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From vice to virtue? Civil war and social capital in Uganda

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From vice to virtue? Civil war and social capital in Uganda*

Giacomo De Luca† and Marijke Verpoorten‡

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Abstract

We show that armed conflict affects social capital as measured by trust and associational membership. Using the case of Uganda and two rounds of nationally representative individual-level data bracketing a large number of battle events, we find that self-reported generalized trust and associational membership decreased during the conflict in districts in which battle events took place. Exploiting the different timing of two distinct waves of violence, we provide suggestive evidence for a rapid recovery of social capital. Evidence from a variety of identification strategies, including difference-in-difference and instrumental variable estimates, suggests that these relationships are causal.

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1 Introduction

We hope to increase the understanding of the legacy of civil war by analyzing the impact of the Ugandan armed conflict on social capital. What is the impact of civil war on social networks? How does violence affect trust? Providing an answer to these questions is important for conflict researchers for a number of reasons.

First, it is argued that differences among societies in culture the prevailing values, attitudes, and beliefs contribute to differences in economic outcomes. Social capital, which is a broad characterization of culture, is one of the aspects considered. In the seminal work by Putnam (1993), social capital is defined as "the features of social life, networks, norms and trust that enable participants to act together more effectively to pursue shared objectives". Social capital arises when people interact in a number of settings, ranging from membership in an organization to attendance at religious services and to dinner with a group of friends. Since a person is less likely to cheat someone who is a member of his social network, social capital makes people more trustworthy (Coleman 1988). And, vice versa, trust is a prerequisite for building social networks. For these reasons, trust is often associated with the value of social networks (Fukuyama 2000).

Following Putnam (1993), several scholars have focused on the role of social capital in shaping economic performance (Colletta and Cullen 2000, Sobel 2002, Woolcock and Narayan 2000). Because huge resources would have to be devoted to making sure that people keep their promises in a society with low social capital and low reliance on a person to keep his word, economic activity would be greatly reduced. However, high levels of trust in a society would reduce transaction costs and private protection costs, thereby providing stronger incentives for investment and innovation and improving government functioning (Colletta and Cullen 2000). Early cross-country studies confirmed the positive association between social capital, trust and indicators of economic performance (Knack and Keefer 1995, 1997, Zak and Knack 2001, Guiso et al. 2004). And,

in the new growth literature, these aspects of culture are considered to be fundamental drivers of economic growth, *i.e.*, as having the potential to lift the economy to a higher level of growth (Weil 2009).

Second, social capital may be particularly relevant for the economic development of countries with weak formal institutions, which countries host most of the present-day civil wars (Blattman and Miguel 2010). In these countries, the vacuum left by the absence of formal institutions may be filled in part by informal institutions that overcome coordination failure. For example, a well-networked society may provide a solid base for mutual aid and informal insurance and facilitate the flow of information and collective action (because people who already have a relationship with each other can trust one another to do their part in a joint enterprise). Furthermore, social capital may stimulate the accountability of ill-functioning governments. People who care about their fellow community members may be more likely to vote. Thus, politicians in an environment where social capital is high may be less inclined to abuse their constituents for personal gain.[1] This functioning of social capital may be welfare enhancing, as is suggested by the findings of several empirical studies in developing countries that report a positive impact of social capital on household expenditure, access to credit, public-service provision, and the adoption of new technologies in agriculture (Grootaert et al. 2002, Isham 2002, Narayan and Pritchett 1999).

Third, although culture is generally perceived as sticky and able to change only slowly, there is a strong prior that armed conflict and massive violence can affect certain aspects of social capital. A recent study by Nunn and Wantchekon (2011) provides some support for this prior as it establishes a link between 400 years of slave trade and the development of a culture of mistrust in Africa that persists to this day. Scholars have highlighted the crucial role of interstate wars, e.g. World War II, in shaping national identity and state-building as it reinforces

[1] However, if social capital is formed at the subgroup level, for example, according to ethnic or regional origin, then it may serve as an instrument of exclusion and polarization rather than an instrument of social gain and cohesion (Fafchamps, 2006).

social cohesiveness and collective action both within and across states (Hanson 2003). However, civil wars, which are fought between opposing factions in a society, are often thought to be disruptive of the society's social fabric thus endangering its political stability and economic recovery (Colletta and Cullen 2000, Collier et al. 2003).

This rather pessimistic view has been challenged by recent micro-level studies. Studying the aftermath of the 1991-2002 civil war in Sierra Leone, Bellows and Miguel (2006, 2009) have shown that victimization during the conflict increased political participation. In particular, households directly experiencing displacement or more intense violence were more likely to attend community meetings, join political and community groups, and vote. Similar findings have been presented by Blattman (2009) who investigated the impact of rebel conscription by abduction on post-war social and political participation in Uganda. His analysis suggests that the level of violence witnessed during the war as an abductee leads to more participation in political life but does not affect membership in non-political organizations. In another recent study, Voors et al. (2010) reported that individuals who experienced violence during the 1993-2003 civil war in Burundi displayed more altruistic behavior in the post-war period. Finally, Bozzoli et al. (2010), studied the impact of conflict on expectations. Relying on a 2007 survey conducted in northern Uganda, they found that timing matters: whereas negative expectations prevailed shortly after the experience of conflict, optimistic expectations were positively related to conflict intensity in the distant past. Some of these more optimistic findings may appear counter-intuitive, but they are, in fact, compatible with the results of a number of studies on post-traumatic behavior that suggest that individual tragedies may lead to personal growth and socio-political activation (Carmil and Breznitz 1991, Tedeschi and Calhoun 1996, Tedeschi and Calhoun 2004).

In sum, although most scholars would agree on the importance of understanding the impact of civil war on different aspects of culture, the scarce evidence available is mixed. Moreover, little is known about the underlying mechanisms, the persistence of the impact, and the possible heterogeneity of

the impact related to the nature of civil war. This is also stressed by Blattman and Miguel (2010), who, in their recent discussion on civil war, argue that "the social and institutional legacies of conflict are arguably the most important but the least understood of all war impacts".

The contribution of the present article to this nascent body of literature is threefold. First, our work represents the first study, based on micro-level data, of the impact of civil war on social capital as measured by trust and associational membership.[2] Second, it is the first study on less tangible outcomes of civil war that can rely on two rounds of data compilation, one of which took place before the bulk of the violence occurred. This unique data set, bracketing a peak in violence of more than 250 battle days in a year in the affected area, allows us to adopt a difference-in-difference estimation by studying the change in trust and associational membership upon a continuous treatment equal to the number of district-level battle days. Finally, exploiting the geographic variation as well as the variation in timing of two distinct waves of violence, we provide suggestive evidence as regards the duration of the impact.

