(21.907)	(22.288)	(17.217)	(16.031)	(31.311)	(32.633)	(18.854)	(18.559)
CNDD	0.333	2.249	25.047	31.405	-5.218	-5.616	58.609***	60.868***	-44.402	-23.749	12.833	86.415**
	(10.716)	(10.273)	(26.366)	(25.631)	(20.009)	(20.437)	(16.423)	(15.477)	(44.905)	(33.823)	(45.029)	(38.303)
MRC	-9.394	-13.453	2.976	-5.423	0.344	0.834	41.810**	31.437*	-33.121	-29.930	-69.453***	-84.029***
	(11.599)	(11.453)	(28.159)	(25.466)	(21.136)	(23.034)	(17.475)	(16.562)	(36.374)	(35.009)	(25.083)	(28.739)
FROLINA	5.468	-2.431	50.836*	38.255	43.168*	51.396**	54.381***	42.951**	-1673.514	-2772.219	-2786.310***	-2841.070***
	(11.225)	(11.221)	(26.290)	(26.064)	(22.578)	(25.646)	(19.266)	(18.505)	(1666.657)	(2114.894)	(859.362)	(837.840)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The list of control variables includes the electoral results of major parties at the 2010 municipal election. Major parties are the parties which get more than 1% of the votes at the national level or more than 5% of the votes in one municipality. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.15: Robustness check 5: controlling for the share of votes obtained by each party in 2010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.482***	0.336**	-0.296	-0.676*	0.247	0.158	0.523*	0.340	0.900**	0.465	1.604***	1.110***
	(0.144)	(0.150)	(0.301)	(0.371)	(0.375)	(0.404)	(0.276)	(0.274)	(0.441)	(0.501)	(0.239)	(0.222)
Interaction		0.106***		0.277***		0.004		0.126**		0.304		0.346**
		(0.040)		(0.090)		(0.092)		(0.058)		(0.190)		(0.153)
Demob. polarization (st.)	0.304***	0.312***	0.757***	0.874***	0.505***	0.505***	0.413***	0.441***	0.234	0.215	0.080	-0.019
	(0.087)	(0.089)	(0.231)	(0.263)	(0.162)	(0.163)	(0.159)	(0.152)	(0.215)	(0.249)	(0.172)	(0.162)
Hutu share province, 2012	3.420***	4.144***	8.165**	9.652***	1.875	2.067	2.508	3.347*	4.218	5.784*	3.933**	5.951**
	(1.265)	(1.191)	(3.196)	(3.002)	(3.448)	(3.423)	(2.128)	(2.011)	(3.485)	(3.267)	(1.926)	(2.321)
Ethnic frac., 2012	0.167	0.247	0.312	0.504*	-0.169	-0.090	0.111	0.224	0.231	0.479	0.290	0.394*
	(0.165)	(0.151)	(0.325)	(0.297)	(0.376)	(0.373)	(0.299)	(0.310)	(0.395)	(0.354)	(0.211)	(0.208)
Total no. demob. (/1000)	0.037	0.078	0.107	0.141	-0.101	-0.111	0.071	0.127	-0.149	-0.132	0.167**	0.091
	(0.061)	(0.055)	(0.103)	(0.093)	(0.092)	(0.107)	(0.074)	(0.079)	(0.121)	(0.130)	(0.079)	(0.112)
Past violence (log)	0.126	0.134	-0.013	0.012	0.155	0.166	0.129	0.148	-0.117	-0.106	0.348***	0.330***
	(0.103)	(0.096)	(0.209)	(0.206)	(0.205)	(0.206)	(0.162)	(0.149)	(0.221)	(0.213)	(0.124)	(0.126)
Median Wealth Index (st.)	-0.135	-0.131	0.118	0.060	-1.677	-1.684	-0.215	-0.192	-0.965***	-0.895***	-0.206	-0.226
	(0.154)	(0.125)	(0.338)	(0.342)	(1.134)	(1.242)	(0.182)	(0.166)	(0.277)	(0.306)	(0.160)	(0.151)
Population (log)	1.083***	1.012***	1.025**	0.933*	1.203**	1.195**	1.220***	1.149***	0.828	0.599	0.602	0.402
	(0.220)	(0.215)	(0.487)	(0.517)	(0.474)	(0.478)	(0.389)	(0.367)	(0.611)	(0.598)	(0.367)	(0.392)
Population density (log)	0.133	0.171	0.254	0.342	0.003	0.045	-0.277	-0.171	1.215***	1.339***	0.275	0.473**
	(0.205)	(0.179)	(0.329)	(0.327)	(0.460)	(0.484)	(0.289)	(0.280)	(0.419)	(0.429)	(0.222)	(0.218)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.16: Robustness check Table 5: without controlling for fractionalization between demobilized rebels.

