The political spoils of war: the impact of conflict on political participation in Aceh, Indonesia[*]

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Abstract: This paper contributes to a small, but growing, field of micro-level research on the political consequences of civil war. I analyze the effects of exposure to violence on political participation at the village level in Aceh, Indonesia using surveys of Village Heads and households conducted for the Aceh Reintegration and Livelihood Survey project, which its authors kindly shared with me (Barron, Humphreys, Paler, Tajima, and Weinstein 2008). I find, first, that voter turnout is exceptionally high across Aceh – around 90% – in both local and gubernatorial elections. However, communities which experienced particularly high levels of conflict, especially in eastern Aceh, see diminished voter turnout levels. Second, I find that magnitude of exposure to conflict – whether through deaths or displacement – affects participation, whereas exposure does not. Third, I use household-level data to better interpret these findings and find that the lower aggregate turnout levels in high-conflict village elections may actually represent lower voting rates by former noncombatants and higher voting rates by former combatants. I interpret these findings using emotions-based explanations of the effects of violence.

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The empirical evidence on the effects of civil war present a paradox: "violence destroys but is also often associated with social creativity" (Cramer 2006). Although tolls of death and destruction are large, war-affected regions of a country can usually "catch-up" to unaffected regions within just a few decades (Brakman, Garretsen, and Schramm 2004; Davis and Weinstein 2002; Miguel and Roland 2005). Moreover, as Cramer notes, the social and political effects of civil war might be positive – leading to postwar democratization (Wantchekon 2004) and increased political participation (Bellows and Miguel 2006, 2008; Blattman 2009; Voors et al. 2010). On the other hand, these relatively positive reviews of the effects of civil war contrast directly with what we observe about the destructiveness of conflict; civil war is generally considered "development in reverse" (Collier et al. 2003, 32) and, in some cases, has negatively impacted political participation (Acemoglu, Robinson, and Santos 2009).

This paper speaks directly to the theoretical debates on the effects of civil war by examining political participation in Aceh, Indonesia after the end of its nearly thirty-year separatist conflict. Whereas previous papers have examined the participation of ex-combatants and those directly exposed to violence with the rest of the population, I focus on the net effects of violence on political participation by comparing voter turnout in local elections between affected and unaffected communities. I then turn to household-level data to explain the mechanism behind my main finding: a negative association between conflict-related deaths and voter turnout in eastern Aceh, the rebel stronghold. I use surveys of Village Heads and households conducted for the Aceh Reintegration and Livelihood Survey project, which its authors kindly shared with me (Barron, Humphreys, Paler, Tajima, and Weinstein 2008).

Political participation is an essential component of civil war legacy; it is important for the postwar accountability and legitimacy of institutions. High levels of participation may serve as

an indication of "buy in" into postwar institutions by social actors accustomed to shaping policy through force. To the extent that different subpopulations participate at different rates, we may expect different types of policies to be adopted and different distributional conflicts over the valuable spoils of civil war – postwar aid. Indeed, "the social and institutional legacies of conflict are arguably the most important but least understood of all war impacts" (Blattman and Miguel 2010, 42).

Recent research finds that ex-combatants tend to participate more than their civilians peers, but little is known about net changes in political participation. Does indirect exposure to violence – as a conflict bystander – have similarly positive effects on participation? Does exposure to violence exhibit uniform effects, or does it depend on the type and magnitude of violence? Answering these questions would facilitate a nuanced approach to post-conflict institution-building, through a deeper understanding of which social actors are participating and which actors remain outside of the political sphere.

I find, first, that voter turnout is exceptionally high across Aceh – around 90% – in both local and gubernatorial elections. However, communities which experienced particularly high levels of conflict, especially in eastern Aceh, see diminished voter turnout levels – around 86%.[1] In eastern Aceh, the birthplace of GAM (the rebels), higher rates of violence are negatively and robustly associated with voting. This relationship does not hold, however, across western, central, or northern Aceh (see Map 1). Second, I find that magnitude of exposure to conflict – whether through deaths or displacement – affects participation, whereas exposure does not. Third, I use household-level data to better interpret these findings and find that the lower

[1] This is the average voter turnout for villages in the districts of Pidie, Bireuen, Lhokseumawe, Aceh Utara, and Aceh Timur that experienced more than 50 deaths.

aggregate turnout levels in high-conflict village elections may actually represent lower voting rates by former noncombatants and higher voting rates by former combatants.

I interpret these findings using emotions-based explanations of the effects of violence. In high-conflict communities, households which directly experienced death voted at rates of around 7% higher than households which did not. When I control for household and prewar characteristics, I find that ex-combatants living in high-conflict communities are significantly more likely to vote. Indirect participants in conflict, however, are less likely to vote in those same communities (although this effect is not significant at conventional levels).

In Section 1, I briefly discuss the conflict in Aceh, emphasizing both its particular and its more generalizeable features. Section 2 presents the data used for the analysis and summary statistics. It also addresses the methodological issues inherent in studying the effects of civil wars – namely, selection effects – and how these should affect our interpretations of and confidence in the findings presented here. I then present models on the determinants of violence within Aceh, which will help us to account for selection effects in exposure to violence. Section 3 seeks to establish correlations between violence and voting, which will be explored more theoretically in Section 4. Section 4 reviews three different mechanisms posited by the literature by which civil war violence may affect political participation: (1) altering the costs of voting, (2) shifting preferences for pro-social behavior, and (3) affecting the individual-level emotions which shape participation in group behavior. I tentatively conclude that legacies of fear may diminish participation in high-conflict villages among those that did not directly experience violence. Among direct conflict participants, emotions of anger/resentment may positively affect postwar participation.

Section 1: Conflict in Aceh

Aceh, located on the northern tip of the island of Sumatra in Indonesia, was mired in separatist conflict for nearly thirty years, resulting in nearly 15,000 deaths (Barron, Clark, and Daud 2005). The Free Aceh Movement (Gerakan Aceh Merdeka; GAM) launched its campaign for independence from the Indonesian state in 1976. The conflict ended with peace agreements signed in 2005 which called for disarming GAM combatants and the withdrawal of the Indonesian military from Aceh; the agreement also allowed GAM to form a political party. I will briefly review the conflict in Aceh and the post-conflict environment and then note how this conflict is different from others studied in the literature on postwar participation.

Conflict timeline. Aceh has a distinct cultural and political history from the rest of Indonesia, derived primarily from its "strict adherence to Islam and its history of having been an independent sultanate until the Dutch invasion of 1873" (Schulze 2004, vii). Sukarno promised Aceh special status in recognition of the important role that it played in Indonesia's independence from Dutch colonial rule but almost immediately revoked it. This has been a fairly consistent pattern in interactions between Aceh and Jakarta: Aceh has been promised varying levels of autonomy from the Indonesian state but has never actually exercised autonomy in practice.

During the late 1970s, GAM was an organization of around 70 people, most of whom were well-educated and had personal ties to the group's charismatic leader, Hasan di Toro. By the end of 1979, most of GAM's leaders were either exiled, imprisoned, or dead. GAM experienced a resurgence, however, when Libya agreed to train remaining GAM leaders in insurgency tactics. When the trained guerillas returned in 1989, they quickly began to

consolidate GAM's command structure – in the districts of Pidie, Aceh Besar, Aceh Utara, and Aceh Timur – and recruited and trained hundreds of new guerillas on the ground. New recruits, unlike the old guard, were primarily from rural areas where unemployment was high.

The period between 1989 and 1998 coincided with the heavy-handed centralization strategy pursued by the Suharto regime. The Suharto regime consistently treated Aceh as a "security problem" rather than as a separatist conflict with political aims (Sukma 2004). During this period, the Indonesian military failed to distinguish between civilians and combatants, resulting in thousands of deaths and human rights violations. The military campaigns primarily aimed to punish villages which were thought to tolerate or support GAM. Anger induced by these violations is cited as a key motivation for joining GAM later in the conflict. By 1991, however, GAM was almost completely eliminated militarily. They survived because their leadership was still in exile, because many of the mid-level military commanders could hide out in Malaysia during particularly difficult military raids, and because the repression itself increased support for GAM amongst civilians (Schulze 2004).

In 1998, with the end of the Suharto regime, conflict rose across Indonesia, including an intensification of the Acehnese conflict. Bertrand (2008) argues that this period was a 'critical juncture' for the state, when institutional change offered opportunities for groups to redefine criteria for inclusion and exclusion from the state. This time around, however, GAM had converted into a popular movement, with widespread support across Aceh. Simultaneously, the Indonesian state was under pressure from the military to resolve the conflict (Sukma 2004). In 2002, a humanitarian pause in the fighting was agreed upon, but GAM used the period to consolidate power and gain new recruits. 2003 marked the beginning of martial law in Aceh and renewed fighting between armed factions. GAM claimed around 30,000 combatants at this time,

though their level of armament was fairly low, with only 1,000-5,000 modern firearms (Schulze 2004, 32). Militarily, GAM aimed primarily to make Aceh ungovernable for the Indonesian state rather than to control territory.