Our findings indicate that both self-reported trust and associational membership decrease substantially during the conflict in the affected districts. We also found suggestive evidence of a strong recovery process once the violence has ended. The difference-in-differences estimation method, along with the inclusion of several district- and individual-level controls, provides a solid base for our empirical analysis. Nevertheless, the potential issue of endogeneity of conflict intensity remains in establishing a causal effect of violence on social capital. Violence may be the consequence rather than the cause of decreased levels of trust and participation in associations, because, for instance, rebel recruitment may be easier in regions plagued by antagonistic feelings. Although, as argued by Blattman (2009), this is far-fetched in the northern Ugandan context, where a large share of the Lords Resistance Army was composed of abducted youths, we adopt distance measures to instrument for conflict intensity following the

[2] In a related paper, we investigate the impact of conflict on political participation in Uganda (De Luca and Verpoorten 2011).

recent empirical literature on civil war.[3] The IV estimations broadly confirm the OLS findings.

In the next section, we present the data and provide relevant background information on the armed conflict in Uganda. In section 3, we present our empirical strategy. The OLS results are presented in section 4, and in section 5 we turn to the IV strategy. The last section concludes.

2 Data and Background

2.1 Social capital

The data on social capital is taken from Afrobarometer (AB), an independent, non-partisan research project that measures the social, political, and economic atmosphere in Africa. We use two rounds of AB survey data compiled in Uganda in 2000 and 2005. [4] Each survey includes information on approximately 2,400 individuals of voting age. The samples are nationally representative and geographically stratified across 33 districts in 4 regions, including both urban and rural areas. Figure 1 gives an administrative map of Uganda in 2000, and Table A1 lists the districts by region. In Table 1, we give the number of observations per region and per survey year, which show that all four administrative regions of Uganda are well represented in both survey years. [5]

Figure 1 about here

Table 1 about here

[3] See, for example, Akresh and De Walque (2008), Miguel and Roland forthcoming, Serneels and Verpoorten (2010), Voors et al. (2010).

[4] We do not use the 2002 and 2008 AB surveys. The 2002 survey does not cover the districts most affected by the civil war, while the questions on social capital included in the 2008 survey are not comparable to those in the 2000 and 2005 surveys (for details on the survey instruments, we refer to www.afrobarometer.org).

[5] The four administrative regions are denominated: Central, Eastern, Northern, and Western.

The AB surveys include questions on two interrelated dimensions of social capital: trust and associational membership. We restrict our analysis to five questions one on trust and four on membership that are comparable across the survey rounds in terms of question formulation and response categories. The question on trust concerns the respondent's level of trust of others in general and is formulated as follows: *"Generally speaking, would you say that most people can be trusted or that you must be very careful in dealing with people?"* The answer categories are "You must be very careful"(coded as 0), and "Most people can be trusted"(coded as 1). The questions on membership are introduced as follows: *"Now I am going to read out a list of voluntary organizations. For each one, could you tell me whether you are an official leader, an active member, an inactive member, or not a member of that type of organization?"* The list of organizations includes (i) a religious organization like a church or a mosque, (ii) a trade union or farmer's organization, (iii) a professional or business organization, and (iv) a development association. We code the answer categories as follows: (0) Not a member, (1) Inactive member, (2) Active member, and (3) Official leader. In the empirical analysis, we check the robustness of our results against different ways of coding the answers.

A summary of the social capital variables and the different codings is provided in Table 2. We find rather low levels of trust with less than 20% of the respondents answering that most people can be trusted. Membership is highest in religious organizations, with more than 80% of the respondents reporting that they were a member of a religious organization (inactive, active or leading). The other types of organizations only involve the membership of 20% to 30% of the population. Over time, the reported levels of social capital are rather stable. On average, generalized trust increases by 2 percentage points, and membership of a religious organization increases slightly from 80% to 83%, but these changes are not significant. Larger and significant changes take place in membership in a trade union/farmer organization (a decrease of 13 percentage points), a professional/business organization (a decrease of 8 percentage points), and a community development organization (an increase of 6 percentage points). It is

noteworthy that there are large differences across regions despite the relatively small changes in the averages. For example, self-reported trust increased by 10 percentage points in the western region, while it decreased by 12 percentage points in the northern region.

Table 2 about here

2.2 The Conflict

The conflict intensity data are taken from the Armed Conflict Locations Events Data (ACLED), which provides geo-referenced information on approximately 3,921 violent events in Uganda between 1960 and 2010 (Raleigh et al. 2010).[6] The violent events include battles between armed groups (2,659) or attacks on civilians (1,262). These events took place on 1,983 different days within the 50-year period. Hence, on average, a year counts almost 40 event days, and an event day counts 1.98 violent events. The bulk of these event days more than 90% took place after 1995. We situate them on a timeline in Figure 2.

Figure 2 about here

Figure 2 indicates that, after a period of relative peace following the power seizure by Museveni in 1986, the number of event days started to rise in 1995. This increase occurred on two fronts. First, in northern Uganda, the Lord's Resistance Army (LRA), an armed opposition group founded in 1987 by Joseph Kony as able to intensify its activities in 1995 mainly because of support by the Sudanese government (Dolan 2009).[7]

[6] Two separate ACLED datasets for Uganda were released, one recording events between 1960 and 2006, and one recording events between 1997 and 2010. We merged the two datasets and removed the duplicate observations in the overlapping period 1997-2006.

[7] Kony's movement gathered armed groups reluctant to settle with Kampala's new government and was initially called the Lord's Salvation Army, then the United Democratic Christian Forces, and eventually, from 1994 onward, the Lord's Resistance Army (Allen 2006, Doom and Vlassenroot 1999). The LRA received assistance from Sudan in retaliation for Ugandan support of a rebel group operating in southern Sudan.

Second, in western Uganda, another armed group the Allied Democratic Forces (ADF) commenced its activities in the mid-nineties. The ADF was a fundamentalist Islamic guerrilla group formed by various remnant rebels from Uganda, Congo, and Rwanda (Boas 2004). They operated mainly from the Ruwenzori Mountains bordering with Congo and received support from both the Congolese and Sudanese governments (Behrend 2007).

In Figure 2, we distinguish between the number of event days with LRA and ADF involvement. Whereas both groups started to increase their activities in the mid-nineties, the peaks and ends of their activities occurred at different times. The activities of the ADF were influenced by conflict trends in the neighboring DRC and were mostly concentrated in the period from 1997 to 2001. By 2002, relative degree of peace had been established in western Uganda. The bulk of LRA violence, instead, fully unraveled in the period 2002-2005 following a military operation in southern Sudan by the Ugandan army the "Iron Fist" intended to destroy the LRA supply bases (Dolan 2009). LRA bases were, indeed, destroyed and many rebels killed. The mission was, however, considered a failure (Allen 2006, Dolan 2009). In fact, LRA forces managed to outflank the Ugandan army and attacked further south in Ugandan districts until then relatively untouched by the conflict (*e.g.*, Apac and Lira). Starting from 2006, however, the area of LRA activities first moved out of Uganda into southern Sudan and into the Democratic Republic of Congo (2006-2008) and then further west reaching the Central African Republic after 2008 (Accord 2010). This released the pressure on civilians and opened the way to a recovery in northern Uganda.