	Second-stage regression - dependent variable: aggregated indicator of electoral violence											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Measure of political competition	Fractionalization			Polarization			$1-(v_i-v_j)^2$			All 3		
	2010	Reduced	IV	2010	Reduced	IV	2010	Reduced	IV	2010	Reduced	IV
Fractionalization (st.)	0.369***	0.303***	0.506***							0.764*	0.708**	2.346*
	(0.126)	(0.083)	(0.144)							(0.400)	(0.290)	(1.205)
Polarization (st.)				0.291***	0.204**	0.316**				0.530***	0.383	0.965
				(0.095)	(0.088)	(0.150)				(0.170)	(0.251)	(0.823)
$1-(v_i-v_j)^2$							1.465***	0.994***	1.713***	-4.023*	-3.184*	-12.192
							(0.540)	(0.374)	(0.661)	(2.160)	(1.891)	(8.533)
Demob. polarization (st.)	0.337***	0.393***	0.342***	0.304***	0.362***	0.301***	0.301***	0.361***	0.299***	0.371***	0.440***	0.468***
	(0.102)	(0.107)	(0.103)	(0.110)	(0.107)	(0.107)	(0.102)	(0.106)	(0.102)	(0.118)	(0.112)	(0.142)
Demob. fractionalization (st.)	-0.056	-0.156	-0.065	-0.053	-0.116	-0.056	-0.037	-0.123	-0.040	-0.105	-0.188	-0.179
	(0.105)	(0.114)	(0.105)	(0.110)	(0.117)	(0.112)	(0.104)	(0.115)	(0.105)	(0.113)	(0.116)	(0.145)
Hutu share province, 2012	2.948**	2.769**	3.414***	1.956	2.090	1.968	2.397*	2.239*	2.505*	2.856**	3.229***	4.822***
	(1.331)	(1.197)	(1.248)	(1.279)	(1.331)	(1.282)	(1.307)	(1.246)	(1.283)	(1.288)	(1.238)	(1.418)
Ethnic frac., 2012	0.126	0.139	0.157	0.023	0.081	0.019	0.066	0.094	0.069	0.114	0.178	0.305*
	(0.167)	(0.167)	(0.166)	(0.148)	(0.166)	(0.146)	(0.158)	(0.164)	(0.158)	(0.146)	(0.167)	(0.160)
Total no. demob. (/1000)	0.020	0.030	0.041	-0.005	-0.015	-0.003	0.004	0.005	0.010	0.024	0.026	0.084
	(0.062)	(0.063)	(0.062)	(0.052)	(0.053)	(0.052)	(0.058)	(0.059)	(0.058)	(0.052)	(0.057)	(0.059)
Past violence (log)	0.144	0.165*	0.126	0.112	0.155	0.108	0.139	0.169*	0.130	0.096	0.132	0.084
	(0.104)	(0.099)	(0.102)	(0.104)	(0.105)	(0.110)	(0.105)	(0.102)	(0.106)	(0.103)	(0.101)	(0.111)
Median Wealth Index (st.)	-0.118	-0.119	-0.136	-0.021	-0.047	-0.021	-0.097	-0.090	-0.104	-0.006	-0.077	0.017
	(0.150)	(0.163)	(0.157)	(0.124)	(0.145)	(0.124)	(0.141)	(0.151)	(0.144)	(0.131)	(0.170)	(0.171)
Population (log)	1.076***	1.181***	1.102***	1.169***	1.166***	1.176***	1.105***	1.163***	1.117***	1.167***	1.215***	1.142***
	(0.223)	(0.227)	(0.218)	(0.218)	(0.231)	(0.222)	(0.223)	(0.229)	(0.221)	(0.215)	(0.228)	(0.219)
Population density (log)	0.131	0.161	0.141	0.088	0.138	0.087	0.096	0.126	0.095	0.151	0.235	0.279
	(0.200)	(0.213)	(0.208)	(0.178)	(0.203)	(0.177)	(0.194)	(0.202)	(0.195)	(0.180)	(0.242)	(0.225)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. In columns (1) to (3), political competition is measured by an index of fractionalization. In columns (4) to (6), political competition is measured by an indicator of polarization. In columns (7) to (9), political competition is a function of the difference in electoral results between the two major parties in the municipality: $1-(v_i-v_j)^2$. All three measures are included in columns (10) to (12). In columns (1), (4), (7) and (10), political competition is a fractionalization index built using results of the 2010 municipal elections. In columns (2), (5), (8) and (11), political competition is a fractionalization index built using results of the 2005 municipal elections. In columns (3), (6), (9) and (12), political competition in 2010 is instrumented by political competition in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.17: Robustness check: comparing different measures of political competition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political polarization 2010 (st.)	0.316**	0.398**	0.222	-0.152	0.371	0.266	0.273	0.580**	0.479	0.556	1.028***	1.711***
	(0.150)	(0.191)	(0.271)	(0.407)	(0.287)	(0.450)	(0.208)	(0.284)	(0.364)	(0.468)	(0.259)	(0.385)
Interaction		0.009		0.114*		0.084		-0.031		0.034		-0.079
		(0.036)		(0.061)		(0.079)		(0.040)		(0.085)		(0.052)
Demob. polarization (st.)	0.301***	0.289***	0.837***	0.858***	0.659**	0.626**	0.441**	0.420**	-0.088	-0.084	-0.397**	-0.330
	(0.107)	(0.108)	(0.266)	(0.259)	(0.272)	(0.263)	(0.210)	(0.209)	(0.250)	(0.245)	(0.183)	(0.209)
Demob. fractionalization (st.)	-0.056	-0.068	-0.216	-0.184	-0.161	-0.097	-0.070	-0.119	0.198	0.171	0.235	-0.033
	(0.112)	(0.108)	(0.278)	(0.276)	(0.279)	(0.283)	(0.206)	(0.200)	(0.361)	(0.358)	(0.251)	(0.275)
Hutu share province, 2012	1.968	2.080*	9.699***	9.692***	3.515	5.320	0.852	0.876	0.743	0.725	-1.245	-0.698
	(1.282)	(1.237)	(2.850)	(2.834)	(3.100)	(3.349)	(1.823)	(1.796)	(3.278)	(3.203)	(1.519)	(1.422)
Ethnic frac., 2012	0.019	0.014	0.340	0.379	0.048	0.121	-0.054	-0.098	-0.087	-0.079	-0.338	-0.392*
	(0.146)	(0.146)	(0.317)	(0.312)	(0.371)	(0.444)	(0.265)	(0.267)	(0.382)	(0.385)	(0.211)	(0.232)
Total no. demob. (/1000)	-0.003	0.004	0.157*	0.144*	-0.065	-0.061	0.012	0.023	-0.225**	-0.245**	-0.061	-0.075
	(0.052)	(0.050)	(0.095)	(0.084)	(0.099)	(0.089)	(0.066)	(0.064)	(0.102)	(0.119)	(0.083)	(0.083)
Past violence (log)	0.108	0.093	-0.074	0.055	-0.017	-0.071	0.124	0.062	-0.102	-0.114	0.319	0.112
	(0.110)	(0.107)	(0.210)	(0.232)	(0.180)	(0.213)	(0.176)	(0.181)	(0.216)	(0.229)	(0.197)	(0.198)
Median Wealth Index (st.)	-0.021	-0.007	0.150	0.235	-0.364	-0.152	-0.091	-0.101	-0.603**	-0.573**	0.009	0.043
	(0.124)	(0.118)	(0.338)	(0.361)	(0.531)	(0.579)	(0.173)	(0.172)	(0.241)	(0.254)	(0.148)	(0.138)
Population (log)	1.176***	1.202***	1.209***	0.994**	1.538***	1.681***	1.303***	1.389***	0.851	0.878	0.516	0.818*
	(0.222)	(0.209)	(0.464)	(0.499)	(0.420)	(0.501)	(0.426)	(0.415)	(0.570)	(0.540)	(0.519)	(0.475)
Population density (log)	0.087	0.085	0.305	0.337	-0.109	-0.265	-0.299	-0.313	0.872**	0.835*	0.107	0.176
	(0.177)	(0.182)	(0.342)	(0.399)	(0.516)	(0.603)	(0.280)	(0.290)	(0.429)	(0.481)	(0.214)	(0.212)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.18: Robustness check Table 5: political competition proxied by political polarization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp.	1.713***	0.054	-0.137	-0.969	1.195	-0.193	2.305**	0.635	3.818**	1.044	6.350***	2.062*
	(0.661)	(0.905)	(1.277)	(1.642)	(1.545)	(1.683)	(1.069)	(1.199)	(1.642)	(2.051)	(1.099)	(1.126)
Interaction		0.244		0.372		0.094		0.305		0.349		0.346
		(0.213)		(0.319)		(0.455)		(0.234)		(0.425)		(0.292)
Demob. polarization (st.)	0.299***	0.219*	0.858***	0.748***	0.585**	0.580**	0.425**	0.393**	0.029	-0.053	-0.266	-0.284