Conflict spread across the districts from traditional GAM strongholds in eastern Aceh[2] to western Aceh[3] during this period. Formally, the military command and control structure extended from the exiled leadership in Sweden directly to field commanders. Because of the long communication lines, in practice, decisions on strategy and tactics were effectively made by field commanders (Schulze 2004). As the conflict spread geographically, GAM's command and control structure deteriorated. Whereas in the eastern districts, GAM commanders tended to heed the commands from the exiled leadership in Sweden, in western districts, commanders acted much more locally (Barron, Clark, and Daud 2005). The result was that violations against civilians were more common in western districts and that the connections between locals and GAM commanders were weaker; in the west, "locals do not know who GAM commanders are, and the organization's activities are often shrouded in mystery" (ibid., 23). In Section 3, I suggest that the different experiences that civilians had between older and newer bases of GAM control influenced political participation (see Table 5). Perhaps contrary to initial expectation, it is those districts in eastern Aceh, in which GAM were more organized, which see the negative relationship between violence and voting.

The conflict ended in 2005 with the signing of a peace agreement which called for disarming GAM combatants and the withdrawal of the Indonesian military from Aceh. The agreement allowed GAM to form a political party but not to hold a referendum on independence.

[2] Pidie, Bireuen, Aceh Utara, Lhokseumawe, Aceh Timur, and Bireuen.

[3] Aceh Barat, Aceh Selatan, Aceh Singkil, Aceh Barat Daya, Aceh Tenggara, and Nagan Raya.

Most analysts attribute the peace to the devastation caused by the 2004 tsunami, which killed 170,000 Acehnese and displaced many more (Pan 2005).

Post-conflict environment. In many ways, the post-conflict environment in Aceh is representative of the success of the peace process. Barron (2007) notes that:

> The list of achievements speaks for itself: the voluntary surrendering and then destruction of over 800 GAM weapons, the departure of over 31,000 Indonesian military and police troops, Aceh's first ever direct election passing smoothly despite a wholesale transfer of power, the almost complete disappearance of security incidents between former GAM and military; the list goes on (1).

GAM ex-combatants report high levels of acceptance amongst community members, due in part to the fact that they returned to their home communities where they had strong kinship networks.

However, some ex-combatants do not respect the authority of local government and traditional leaders. In some cases, ex-combatants challenged village leaders for political authority; political control also implies economic control over the large streams of postwar aid – the spoils of war – and over patronage systems (World Bank 2006). Where this tension occurs, it "limits the ability of villagers and, in particular, community leaders to voice their concerns" (ibid., 28). While the instances of physical violence or threats have been few, interviews conducted by the World Bank provide qualitative evidence that some civilians do feel constrained in their freedom to speak and act.

On the differences between Aceh and other conflicts, scope conditions. Studies on postwar political participation have been conducted thus far on a limited number of cases – namely, on Uganda, Sierra Leone, Colombia and Burundi. Aceh differs from these conflicts in at least one important way: the rebels held a monopoly on legitimacy throughout the entire conflict region.

Because Aceh experienced a separatist conflict, the support amongst the population was generally not divided between government and rebels. The areas that did not support rebel groups tended to be neutral rather than supporting the other side. Some anti-separatist movements did exist, but popular support for them was relatively shallow and there is evidence that these groups relied on coercion for recruitment (Sukma 2004). Further, almost all ex-combatants reintegrating in Aceh fought for the same armed faction; the Indonesian army simply has to withdraw behind a border without having to socially or politically reintegrate. This may facilitate the process of reintegration of ex-combatants relative other conflicts in which ex-combatants from both sides have to return to villages that did not necessarily support their armed factions during the conflict.

Therefore, the end of the Acehnese conflict should in some ways be an "easy" case for the reintegration of ex-combatants (and a "tough" case from which to estimate the political effects of reintegration). To the extent that the diminished voter turnout among the population can be attributed to the challenges of reintegrating ex-combatants, we should expect this effect in Aceh to represent a lower bound on the magnitude of the effect. Finding effects in Aceh should increase our confidence that the relationship between exposure to violence and political participation holds more broadly.

What should we expect? In the first stage of analysis – on community-level turnout – I do not have a *prima facie* hypothesis about the direction of the relationship between violence and voting. That there *is* a relationship has been found at the community-level in Sierra Leone (Bellows and Miguel 2006) and Colombia (Acemoglu, Robinson, and Santos 2009), but in opposite directions. In Section 3, I seek only to determine correlations in the Aceh case and then

to more thoroughly consider the literature and mechanisms in operation in Section 4. I expect that the relationship is context-dependent and that it differs based on the extent of demobilization and the success of social reintegration. In Aceh, these indicators are fairly positive, so we should expect overall high levels of participation (which is what we observe).

Section 2: Data and summary statistics

I examine voter turnout in Village Head and gubernatorial elections around three years after the conflict between the Indonesian military (TNI) and GAM ended. Hostilities between the factions have not resumed, but the results should be interpreted (1) in the context of the relatively recent end to the conflict, and (2) in the context of the uncertainty about the possible recommencement of conflict.[4] When the Village Head and household surveys were conducted in July-September 2008, therefore, Aceh was three and a half years out from the tsunami and from the beginnings of the end of the conflict between GAM and TNI.[5]

Before proceeding to the analysis, I first describe the surveys conducted in Aceh. Second, I discuss the strategy for analyzing the survey data. Third, I discuss the specific variables employed (see Table 1 for detailed descriptions and summary statistics). Finally, I review the methodological problems inherent in studying the effects of civil war: the selection effects of violence. I present models on the determinants of violence in Aceh.

[4] Especially around elections, uncertainty runs high and sporadic, low-level violence has occasionally broken out (ICG 2009).

[5] Although the peace agreement was not signed until August 2005, peace negotiations officially began in December 2004. GAM spent the second half of 2004 on the defensive, focusing on avoiding battles in order to protect their bases and troops (ICG, 2005b). Uncertainty about possible recommencement of the conflict was likely heightened by the failed peace agreement in 2002 (ICG, 2005b). When guerillas tried to defect with demilitarization in 2002, many were arrested or attacked, and GAM used the time to regroup for further fighting (2005a).

Village Head and household surveys in Aceh

Between July and September 2008, surveys were conducted in 754 randomly-selected villages across twenty of the twenty-one districts in Aceh.[6] The villages for the Village Head survey were selected randomly using population and sub-district as strata, with the requirement that at least one village be selected per sub-district (Barron et al. 2009). The Village Head survey reports community-level information on conflict events, prewar village characteristics, and post-conflict environment (as well as a host of other factors not considered here).

In the same villages selected for the Village Head survey, three additional household surveys were conducted, all of which are used in this analysis. First, a survey of ex-GAM combatants was conducted; in each of the 754 villages, all ex-GAM combatants were counted and interviewed with a 6/10 probability. Second, short- and long-household surveys were conducted in order to offer a representative sample of adult males that are non-combatants (a control group). Because all villages were selected into the Village Head survey sample with equal probability, village-level data is relatively straightforward to analyze. However, the samples for both the short- and long-household surveys are not representative at the district-level. Therefore, in calculation of village averages (used in Tables 4 and 5) and in differences in means (Table 6), sampling weights are accounted for.[7] In Tables 3 and 7, I report the results from regressions weighted using the calculated sampling weights.[8]

[6] Excluding on the island of Sabang.

[7] I calculated sampling weights based on instructions in Barron et al. 2009. Do file available upon request.

[8] The standard econometric argument against accounting for sampling weights is that if the population is not homogeneous, then the estimators from both weighted and unweighted regressions will be biased. Therefore, it is better to use the more efficient unweighted estimator. However, Deaton argues that "if regressions are primarily descriptive, exploring association by looking at the mean of one variable conditional on others," then the researcher should "use the weights and correct the standard errors for the design" (1997, 64). Because my interest is in descriptions of the population (rather than in the interaction between population heterogeneity and sample design), I report weighted regression results.

Methodological strategy

First, I address the potentially large selection effects (discussed below) that derive from the non-random application of violence. I analyze the determinants of violence at the village and household levels (Tables 2 and 3). Second, I address the research question directly by analyzing data from the Village Head survey on reported levels of voter turnout for the most recent Village Head election. This data reports aggregate turnout only and does not break down voting patterns based on individual characteristics (like whether they are ex-combatants, IDPs, etc.). Examining Village Head elections gives us a sense of the net effects of communal-level exposure to violence on political participation.

For the village-level analysis, I report pooled models across all districts in Aceh (Table 4) and separate models for four different regions in Aceh (Table 5). I distinguish between districts in eastern Aceh, western Aceh, central Aceh, and northern Aceh (Map 1). The distinction between the eastern and western regions of Aceh is motivated by the significant differences in GAM organization and activity between the two regions documents in Section 1 (Barron, Clark, and Daud 2005). I distinguish the districts within Central Aceh based on Czaika and Kis-Katos (2009), who find significantly more sweeping operations and forced displacement in these provinces. Northern Aceh is a residual category. To the extent that different types of military strategy, rebel organization, and violence have differential impacts on postwar participation, we might expect different effects of exposure to conflict between these regions.

