GROUP VIOLENCE, ETHNIC DIVERSITY, AND CITIZEN PARTICIPATION: EVIDENCE FROM INDONESIA

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August 2022

Keywords: Violent Conflict, Ethnic Diversity, Citizen Participation, Local Public Goods.

JEL Codes: D74, H42, O11.

We are grateful for comments from participants at many seminars and conferences, in particular from M. Ravallion, M. Rosenzweig, J. Behrman, S. Kalyvas, F. Bourguignon, and H. Rapoport. This research was funded by a MICROCON grant from the European Community's Framework Program, and by the French National Research Agency (ANR) under the TMENA2 project (ANR-17-CE39-0009-01) (http://christophemuller.net/tmena/) and grant ANR-17-EURE-0020.

ABSTRACT

We investigate how ethnic solidarities and rivalries contribute to five types of local community activities in Indonesia and overcome free-riding.

As an elliciting strategy, we estimate the impact of moderate inter-group violence, which preserves the existence of activities, on these activities to reveal these ethnic relationships. Individual participation in permanent local activities is matched with violent events at district level. Causal identification is based on extensive controls and heteorogeneity effects, robustness checks, and geographical spillovers and ethnic networks for instrumentation.

Heterogeneous causal effects of violence are found that locally vary with: activity type, ethnic polarization, own-group involvement in the same activity, and unobserved heterogeneity. While violence generally weakens all activities that are not immune to conflicts, in contexts of high ethnic polarization it can stimulate participation (e.g., in cooperatives). In contrast, in non-violent contexts polarization depresses participation. Moreover, local involvement of own-group members in an activity induces further participation of individuals of this ethnic group in the same activity. This solidarity effect is amplified by both violence and ethnic polarization. A few theoretical mechanisms are suggested to interpret these results.

The estimates suggest that noxious phenomena may occur within community groups: ethnic conflicts, corruption, exclusion, and capture by an ethnic group or by elites. Therefore, local community activities should not be considered as a development panacea.

I. The Issue

Scholars and practitioners increasingly advocate bottom-up development approaches based on local engagement of citizens. Well-functioning local activity groups and networks may especially matter when state and market institutions are absent or non-functional. For instance, community initiatives may help to overcome shortages in the provision of local public goods and services. In the absence of formal credit and insurance markets, networks of mutual assistance allow for productive investments and mitigation of income shocks. Finally, information dissemination and policy decisions can take place within local organizations.

However, the well-known incentive problems that plague collective action also exist locally and it remains unclear how they are solved.[1] Collective action suffers not only from inefficiencies, but also from external shocks, including violent conflicts that put local institutions out of balance.

Using household and community panel data from Indonesia, we investigate how ethnic solidarities and rivalries contribute to five types of local community activities and overcome free-riding. As an eliciting strategy, we study the impact of violence on citizen participation in diverse types of community groups in different ethnic contexts. Examining the impact of violence will inform us about hidden mechanisms and determinants of local collective action. Notably, it will evince the powerful role of ethnic solidarities and rivalries. Given that stable groups can probably redistribute gains and losses internally more easily — for example, by imposing internal norms —these operations may be facilitated by community group members belonging to the same ethnic group. Besides, ethnocentricity may stimulate group cohesion and inter-group conflict.

Why is looking at violence impact on community groups useful? First, violence disrupts market and public institutions. It should therefore enhance the interest of individuals and groups in participating and in controlling community activities, as a feasible alternative. Second, being from the same ethnicity should make both within-community-group redistribution and the stability of the group easier. Third, ethnic polarization and oppositions may not only generate conflicts, but also reinforce the impact of conflicts by raising the strategic payoffs in balance. As a mirror image of this hypothesis, conflict may strengthen the impact of ethnic polarization. Fourth, local ethnic diversity, which typically frames local politics, bears on the activity involvement of citizen from different

[1] See Lin and Nugent (1995), and Banerjee, Yyer, and Somanathan (2008) for overviews.

ethnic groups. In that case, news about violence may strengthen these local political mechanisms by raising their stakes, as perceived by individuals. Fifth, even without invoking specific strategic explanations, one may often believe that ethnocentricity increases group-cohesion and inter-group conflicts.