2.3 Linking social capital to the conflict

To construct our dataset, we merged the AB data with the ACLED data at the district level, which is the smallest administrative unit they have in common. Doing so yields a dataset of approximately 4,500 individual level observations across 33 districts. In what follows, we will use the ACLED conflict data as a

treatment to study the change in social capital upon conflict. Before doing so, three issues have to be discussed.

First, it is evident from Figure 2 that ADF violence peaked before the 2000 AB baseline survey, was still fairly high in 2001 and 2002, and then ceased such that by the time the 2005 survey was carried out, ADF operations had come to an end. When we single out the effect of ADF violence, therefore, we can interpret our results as the effect of conflict cessation on social capital with respect to the baseline survey collected amidst the violence. In other words, the ADF treatment captures post-war recovery.

Second, although LRA violence escalated after our baseline year, a non-negligible number of battle days took place before 2000. This pre-2000 LRA activity was largely confined to one particular geographic region, "Acholiland"(Kitgum and Gulu Districts), while LRA violence outside Acholiland only took off after 2000. Hence, while the estimated LRA treatment should be interpreted as the impact of continued and escalating violence on social capital, a somewhat cleaner treatment effect can be discerned when focusing on LRA activities outside Acholiland. This point is illustrated in Figure 3, which gives the number of event days with LRA involvement inside and outside Acholiland for the period 1986-2010.[8]

Figure 3 about here

Finally, that the AB survey was conducted in times of violence as well as amidst a huge refugee crisis following violence raises the issue of sample selection bias. For instance, because of insecurity, the surveys may have excluded the most affected individuals in certain districts. In order to verify this, we consulted the local AB team that conducted the survey. We learned that, when an enumeration area within a district was highly insecure, the enumeration area was replaced by a more secure area within the same district. The substitution

[8]Notice that the average intensity of LRA violence experienced outside Acholi districts before 2000 is fairly close to nil, as the violence reported in Figure 3 was spread across 7 districts (see Appendix A1 for a detailed distribution of violence by district).

always followed the composition of the original sample in terms of language and ethnicity as well as the direction of displacement of the individuals in the original sample, often ending up with a sample of within-district internally displaced people (IDP) (correspondence with Francis Kibirige 2011). This approach was facilitated by the maintenance of local administrative structures in the IDP camps and also by the moving of the IDP within their own district. Consequently, we can be fairly confident that the AB survey is representative at the district level for each survey year.

3 Empirical strategy

To identify the impact of violence on social capital, we use a difference-in-difference estimation that exploits variation in the event days across districts and over time. The treatment is a continuous variable equal to the event days occurring between the implementation of the 2000 and 2005 AB surveys. The treated group are the households located in the districts where the battles and attacks took place. In other words, the empirical identification strategy relies on the comparison of the change in social capital in 2000-2005 across areas with low violence intensity and areas with high violence intensity.

Formally, the empirical model can be written as follows:

$$\begin{aligned} S_{i,t,d} &= \alpha_1 B_d + \alpha_2 year_t + \alpha_3 (B_d * year_t) \\ &\quad + X'_{i,t,d}\Psi + X'_{t,d}\Theta + \eta_r + \varepsilon_{i,t,d} \end{aligned} \tag{1}$$

where i indexes individuals, d districts, r regions and t survey years. The variable $S_{i,t,d}$ denotes individual-level social capital. B_d denotes logged event days per district in the period 2000-2005; and $year_t$ is an indicator variable taking one for respondents in the 2005 survey. Thus, the coefficient of interest is α_3, which is the coefficient of the interaction term between B_d and $year_t$. To reduce heterogeneity across the observations on social capital, we control for a number of relevant individual-level and district-level covariates. The vector $X_{i,t,d}$ denotes a set of individual-level covariates, including the respondent's

age, the age squared, a gender indicator variable, an indicator variable that equals one if the respondent lives in an urban location, ten fixed effects for the respondent's ethnicity, and nine fixed effects for the educational attainment of the respondent (all recorded in the AB). The vector $X_{t,d}$ denotes a set of district level covariates, which include historical battle days experienced in the period 1960-2000 (taken from ACLED) and ethnic fractionalization.[9] Both variables may affect the level of trust in the baseline year. In the robustness checks, we show that neither of these district-level controls is critical for our results.

These explanatory variables are summarized in Table 3.

Table 3 about here

Finally, η_r denotes regional fixed effects, which are included to capture region-specific unobserved factors that may affect social capital and $\varepsilon_{i,t,d}$ is the standardized error term. In order to account for a potential correlation of these errors within districts and within years, we adjust the standard errors for two-way clustering as suggested by Cameron et al. (2006).

Since the answer categories for the social capital questions in the AB surveys are categorical, we have the option between two different estimation strategies. First, we can maintain the categorical nature of the answers and estimate an ordered probit model. Second, we can estimate our empirical model by OLS, treating the categorical answer as if they were part of a continuous scale. We use the latter approach in the baseline result and report the former as a robustness check.[10]

To account for the different timing of the violent events, we estimate an expanded model in which we distinguish three different types of violence: LRA violence in Acholi districts (LA), LRA violence in non-Acholi districts (LN), and ADF violence (AD). Formally, we replace B_d in Eq. 1 by B_d^j, with $j =$

[9] Ethnic fractionalization is taken from the 1991 Ugandan population census accessed through IPUMS at the Minnesota Population Center.

[10] One advantage of using OLS is that it allows us to estimate the standard IV model. This is also the approach taken by Nunn and Wantchekon (2011) in their analysis of the AB trust data.

(LA, LN, AD) denoting the type of violence, obtaining:

$$\begin{aligned} S_{i,t,d} &= \alpha_1 B_d^{LA} + \alpha_2 B_d^{LN} + \alpha_3 B_d^{AD} + \alpha_4 year_t \\ &\quad + \alpha_5 (B_d^{LA} * year_t) + \alpha_6 (B_d^{LN} * year_t) + \alpha_7 (B_d^{AD} * year_t) \\ &\quad + X'_{i,t,d}\Psi + X'_{t,d}\Theta + \eta_r + \varepsilon_{i,t,d} \end{aligned} \tag{2}$$

where α_5, α_6 and α_7 are the coefficients of interest. In this specification, the vector $X_{t,d}$ now also includes the interaction term of ethnic fractionalization in 1991 and the 2005 year dummy. By doing so, we can rule out that the differential impacts we may find across the three types of violence are due to different degrees of ethnic heterogeneity across the affected districts. Again, this district-level control is not critical for our results.