Finally, I draw on data from household surveys to analyze reported participation in gubernatorial elections.[9] Despite plausible differences in the determinants of local- and gubernatorial-level participation, the same political parties are running at both levels (as opposed

[9] Household data on voter turnout in Village Head elections is not available.

to in national elections, for example), and household-level data offers the opportunity to analyze household-level characteristics which affect the likelihood of voting. I use the household analysis to try to understand the individual-level mechanisms by which exposure to violence affects voter turnout.

MAP 1: Districts in Aceh, colored by region

Measurement of the variables

Dependent variable, voter turnout. Voter turnout is calculated as the total number of voters divided by the number of registered voters, as reported by the Village Head. A few measurement

points are worth noting with the dependent variable. First, mean voter turnout rates are very high (around 90%). Nearly 225 villages out of the 754 report voter turnout rates of 100%. If we exclude these observations, the mean turnout rate is around 86%. I run the models presented in Tables 4 excluding villages with a turnout rate of 100% and find no substantive changes between these models and those presented in Table 4.[10] The concern with these villages may be that the Village Head is not making a distinction between voter turnout and voter registration.[11] However, our confidence should increase in these reported figures based on the reported household-level voter turnout data for gubernatorial elections; accounting for sampling weights, nearly 90% of households report having voted in the gubernatorial election.

At the household level, I use self-reported voting behavior for the last gubernatorial election as the dependent variable (Table 7). National election voting behavior is also available, but I do not consider the national-level indicators at all comparable to the Village Head elections. Because the conflict was a separatist one, many opt out of national elections altogether (mean=72%), whereas participation in local and Aceh-wide politics is considerably higher.

Independent variables, conflict exposure. I consider several different measures of conflict exposure at the village level: deaths in the community, percent of households displaced,[12] hosting a TNI military base for at least three months, and hosting a GAM military base for at

[10] Results available upon request.

[11] As an alternative measure, I also ran all of the models presented here on a dependent variable measured as reported voter turnout over the population of the village. However, these two different ways of measuring voter turnout are not correlated very highly (r=0.48), and although I get the same results (in terms of sign and significance) for the effect of total deaths, I get substantially different results on the other measures of conflict exposure (results available upon request). I suspect that conflict-affected villages have substantially different demographic characteristics from non-affected villages, and that these differences may be driving the differences in results. Therefore, although the reported voter registration numbers potentially contain measurement error, I still consider them the most accurate measurement possible.

[12] 22 villages report the % of households that fled as greater than 100%. I exclude these observations.

TABLE 1: Variables

	Description of variables	Mean (St. Dev.)	Obs. household level	Obs. community level
Voter turnout				
Village head elections (over registered voters)	The number of people reported to have voted in the last village head election over the reported number of registered voters in the village	90.75 (13.79)	--	673
Governor elections (last)	A dummy variable indicating whether the interviewee voted in the last gubernatorial election (self-reported)	0.90 (0.30)	4120	--
Conflict variables				
Relative number of households that fled	The proportion of households (out of the village's 1998 population) that were displaces as a direct result of the conflict (1998-2005) for at least three months	16.56 (40.55)	--	621
TNA troop base	A dummy variable indicating whether the village was ever considered a 'basis GAM' by the government (1998-2005)	0.38 (0.49)	--	756
TNI troop base	A dummy variable indicating whether the village ever had a military or Brimob post (1998-2005)	0.49 (0.50)	--	756
Household death	A dummy variable indicating whether a member of the household was killed as a direct result of conflict	0.03 (0.17)	4121	--
Household displacement	A dummy variable indicating whether a member of the household was displaced due to conflict.	0.25 (0.43)	4121	--
Membership in an armed faction	A dummy variable indicating whether a household member (including all 1998 and 2008 household members) ever joined an armed faction, either voluntarily or by force	0.29 (0.45)	4121	--
Post-conflict variables				
TNA ex-combatants	TNA ex-combatants as a percentage of the 2008 village population	0.57 (1.01)	--	744
TNI ex-combatants	TNI ex-combatants as a percentage of the 2008 village population	0.16 (1.09)	--	743
Attitudes towards ex-combatants	An additive index measuring the interviewee's views towards ex-combatants based on his views on the following issues: (1) whether ex-combatants should be fully welcomed into the village, (2) whether ex-combatants should be allowed to join community associations, (3) whether ex-combatants should be allowed to be leaders of the village, (4) whether ex-combatants could be among his closest friends, and (5) whether he would welcome an ex-combatant into his family through marriage	4.67 (1.00)	4121	--
Household characteristics				
Literate	Head of household is literate in 1998	0.86 (0.34)	4121	--
Male	Male head of household in 1998	0.85	4121	--

		(0.35)		
1998 wealth index	An additive index of the number of the following possessions that the household owned in 1998: stove, radio/tape recorder/video, television, antenna, buffet/ornamental sideboard, refrigerator, bicycle/row boat, motorcycle/portable engine, car/motorized boat, and telephone/cellular phone.	2.86 (3.26)	4121	--
2008 wealth index	Index calculated as described above for 2008 possessions.	6.01 (4.60)	4121	--
Difference in wealth	Difference between 2005 and 1998 household wealth indices	0.83 (2.90)	4121	--
1998 investments in farming and non-farming machinery	A dummy variable indicating whether the household owned either large agricultural machinery or non-agricultural machinery in 1998	0.03 (0.18)	4121	--
Health	A dummy variable indicating whether a member of the household had a sickness that prevented him or her from going to work or school during the past 1 month	0.11 (0.31)	4121	--
Village characteristics				
Road	Categorical variable indicating the type of road that is the main access to the village. Coded as 0 for dirt, 1 for gravel, and 2 for asphalt	1.41 (0.71)	--	752
Terrain	Categorical variable indicating the type of terrain on which the village is located. Coded as 0 for very hilly, 1 for somewhat hilly, and 2 for flat	1.68 (0.57)	--	756
1998 population	Total village population in 1998	708 (934)	--	611
1998 associational life	An additive index for whether the following types of associations were active in the village in 1998: farmers'/professional groups, credit/finance groups, community development groups, religious groups, cultural/ethnic groups, youth groups, and women's groups.	3.65 (1.47)	--	740
Javanese	A dummy variable indicating whether the village has ethnic Javanese	0.60 (0.49)	--	748
Avg. head of household literacy	The average of dummy indicators for whether the surveyed households in the village have a literate head of household. Sampling weights accounted for.	0.83 (0.19)	4079	
Avg. head of household male	The average of dummy indicators for whether the surveyed households in the village have a male head of household. Sampling weights accounted for.	0.87 (0.16)	4079	
Avg. 1998 household wealth index	The average of the 1998 household wealth indices. Sampling weights accounted for.	2.92 (2.04)	4079	

least three months. At the household level, I additionally consider the effects of having a member of the household join an armed faction. Due to the concern that villages which report exceptionally high numbers of deaths may disproportionately influence the results, I also include models which log the number of deaths.

Independent variables, post-conflict conditions. I additionally consider the effects of post-conflict conditions on voter turnout. Specifically, I consider the percent of the village population comprised by militia/anti-separatist ex-combatants, GAM ex-combatants, and internally-displaced persons (IDPs).

Methodological challenges, selection effects of violence

Assessing the aggregate economic or political effects of civil war encounters a deep identification problem: countries that experience civil war are likely different than countries that do not along a host of unobservable factors. To assess aggregate the economic effects of civil war, for example, the proper comparison is between a postwar country and a hypothetical projection of growth in the same country as if there had been no civil war. Estimating the economic effects of civil war therefore "requires some best guess of how the economy would have functioned in the absence of war" (Humphreys 2003, 11).

One solution to the identification problem is to examine subnational variation in exposure to violence (thus, implicitly comparing areas with similar institutional and cultural contexts that differ only in their exposure to the treatment). However, studies at the subnational level tend to disregard the possibility of a changing national baseline; in the case of political participation, if we observe higher levels of participation among ex-combatants, it is impossible to say whether

participation among ex-combatants is increasing, whether participation among non-combatants is decreasing, or whether both are increasing or decreasing but at different rates without examining the national baseline. Moreover, violence is likely to be selective at the subnational as well as the national level; conflict-affected areas may be different than unaffected areas within the same country.

In the case of political participation, selection effects of exposure to conflict are particularly problematic if areas that are more or less likely to participate based on their prewar characteristics systematically experience more or less violence. Blattman (2009) exploits a "tragic natural experiment" – the plausibly random forced abduction of combatants into the Lord's Resistance Army in Uganda. No such natural experiment is possible in Aceh. Indeed, communities with poorer road access, lower density of religious institutions, higher school density, and higher population are significantly more likely to experience higher levels of community deaths. To the extent that these factors are also correlated with the likelihood of political participation, estimates on the effects of exposure to conflict would be biased by selection effects.