It is well acknowledged that violent conflict may disrupt markets and economic contracts, in particular by jeopardizing property rights and destroying capital and organizations. This has been observed in many ways. Different estimates in the literature show that civil war depresses GDP and increases poverty (Blattman and Miguel, 2010). Beyond causing damage, conflicts may divert labor resources from valuable economic and social activities (Weinstein, 2007). Micro-level studies find that heightened insecurity in conflict areas impedes market access of local producers (e.g., Verpoorten, 2009, in Rwanda). On a more global scale, huge slumps in international trade flows have been observed in those countries affected by conflict (Blomberg and Hess, 2006). It is less known whether and how violence affects community activities. This matters because if these activities showed a higher resistance to violence than public and market institutions, they could substitute for these institutions in these conflictual times.

Civil wars damage the social fabric of society. Coletta and Cullen (2000) provide case study evidence from Cambodia, Guatemala, Rwanda, and Somalia that illustrates how social cohesion and communal trust can be eroded in societies plagued by civil conflicts.

However, a systematic negative effect of violent conflict on social cohesion and political participation has been called into question. Reviewing a few articles in economic, sociological, psychological and political studies, Bauer, Chytilova, Henrich, Miguel and Mitts (2016) claim that people exposed to more war-related violence tend to increase their social participation in local social civic groups, or taking on social or political responsibilities. In their micro-level study, Bellows and Miguel (2009) find that direct victims of civil war violence in Sierra Leone are politically and socially more engaged in post-conflict collective action in their communities than non-victims. Specifically, conflict victimization positively affected participation in community meetings, voter registration, and membership of social groups,[2] whereas neither ethnic nor religious divisions played a central role. Blattman (2009) finds that abducted ex-

[2] In this paper, social groups correspond to women's groups, youth groups, and farmer's groups (Bellows and Miguel, 2009, p. 1149).

combatants in Northern Uganda show increased political participation (measured by voting, being a community activist, and political employment) after their return.[3]

A positive link between exposure to violence and reinforced social links is also found in some laboratory experiments. Using behavioral games in Nepal, Gilligan, Pasquale, and Samii (2010) find a greater willingness to invest in trust-based transactions and to contribute to public goods in those communities that were particularly affected by violence during the civil war. Similarly, Voors et al. (2012) study behavioral changes in post-war Burundi and find evidence for increased altruism by both individuals and communities that experienced violence during the 1993–2005 civil conflict.

Interestingly, such pro-social behavior found in experiments appears less distinct in those war-affected communities that are ethnically heterogeneous. In a game-theoretical approach, Choi and Bowles (2007) argue that altruistic behavior toward fellow group members and hostility toward other groups is a dominant evolutionary strategy during inter-group conflict. Further laboratory experimental evidence on this dark side of social capital comes from Bauer, Cassar, and Chytilova (2011): with Georgian children after the 2008 war with Russia, war-related experiences increase one's sense of group identity.

From a theoretical perspective, these questions can be related to the literature on polarization between competing groups, much initiated by Esteban and Ray (1994, 2011). In these models, the fierce competition between groups that characterizes the high polarization contexts generates negative consequences on diverse development outcomes, notably public goods and public services. Ethnic polarization indices have been used as significant covariates for socio-economic country-level variables.[4] Montalvo and Reynal-Querol (2005a, b) find that polarization is a significant and positive determinant of civil wars, while it is negatively associated with diverse development indicators. Using data for 138 countries over 1960-2008, Esteban, Mayoral and Ray (2012) show that ethnic polarization is significantly and positively correlated with violent conflict involving public goods or public prizes. All these results incite us to include a local ethnic polarization index as a major covariate in our analyses, among other ethnic indicators.

While within-group ties may be strengthened in settings of violence, cooperation across groups may suffer from inter-group tensions. Varshney (2001) stresses these contrasted effects during communal violence in India. Local fieldwork by Pinchotti and Verwimp (2007) in rural Rwanda illustrates how social relations between Hutu and Tutsi

3 However, the formerly abducted show neither greater involvement in social and religious groups nor higher contributions to local public goods.