As noted above, LRA activities exploded in 2002 but affected Acholi districts already before 2000, albeit to a lesser degree. Hence, we interpret the coefficient α_5 on the interaction term $B_d^{LA} * year_t$ as the effect of additional and escalating violence on social capital. The LRA activities reached further south only after 2002, which allows us to interpret α_6 on the interaction term $B_d^{LN} * year_t$ as the impact of violence on social capital relative to a situation without a direct confrontation with violence. Finally, the coefficient α_7 on the interaction term $B_d^{AD} * year_t$ captures the change in social capital when moving from a situation amidst violence into a post-war phase.

With respect to these coefficients of interest, we formulate two intuitively appealing hypotheses:

Hypothesis 1. *Both the start and the escalation of LRA violence reduce social capital.* $\alpha_5 < 0$ *and* $\alpha_6 < 0$.

Hypothesis 2. *The ending of ADF violence is associated with an increase in social capital.* $\alpha_7 > 0$.

Thus, we hypothesize that violence reduces social capital and that, once the violence ends, social capital recovers. It is much less intuitive to conjecture about the relative magnitude of the coefficients. For instance, if the start of

violence reduces social capital more than the escalation of violence, then then $|\alpha_5| < |\alpha_6|$. On the other hand, if the escalating violence reaches a very high intensity, the reverse may be true, $|\alpha_5| > |\alpha_6|$.

4 OLS estimates

4.1 Baseline results

Table 4 shows the results of estimating Eq. 1, i.e., when all types of violence (LRA and ADF event days) are pooled together. There are no sizable effects of violence on the level of generalized trust and on the associational membership, except for a significantly negative impact on membership in religious organizations. However, as argued above, it is more appropriate to separate ADF- and LRA- related violence as well as LRA violence inside and outside Acholiland.

Table 4 about here

Table 5 shows the estimation results of Equation 2 when the three types of violence are distinguished. Consider first the treatment effect associated with LRA violence in Acholiland. The estimated coefficient α_5 indicates a decrease in associational membership (Columns 2-5), but no significant impact on generalized trust (Column 1). The estimated treatment effect of LRA violence outside Acholiland, α_6, indicates a significant decrease in generalized trust as well as associational membership of religious groups and community/development organizations but is insignificant in explaining the change in membership in economic associations (trade/farmer & professional/business).

Table 5 about here

Finally, for ADF violence, we find a positive and significant impact for all social capital variables considered ($\alpha_7 > 0$), indicating that individuals living in the ADF-targeted districts reported higher levels of trust and greater involvement in all types of association in peaceful 2005 than in war-torn 2000.

Overall, these results are in line with Hypotheses 1 and 2 formulated above. Hypothesis 1 is, however, only partially confirmed since α_5, although negative, is not estimated significantly different from zero in explaining the change in generalized trust. In contrast, α_6 is estimated negative and significant, indicating that trust is negatively affected by LRA violence outside Acholi districts. Thus, in the case of generalized trust $|\alpha_5| < |\alpha_6|$. The pattern is reversed for associational membership, where we find $|\alpha_5| > |\alpha_6|$. As pointed out above, one explanation may be that the escalating LRA violence inside Acholiland reached epic proportions. In fact, in the period 2000-2005, the number of event days in an Acholiland district was more than five times as high than the number of event days in an LRA affected district outside Acholiland (see Table A1). The concentration of intense fighting in Acholiland triggered a large refugee crisis, which may have disrupted the associational life of its residents. In contrast, associational life outside the Acholi districts may have been less affected given the lower exposure to intense violence and the lower degree of population displacement.

4.2 Robustness checks

We perform two types of robustness checks. First, we test if our results hold in subsamples of the AB data. Second, we check whether our results are robust with respect to the use of alternative estimation models and alternative definitions of the main variables of interest. All results are condensed in Table 6, in which we report only the coefficients for the interaction terms of interest.

Table 6 about here

4.2.1 Subsample analysis

Our empirical strategy relies on the comparison of the change in social capital between individuals living in heavily war-affected districts and individuals living in less affected districts. Thus, these latter districts are used to proxy the counterfactual: what would have happened if violence would not have taken

place? This is a valid approach if both groups of districts are broadly comparable in terms of other potential determinants of the change in social capital. To put this approach to a test, we estimate our empirical model for two subsamples of broadly comparable districts: (1) a sample including only the northern area to test the impact of the LRA violence and (2) a sample only including the southern area for testing the impact of the ADF violence. The former is a rather radical test since it leaves us only with one third of the sample observations.

This north-south division of the sample follows the division of Uganda along ethnolinguistic lines: the southern part is exclusively Bantu, whereas the northern part is almost exclusively of Nilotic origin. In Table A1, we indicate the districts with Bantu origin based on Lewis (2009).

The results, reported in the first two panels of Table 6, are qualitatively the same as our baseline results with one exception. For non-Acholi districts, the impact on generalized trust loses significance, which may be due to the drastic reduction in the sample size.

4.2.2 Alternative estimation models and variable definitions

We first estimate a more parsimonious model that excludes the district level controls (historical battles, ethnic fractionalization and the interaction term between the latter and the 2005 survey dummy). The results, reported in the third panel of Table 6, are qualitatively the same as the baseline results except for the impact of LRA violence in Acholiland on general trust, which is now estimated to be significantly negative (instead of insignificant).

Second, since the responses to the AB questions on trust and membership are categorical in nature, a sensible robustness check consists in replicating the estimations using the original categorical nature provided by the AB. Using an (ordered) probit model produces estimates that are qualitatively identical to our baseline OLS estimates.

We also estimate our empirical model using probit with an alternative binary coding for our dependent variables (see Table 2 for details on the codes). The

results are given in the fifth panel of Table 6: 13 out of the 15 coefficients of interest remain qualitatively identical, and the remaining two coefficients lose significance but do not change sign.

Finally, we repeat our main specification measuring conflict intensity in two different ways (instead of the logged number of event days): (1) by the number of event days, and (2) by the logged number of events. The results displayed in the last two panels of Table 6 do not change qualitatively except for the impact of LRA violence in Acholiland on the generalized trust level, which is now weakly significant (instead of insignificant).

5 Identifying causal relationships - IV estimates

The positive correlation between event days and the change in social capital that is documented in the previous sections is consistent with the hypothesis that conflict decreases associational membership and generalized trust. However, the correlation could also be explained by reversed causality or by omitted variables that are correlated both with selection into conflict and with changes in social capital. In addition, it is not unlikely that conflict events are measured with error, for example, because events in very remote or insecure areas may receive little news coverage (Verpoorten 2011). If this is the case, our results may suffer from an attenuation bias. To address these concerns, we turn to an instrumental variable strategy.