Tables 2 and 3 present models on the determinants of violence. Detailed discussion of these models is available in the Appendix. However, it is important to note that violence is <u>not</u> exogenous to prewar characteristics. Significant selection effects appear to be in play. In the subsequent analyses, I include prewar characteristics to correct for the selection effects as much as possible.

TABLE 2: Determinants of violence, 1998-2005

	DV: Total deaths	DV: At least 1 death	DV: TNA base	DV: TNI base	DV: % households fled
Village characteristics	(1)	(2)	(3)	(4)	(5)
Road	-0.35***	-0.23	-0.15	0.01	-8.29***
	(0.10)	(0.16)	(0.14)	(0.14)	(2.66)
Terrain	-0.09	-0.20	-0.20	0.15	-7.38**
	(0.15)	(0.20)	(0.16)	(0.15)	(3.34)
Associational life, 1998	-0.00	-0.10	-0.10	0.05	-0.68
	(0.06)	(0.08)	(0.06)	(0.06)	(1.17)
Religious density, 1998	-1.09**	-0.97**	-0.71*	-0.32	-2.50
	(0.42)	(0.49)	(0.43)	(0.40)	(9.40)
School density, 1998	0.91***	0.71**	0.48*	0.52**	6.22
	(0.22)	(0.28)	(0.27)	(0.23)	(5.77)
Log of population, 1998	0.48***	0.45***	-0.01	0.52***	-0.24
	(0.10)	(0.17)	(0.12)	(0.13)	(1.96)
Javanese	0.17	0.14	0.08	0.14	2.79
	(0.14)	(0.21)	(0.21)	(0.20)	(3.94)
Household characteristics					
Avg. male head of household	0.51	-1.94***	0.12	0.03	0.57
	(0.42)	(0.61)	(0.51)	(0.47)	(8.91)
Avg. head of household literate	-0.32	0.53	-0.56	-0.42	5.12
	(0.37)	(0.48)	(0.46)	(0.44)	(7.72)
Avg. household wealth index, 1998	-0.05	-0.07	-0.19***	-0.15***	-1.41*
	(0.04)	(0.05)	(0.05)	(0.04)	(0.72)
N	585	592	592	592	584

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors clustered by subdistrict in parentheses. Model (1) presents the results of a negative binomial regression. The distribution of the data suggests that an event count model rather than OLS should be used, and a likelihood test shows that we can reject the null hypothesis that there is no over-dispersion in the data. The Poisson model is therefore inappropriate. Models (2), (3), and (4) present the results of logit models, and Model (5) is an OLS. Average household characteristics calculated using sampling weights. Calculated in STATA 11.

TABLE 3: Determinants of violence, household

	DV: Household death	DV: Household injury	DV: Displacement	DV: Recruitment
Household characteristics	(1)	(2)	(3)	(4)
Head of household literate	0.08	-0.16	0.26**	0.20*
	(0.28)	(0.15)	(0.12)	(0.11)
Head of household male	0.42	0.31*	-0.14	0.18
	(0.37)	(0.18)	(0.13)	(0.12)
Wealth index, 1998	-0.01	-0.05**	-0.02	-0.07***
	(0.03)	(0.02)	(0.01)	(0.02)
Investment, 1998	-0.81	0.27	0.11	-0.33
	(0.74)	(0.30)	(0.24)	(0.23)
No. Household members	0.23***	0.03	0.01	0.04**
	(0.04)	(0.02)	(0.02)	(0.02)
Subdistrict fixed effects	YES	YES	YES	YES
N	2021	3153	3534	3432

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors in parentheses. Models (1)-(4) report coefficients from logit models which include subdistrict fixed effects. Observations are dropped in the cases for which there are no incidences of death, injury, displacement, or recruitment respectively within the subdistrict (in which case the subdistrict fixed effect would perfectly predict failure).

Section 3: Village-level results, turnout in Village Head elections

In general, I find that exposure to civil war violence significantly impacts levels of postwar voter turnout in Village Head elections. Communities which experienced higher numbers of deaths exhibit diminished voter turnout. By contrast, the more households that fled the village during the conflict, the higher the voter turnout (Table 4). However, I find considerable heterogeneity in these findings across districts in Aceh (Table 5). The magnitudes of the effects of exposure to conflict are relatively small; generally, a one-unit exposure to conflict (whether an additional community death or an additional household that flees the village) yields less than a 1-person change in voter turnout for the average village. In general, voter turnout is high across the region and shifts only at the margins.

Exposure to conflict

Conflict-related deaths. Communities which experienced a higher number of deaths have significantly lower voter turnout for village elections (Table 4). For every additional 10 people (one standard deviation) that die in the average community, 4 fewer people vote in a Village Head election.[13] This finding holds when controlling for prewar village characteristics and district fixed effects.

However, there is some nuance in the finding. Magnitude of deaths, rather than exposure, is what matters– the dichotomous indicator for the presence of conflict-related deaths is insignificant. A dummy variable indicating whether the village is in the top 50% of conflict-affected villages (both in terms of number of deaths and the in the percentage of population that is displaced) is also insignificant. The fact that magnitude rather than exposure matters is important theoretically (a subject I take up in Section 4), but it could also raise concerns that the results are being driven by outliers. For this reason, I also present results on a logged value of total community deaths; this resulting coefficient is still negative, although it has large standard errors. This suggests that – at least in the pooled sample across all districts in Aceh – the effect of number of deaths is sensitive to the presence of outliers, but that the negative association between total deaths and voter turnout is fairly consistent.[14]

When we divide the analysis between the four regions proposed in Section 2 (see Map 1), we see the negative and significant effect in the pooled model is likely driven almost entirely by eastern Aceh. Further, the effect of total deaths remains significant even when the value is

[13] An average surveyed village has an average of 400 registered voters. 10 deaths represents one standard deviation when we exclude villages with exceptionally high numbers of deaths (> 100). If we include these villages, then the standard deviation is 19 and the implied marginal effect would be 8 fewer voters.

[14] It is important to note that the model including logged deaths *includes only those villages with at least one death*.

TABLE 4: Voter turnout in Village Head elections

	Conflict magnitude			Logged deaths	Conflict exposure	Upper 50%
Conflict variables	(1)	(2)	(3)	(4)	(5)	(6)
Total deaths	-0.10***	-0.09**	-0.07*			
	(0.03)	(0.04)	(0.03)			
Logged total deaths				-0.82		
				(0.66)		
1 or more deaths					0.88	
					(1.41)	
Highest 50% conflict indicators						1.17
						(1.44)
% households fled	0.05*	0.07**	0.08**	0.08**	0.06**	
	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	
TNI base	-0.13	1.54	-0.04	1.16	1.09	1.35
	(1.17)	(1.23)	(1.23)	(1.46)	(1.22)	(1.22)
TNA base	-0.01	-0.10	-0.37	-0.85	-0.84	-0.38
	(1.26)	(1.26)	(1.32)	(1.38)	(1.28)	(1.25)
% pop. militia ex-com	0.37*	0.16	-0.13	-0.03	0.10	0.20
	(0.19)	(0.20)	(0.50)	(0.19)	(0.22)	(0.26)
% population TNA ex-combatants	1.04***	0.50	0.32	0.32	0.35	0.38
	(0.35)	(0.37)	(0.59)	(0.42)	(0.37)	(0.38)
% population IDPs	0.02	-0.02	0.00	-0.03	-0.02	-0.02
	(0.02)	(0.02)	(0.06)	(0.02)	(0.02)	(0.02)
Controls						
Pre-war controls	NO	YES	YES	YES	YES	YES
District fixed effects	NO	NO	YES	NO	NO	NO
R^2	0.03	0.11	0.10	0.13	0.10	0.10
N	506	483	483	361	488	488

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors clustered by subdistrict in parentheses. All models present OLS coefficients. Prewar controls include: road, terrain, associational life, religious density, school density, log of population, dummy for presence of Javanese, average male heads of household, average literacy of head of household, and average household wealth (all in 1998). All models exclude cases for which % households that fled is reported as > 100%.