4 For example, Alesina, Michalopoulos and Papaioannou (2016).

ethnic groups almost collapsed in the presence of extreme violence, while social ties were strengthened within each ethnic group. Using cross-sectional data from opinion surveys in Uganda and an innovative instrumentation strategy to identify causal effects, Rohner, Thoenig, and Zilibotti (2011) show that fighting weakened trust across ethnic groups and raised feelings of ethnic identity. Finally, using data from 35 European countries, Grosjean (2014) finds that conflict spurs collective action, through its influence on social and political preferences, although with a decline in social and political trust.

Overall, the scarce and partly contradictory evidence suggests that further empirical investigations are needed to understand the mechanisms through which violence interacts with citizen participation and ethnicity. This knowledge gap has been already reduced by studies in the literature that are often based on qualitative knowledge, individual responses about feelings and opinions, cross-sectional data, small and/or non-representative samples, laboratory experimental designs, or on proxy behavior such as political activities (as in De Luca, 2011).

However, large-scale actually observed participation in permanent community activities is necessary to go further since they can only provide credible control for observed and unobserved heterogeneities. In particular, distinguishing different local ethnic configurations and types of activities is essential, as we shall show for Indonesia.

This limited account for individual, activity and context heterogeneities implies that the current knowledge is mostly expressed in terms of relatively uniform effect of violence on participation. For example, the recent literature emphasizes that people often behave more cooperatively after a war.**IIT IIU**

Moreover, little is known about the social consequences of low intensity forms of conflict, aside laboratory experiments or theoretical insight. Addressing conflict situations of moderate intensity matters because they allow community activities to be monitored over time. Indeed, during full-fledged wars, most of them utterly vanish and therefore cannot be properly investigated.

Finally, as pointed out by Bauer et al. (2016), the literature mostly deals with suggestive correlations rather than with causal effects. This may be an issue because more socially active people or areas may be more strongly targeted by violent attacks, or more cooperative people may tend to participate more in local community activities and in violent events.

We address these research gaps through a series of methodological choices. Large representative panel data on actual participation choices for an extended set of activities are used. The analysis focuses on a low conflict intensity context, which allows us to study permanent group settings. Unlike the existing focus on new institutions emerging

after a war, stable institutions are followed throughout their historical experience, which includes spans of moderate violence. A broad scope of socioeconomic activities are examined and how they respond to violence in connection with ethnic lines. Finally, causal inference results are provided for these issues.

For Indonesia specifically, Madden and Barron (2002) document the social impact of sporadic while widespread violence in the province of Lampung after the 1998 fall of the New Order regime. They report a mixed diagnosis of how spontaneous violence, armed robbery, and vigilantism affected local relations and networks. They opine that, while within-group cooperation increased, social interactions across ethnic groups deteriorated. Chen (2010) further investigate the economic functions of group solidarities in this country. He finds that group identity, in the form of religious intensity, played the role of ex-post insurance, after the 1997–98 Indonesian economic crisis. However, the link between violence in the immediate post-Suharto era and local community activities has not been analyzed quantitatively. We fill this gap with hard empirical evidence.

Our results will show that local community activities are not immune to violence. Moreover, participation responses will appear to vary substantially across activity types. The local ethnic context matters a lot for the realized impact of news about local violence. The effect of violence on activities is heterogeneous along ethnic lines and with respect to unobservables. However, local own-group presence, ethnic polarization and own-group relative participation in the considered activity, including when they are interacted with violence, provide a decent summary of the roles of the ethnic links in participation processes. Noxious social phenomena may occur within community groups that involve ethnic links. As for any human organization, local community activities are subject to human interests and greed, and to struggles between groups. In that sense, CDD involve efficiency-equity trade-offs with some activities made more resistant to violence but generating higher inequity across ethnicities, notably when they are captured by a specific ethnic group.

New social groups may result from individual grouping dynamics, and engagement in community activities may facilitate this processes. In that case, news about violent conflict may speed up this construction in polarized contexts. However, what we also see is that locally existing and dominating ethnic groups benefit more from these reinforcements, and that some ethnicities can be excluded from these processes. As a consequence, a strong pre-existing ethnic root in some activity groups may makes these

group-emergence mechanisms more powerful. This is also the case when there is more ethnic polarization locally.

The next section describes the data and provides background information on community activities in Indonesia. The estimation strategy is presented in Section 3. Section 4 reports the empirical results and Section 5 reports their discussions. Finally, Section 6 concludes.