We instrument for the three types of violence as well as the three interaction terms of interest, *i.e.*, B_d^j and $B_d^j * year$. In order to do so, we follow the three-step procedure described in Wooldridge (2002, p.236). In the first step, we predict conflict intensity by regressing B_d^j on the set of included instruments as well as the set of excluded instruments, with the latter denoted by Z_d^j. Next, the predicted conflict intensity variables are interacted with the post-treatment year, $(\hat{B}_d^j * year_t)$. Finally, both $(\hat{B}_d^j * year_t)$ and Z_d^j are used as instruments in a conventional 2SLS procedure, instrumenting for B_d^j and the interaction terms

$B_d^j * year$. The Wooldridge procedure is given by the following set of equations:

$$
\begin{aligned}
&(Step\ 1) \\
B_d^j &= Z_d^{j\prime}\Gamma^j + \delta^j year_t + X'_{i,t,d}\Phi^{j\prime\prime} + X'_{t,d}\Theta^{j\prime\prime} + \eta_r^{j\prime\prime} + \varepsilon_{i,t,d}^{j\prime\prime} \qquad (3)
\end{aligned}
$$

$$
\begin{aligned}
&(Step\ 2) \\
B_d^j &= Z_d^{j\prime}\Gamma^{j\prime} + \delta_1^{j\prime} year_t + \delta_2^{j\prime}(\hat{B}_d^j * year_t) \qquad (4) \\
&\quad + X'_{i,t,d}\Phi^{j\prime\prime\prime} + X'_{t,d}\Theta^{j\prime\prime\prime} + \eta_r^{j\prime\prime\prime} + \varepsilon_{i,t,d}^{j\prime\prime\prime} \\
B_d^j * year_t &= Z_d^{j\prime}\Gamma^{j\prime\prime} + \delta_1^{j\prime\prime} year_t + \delta_2^{j\prime\prime}(\hat{B}_d^j * year_t) \qquad (5) \\
&\quad + X'_{i,t,d}\Phi^{j\prime\prime\prime\prime} + X'_{t,d}\Theta^{j\prime\prime\prime\prime} + \eta_r^{j\prime\prime\prime\prime} + \varepsilon_{i,t,d}^{j\prime\prime\prime\prime}
\end{aligned}
$$

$$
\begin{aligned}
&(Step\ 3) \\
S_{i,t,d} &= \beta_1 \hat{\hat{B}}_d^{LA} + \beta_2 \hat{\hat{B}}_d^{LN} + \beta_3 \hat{\hat{B}}_d^{AD} + \beta_4 year_t \qquad (6) \\
&\quad + \beta_5 (\widehat{B_d^{LA} * year_t}) + \beta_6 (\widehat{B_d^{LN} * year_t}) + \beta_7 (\widehat{B_d^{AD} * year_t}) \\
&\quad + X'_{i,t,d}\Phi' + X'_{t,d}\Theta' + \eta'_r + \varepsilon'_{i,t,d}
\end{aligned}
$$

The coefficients of interest are β_5, β_6 and β_7, which capture the treatment effect of the predicted battle days on social capital.

As excluded instruments, Z_d^j, we use the 1991 district-level population share of Acholi, the distance to Sudan, and the logged distance to the Ruwenzori Mountains. The first of these instruments captures LRA violence, which was directed mainly against the Acholi.[11] The second instrument is relevant because, as part of the Sudanese support for the LRA rebels, the LRA was provided with logistics and bases on Sudanese territory from where they organized raids. Finally, since ADF bases were located in the Ruwenzori Mountains, where rebels

[11] The LRA was constituted by people of Acholi origin. Nevertheless, LRA received little support among the Acholi population as it resorted to looting and youth abduction to sustain itself. The situation worsened further when the government started to organize self-defense militias in Acholi districts. The LRA leadership tagged this decision as betrayal and launched a campaign of killing and mutilation of Acholi civilians to dissuade further collaboration with the government army (Behrend 1999, Branch 2005.

could easily hide and be supplied from the DRC, we expect the distance to these mountains to be highly correlated with the location of ADF operations.

Table 7 about here

Table 8 about here

The first stage results, reported in Table 7, indicate that the instruments are relevant, with the estimated coefficients on the instruments Z_d^j significantly different from zero in predicting $\hat{B}_d^j$ (Columns 1-6, with Columns 1-3 corresponding to Step 1 of Wooldridges Procedure), and $\hat{B}_d^j * year$ significantly different from zero when instrumenting for the interaction terms (columns 7-9). The relevance of our instruments is confirmed by the Kleibergen-Paap test for underidentification. The second stage results are qualitatively very similar to the OLS results for most of the social capital variables. The most noteworthy change concerns the impact of LRA violence in Acholiland on trust, which is now estimated significantly negative (instead of insignificant).

6 Conclusions

The evidence presented in this paper adds to the small but growing body of literature on the social and institutional legacies of civil war. Analyzing the impact of armed conflict in Uganda, our findings indicate that social capital decreases amidst violence but recovers once violence has ended. These findings are based on two nationwide surveys that bracket the peak in LRA violence taking place in the north and capturing the transition from violence to peace in the west in the aftermath of ADF violence.

Measuring social capital by self-reported trust and by membership in different types of associations, we find that both the level of trust and participation in religious and community associations decreases when transiting from relative peace to violence. Regarding participation in economic associations (farm, trade, business and professional voluntary organizations), the negative impact of violence is confined to Acholiland, where the conflict was most disruptive as

the majority of the population was living in IDP camps to protect themselves from LRA attacks. Finally, on a more positive note, our results are suggestive of a strong post-violence recovery process. A few years after the end of the ADF-related violence, the level of trust dramatically increases in the affected areas and participation flourishes in all the types of voluntary organizations considered.

Although we control for a large set of individual- and district-level covariates, and although our results are stable throughout a number of robustness checks and after controlling for possible endogeneity and attenuation bias, these results remain tentative. First, this is obviously not an experimental setting and the econometric techniques used cannot fully substitute for the unobserved counterfactual: what would have happened in the absence of violence? Second, many questions remain unanswered. What are the precise mechanisms underlying our results? Does social capital bounce back to its pre-war level, fall behind or even exceed it? How can these results be generalized to other settings with violence of different forms and duration? To answer these questions, more data points are needed from more countries on more forms of violence.