	(0.102)	(0.120)	(0.263)	(0.253)	(0.230)	(0.226)	(0.213)	(0.195)	(0.232)	(0.242)	(0.189)	(0.173)
Demob. fractionalization (st.)	-0.040	0.048	-0.197	-0.136	-0.164	-0.113	-0.071	-0.065	0.179	0.389	0.275	0.315
	(0.105)	(0.135)	(0.271)	(0.267)	(0.245)	(0.231)	(0.207)	(0.199)	(0.346)	(0.362)	(0.245)	(0.219)
Hutu share province, 2012	2.505*	-0.036	9.043***	0.381	2.108	-0.360	1.519	-0.092	2.915	-0.659	1.194	-0.859
	(1.283)	(1.737)	(2.978)	(3.090)	(3.025)	(2.979)	(1.947)	(1.847)	(3.269)	(3.015)	(1.575)	(1.499)
Ethnic frac., 2012	0.069	-0.195	0.348	-0.358	-0.164	-0.339	-0.012	-0.267	0.091	-0.234	-0.028	-0.311
	(0.158)	(0.180)	(0.316)	(0.370)	(0.381)	(0.365)	(0.283)	(0.285)	(0.388)	(0.349)	(0.200)	(0.197)
Total no. demob. (/1000)	0.010	-0.200	0.144	-0.173	-0.104	-0.200	0.048	-0.203	-0.188*	-0.390	0.052	-0.339
	(0.058)	(0.128)	(0.104)	(0.257)	(0.094)	(0.241)	(0.070)	(0.158)	(0.108)	(0.343)	(0.074)	(0.236)
Past violence (log)	0.130	0.389**	-0.031	0.292	0.066	0.496	0.126	0.383*	-0.137	0.206	0.352**	0.505**
	(0.106)	(0.169)	(0.213)	(0.210)	(0.206)	(0.314)	(0.169)	(0.231)	(0.221)	(0.241)	(0.151)	(0.222)
Median Wealth Index (st.)	-0.104	-0.295*	0.110	-0.462	-1.084	-1.032*	-0.194	-0.365	-0.865***	-0.671***	-0.198	-0.216*
	(0.144)	(0.170)	(0.348)	(0.407)	(0.747)	(0.534)	(0.180)	(0.227)	(0.257)	(0.237)	(0.157)	(0.128)
Population (log)	1.117***	0.005	1.121**	-0.002	1.493***	0.000	1.272***	0.015	0.884	-0.012	0.563	-0.039
	(0.221)	(0.542)	(0.470)	(0.491)	(0.468)	(0.589)	(0.399)	(0.513)	(0.603)	(0.636)	(0.414)	(0.549)
Population density (log)	0.095	-0.019	0.306	-0.053	-0.045	-0.030	-0.335	-0.075	1.045**	0.047	0.124	-0.004
	(0.195)	(0.205)	(0.342)	(0.388)	(0.466)	(0.492)	(0.294)	(0.324)	(0.416)	(0.416)	(0.209)	(0.182)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.19: Robustness check Table 5: political competition $= 1 - |v_i - v_j|^2$ where v_i and v_i are the electoral results of the two main parties in the municipality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.487***	0.344**	-0.324	-0.635*	0.324	0.257	0.535*	0.344	0.925**	0.500	1.595***	1.057***
	(0.147)	(0.150)	(0.305)	(0.364)	(0.355)	(0.401)	(0.307)	(0.303)	(0.453)	(0.504)	(0.263)	(0.230)
Interaction		0.104***		0.239***		0.005		0.130**		0.307		0.414**
		(0.040)		(0.086)		(0.088)		(0.059)		(0.189)		(0.184)
Qindex2st	0.287***	0.302***	0.548*	0.682**	0.657**	0.657**	0.727***	0.776***	0.277	0.285	0.325	0.384*
	(0.094)	(0.098)	(0.285)	(0.312)	(0.278)	(0.273)	(0.219)	(0.214)	(0.314)	(0.356)	(0.217)	(0.217)
Demob. fractionalization (st.)	-0.049	-0.058	0.017	-0.053	-0.263	-0.270	-0.282	-0.303	0.010	-0.060	-0.186	-0.474*
	(0.111)	(0.113)	(0.277)	(0.283)	(0.281)	(0.261)	(0.206)	(0.202)	(0.368)	(0.357)	(0.284)	(0.271)
Hutu share province, 2012	3.016**	3.734***	7.057**	8.195***	1.765	1.866	2.139	2.953	4.588	6.080*	3.987**	6.142***
	(1.245)	(1.183)	(3.108)	(2.905)	(3.164)	(3.223)	(2.104)	(1.942)	(3.576)	(3.398)	(1.763)	(2.141)
Ethnic frac., 2012	0.118	0.196	0.204	0.347	-0.232	-0.180	0.056	0.176	0.251	0.483	0.313	0.416**
	(0.160)	(0.147)	(0.312)	(0.288)	(0.373)	(0.396)	(0.290)	(0.290)	(0.404)	(0.371)	(0.192)	(0.172)