II. The Context and the Data

A. Community Participation

Indonesian islands are characterized by a mixture of groups, castes, tribes, religious groups, clans, and production associations that both link and oppose individuals and families. These groups provide solidarity, but they also bring constraints. Individuals who neglect social duties may be excluded from the community. For example, people who do not bring offerings, or do not share collective work, may lose the support of their neighbors. Another social punishment is losing access to diverse social and economic institutions — like, in Bali, for example, being deprived of cremation when deceased.

The moral basis of society is grounded in family and religious values. Social rights and duties in Indonesia depend on parental positions. Elders and family heads are highly respected. Traditional solidarities, often regulated by customs ('*adat*'), are implemented at village or neighborhood level. The neighborhoods ('*banjar*') are regulated by their own customs, partly religious and partly civil, which underlie local associations and mutual help initiatives. Collective decisions generally involve lengthy deliberations, often within a specific detached building, or pavilion, besides used for many community activities (e.g., the '*bale*' in Bali).

Local mutual cooperation has a long tradition in Indonesia, as discussed by Bowen (1986). Whatever their ethnic, religious, or social origins, Indonesians are faithful to these traditional community principles of mutual help. The New Order political regime enrolled the underlying ethic ('*gotong royong'*) of this tradition to foster development strategies based on local collective solidarity and reciprocity. Specifically, President Soekarno's policy was based on the traditional system of discussions and consensus, guided by village elders. Local community activities were also seen as a response to rising inequality (Cameron, 2000) and to the lasting impact of the 1998 financial crisis on poverty (Ravallion and Lokshin, 2007). These initiatives were expanded through the 2001

decentralization laws that delegated much public and social decision-making to local institutions. The 1999 regional autonomy law divided provinces (33 *provinsi*) and districts (*kabupaten*) into smaller administrative units, such as the communes (*kota*) and villages, as a device to ensure greater proximity between decision makers and the population. Higher efficiency and more equitable distribution of resources were expected from this reform. The villages and their neighborhoods are the new, relatively autonomous, base of this administrative edifice. Patriat (2008) discusses how these local units (kabupaten and kotamadja) became the main beneficiaries of the transferred administrative power from the central state.

We study these local groups' functionings by using data from the Indonesian Family Life Survey (IFLS), a large-scale longitudinal household and community survey representative of about 83 percent of the Indonesian population[5] (Strauss et al., 2004). The second (IFLS2 in 1997) and the third waves (ILFS3 in 2000) that we use allow us to capture information contemporary with the 1997 financial crisis and the outbreak of violence in the aftermath of President Suharto's resignation in May 1998.

Since the conflict data we draw on are not available for those Indonesian provinces with negligible levels of communal violence, our analysis focuses on the main island of Java, the islands of West Nusa Tenggara, and the province of South Sulawesi. This provides us with a sample of 15,508 adult respondents from 5,026 households, of which 9,466 individuals are observed in both selected IFLS waves. Moreover, a community questionnaire offers detailed information on the 197 communities in the sample.[6]

During the second IFLS wave, in 1997, a survey module on citizen participation was included for the first time. It provides information on individual participation in community-level activities. Precisely, the following question was asked for each of thirteen community activities:

"*Now I would like to ask you about some community or government activities and programs that may have taken place in this village during the past 12 months.*

Did you participate in or use the community activity?"

To which they could answer: "*Yes, No, or Don't Know.*"

[5] The IFLS includes all provinces of Java, the provinces of North, West, and South Sumatra, and Lampung on Sumatra, the islands of Bali and Nusa Tenggara Barat, as well South Sulawesi and South Kalimantan. The least densely populated regions and the conflict provinces of Aceh, Malukku, and East Timor were excluded for cost efficiency and security reasons, respectively.

6 An IFLS community/village refers to an enumeration area (EA) that was randomly chosen from a nationally representative sample frame used in the 1993 SUSENAS (National Household Survey). Each EA includes between 200 and 300 households (Strauss et al., 2004).

These activities can be grouped into four (mutually non-exclusive) categories: local governance, social services, infrastructure development, and mutual insurance. Table 1 offers an overview of the categories and included activities.