TABLE 5: Voter turnout in Village Head elections, separated by regions

	Eastern districts		Western districts		Central districts		Northern districts	
Conflict variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total deaths	-0.09**		0.13		-0.38		0.22	
	(0.04)		(0.12)		(0.24)		(0.56)	
Logged total deaths		-1.72*		1.41		-2.77		1.48
		(0.90)		(1.36)		(2.59)		(2.32)
% households fled	0.07*	0.09**	0.10**	0.11**	0.12	-0.03	0.00	-0.49*
	(0.04)	(0.04)	(0.04)	(0.04)	(0.11)	(0.15)	(0.14)	(0.24)
TNI base	-1.66	-2.36	0.08	-3.17	6.75*	9.35	5.78***	7.05*
	(1.36)	(1.67)	(4.09)	(3.08)	(3.92)	(5.96)	(1.91)	(3.63)
TNA base	-0.76	-1.24	2.17	3.15	-1.46	-4.24	-1.12	-1.53
	(1.63)	(1.80)	(2.46)	(3.07)	(6.41)	(5.44)	(2.45)	(3.89)
% pop. militia ex-com	0.52	0.52	-3.77***	-4.98***	-0.16	-0.04	-4.90**	-30.96
	(0.50)	(0.64)	(1.32)	(1.81)	(0.47)	(0.49)	(2.07)	(20.76)
% pop. TNA ex-com	0.29	0.30	1.69*	0.82	0.38	1.09	-0.60	0.23
	(0.55)	(0.62)	(0.91)	(0.67)	(4.19)	(4.52)	(1.60)	(1.94)
% population IDPs	0.14	0.18	0.48*	0.22	-0.10*	-0.18	-0.10	-2.17
	(0.34)	(0.36)	(0.25)	(0.17)	(0.06)	(0.11)	(1.45)	(1.65)
Controls								
Pre-war controls	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.13	0.12	0.28	0.38	0.38	0.54	0.20	0.39
N	245	214	76	52	78	49	77	46

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors clustered by subdistrict in parentheses. All models present OLS coefficients. Models (1) and (2) include Aceh Timur, Pidie, Aceh Utara, Bireuen, and Kota Lhokseumawe. Models (3) and (4) include Aceh Selatan, Aceh Singkil, Aceh Barat Daya, Aceh Tenggara, Aceh Barat, and Nagan Raya. Models (5) and (6) include Aceh Tamiang, Aceh Tengah, Bener Meriah, Gayo Lues, and Kota Langsa. Models (7) and (8) include Aceh Besar, Aceh Jaya, and Kota Banda Aceh. Simeulue is excluded.

logged for eastern Aceh. Indeed, this is the region which was the birthplace of GAM and which GAM controlled for the longest period. I discuss the interpretation of this result further in Section 4.

Displacement. The coefficient on conflict-related displacement is consistently positive and significant across the pooled models (Table 4). However, this effect is driven primarily by the eastern and western regions (Table 5). For every additional standard deviation in households that flee the village (16 households[15]), 4 more individuals vote in the average village.

It is interesting that the effect of displacement runs in the opposite direction to that of community deaths. After the implementation of martial law in 2003, forced migration was adopted as a government strategy; the military used forced migration to separate GAM from their civilian bases of support, pushing people into camps or villages deemed safer from GAM influence (Czaika and Kis-Katos, 2009, 401-2). We might expect this type of explicit political cleansing to reduce tensions within local elections; the positive coefficient on forced displacement might be explained by the increased political homogeneity in affected villages. Indeed, Wood argues that flight of persons out of fear can lead to "increasing homogeneity of the community" as only those unfearful of the armed group (perhaps its allies) remain behind (2008, 549). This form of political cleansing can have long-lasting effects on local networks and politics. If the diminished turnout levels among villages in eastern Aceh can be explained by continued fear of armed actors (as I argue in Section 4), then relatively higher turnout in villages where the remaining population is unafraid of armed actors is consistent with this logic. Future research should explain this relationship more deeply.

[15] This excludes the villages which report a percentage of households fleeing that is greater than 100%, which are also excluded from the statistical analysis (n=22).

Military bases. Hosting a military base for at least three months – regardless of whether the base is GAM or TNI – during the conflict has no observable effect on voter turnout.

Post-conflict variables

Ex-combatants. Once we control for prewar village characteristics, hosting ex-combatants does not have a significant effect on voter turnout. However, anti-separatist/militia ex-combatants as a percentage of the population has a large, negative effect on voter turnout in Aceh's western districts (Table 5, Models 3 and 4). Only 17 out of the 163 villages surveyed in the western districts report having any population whatsoever of militia ex-combatants. Among these 17, the mean voter turnout is considerably lower than the other villages within the region – 84% compared to 91%. Significantly, there are reported deaths in all but three of these villages.[16] Although in general anti-separatist/militia movements were not important actors in the conflict (Barron, Clark, and Daud 2005), it is possible that they were significant actors within these specific villages and that legacies of violence and coercion overhang local elections. Indeed, these anti-separatist groups often employed coercion in recruitment and in their relations with villagers (Sukma 2004).

The findings on ex-combatant voting patterns are especially important in light of the finding in Uganda regarding the higher participation of ex-combatants. At the community level, this effect is not apparent. Moreover, that the presence of militia ex-combatants reduces turnout in some villages suggest an important scope condition on the Ugandan case; the effect of violence on political participation may be highly contingent on the post-conflict environment,

[16] In the Western districts of Aceh, around 60% of villages report deaths. Among the villages with militia ex-combatant presence, 82% report deaths.

particularly on the friendliness towards ex-combatants. The majority of the government's early reintegration programs for ex-combatants were provided through the structure of GAM. As it expanded its programs to conflict groups beyond GAM (including anti-separatist groups and civilians), access to the programs were primarily determined by group membership (rather than need), creating divisions within villages as those who were members of recognized groups were privileged (Barron 2007). We might expect these social divisions to be particularly high in the case of anti-separatist groups – who were largely considered illegitimate in the eyes of the population – receiving government funding.

All of this is to say that, in general, the presence of ex-combatants does not significantly affect political participation at the village-level, with the exception of a few very specific and localized examples. All in all, this bodes well for reintegration and is consistent with qualitative evidence on the success of the reintegration thus far (Barron 2007).

Internally-displaced persons (IDPs). The percentage of a village's population which is constituted by IDPs has no significant effect on voter turnout. Although the coefficient on the percentage of IDPs is occasionally significant in the regressions separated by region, it is not significantly so. A non-finding for both the presence of IDPs and of ex-combatants in general implies that both are probably integrating well into their communities, at least in terms of participation in local politics.

Section 4: Mechanisms by which conflict can affect participation

In this section, I review the emerging literature on postwar political participation to derive hypotheses about the direction of the effect of exposure to violence on postwar political

participation and the mechanism by which the effect operates. I focus on explaining the association between deaths and voter turnout.[17] I propose three mechanisms by which exposure to violence could affect postwar participation: : (1) altering the costs of voting, (2) shifting preferences for pro-social behavior, and (3) affecting the individual-level emotions which shape participation in group behavior. I discuss the observable implications for each mechanism.

Costs of voting

Rational models of voting predict that the likelihood of an individual voting depends on the utility of voting (Downs 1957). Utility of voting is classically constituted by the costs and benefits of voting. Costs are generally the costs incurred for getting to the polls and any associated opportunity costs. Benefits include any utility derived from exercising "civic duty" (Riker and Ordeshook 1968) and the opportunity to influence the outcome of an election. Exposure to conflict could affect either the costs or the benefits of voting; I address the costs first and the benefits below by exploring how conflict may affect the utility attached to civic duties and pro-social behavior.

Conflict affects both the costs of getting to the polls and the opportunity cost of voting. Conflict injuries and diseases increase the physical costs of voting. Civil wars "directly affect all the major contributors to health: exposure to disease, medical care, public health interventions, and overall socio-economic conditions" (Ghobarah, Huth, and Russett 2004). However, in order to attribute bad health outcomes – even those acquired during the civil war – to the conflict itself, we must be able to compare the postwar environment with the counterfactual of the same

[17] Future work could theoretically assess the relationship between displacement and voter turnout.

country as if it had never experienced a civil war. Since this type of analysis is not possible for Aceh, I will consider health problems in general as an indicator of the physical costs of voting.

H1: Higher costs of "getting to the polls" will lower the likelihood of voter turnout.

Based on the logic of this mechanism, I also expect that those individuals for whom the opportunity cost of voting is higher should be less likely to vote. Conflict can affect opportunity costs by changing household wealth. Changes in income can occur at the national level[18] – plausibly shifting the baseline probability of voting – and at the subnational level. At the subnational level, studies tend to find that affected and unaffected areas converge to similar economic and demographic trends within about a generation after a civil war has ended.[19] This is true whether the damage is primarily to physical capital[20] or to human capital.[21] Because the

[18] At the national level, the short-run impact of conflict on gross domestic product can be large; Knight et al (1996) estimate a 2% loss in GDP due to a shift in spending away from productive factors towards military, and Cerra and Saxena (2008) estimate an immediate 6% decline in output in the aftermath of civil war. Adverse economic effects extend into neighboring countries (Murdoch and Sandler 2004).

The long-run impact of civil war on national income can also occur via a shift in the composition of GDP. Collier (1999) argues that as a civil war progresses, investment in "war vulnerable" sectors – manufacturing, construction, transport, distribution, finance – shifts towards "war invulnerable" sectors – namely, subsistence agriculture. This shift can result in lowered long-term optimal capital investments for the country. Specifically, Collier argues that civil war lowers the optimal level of capital investment in a country by increasing transaction costs, reducing enforceability of contracts, and generating environments of high uncertainty long after the conflict ends. The mere fact of having a civil war informs investors – including domestic ones – that a particular country is civil war prone. Even if optimal post-conflict investment levels are higher than optimal wartime levels, they are unlikely to be as high as the counterfactual case of never experiencing a civil war.