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Figure 1: Administrative map of Uganda

Figure 2: Event days with LRA and ADF involvement

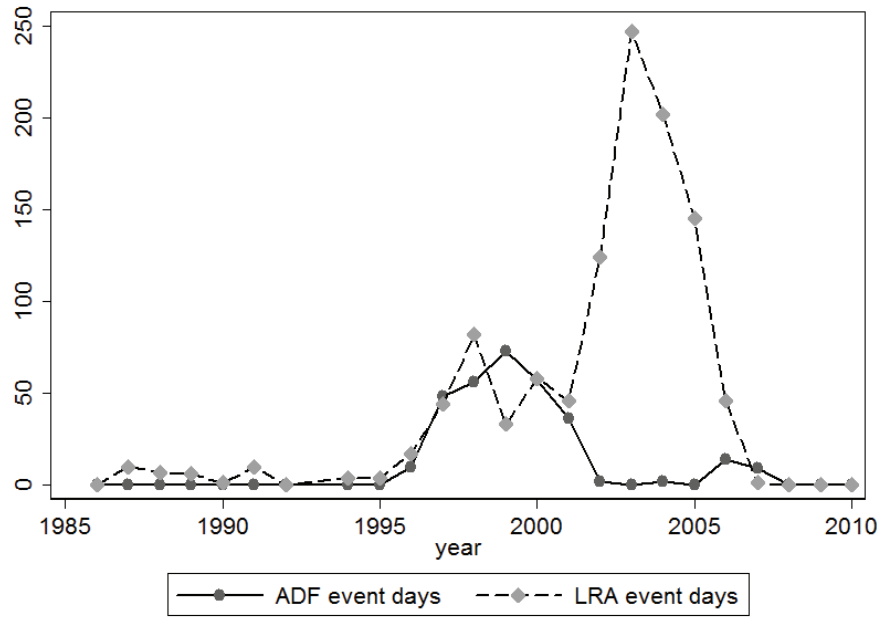

Figure 3: LRA event days inside and outside Acholiland

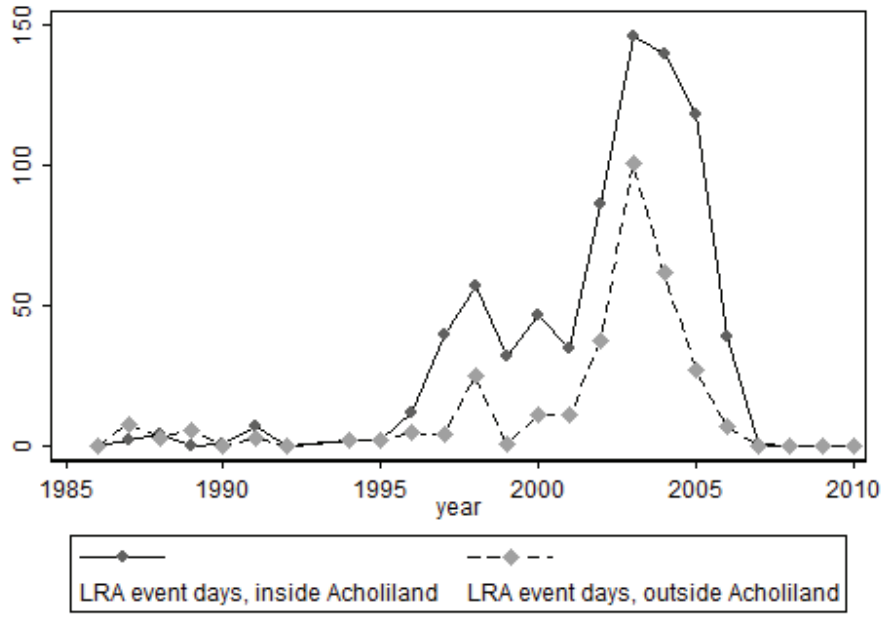

Table 1: Sample observations

	Individuals in sample (Nr)	
	2000	2005
Central	751	656
East	559	584
North	369	544
West	592	616
Total	2,271	2,400

Table 2: Descriptives of dependent variables

	Value used in main specification	Value used in robustness check	Distribution of responses across answer categories (column %) 2000	2005
Trust generally				
You must be very careful	0		85	83
Most people can be trusted	1		15	17
Membership of:				
Religious organization				
Not a member	0	0	20	17
Inactive member	1	0	24	25
Active member	2	1	47	51
Official leader	3	1	9	7
Trade union or farmer organization				
Not a member	0	0	70	83
Inactive member	1	0	8	4
Active member	2	1	20	11
Official leader	3	1	2	2
Professional or business organization				
Not a member	0	0	78	86
Inactive member	1	0	6	3
Active member	2	1	13	10
Official leader	3	1	2	1
Community development organization				
Not a member	0	0	70	64
Inactive member	1	0	7	6
Active member	2	1	19	25
Official leader	3	1	4	5

Table 3: description of explanatory variables

	2000	2005
Dependent variables		
General trust	0.15	0.17
Religious organization	1.46	1.48
Trade union or farmer organization	0.53	0.32
Professional or business organization	0.39	0.26
Community development organization	0.56	0.70
Explanatory variables		
Battle events '01-'05	19.8	22.8
LRA in Acholiland	19.9	22.9
LRA outside Acholiland	7.7	8.2
ADF	7.3	9.3
Age	2.3	2.3
Age^2	1275	1207
Male	0.5	0.5
Urban	0.1	0.3
Education level	3.1	3.4
Ethnicity (%)		
Ateso	4.76	7.25
Luganda	25.36	18.63
Lugbara	2.91	4.92
Lumasaba	5.15	4
Luo (incl. Acholi)	12.86	12.92
Lusoga	9.91	9.88
Rukiga	6.43	6.25
Runyankole	2.95	11.04
Rutooro	11.93	3.63
other	17.75	21.5
Historic battles	24.5	28.4
Ethno-Linguistic fractionalization	0.4	0.4

Education level is a categorical variable taking values between 0 and 8, with 0 denoting no schooling and 8 post-university education; the Acholi ethnic group is a subgroup of the broader category of Luo; the index of ethno-linguistic fractionalization is calculated from the 1991 population census.

Table 4: OLS results

	Trust		Membership		
Dependent variable:	General trust	Religious	Trade/ Farmer	Professional/ Business	Community/ Development
	(1)	(4)	(5)	(6)	(7)
Battle days '01-'05*2005 round	0.005	-0.055*	0.006	0.005	-0.014
	(0.011)	(0.032)	(0.027)	(0.014)	(0.028)
Battles in treatment period	-0.019	0.083	-0.062***	-0.076***	-0.156***
	(0.030)	(0.052)	(0.021)	(0.019)	(0.030)
Post-treatment year	-0.102**	0.061	-0.368***	-0.248***	0.235*
	(0.046)	(0.150)	(0.105)	(0.069)	(0.135)
District-level controls	Yes	Yes	Yes	Yes	Yes
Individual-level controls	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes
Number of clusters	63/2	63/2	63/2	63/3	63/2
Observations	4,481	4,529	4,507	4,500	4,506
R-squared	0.064	0.064	0.076	0.103	0.123

Notes: *** p<0.01, ** p<0.05, * p<0.1; The table reports OLS estimates. The unit of observation is an individual. The robust standard errors are adjusted for two-way clustering within rural and urban samples in each district and within years and are reported between brackets. The individual-level and district-level controls are those specified in Table 3.