B. Conflict

The 1997 Asian financial crisis and the subsequent resignation of President Suharto in May 1998, were accompanied by a period of violent local conflicts, the *Reformasi*. This time of troubles started with student riots in Jakarta, supported by a population frustrated by corruption and social injustices. Then, it degenerated into conflicts in various parts of the country. Aside from the specific separatist conflict in Aceh and ethno-religious conflicts in the Moluccas and Central Sulawesi, communal violence of varying intensity affected most of the country (Wilson, 2005). Patriat (2007) reports on what this violence covers: ethnic rivalries, religious tensions, economic inequalities, core-periphery jealousy and grudge, and so on. The complexity and diversity of conflict motivations suggest that people may sometimes have lost sight of the original causes of the conflict, and reinterpreted them according to individual inclinations. Indeed, a posteriori interpretations of conflicts along ethnic or religious lines is common, even though competition for access to land and other resources may originally have been at the source of these oppositions. For example, in Bali, the immigration of Muslim Javanese sparked competition for resources from foreign tourists with Balinese Hinduists. However, we avoid any a priori interpretation of these oppositions, whether ethnic, religious or economics.

We use the United Nations Support Facility for Indonesian Recovery (UNSFIR)-II database, which reports incidents of group violence in fourteen Indonesian provinces for the 1990–2003 period. Based on a survey of regional newspapers, UNSFIR-II covers "violence perpetrated by a group on another group (as in riots), by a group on an individual (as in lynching), by an individual on a group (as in terrorist acts), by the state on a group, or by a group on organs or agencies of the state" (Varshney, Panggabean, and Tadjoeddin, 2004, p. 7). Hence ordinary crime, such as robbery or murder, is not included.

Conflict death is our indicator of violence severity. We aggregate the number of fatalities at district level, since a more detailed localization of violence is often not possible. We neither deal with direct exposure to violence at individual level, nor direct interactions with individual decisions, which would be insignificant in this sample since the probability of an individual directly suffering from violence is very small therein.

The resulting conflict indicators are then matched with the IFLS data, which leaves us with the six provinces covered by both IFLS and UNSFIR-II: West Java, Central Java, East Java, Jakarta on Java, West Nusa Tenggara, and South Sulawesi. These

provinces account for more than 60 percent of the total number of conflict incidents reported by UNSFIR-II, but were relatively unaffected by highly destructive, fatal violence. Given that we exclude the administrative center of Jakarta, the religious violence in the Moluccas, and the separatists' conflicts to avoid contexts in which violence would exclude normal functioning of the activities of interest, conflict severity is relatively moderate in our sample, as far as we can make distinctions about this.[7] Our attempts to disaggregate the violence information into several categories led to too few observations to be useful. Table 2 reports summary statistics for the different conflict indicators used in the analysis.

C. Ethnicity

Since the violence events that we study are between ethnic groups, we now discuss the definition of these groups. Levinson and Christensen (2003) report more than 300 ethnic groups in Indonesia. These groups differ by their language, culture, and history. The huge majority of the population, about 95 percent, corresponds to native individuals. In our sample, the largest group are the Javanese (41 percent of the total), who can be found mostly in Java while also on other surveyed islands. Other large groups are the Malay, the Sundanese, and the Madurese. Some ethnic groups are very small. For example, the Chinese account for less than one percent of the population despite their conspicuousness. In practice, the ethnic categories are highly correlated with a linguistic nomenclature in which Austronesian languages dominate. In any case, although ethnic group definitions are always debatable, especially with all the intermixing happening over history, we are constrained to use the information available in the IFLS data. Therefore, our definition of ethnic group is that used by the Indonesian administrators of the survey.

The information on individual ethnicity is obtained from the IFLS4 (collected in 2007/2008), while the data on the share of the three main ethnicities in each village/neighborhood is extracted from the IFLS2 community survey. As no information on ethnicity is available from IFLS3, we have to assume stable ethnic composition of villages between 1997 and 2000.

Originating from the Dutch colonization period, *transmigrasi* programs moved individuals out of Java and Bali towards less populated islands. They were sustained during Sokarno's and Suhartoe's governments, spawning millions of migrants. Conflicts with indigenous people have been frequent in the settled areas. However, these migrations

[7] Diverse other geographical specifications of the sample have been tried and yielded results qualitatively in lines. They are partly reported in Table A1, and discussed in the 'robustness' paragraph.

were less active during the studied period, in part because public funding for them were cut during the Asian crisis.