Total no. demob. (/1000)	0.030	0.070	0.083	0.120	-0.108	-0.115	0.063	0.118	-0.151	-0.132	0.167*	0.099
	(0.061)	(0.055)	(0.100)	(0.092)	(0.090)	(0.100)	(0.079)	(0.081)	(0.120)	(0.130)	(0.086)	(0.112)
Past violence (log)	0.131	0.138	-0.027	-0.007	0.160	0.167	0.144	0.166	-0.125	-0.113	0.345***	0.316***
	(0.103)	(0.096)	(0.222)	(0.221)	(0.200)	(0.201)	(0.163)	(0.149)	(0.219)	(0.212)	(0.122)	(0.122)
Median Wealth Index (st.)	-0.148	-0.144	0.111	0.064	-1.694	-1.697	-0.242	-0.219	-1.004***	-0.939***	-0.201	-0.227
	(0.154)	(0.126)	(0.326)	(0.326)	(1.170)	(1.264)	(0.180)	(0.161)	(0.282)	(0.330)	(0.157)	(0.144)
Population (log)	1.054***	0.983***	0.953*	0.893*	1.195**	1.188**	1.241***	1.177***	0.772	0.572	0.648*	0.487
	(0.222)	(0.214)	(0.509)	(0.532)	(0.470)	(0.476)	(0.376)	(0.357)	(0.592)	(0.574)	(0.361)	(0.350)
Population density (log)	0.117	0.152	0.228	0.315	0.056	0.088	-0.305	-0.190	1.243***	1.374***	0.278	0.530***
	(0.204)	(0.180)	(0.327)	(0.317)	(0.495)	(0.502)	(0.283)	(0.271)	(0.427)	(0.425)	(0.207)	(0.202)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.20: Robustness check Table 5: demobilized polarization index computed following Garcia-Montalvo and Reynal-Querol (2005b): $RQ = 1 - \sum_{k=1}^{N} \pi_k (\frac{0.5 - \pi_k}{0.5})^2$.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.517***	0.413***	-0.240	-0.486	0.243	0.222	0.632**	0.472*	0.875**	0.481	1.444***	1.068***
	(0.146)	(0.147)	(0.316)	(0.346)	(0.379)	(0.418)	(0.271)	(0.261)	(0.405)	(0.457)	(0.244)	(0.239)
Interaction		0.099**		0.228**		-0.043		0.143**		0.336*		0.362**
		(0.044)		(0.089)		(0.082)		(0.067)		(0.201)		(0.172)
Qindex2absst_or	0.340***	0.328***	0.449*	0.520*	0.381	0.398*	0.509***	0.538***	0.150	0.151	0.178	0.152
	(0.108)	(0.107)	(0.262)	(0.279)	(0.244)	(0.236)	(0.183)	(0.172)	(0.230)	(0.240)	(0.186)	(0.190)
Fracindex2st_or	-0.098	-0.078	0.063	0.092	-0.051	-0.085	-0.199	-0.203	-0.130	-0.196	0.203	0.058
	(0.095)	(0.096)	(0.251)	(0.260)	(0.242)	(0.229)	(0.169)	(0.165)	(0.332)	(0.315)	(0.264)	(0.296)
Hutu share province, 2012	2.785**	3.365***	5.181	6.132**	1.088	0.862	1.721	2.549	4.310	5.905*	3.164*	5.931**
	(1.217)	(1.093)	(3.166)	(3.020)	(3.480)	(3.421)	(1.925)	(1.837)	(3.349)	(3.153)	(1.849)	(2.412)
Ethnic frac., 2012	0.126	0.189	0.106	0.254	-0.189	-0.166	0.034	0.141	0.251	0.487	0.251	0.415**
	(0.159)	(0.145)	(0.314)	(0.282)	(0.407)	(0.408)	(0.286)	(0.295)	(0.393)	(0.347)	(0.172)	(0.170)
demobper1000_or	0.019	0.083	0.070	0.151	-0.139	-0.176*	0.092	0.190*	-0.189*	-0.134	0.089	0.086
	(0.061)	(0.069)	(0.112)	(0.120)	(0.090)	(0.094)	(0.097)	(0.114)	(0.104)	(0.123)	(0.099)	(0.120)
Past violence (log)	0.090	0.087	-0.076	-0.073	0.120	0.131	0.058	0.059	-0.092	-0.098	0.330**	0.289**
	(0.102)	(0.098)	(0.219)	(0.216)	(0.207)	(0.208)	(0.163)	(0.151)	(0.224)	(0.212)	(0.132)	(0.115)
Median Wealth Index (st.)	-0.085	-0.067	0.108	0.096	-2.017	-2.059	-0.165	-0.109	-1.038***	-1.077***	-0.062	-0.154
	(0.196)	(0.162)	(0.410)	(0.392)	(1.281)	(1.355)	(0.253)	(0.230)	(0.332)	(0.384)	(0.182)	(0.163)
Population (log)	1.109***	1.065***	0.998*	0.929*	1.270**	1.266**	1.267***	1.241***	0.845	0.664	0.601	0.472
	(0.230)	(0.223)	(0.517)	(0.529)	(0.503)	(0.508)	(0.385)	(0.367)	(0.638)	(0.611)	(0.393)	(0.417)