Table 5: OLS results, distinguishing between three types of violence

	Trust	Membership			
Dependent variable:	General trust	Religious	Trade/ Farmer	Professional/ Business	Community/ Development
	(1)	(4)	(5)	(6)	(7)
LRA in Acholiland: Battle days '01-'05*2005 round	-0.005	-0.096***	-0.056***	-0.014*	-0.075***
	(0.006)	(0.012)	(0.018)	(0.007)	(0.016)
LRA outside Acholiland: Battle days '01-'05*2005 round	-0.025***	-0.077**	0.017	0.005	-0.047**
	(0.007)	(0.036)	(0.026)	(0.023)	(0.023)
ADF: Battle days '01-'05*2005 round	0.058***	0.159***	0.130***	0.055***	0.155***
	(0.013)	(0.016)	(0.023)	(0.020)	(0.030)
LRA in Acholiland: Battle days in treatment period	-0.011	0.000	-0.008	-0.033	-0.066**
	(0.007)	(0.037)	(0.015)	(0.027)	(0.026)
LRA outside Acholiland: Battle days in treatment period	0.008	0.032	-0.076***	-0.063*	-0.105***
	(0.009)	(0.037)	(0.018)	(0.033)	(0.028)
ADF: Battle days in treatment period	-0.072***	0.016	-0.108**	-0.064	-0.193***
	(0.009)	(0.052)	(0.046)	(0.068)	(0.058)
Post-treatment year	-0.044	0.061	-0.399***	-0.253***	0.287***
	(0.032)	(0.079)	(0.063)	(0.058)	(0.108)
District-level controls	Yes	Yes	Yes	Yes	Yes
Individual-level controls	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes
Number of clusters	63/2	63/2	63/2	63/3	63/2
Observations	4,481	4,529	4,507	4,500	4,506
R-squared	0.074	0.081	0.084	0.105	0.135

Notes: *** p<0.01, ** p<0.05, * p<0.1; The table reports OLS estimates. The unit of observation is an individual. The robust standard errors are adjusted for two-way clustering within rural and urban samples in each district and within years and are reported between brackets. The individual-level and district-level controls are those specified in Table 3, as well as the interaction term between ethno-linguistic fractionalization and the 2005 year dummy.

Table 6: Robustness checks

	Trust	Membership			
Dependent variable:	General trust	Religious	Trade/ Farmer	Professional/ Business	Community/ Development
	(1)	(4)	(5)	(6)	(7)
Only Nilotic areas (North)					
LRA in Acholiland: Battle days '01-'05*2005 round	-0.004	-0.119***	-0.063**	-0.033	-0.158***
	(0.012)	(0.020)	(0.027)	(0.021)	(0.032)
LRA outside Acholiland: Battle days '01-'05*2005 round	-0.028	-0.126***	0.021	-0.031	-0.178***
	(0.019)	(0.034)	(0.042)	(0.039)	(0.041)
ADF: Battle days '01-'05*2005 round	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Only Bantu-areas (South)					
LRA in Acholiland: Battle days '01-'05*2005 round	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LRA outside Acholiland: Battle days '01-'05*2005 round	0.033	-0.096**	-0.163***	-0.034	-0.081*
	(0.028)	(0.047)	(0.025)	(0.028)	(0.044)
ADF: Battle days '01-'05*2005 round	0.059***	0.143***	0.123***	0.055***	0.196***
	(0.018)	(0.023)	(0.021)	(0.013)	(0.028)
Excluding district level controls					
LRA in Acholiland: Battle days '01-'05*2005 round	-0.010**	-0.087***	-0.067***	-0.017**	-0.050***
	(0.005)	(0.009)	(0.017)	(0.007)	(0.010)
LRA outside Acholiland: Battle days '01-'05*2005 round	-0.033***	-0.062**	0.002	-0.002	-0.003
	(0.005)	(0.030)	(0.026)	(0.024)	(0.016)
ADF: Battle days '01-'05*2005 round	0.056***	0.162***	0.127***	0.054***	0.157***
	(0.013)	(0.014)	(0.021)	(0.018)	(0.029)
Oprobit/probit[a]					
LRA in Acholiland: Battle days '01-'05*2005 round	-0.010	-0.121***	-0.109*	-0.050	-0.132**
	(0.040)	(0.037)	(0.062)	(0.046)	(0.051)
LRA outside Acholiland: Battle days '01-'05*2005 round	-0.078*	-0.097***	0.007	-0.014	-0.059
	(0.040)	(0.033)	(0.038)	(0.035)	(0.040)
ADF: Battle days '01-'05*2005 round	0.236***	0.216***	0.200***	0.118*	0.222***
	(0.061)	(0.046)	(0.054)	(0.060)	(0.056)
Alternative coding of answers[a]					
LRA in Acholiland: Battle days '01-'05*2005 round		-0.192***	-0.104***	-0.025	-0.116***
		(0.037)	(0.037)	(0.057)	(0.040)
LRA outside Acholiland: Battle days '01-'05*2005 round		-0.174***	0.020	0.008	-0.078
		(0.035)	(0.041)	(0.044)	(0.048)
ADF: Battle days '01-'05*2005 round		0.099*	0.258***	0.137*	0.162***
		(0.052)	(0.064)	(0.074)	(0.050)
Event days instead of logged event days					
LRA in Acholiland: Battle days '01-'05*2005 round	-0.000	-0.002***	-0.001***	-0.000	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LRA outside Acholiland: Battle days '01-'05*2005 round	-0.002***	-0.007***	0.000	-0.002	-0.003**
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
ADF: Battle days '01-'05*2005 round	0.014***	0.039***	0.028***	0.013***	0.040***
	(0.003)	(0.009)	(0.008)	(0.004)	(0.007)
Logged events instead of logged event days					
LRA in Acholiland: Battle days '01-'05*2005 round	-0.008*	-0.084***	-0.053***	-0.016**	-0.074***
	(0.004)	(0.010)	(0.015)	(0.006)	(0.012)
LRA outside Acholiland: Battle days '01-'05*2005 round	-0.023***	-0.068**	0.018	0.003	-0.040**
	(0.006)	(0.029)	(0.022)	(0.019)	(0.019)
ADF: Battle days '01-'05*2005 round	0.048***	0.134***	0.114***	0.050***	0.131***
	(0.011)	(0.015)	(0.020)	(0.019)	(0.028)

Notes: *** p<0.01, ** p<0.05, * p<0.1; The table reports OLS estimates. The unit of observation is an individual. The standard errors are adjusted for two-way clustering within rural and urban samples in each district and within years and are reported between brackets. [a] Bootsrapped standard errors. The inlcuded control variables are as in Table 5, unless indicated otherwise.