Whether or not GDP grows or declines in the aftermath of civil war depends on whether or not the war has lasted long enough for the GDP to adjust down to the new optimal (and lower) level of capital investment. If not, then GDP will continue to decline after civil war, a war overhang effect. A longer civil war means that the economy will have adjusted down to optimal wartime levels and may grow after the end of a civil war as it adjusts to higher post-conflict optimal levels. In both cases, however, overall GDP levels will be substantially lower in the long-term than if the country had never experienced a civil war.

[19] However, evidence of the recovery from physical capital damage is based largely on countries that had stable underlying institutions – namely, Japan, Germany, and Vietnam – while countries with unstable post-war institutions are systematically less likely to offer opportunities for economic studies (Blattman and Miguel 2010).

[20] See Davis and Weinstein 2002; Miguel and Roland 2005; and Brakman, Garretsen, and Schramm 2004 on the impacts of U.S. bombing campaigns in Japan, Vietnam, and Germany. These three studies find that areas hit by

conflict in Aceh ended relatively recently, we should expect conflict-affected areas to continue to exhibit lower levels of educational attainment and income, although these effects may dissipate over time. However, to the extent that the poor are more likely to be affected by conflict in general, observed effects could be due to the selection effects of violence; therefore, I include prewar household characteristics in the analysis.

H2: Higher opportunity costs of voting will lower the likelihood of voter turnout.

The relationship between conflict, income, and political participation can operate in a number of simultaneous and cross-cutting ways. First, changes in the Acehnese economy broadly can affect the baseline probability of voting. To the extent that the Acehnese economy shrunk during the civil war, we should interpret differences in political participation among subpopulations relative to a potentially shifting baseline. Second, differences in household wealth directly caused by conflict exposure change the likelihood that an individual will vote relative to their individual likelihood of voting had a civil war never occurred. Finally, it is possible that current income levels directly affect the likelihood of voting. In the empirical analysis, I distinguish between these mechanisms by including a measure of the difference between 1998 and 2005 household wealth and a measure of 2008 wealth.[22]

U.S. bombing campaigns converged to similar economic trajectories to unaffected areas within relatively short time periods (decades).

[21] While civil war violence certainly harms health (Ghobarah, Huth, and Russett 2003, 2004), educational attainment (Blattman and Annan 2007; Swee 2009), and marriage and demographic patterns (de Walque 2004) in the short-term, most studies find that demographic trends eventually converge to the levels observed in unaffected areas.

For example, Akbulut-Yuksel (2009) finds that the generation of Germans that was school-aged during WWII has lower educational attainment and health but that this effect did not persist into the next generation. Leon (2009) finds that Peruvian children exposed to violence before they begin schooling achieve lower educational levels but those that were already in school at the time of exposure were able to catch up within a decade.

[22] These only correlate at 0.26.

Costs of voting matter, but not in the predicted directions. In the household-level voting model presented in Table 6, both health conditions and current household assets help to explain voting behavior but not in the predicted directions. Also, in high-conflict villages, households with ex-combatants vote are more likely to vote. If voting behavior were determined by the costs of voting, then we expected negative coefficients on both assets and health rather than positive and significant ones. Further, since we have controlled for the effects of conflict-related injury and changes in income, there should be no reason to *prima facie* expect ex-combatants to vote at higher rates. It is also important to note that, in general, rational approaches to voting should lead us to expect low voter turnout overall, which we certainly do not observe in Aceh.

Despite these findings, it is still possible that voting behavior can still be partially explained using a rational framework. The hypothesized negative relationship between income and voting is based on the logic that the value of the vote in terms of influencing election results is negligible, "then even a very small cost will lead the rational individual to abstain" (Dhillon and Peralta 2002, F335). However, a positive relationship between income and voting is well-established in the U.S. context. The explanation is still contested, but it is possible that high-asset individuals are less directly accountable for their time than low-asset individuals (Frey 1971) and, therefore, that they actually face a *lower* opportunity cost.[23] In the post-conflict setting, household assets may reflect an unobservable characteristic of the household entirely separate from its physical assets. Households with higher assets in 2008 are those that developed better coping strategies for protecting household wealth and economic activity during the conflict; this includes the ability to adjust short-term consumption to maintain assets in times of

[23] Future work could use household survey data to determine whether type of economic activity is a significant determinant of voter turnout.

TABLE 6: Voter turnout in gubernatorial elections, household

	All villages	All villages, including ex-combatant int.	All villages, including household death int.	Upper 75% of conflict	Upper 75% of conflict, including ex-com. int.	Upper 75% of conflict, including household death int.
Costs of voting	(1)	(2)	(3)	(4)	(5)	(6)
Health condition	0.69**	0.67**	0.69**	2.28**	2.21**	2.35**
	(0.32)	(0.32)	(0.32)	(1.08)	(1.08)	(1.11)
Conflict-related injury	0.17	0.17	0.17	-0.79	-0.80	-0.80
	(0.43)	(0.43)	(0.43)	(0.68)	(0.67)	(0.69)
Wealth index, 2008	0.05**	0.05**	0.05**	-0.02	-0.02	-0.02
	(0.03)	(0.03)	(0.03)	(0.06)	(0.06)	(0.06)
Difference in wealth, 1998-2005	0.03	0.03	0.03	0.03	0.02	0.02
	(0.03)	(0.03)	(0.03)	(0.05)	(0.05)	(0.05)
Exposure to violence						
Recruited	0.22	0.10	0.22	0.85*	0.44	0.86*
	(0.23)	(0.24)	(0.23)	(0.50)	(0.45)	(0.51)
Household death	0.70	0.70	0.56	0.16	0.16	-1.33
	(0.69)	(0.69)	(0.82)	(0.94)	(0.94)	(1.17)
Deaths in the community	-0.00	-0.01	-0.00	-0.00	-0.01	-0.00
	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)
Deaths in community x recruited		0.01			0.01	
		(0.01)			(0.01)	
Deaths in community x household death			0.01			0.05
			(0.03)			(0.03)
Attitudes towards ex-com	0.02	0.02	0.02	-0.42	-0.43	-0.40
	(0.07)	(0.07)	(0.07)	(0.41)	(0.41)	(0.40)
N	3522	3522	3522	576	576	576

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: Standard errors in parentheses. Models (1)-(6) report coefficients from logit models, weighted by sampling weights. Prewar household characteristics, included in all models, include the number of household members in 1998, whether the head of the household was literate in 1998, whether the head of the household was male in 1998, and household investment in 1998. In Model (5), the constituent term for recruitment is not interpretable because there are no observations for which the number of deaths in the community is zero. The constituent term on deaths in the community should be interpreted as the effect of community-level violence on those households that had no recruits into the armed forces, i.e. those experiencing only indirect violence. Similar logic applies to the interpretation in Model (6).

economic shock and maintaining access to informal risk-sharing mechanisms (Ibanez and Moya 2009). Therefore, lower-asset households may be those that were (and remain) more vulnerable to intimidation and isolation from the community. In sum, many explanations can be posited within rational approaches to voting to explain the positive relationship between income and voting; the important point here is that since rational models of voting typically do not reject the rational framework based on this correlation in other contexts, I will not reject it here either.

The positive relationship between household sickness and voting can potentially be explained using a rational framework, though the explanations are shaky. The variable for sickness indicates only whether a member of the household was ill and not the voter himself. If the interviewee is not sick, then the physical costs of getting to the polls should not increase. It is also possible – though not probable – that the strong positive relationship between household sickness and voting could represent the greater stake that households with ill family members have in gaining access to their share of the postwar aid. However, there is no evidence that I know of that access to aid is actually linked to voting behavior. Moreover, postwar aid is targeted rather than diffuse (Barron 2007); if the household could not establish that the illness was directly caused by the conflict, they should not necessarily expect to receive additional funds.

The overall high levels of voting are also puzzling for rational models. Downs (1957) resolves the paradox of *anyone* voting by arguing that the long-term costs of not voting could be the undermining of the legitimacy of the democratic system itself. This argument seems particularly relevant in explaining the overall high levels of voter turnout in Aceh: the gubernatorial election was the first province-wide election in its history and Indonesia itself is still a growing democracy. Further, the gubernatorial election was highly contested and the

candidates who eventually one were thought to be underdogs: "Polls just before formal campaigning began showed GAM's governor/deputy governor slate – Irwandi Yusuf and Muhammad Nazar – virtually out of contention" (ICG 2007, 1). Turnout should be higher among those that support less popular candidates – the so-called "underdog effect" (Levine and Palfrey 2007).

Importantly, rational models are based on individual-level explanations for voting behavior rather than group-level. Therefore, they provide no satisfying explanation for the increased likelihood of voting observed among ex-combatants in high-conflict villages (Table 6, Model 3). Moreover, we still have no satisfying explanation of the negative association between conflict deaths and voting observed at the village level in eastern Aceh.