Let us now turn to the econometric strategy.

III. The Econometric Strategy

A. The Model and the Estimators

The analysis of the individual participation is conducted separately for each activity category, as well as for security organizations and cooperatives for their own sake.[8] A simple model can be obtained by specifying the propensity of an individual *i* to participate in a certain community activity *k*, in community *j* and year *t*. It can be seen as reflecting a latent expected benefit from involvement, B_{ijtk}^{*}, as follows:

$$B^{*}_{ijtk} = X'_{it}\beta + C'_{jt}\gamma + R'_{j}\delta + T'_{t}\varphi + P_{jt}\alpha_1 + RP_{ijtk}\alpha_2 + v_{t-1,d(j)}\alpha_3 + v_{t-1,d(j)}.P_{jt}\alpha_4 + v_{t-1,d(j)}.P_{jt}.RP_{ijtk}\alpha_5 + a_i + \varepsilon_{it}, \quad (1)$$

where X_{it} is a vector of individual and household characteristics, C_{jt} a vector of community characteristics, from which is distinguished P_{jt}, the ethnic polarization indicator of the village. R_j and T_t are province and year dummies. RP_{ijtk} is the own-group relative participation rate in activity k in village j at year t, for the ethnic group which individual i belongs to. Precisely, it is defined as: [the participation rate of the own ethnic group] – [the participation rate of the other ethnic groups], with the individual respondent observation excluded from the rates. This variables, which we also denote OGRP, varies between -1 and 1. The term a_i denotes an unobserved individual random effect. The term ε_{it} is a centered idiosyncratic error term with mean zero. The parameter vectors β, γ, δ, φ, and α_1 to α_5 are to be estimated.

The vector of conflict indicators, includes dummies for low and high lagged violence levels in the district d(j) of village j ($v_{t-1,d(j)}$). These are interacted with the local ethnic polarization index ($v_{t-1,d(j)}.P_{jt}$), and finally these obtained composite variables are also interacted with the relative rate of participation of the own-group in the considered activity locally, RP_{ijtk}. This parsimonious specification is motivated, on the one hand, by

8 The fact that we estimate separate models for different, non-exclusive activities does not prevent the coefficient estimators to be consistent. While some efficiency could be gained by simultaneous estimation of all equations, this is not necessary here as the sample size is large enough to yield accurate estimates.

our interest in ethnic network effects that are partly captured through the effect of RP_{ijtk}; and, on the other hand, by violence impact possibly varying with local ethnic configuration and ethnic involvement in activities.

As respondents are asked for their participation in the twelve months prior to the interview, the violence variable is specified as the number of fatalities in the two-year interval one year before the reference period of the IFLS interview.[9] Lagging the conflict variables in that way mitigates concerns of reverse causality from community participation in violence. This helps us to partly address potential endogeneity issues. However, we complete this with other precautions, and alternative estimation treatments discussed in the next sub-section.

In this base model, the observed individual participation choice, P_{ijtk}, equals 1 (participation) if the expected benefit is positive, and zero (no participation) otherwise:

$$P_{ijtk} = 1 \; if \; B^{*}_{ijtk} > 0, 0 \; otherwise. \qquad (2)$$

Alternative interpretations of these equations are possible. For example, internal/external selection rules can be based on observable and unobservable individual and local characteristics. Mixed decision processes by applicants and insiders, for example as in La Ferrara's (2002) model, are therefore encompassed in our setting.

Since we want to preserve the inclusion of the information about violence, which is at district level, fixed effect cannot be specified.[10] Instead, a random effects (RE) logit estimator and a RE linear estimator, in which the individual random effect is augmented by fixed effects for provinces and years, are first used to estimate (1)–(2). This accounts for unobserved individual, provincial and time heterogeneities that might affect individual engagement in activities. This is notably useful because some participation decisions may be grounded in stable individual characteristics beyond observation possibilities, such as regional features, annual conjuncture, individual personality, family

[9] For example, the IFLS interview conducted in December 2000 corresponds to using a conflict indicator that covers incidents of violence during the January 1998–December 1999 period. UNSFIR data on communal violence are only available until 2003, which precludes the use of the 2007 IFLS wave. Introducing longer lags results in missing out the period of most significant violence in 1997–2000 and is therefore not useful.