Table 7: First stage IV results

Dependent variable:	LRA inside Acholiland Battle days '01-'05	LRA outside Acholiland Battle days '01-'05	ADF Battle days '01-'05	LRA inside Acholiland Battle days '01-'05	LRA outside Acholiland Battle days '01-'05	ADF Battle days '01-'05	LRA inside Acholiland Battle days '01-'05 * '05 round	LRA outside Acholiland Battle days '01-'05 * '05 round	ADF Battle days '01-'05 * '05 round
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Distance to Sudan	-0.000***	-0.003***	-0.002**	-0.000***	-0.003***	-0.002**	-0.000	-0.000	-0.000
	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
log(Distance to Ruwenzori mountains)	-0.016***	0.190***	-0.140***	-0.016***	0.190***	-0.140***	-0.001	0.001	0.005
	(0.004)	(0.046)	(0.044)	(0.004)	(0.046)	(0.044)	(0.001)	(0.007)	(0.011)
Share of Acholi in district	6.486***	-5.243***	-0.917***	6.522***	-5.288***	-0.926***	0.002	-0.004	-0.015
	(0.036)	(0.207)	(0.155)	(0.012)	(0.177)	(0.146)	(0.002)	(0.027)	(0.020)
Prediction of LRA inside Acholiland battle days * post-treatment year				-0.008***	0.009	-0.004	0.996***	0.007	-0.011
				(0.001)	(0.011)	(0.011)	(0.001)	(0.005)	(0.008)
Prediction of LRA outside Acholiland battle days * post-treatment year				0.003	-0.003	-0.005	0.001***	1.008***	-0.021
				(0.002)	(0.035)	(0.029)	(0.000)	(0.012)	(0.016)
Prediction of ADF battle days * post-treatment year				0.002	-0.008	-0.017	0.001	-0.000	0.989***
				(0.003)	(0.046)	(0.037)	(0.001)	(0.018)	(0.011)
Post-treatment year	-0.002	0.045	-0.056	-0.005**	0.049	-0.038	-0.002*	-0.029	0.087
	(0.002)	(0.052)	(0.056)	(0.002)	(0.057)	(0.086)	(0.001)	(0.039)	(0.066)
District-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of clusters	63/2	63/2	63/2	63/2	63/2	63/2	63/2	63/2	63/2
Observations	4,539	4,539	4,539	4,539	4,539	4,539	4,539	4,539	4,539
R-squared	0.999	0.876	0.760	0.999	0.876	0.760	1.000	0.912	0.829

Notes: Robust standard errors adjusted for two-way clustering within geographic units and within years in parentheses; *** p<0.01, ** p<0.05, * p<0.1. The included controls are as in Table 5. The interaction terms are instrumented as suggested by Wooldrige (2000, p.236); first constructing predicted values of the battle days by regressing them on the included instruments and the excluded instruments (columns 1-3); then using the interaction terms between the predicted battle days and the post-treatment year as additional identifying instrument in the first stage of the 2SLS (columns 4-9).

Table 8: IV, 2nd stage

	Trust	Membership			
Dependent variable:	General trust	Religious	Trade/ Farmer	Professional/ Business	Community/ Development
	(1)	(4)	(5)	(6)	(7)
LRA in Acholiland: Battle days '01-'05*2005 round	-0.008***	-0.092**	-0.046***	-0.001	-0.062***
	(0.001)	(0.041)	(0.014)	(0.024)	(0.018)
LRA outside Acholiland: Battle days '01-'05*2005 round	-0.033***	-0.071*	0.032	0.020	-0.028
	(0.003)	(0.037)	(0.026)	(0.017)	(0.040)
ADF: Battle days '01-'05*2005 round	0.050***	0.202***	0.181***	0.115***	0.206***
	(0.002)	(0.038)	(0.012)	(0.014)	(0.061)
LRA in Acholiland: Battle days in treatment period	-0.035***	-0.005	-0.072***	-0.066***	-0.226***
	(0.002)	(0.054)	(0.025)	(0.017)	(0.042)
LRA outside Acholiland: Battle days in treatment period	-0.010***	-0.051	-0.170***	-0.088**	-0.279***
	(0.002)	(0.041)	(0.035)	(0.036)	(0.076)
ADF: Battle days in treatment period	-0.133***	0.442***	-0.074*	-0.191***	-0.416***
	(0.006)	(0.039)	(0.043)	(0.062)	(0.097)
Post-treatment year	-0.023**	0.058	-0.450***	-0.319***	0.213
	(0.009)	(0.128)	(0.028)	(0.022)	(0.183)
District-level controls	Yes	Yes	Yes	Yes	Yes
Individual-level controls	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes
Number of clusters	63/2	63/2	63/2	63/3	63/2
Observations	4,481	4,529	4,507	4,500	4,506
R-squared	0.072	0.086	0.084	0.105	0.136
Kleibergen-Paap rk LM statistic	10.49	10.41	10.3	10.3	10.32
p-value	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

Notes: *** p<0.01, ** p<0.05, * p<0.1; The table reports OLS estimates. The unit of observation is an individual. Bootsrapped standard errors, adjusted for two-way clustering within rural and urban samples in each district and within years and are reported between brackets. The included controls are as in Table 5. The null hypothesis of the Kleibergen-Paap underidentification test is that the equation is underidentified, i.e., that the excluded instruments are not correlated with the endogenous regressors.

Table A1: distribution of event days in '95-'00 & '00-'05 across the three types of violence

	1995-2000			2000-2005			
District	LRA inside Acholiland	LRA outside Acholiland	ADF	LRA inside Acholiland	LRA outside Acholiland	ADF	Bantu
NORTH:							
Apac		5	1		36	0	
Arua		6	1		29	0	
Gulu	83		0	247		0	
Kitgum	85		2	239		0	
Lira		13	0		75	0	
Nebbi		2	0		12	0	
EAST:							
Iganga		0	0		2	0	X
Jinja		0	0		1	1	X
Kamuli		0	0		0	0	X
Katakwi		1	0		13	0	
Kumi		0	0		2	0	
Mbale		0	0		3	0	X
Pallisa		0	0		1	0	X
Soroti		7	0		43	0	
Tororo		0	4		0	0	X
CENTRAL:							
Kampala		1	6		0	3	X
Kiboga		0	0		0	0	X
Luwero		0	0		1	0	X
Masaka		0	0		0	1	X
Mpigi		0	3		0	3	X
Mubende		0	1		2	2	X
Mukono		0	2		1	2	X
Rakai		0	0		0	0	X
WEST:							
Bushenyi		0	7		1	9	X
Kabale		0	6		0	3	X
Kabarole		0	92		0	12	X
Kasese		0	60		0	13	X
Kibaale		0	7		0	7	X
Kisoro		0	2		0	1	X
Masindi		5	6		3	11	X
Mbarara		0	5		0	2	X
Ntungamo		0	0		0	0	X
Rukungiri		0	5		0	0	X
Sum	0	6	202	0	8	69	

Notes: The 2000 AB survey round started in the month of May. The event days prior to May 2000 are included in the 1995-2000 period, while the event days occuring later are included in the 2000-2005 period.