Population density (log)	0.118	0.123	0.082	0.083	-0.072	0.041	-0.297	-0.219	1.297***	1.443***	0.223	0.420*
	(0.219)	(0.192)	(0.379)	(0.355)	(0.485)	(0.507)	(0.311)	(0.294)	(0.488)	(0.473)	(0.241)	(0.220)
Observations	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388	1388
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.21: Robustness check Table 5: demobilized polarization index constructed using information on the origin of ex-rebels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.258*	0.170	-0.096	-0.314	0.217	0.214	0.039	-0.028	0.651	0.393	1.252***	0.882**
	(0.135)	(0.145)	(0.361)	(0.419)	(0.355)	(0.400)	(0.273)	(0.307)	(0.412)	(0.490)	(0.368)	(0.376)
Interaction		0.078*		0.259***		-0.064		0.070		0.251		0.371**
		(0.043)		(0.096)		(0.089)		(0.062)		(0.194)		(0.158)
Demob. polarization (st.)	0.451***	0.462***	1.067***	1.223***	0.686**	0.715***	0.559**	0.580***	0.162	0.239	-0.325	-0.292
	(0.118)	(0.111)	(0.310)	(0.317)	(0.266)	(0.248)	(0.233)	(0.224)	(0.309)	(0.401)	(0.310)	(0.342)
Demob. fractionalization (st.)	-0.051	-0.035	-0.519	-0.590*	-0.242	-0.284	-0.041	-0.039	0.353	0.249	0.745**	0.523
	(0.127)	(0.122)	(0.326)	(0.337)	(0.291)	(0.269)	(0.232)	(0.231)	(0.453)	(0.408)	(0.369)	(0.398)
Hutu share province, 2012	5.227**	6.011***	5.313	6.987*	1.457	2.213	1.586	2.371	15.704**	15.789**	15.271***	16.425**
	(2.142)	(2.107)	(4.223)	(3.808)	(3.667)	(3.932)	(2.526)	(2.465)	(6.979)	(7.636)	(4.871)	(6.699)
Ethnic frac., 2012	0.352	0.442*	-0.066	0.008	-0.211	-0.062	0.034	0.146	1.382**	1.403**	1.425***	1.694**
	(0.257)	(0.236)	(0.444)	(0.421)	(0.480)	(0.536)	(0.346)	(0.331)	(0.699)	(0.683)	(0.539)	(0.711)
Total no. demob. (/1000)	-0.087*	-0.042	-0.115	-0.060	-0.171*	-0.233**	-0.088	-0.037	-0.231*	-0.182	0.007	0.218
	(0.050)	(0.058)	(0.108)	(0.110)	(0.092)	(0.103)	(0.092)	(0.090)	(0.118)	(0.157)	(0.114)	(0.150)
Past violence (log)	0.375***	0.357***	0.109	0.084	0.240	0.271	0.645***	0.622***	0.024	-0.026	0.849***	0.729***
	(0.124)	(0.121)	(0.273)	(0.255)	(0.222)	(0.220)	(0.194)	(0.188)	(0.337)	(0.315)	(0.237)	(0.215)
Median Wealth Index (st.)	0.068	0.062	-0.189	-0.273*	0.031	0.052	0.035	0.033	-0.309	-0.313	-0.290	-0.307
	(0.083)	(0.073)	(0.172)	(0.163)	(0.165)	(0.174)	(0.148)	(0.135)	(0.259)	(0.235)	(0.262)	(0.225)
Population (log)	0.751***	0.754***	0.895	0.973	0.950*	0.960*	0.504	0.511	1.021	0.849	0.574	0.759
	(0.238)	(0.234)	(0.681)	(0.714)	(0.495)	(0.494)	(0.390)	(0.396)	(0.747)	(0.717)	(0.594)	(0.516)
Population density (log)	0.208	0.164	2.169**	2.467***	0.289	0.396	-0.047	-0.070	0.595	0.887	-0.009	0.108
	(0.323)	(0.303)	(0.889)	(0.904)	(0.558)	(0.563)	(0.453)	(0.452)	(1.050)	(1.041)	(0.587)	(0.684)
Observations	1266	1266	1266	1266	1266	1266	1266	1266	1266	1266	1266	1266
Pair Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. The unit of observation is the municipality. The data used identifies each pair of neighboring municipalities by a dummy variable (702 pairs and 1404 lines). These dummies are included in the regression as fixed effects. Data on wealth is missing for one municipality, which has 8 neighbors, implying that regressions are based on 1388 observations. Multiway clustered-robust standard errors are reported in parentheses. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.22: Robustness check Table 5: without the capital Bujumbura Mairie