[10] More generally, individual fixed-effect estimation is not feasible here as too many perfect participation predictions would arise for individuals not changing their participation choice over the observed period. Moreover, introducing fixed-effects for individuals, or even for districts, is not attractive in that case, as we would have to drop not only the conflict variables (and other district variables of interest) that are constructed at district level but also the local ethnic composition variables at the village level. Finally, the substantial unbalancedness of the panel, in which the set of observed years greatly vary with individuals, incite us to prefer random effect specifications to fixed-effect specifications, as understood and advised in Baltagi and Chang (1994, 2000), and validated by their extensive simulation results. Bell and Jones (2015) also argue in favor of random effect modelling, rather fixed effect approaches, not only for including time-invariant variables but also for dealing with unbalanced data.

background, or personal history, which are therefore controlled. In addition, endogeneity and selection issues will be dealt with as discussed below.

Baltagi and Chang found that their best estimator, including with endogeneity issues, denoted EC2SLS, is such that the model is first sphericised (as for GLS), and then the instrumentation is performed using both the within and the between transformations of the initial instruments. The, still consistent, estimator that is merely based on using sphericised variables in the formula of 2SLS is asymptotically dominated by the EC2SLS that has smaller asymptotic variance-covariance matrix, which is why we use the EC2SLS.

Let $u_{it} = a_i + \varepsilon_{it}$. Then,

$$E(uu') = \sigma^2_\varepsilon \, diag\{I_{Ti} - (1/T_i)\, i_T\, i_T')\} + diag\{w_i\, (1/T_i)\, i_T\, i_T'\},$$

where i_T is the T-vector of ones, and $w_i = T_i\, \sigma^2_a + \sigma^2_\varepsilon$.

Two consistent estimators of the variance terms are

$$s^2_a = ((\sum_{i=1}^{n} \sum_{t=1}^{T} (vw_{it})^2) - (n-K)\, s^2_\varepsilon)/ (N-r)$$

and

$$s^2_\varepsilon = \sum_{i=1}^{n} \sum_{t=1}^{T} (uw_{it})^2 / (N-n-K+1),$$

where N is the number of observations, n is the number of panel groups, K is the number of covariates, uw_{it} is the residual based on the within estimator, $vw_{it} = y_{it} - Z_{it}d_b$ is the residual based on the between estimator, and r is the trace of matrix

$M = (E(Zi)'\, E(Zi))^{-1}E(Zi)JJ'^{1}E(Zi)$, with Z_i the covariates for panel i and

$J = diag(\, i_{Ti}\, i_{Ti}')$, and the expectation replaced by empirical expectation.

The coefficients of the determinants of the individual participation, in each activity, are estimated conditionally on individual awareness of the activity's existence within the community. Although this may induce a selection bias if one were interested in all potential participants, aware or unaware of the activities, focusing on individuals reporting awareness seems to be more relevant. Besides, we also ran the analysis on the full sample and obtained similar results.

B. Endogeneity and Selection

In general, endogeneity and selection bias issues may be seen as originating from missing variables. Bellows and Miguel (2009) develop typical strategies to control for

confounders of violence effects: use of village fixed-effects, inclusion of extensive pre-war characteristics, estimations with diverse subsamples more or less liable to violence. We concur to these prophylactic approaches, and develop them further.

More precisely, they are reasons why endogeneity issues may be much alleviated in this work. First, we include province, year, and individual effects to control for the unobserved heterogeneities of individuals and circumstances that may generate endogeneity or selection bias. Second, we incorporate a very large set of covariates (56) in the regressions, which is likely to yield much greater control than usual. Third, as mentioned above, we lag the variables most likely to generate endogeneity issues, moreover in a context of non-stationary violence. Fourth, using alternative sub-samples, and alternative conflict variables, confirm the findings. Fifth, since the conflict data come from a distinct and more aggregated source than the household survey, there is limited risk of endogenous conflict for participation that is measured at individual level.