Preferences for pro-social behavior and the benefits of voting

The utility of voting is a function of the costs (discussed above) and benefits derived from voting. Benefits include the positive utility derived from fulfilling a civic duty (Riker and Ordeshook 1968). To the extent that conflict reshapes preferences for altruistic behavior, we can expect the likelihood of political participation to shift. Importantly, if this mechanism is in operation, we should expect to see changes in multiple measures of social behavior and not just in political participation.[24]

Exposure to violence can "augment the value individuals place on people around them," increasing the value of social networks and inducing individuals to care more about their communities than before the conflict (Voors et al. 2010, 6). In this case, exposure to violence reshapes social attitudes in general. In Burundi, communities exposed to violence are more

[24] I will test this in future versions.

likely to join community organizations and to behave more pro-socially in experimental games (ibid.). The proposed mechanism relies on the experience of trauma and how it increases the value that people place on their social networks. In this case, communities exposed to violence should behave more pro-socially if they are exposed to violence, but we should not expect a meaningful difference between individuals within communities (which Voors et al. 2010 base on the logic of Yehuda 2002). The effect of exposure to violence on social preferences should increase with the magnitude of violence. In other words, between-community differences should matter while within-community differences should not.[25] This logic leads to two hypotheses:

H3: Communities that were exposed to violence should exhibit more voter turnout than unexposed communities.

H4: Only indicators of between-community differences should predict voter turnout.

Evidence in Aceh rejects increasing pro-social behavior. These hypotheses can be largely rejected. First, in eastern Aceh, the relationship between violence and voting is negative. Other regions do not exhibit a relationship that is statistically different from zero (Table 5). Neither of these village-level outcomes is predicted by the theory.

Second, we do not observe a statistically significant difference in household-reported voter turnout in gubernatorial elections between residents in exposed and un-exposed communities (Table 6). Even if we did not consider statistical significance, the effect of community-level exposure is negative across all models. However, it is important to note that overall levels of voter turnout are still very high; so, it is still possible that the experience of conflict universally increased the value of pro-social behavior, but this mechanism cannot be

[25] This implication will contrast directly with the emotions-based approach presented below.

operating explicitly through exposure to violence. On the basis of this evidence, I reject this as a possible mechanism affecting observed patterns of voter behavior in Aceh.

Emotions-based approaches

Finally, Voors et al. (2010) also present an argument that exposure to violence can have differential effects on social outcomes depending on the particular emotions that are engaged by the experience. Specifically, trauma typically induces feelings either of fear or of anger – each with different expected behavioral outcomes. This emotions-based approach is similar to that taken by Petersen (2002) in his explanation of ethnic conflict; Petersen employs emotion as an individual-level mechanism which explains a group-level outcome. Fear "heightens the desire for security" (ibid., 68), while anger/resentment "hinges on the linkage between group status and individual esteem" (ibid., 40). Fear leads to avoidance of risky behaviors and anger leads to generally riskier behaviors. In the case of voting, we would expect fear – where it is present – to lead to less participation and anger/resentment to lead to higher participation.

H5: Fear is associated with lower voter turnout.

H6: Anger/resentment is associated with higher voter turnout.

Emotions-based mechanisms imply a possible difference between four subpopulations affected differently by the civil war: (1) affected households in affected communities, (2) affected households in unaffected communities, (3) unaffected households in affected communities, and (4) unaffected households in unaffected communities (summarized in Figure 1, number of households in parentheses). I define direct exposure to violence as having at least

one member of the household die (Figure 1) or be recruited into an armed faction (Figure 2).[26] I define indirect exposure to violence as living in a community which experiences at least one conflict-related death. Specifically, I would expect fear to play more of a role in indirect exposure (seeing violence around you), whereas resentment/anger would be more likely to operate when the violence is direct.[27]

H7: Fear is associated with exposure to indirect violence.

H8: Anger/resentment is associated with direct violence.

FIGURE 1: Exposure to violence, deaths

		Household had conflict-related death?	
		No	Yes
Village was exposed to violence?	No	No exposure (820)	Direct exposure alone (7)
	Yes	Indirect exposure alone (3180)	Direct and indirect exposure (113)

FIGURE 2: Exposure to violence, recruitment

		Household was recruited?	
		No	Yes
Village was exposed to violence?	No	No exposure (759)	Direct exposure alone (68)
	Yes	Indirect exposure alone (2182)	Direct and indirect exposure (1112)

[26] I include recruitment because participants in the military branches of the armed factions likely participated in and/or observed violent events (the independent variable of interest), even if they did not occur in their hometown.

[27] One could also argue that direct violence would induce even more fear than indirect violence because it could act as a direct form of coercion.

Fear. Generally, I expect fear to be associated with higher levels of wartime coercion. Distinguishing which populations were more "coerced," however, is an empirical challenge and subject to subjective interpretations. For example, we can imagine that if we had found the negative association between violence and turnout in western rather than eastern Aceh, it would be easy to attribute this to the less disciplined GAM troops. On the other hand, we could as easily say that civilians subjected to longer periods of GAM rule may be more fearful of reentering public life (as in eastern Aceh).

In Colombia, Acemoglu, Robinson, and Santos (2009) find that paramilitaries influence the outcomes of elections through coercion. Often, this mechanism operates through inducing fear among voters rather than by explicitly exercising the means of coercion: "sheer terror seems to have been used not just to induce people to vote for particular candidates but also to keep them away from the polls" (21). Although documented coercion is much lower in Aceh than in Colombia, the International Crisis Group argues that, in the case of Aceh, "arms are not in short supply among ex-combatants, but the KPA's [the political party affiliated with GAM] power is not from weapons so much as from the implicit threat that comes from its past history" (2009, 1).[28]

Models 2, 3, 5, and 6 (Table 6) present tentative tests to parse out the potentially differential effects of direct and indirect exposure to violence. In these models, I include an interaction term between community deaths and household recruitment (Models 2 and 5) and an interaction term between community deaths and household deaths (Models 3 and 6). The

[28] Cramer (2002) argues that fear similarly plays a large role in individual behavior *during* conflict and that most studies attribute too much importance to dichotomous differences between choice and coercion: "For fear and obeisance to *de facto* authority – as well as acquiescence with strong mobilizing ideologies not through acceptance but through desperate efforts to resist local structures of oppression – are motivations that might be more significant than either greed or grievance, individual choice or unambiguous coercion, in some circumstances" (1850).

interaction term between community deaths and household recruitment can be interpreted as the effect of increased magnitude of community violence given that the household contains an ex-combatant (direct and indirect exposure, Figure 2). The constituent term for number of deaths in the community represents the effect of magnitude of violence, given that the household does not contain an ex-combatant (indirect exposure, Figure 2). The measures of community deaths and recruitment in Models 1 and 3 can be interpreted as the total effects of indirect and direct violence. Similar logic applies to the interpretation of Models 3 and 6.

If the fear mechanism were in effect for those indirectly exposed to violence, then we would expect a negative coefficient on the constituent terms in Models 2, 3, 5, and 6. Then, if the total population of those who are only indirectly exposed to violence within a village is greater than those who are directly exposed, we should also observe negative total effects of violence on voting in Models 1 and 3. We do observe both of these conditions but not at conventionally-significant levels. Interestingly, the total effect does not strengthen even when we include only high-conflict villages. This suggests that there may be some difference in voter behavior between local and gubernatorial elections. I tentatively take the consistently negative relationship between community-level violence and voting to be indicative of lingering fear and coercion, acknowledging that the relationships are not significant in the individual-level models.

Anger/resentment. The anger/resentment mechanism as explained by Voors et al. (2010) is similar to the psychological conversion of trauma to agency that Blattman (2009) describes among ex-combatants in Uganda. Blattman finds that abduction into the armed forces leads to a 27% increase in the likelihood of voting (as compared to comparable, non-abducted youths) and a greater likelihood of being a community leader. Blattman augments his study through

interviews of ex-combatants to argue that "a change in personal goals, perspective, or self-regard" is the primary factor driving increased participation (243). The more episodes of violence a youth witnessed, the more likely he is to participate. If this mechanism were in operation in the Acehnese case, we should expect higher magnitudes of direct exposure to violence to increase participation (H8).

In fact, household voting turnout among those households which experienced a conflict-related death is significantly greater than unaffected households (Table 7). The difference is even greater between affected and unaffected households in villages with high levels of overall conflict. Interestingly, there are no statistically significant differences between ex-combatant households and other households.

Once we control for other household characteristics (including prewar characteristics, in Table 6), however, neither household deaths nor recruitment has a significant effect in predicting voter turnout in the models including all villages. However, if we run a separate model exclusively in communities which are in the 75 percentile of number of deaths (12 or greater), then being an ex-combatant is positively and significantly associated with voting (Table 6, Model 4). It is possible, then, that the mechanism discussed by Blattman is in operation but that only a very few individuals within Aceh reach the threshold which begins to convert trauma into participation. Blattman also finds that magnitude of violence is an important predictor of postwar participation. If this holds in Aceh, then we should expect the conditional effect of violence, given that the household contains an ex-combatant (Models 2 and 5) to be positive and significant. In high-conflict villages, this term does approach statistical significance (with a p-value of 0.115) and is in the expected direction. Although the total effect of household death is never significant, the conditional effect of community deaths given that the household

experiences a death also approaches statistical significance (with a p-value of 0.123) in the expected direction. The interaction terms give us tentative evidence that, not only does direct exposure to conflict matter, but that it can operate in interaction with the indirect effects of violence – in high-conflict communities, it is those who were directly affected by violence that are voting at the highest levels, whereas those affected merely indirectly vote at lower levels (see Table 7 for difference in means).