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.020	-0.228	0.106	-0.209	-0.035	0.013	-0.086	-0.392*	0.307	-0.198	0.592**	0.197
	(0.124)	(0.153)	(0.223)	(0.272)	(0.221)	(0.290)	(0.177)	(0.214)	(0.330)	(0.461)	(0.247)	(0.313)
Interaction		0.127***		0.171**		-0.048		0.152**		0.283*		0.238
		(0.048)		(0.082)		(0.115)		(0.065)		(0.155)		(0.147)
Demob. polarization (st.)	0.344***	0.350***	0.571***	0.648***	0.398**	0.423**	0.446**	0.443**	0.152	0.167	0.181	0.127
	(0.127)	(0.132)	(0.217)	(0.248)	(0.201)	(0.207)	(0.183)	(0.182)	(0.217)	(0.238)	(0.248)	(0.263)
Demob. fractionalization (st.)	-0.302**	-0.298**	-0.341	-0.360	-0.202	-0.247	-0.488***	-0.461**	-0.233	-0.184	-0.293	-0.270
	(0.134)	(0.134)	(0.259)	(0.280)	(0.209)	(0.203)	(0.188)	(0.182)	(0.260)	(0.266)	(0.279)	(0.269)
Hutu share province, 2012	1.136	1.467	9.777***	10.756***	-0.360	-0.651	-1.612	-1.239	1.659	2.120	1.931	2.175
	(0.952)	(0.957)	(2.336)	(2.285)	(1.975)	(1.938)	(1.511)	(1.495)	(3.017)	(3.071)	(2.077)	(2.340)
Ethnic frac., 2012	-0.069	-0.031	0.515	0.624**	-0.083	-0.088	-0.348*	-0.293	0.021	0.077	-0.057	-0.078
	(0.130)	(0.131)	(0.323)	(0.296)	(0.203)	(0.199)	(0.204)	(0.202)	(0.362)	(0.361)	(0.237)	(0.240)
Total no. demob. (/1000)	-0.009	0.020	0.041	0.007	-0.171	-0.257	0.019	0.071	-0.020	-0.031	0.001	0.036
	(0.062)	(0.084)	(0.093)	(0.126)	(0.106)	(0.188)	(0.071)	(0.109)	(0.081)	(0.124)	(0.075)	(0.119)
Past violence (log)	0.173*	0.180*	-0.093	-0.086	0.135	0.149	0.146	0.158	-0.048	-0.009	0.229	0.211
	(0.092)	(0.095)	(0.195)	(0.181)	(0.163)	(0.172)	(0.128)	(0.128)	(0.151)	(0.152)	(0.152)	(0.155)
Median Wealth Index (st.)	0.061	0.043	0.369	0.421*	-1.010	-1.212	0.040	0.022	-0.371	-0.356	0.084	-0.015
	(0.144)	(0.137)	(0.308)	(0.232)	(0.967)	(1.175)	(0.168)	(0.163)	(0.329)	(0.350)	(0.229)	(0.216)
Population (log)	0.682***	0.607**	0.865*	0.879*	0.956**	1.012**	0.628*	0.570	1.298**	1.108*	1.373**	1.225*
	(0.263)	(0.274)	(0.522)	(0.485)	(0.440)	(0.435)	(0.359)	(0.362)	(0.611)	(0.616)	(0.592)	(0.628)
Population density (log)	0.290**	0.272**	0.619***	0.558***	0.059	0.122	0.036	0.016	0.655***	0.569**	0.415*	0.458
	(0.123)	(0.124)	(0.214)	(0.189)	(0.349)	(0.356)	(0.166)	(0.158)	(0.245)	(0.247)	(0.249)	(0.282)
Lagged dependent var. (log)	-0.266	-0.322	-2.341***	-2.429***	0.004	0.123	-0.896**	-0.892**	0.710	0.870	1.228**	1.223*
	(0.222)	(0.229)	(0.667)	(0.664)	(0.675)	(0.649)	(0.451)	(0.445)	(1.086)	(1.196)	(0.617)	(0.672)
Observations	128	128	128	128	128	128	128	128	128	128	128	128
Fixed Effects	No	No	No	No	No	No	No	No	No	No	No	No
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports negative binomial estimates. Robust standard errors are reported in parentheses. Political fractionalization in 2010 is instrumented by political fractionalization in 2005. The average value of the dependent variable in neighboring municipalities is included as a right-hand side variable. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.23: Robustness check Table 5: spatial dependence - controlling for the average of the dependent variable in neighboring municipalities (no fixed effect)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Total		Clashes		Destruction		Intimidation		Assaults		Murders & attempts	
Political comp. 2010 (st.)	0.002	-0.119*	0.016	-0.050	-0.033	-0.030	-0.027	-0.092	0.030	-0.009	0.058	0.000
	(0.077)	(0.071)	(0.059)	(0.072)	(0.051)	(0.065)	(0.073)	(0.059)	(0.038)	(0.043)	(0.044)	(0.037)
Interaction		0.071***		0.035**		-0.007		0.032*		0.023***		0.039*
		(0.008)		(0.016)		(0.014)		(0.019)		(0.008)		(0.021)
Demob. polarization (st.)	0.199*	0.178	0.113**	0.108*	0.091	0.097	0.158***	0.152**	0.024	0.021	0.031	0.015
	(0.104)	(0.120)	(0.052)	(0.065)	(0.058)	(0.059)	(0.058)	(0.065)	(0.024)	(0.026)	(0.036)	(0.043)
Demob. fractionalization (st.)	-0.163*	-0.138	-0.065	-0.053	-0.057	-0.059	-0.143***	-0.131**	-0.020	-0.011	-0.061	-0.047
	(0.098)	(0.101)	(0.049)	(0.053)	(0.045)	(0.047)	(0.054)	(0.060)	(0.027)	(0.032)	(0.046)	(0.054)
Hutu share province, 2012	0.748	0.877**	1.420***	1.523***	0.100	0.115	-0.346	-0.260	0.200	0.265	0.256***	0.295
	(0.461)	(0.401)	(0.280)	(0.306)	(0.298)	(0.294)	(0.314)	(0.244)	(0.312)	(0.266)	(0.077)	(0.201)
Ethnic frac., 2012	0.024	0.042	0.099	0.115*	-0.003	0.002	-0.090***	-0.076***	0.020	0.027	0.013**	0.015
	(0.075)	(0.075)	(0.068)	(0.068)	(0.047)	(0.048)	(0.026)	(0.018)	(0.044)	(0.040)	(0.006)	(0.022)
Total no. demob. (/1000)	-0.015	0.040	0.014	0.030	-0.035**	-0.052*	-0.009	0.006	0.002	0.016	-0.004	0.039
	(0.057)	(0.050)	(0.028)	(0.029)	(0.013)	(0.030)	(0.037)	(0.038)	(0.020)	(0.018)	(0.029)	(0.032)
Past violence (log)	0.125	0.120	0.002	0.001	0.029	0.030	0.062	0.061	-0.006	-0.006	0.072	0.068
	(0.097)	(0.101)	(0.045)	(0.047)	(0.042)	(0.043)	(0.083)	(0.085)	(0.022)	(0.022)	(.)	(.)
Median Wealth Index (st.)	0.085*	0.070*	0.065*	0.064	0.015	0.026	0.052	0.054*	-0.028	-0.032	0.047**	0.029
	(0.049)	(0.038)	(0.039)	(0.040)	(0.021)	(0.023)	(0.036)	(0.030)	(0.023)	(0.026)	(0.019)	(0.026)
Population (log)	0.609***	0.560***	0.219**	0.202**	0.275***	0.286***	0.310**	0.292*	0.190**	0.172**	0.170	0.136
	(0.158)	(0.156)	(0.104)	(0.098)	(0.091)	(0.096)	(0.151)	(0.150)	(0.078)	(0.084)	(0.153)	(0.162)
Population density (log)	0.126*	0.112	0.078***	0.067***	-0.015	-0.016	-0.020	-0.029	0.085**	0.078**	0.156***	0.152***
	(0.068)	(0.068)	(0.009)	(0.011)	(0.030)	(0.034)	(0.041)	(0.043)	(0.034)	(0.035)	(0.032)	(0.035)
Observations	128	128	128	128	128	128	128	128	128	128	128	128
Fixed Effects	.	.	.	.	.	.	.	.	.	.	.	.
Violent mun.	105	105	41	41	42	42	64	64	27	27	38	38
Violent ep.	519	519	78	78	62	62	136	136	36	36	67	67

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The table reports OLS estimates with standard errors adjusted for spatial correlation (Conley 1999). Political fractionalization in 2010 is instrumented by political fractionalization in 2005. Pair columns include an interaction term between political competition and the number of demobilized rebels who returned in the municipality.

Table A.24: Robustness check Table 5: spatial dependence - standard errors adjusted for spatial correlation (Conley 1999) (OLS in log, no fixed effect, distance max. = 20km)