TABLE 7: Student t-test on difference in means

Voted in last gubernatorial election	
No community deaths	0.870
Community deaths	0.902
Difference	-0.031
p-value (difference != 0)	*0.125*
Voted in last gubernatorial election	
Below 75% community violence	0.897
Above 75% community violence	0.884
Difference	0.013
p-value (difference != 0)	*0.700*
Voted in last gubernatorial election	
No household death	0.894
Household death	0.950
Difference	-0.057
p-value (difference != 0)	*0.085*
Voted in last gubernatorial election	
No household recruitment	0.889
Household recruitment	0.908
Difference	-0.020
p-value (difference != 0)	*0.315*
Voted in last gubernatorial election, only in communities >75 pctile. total deaths	
No household death	0.888
Household death	0.964
Difference	-0.075
p-value (difference != 0)	*0.047*
Voted in last gubernatorial election, only in communities >75 pctile. total deaths	
No household recruitment	0.879
Household recruitment	0.902
Difference	-0.024
p-value (difference != 0)	*0.601*

Note: Sampling weights accounted for. Calculated in STATA 11.

I find the emotions-based account of voter behavior to be most consistent with observed patterns because it allows for separate predictions across subpopulations in terms of the type of violence experienced (direct vs. indirect). Fear/coercion could account for the lower aggregate turnout in eastern Aceh in high-conflict villages, and anger/resentment for the higher turnout among those directly exposed to violence, especially among ex-combatants in high-conflict villages.

Section 5: Conclusions

I draw three conclusions, the first with far more certainty than the second and third. First, civil war fundamentally re-shapes both the number and the identity of political participants. Second, there is a negative relationship between indirect violence and voter turnout that holds for high-conflict villages, especially in eastern Aceh. There is also a positive association between the percentage of households that fled a village and voter turnout which I do not explore theoretically here but will in future versions. Third, I tentatively argue – based on household voting behavior – that indirect and direct violence have different effects – the first negative and the latter positive – that can be explained through the responses of fear and anger. Under conditions where we expect the legacy of coercion to be high, some voters may be fearful to participate; however, for those directly targeted by high levels of violence, trauma is transforming into pro-social participation.

It is important not to forget the big picture. Almost universally high voter turnout in village head elections suggests that Acehnese are, in general, eager to participate in local politics after the civil war. With the exception of a few anti-separatist ex-combatants in western Aceh, ex-combatants appear to be socially reintegrating and participating politically at similar levels to

noncombatants, except in high-conflict villages. In general, former GAM members and supporters are transitioning (relatively) peacefully into post-conflict institutions. They are opting into participation at the community and at the regional level. The overall rates of participation so high and the marginal effect of violence is so low, that we may plausibly expect the negative effect of conflict to diminish over time.

Lower rates of political participation in communities that suffered from high violence, however, could be interpreted as fear of participation by those who were only conflict bystanders – those who did not wield means of coercion during the conflict. Identity of participants is especially important given the high amounts of post-conflict and tsunami aid being distributed, the "spoils of war," and the possibility that these benefits will disproportionately benefit particular groups. ICG interprets the conditions in Aceh today along the lines of the relatively peaceful competition for resources, declaring that former GAM combatants in political leadership roles "are interested more than anything else in getting their fair share of post-conflict benefits" (2009, 1).

Even if the competition for resources is driving participation, especially by GAM, this may not be wholly bad for development. Leaders within social networks, formed through violence or not, often use the opportunity of political leadership to disproportionately benefit members of their own group. It's part of the normal political process. And, if Aceh can transition into something resembling "politics-as-usual," this is probably good for development.

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Appendix: Determinants of violence

If villages with systematically better (or worse) institutions and higher (or lower) levels of political participation were targeted for violence, then this would bias my results. Ideally, a natural experiment (as in Blattman 2009) or an instrumental variable (as in Voors et al. 2010) could be found that offers exogenous variation in exposure to violence. Absent such identification strategies, however, an alternate approach is to control for pre-war village characteristics. Both the Village Head and household surveys ask about village characteristics and household characteristics in 1998. Although it is possible that some of this data suffers from measurement error as the individual surveyed may not correctly remember the accurate statistics, using these characteristics still improves our ability to identify the impact of exposure to violence on political participation. To supplement the pre-war controls, I include geographic variables and district fixed effects. Fixed effects should be correlated with the prewar economic, social, and political factors that I am unable to account for; however, to the extent that there is significant within-regency variation (that is not accounted for by the geographic variables), fixed effects cannot account for this. In this strategy, I follow the approach taken by Bellows and Miguel (2006) in their study of post-war institutions in Sierra Leone. In sum, the results presented here should be taken as a first attempt to answer a question replete with identification problems.

I use geographic characteristics and pre-war variables to assess determinants of four different types of exposure to violence in Aceh: the deaths of household and community members, displacement of household and community members, troop presence in the village (either GAM or TNI), and the likelihood of recruitment. These results are presented in Tables 2 and 3. Because the purpose of this analysis is to determine whether we can plausibly consider

violence as exogenous to the political and economic variables which also may affect political participation (and not on the logic of violence in Aceh), I do not discuss the results in detail. However, it is important to note that violence is not exogenous to prewar characteristics. Significant selection effects appear to be in play.

Deaths and injuries. Specifically, communities which are easier to access (with asphalt roads vs. dirt or gravel) and have higher density of religious institutions[29] are less likely to experience the deaths of community members. By contrast, communities with higher populations and higher density of schools[30] are more likely to experience the deaths of community members (Table 2, Column 1). At the household level, household deaths are only associated (positively) with the number of household.[31] Household injuries are more common in poorer, male households (Model 2).

Migration. The poorer, hillier, and harder to access the communities are, the more likely that community members will be forcibly displaced (Table 2, Model 5). In general, the military used forced migration to separate GAM from their civilian bases of support, pushing people into camps or villages deemed safer from GAM influence (Czaika and Kis-Katos 2009, 401-2).[32] It

[29] Interestingly, in their study on local conflict across Indonesia, Barron, Kaiser, and Pradhan (2009) find that the presence of multiple religions in an area increases the likelihood of conflict events. However, religion in Aceh generally plays a unifying rather than a divisive role.

[30] GAM targeted schools both because they taught Indonesian national curricula and because TNI began to use schools as military bases in the towns that they occupied. With low levels of public support, the TNI was forced to occupy buildings as military bases rather than rely on the public, and schools became a popular choice (Schulze 2004).

[31] All household characteristics are for 1998.

[32] In addition to the migration induced by conflict, Czaika and Kis-Katos (2009) detect an overall pattern of rural to urban migration occurring during the conflict. Because the survey question I use to code this variable asks explicitly about families displaced due to the conflict, this analysis should exclude purely voluntary migration, but

is interesting to note that I do not find the presence of ethnic Javanese to be a significant determinant of forced migration, whereas Czaika and Kis-Katos (ibid.) do. There is qualitative evidence that ethnic Javanese, who were not considered one of Aceh's "true" ethnic affiliations[33] and associated with the Indonesian state, were intimidated into fleeing, especially from Central Aceh. More nuanced analysis may find evidence of this in the surveys recorded here, but as this is not the focus of my paper, I will move forward including the presence of ethnic Javanese as a control variable.

At the household level, households led by a literate person are the most likely to be displaced. These patterns indicate that it was the relatively more literate households from relatively poorer villages that were being displaced (Table 3, Model 3).

Troop presence. Troop presence both for GAM and TNI is defined by the existence of a military base for at least three months during the conflict. Therefore, troops that passed through villages or lived in the forests between villages do not count as having 'presence' in a particular community.

GAM is more likely to have bases in communities with low religious density, high school density, and low average household wealth. If we split the analysis between the 1998-2001 and 2001-2005 periods,[34] between 2001 and 2005, GAM is increasingly occupying 'rough terrain' villages, perhaps indicating that they were on the retreat. TNI are also more likely to occupy

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it is likely that in every decision to move there are both push and pull factors which are important to varying degrees depending on the level of coercion involved in the migration.

[33] Aceh's nine ethnic groups that are considered "Acehnese" are Aceh, Alas, Gayo, Singkil, Tamiang, Kluet, Anek Jamee, Bulolehee, and Simeuleu (Schulze 2004).

[34] Not reported, this analysis is available upon request.

communities with high school density and low average household wealth; however, higher population also increases the likelihood of becoming a TNI base.

Recruitment. The likelihood of recruitment appears to be very non-random; almost every prewar household characteristic is a significant predictor of recruitment. Large, literature, poor households are more likely to be recruited.