Sixth, potential endogeneity issues vanish at the aggregate community level. For example, the aggregate correlation between violence and out-migrations is found to be small and insignificant. The share of IFLS2 respondents that out-migrated between 1998 and IFLS3 is 11.52 percent on average in districts with no violence and 11.51 percent in districts with high intensity of violence. Similarly, the sample attrition turns out not to be correlated with violence at district level. The proportion of individuals observed in IFLS2 and no longer observed in ILFS3 is 11.6 percent in districts with no violence and 12.2 percent in districts with high intensity of violence, with a non-significant gap. Besides, restricting the sample to permanent respondents yields estimates similar to what is reported in the next section.

Finally, using instrumental variables validates the robustness of most results and correct for a few crucial ones. The main two likely endogeneity issues arise from the violence variables, on the one hand, and from the reflection effect associated with the relative own-group participation, on the other. To deal with the endogeneity related to violence we rely on indicators of conflict intensity in neighboring districts as an instrument for violence in the domestic district. These indicators are presumed to: (i) be strongly related to local domestic levels of conflict through spatial spillover effects; and (ii) have no impact on citizens' participation in within-district community groups. The latter assumption, (ii), is supported by the large geographical size of the districts that suggests that news about faraway violence should not significantly affect participation in local groups. Furthermore, substantial shifts in participation across districts are not plausible because districts are spatially large. In any case, outsider participants from other villages would be typically excluded from the considered kinds of community activities.

The first assumption, (i) relies on the literature, in which war in a contiguous country has been found to be a robust predictor of conflict (Blattman and Miguel, 2010).

To sum up: One the one hand, spillover of violence across districts is what allows the efficiency of the instrumenting strategy. On the other, the large size of the districts precludes significant direct effects of violence from the neighboring districts on local participation. Since one concern about instrument validity is about common local shocks to participation and violence, using violence in neighboring districts should avoid including such common shocks. One akin instrumentation strategy for local violence has been used for example by Rohner, Thoenig and Zilibotti (2013) for Uganda with cross-sectional data. The validity of our instruments is also supported by diverse diagnosis analyses and tests whose results are shown below in Section IV.

Another issue is how to deal with the endogeneity potentially arising from the reflection effect for the own-group relative participation in each activity. For this, we develop a strategy inspired from the insight in Lee (2007) for fixed-effect spatial econometric models, which we adapt instead to group effects and random effect models. The intuition behind this approach is that when different groups have different sizes, then the inference on group effects is possible because of the heterogeneous degrees of interactions across groups. Moreover, one can take advantage of the fact that the predicted activity participation – conditional on these characteristics - of people from the same ethnic group can be computed by using the equations of the model while excluding the possibly endogenous regressors (that is, in particular: without the own ethnic group effect and the violence effect). Finally, recall that in our specification, the participation rate of the other groups is subtracted from the participation rate of the own ethnic group. This implies a corresponding adjustment of the method when using the respective exogenous predicted fitted-values of group participation **Unclear**. However, nothing fundamentally different from dealing with group effects, or neighbor effects, occurs **Unclear**. Another difference with Lee's approach is that we use equations in levels that include random effects, while Lee uses within-transformed equations to eliminate fixed effects first. However, the intuition based on the group size instrumental information carries through to this setting.

Our estimators are extensions of the two-stage least-square methods for panel data with random effects. Using the EC2SLS estimators proposed by Baltagi and Chang (1994, 2000), we included as instruments not only the predicted exogenous own-group relative participation rate, but also the own-group relative size, and the ratio of these two variables. The latter is motivated by the fact that, in the estimated model, the individual contribution to the own-group participation appears as divided by the group size in the

term describing the own-group effect. It seems therefore reasonable to account for this division while constructing instruments.

To recap, our method based on the EC2SLS is as follows. On the one hand, the violence dummies are instrumented by using the information on the level of violence in the neighboring districts. Specifically, we calculate the share of neighboring districts with (i) 1–9 conflict-related fatalities, and (ii) 10 or more conflict-related fatalities, and use these variables to instrument the respective 'domestic' conflict indicators. As data on conflict-related fatalities in neighboring districts are not always available, we lose some 20 percent of the observations. However, the previous results also hold with the reduced sample used for the IV estimations.

On the other hand, the relative participation variable for each activity is instrumented using: (1) The predicted relative participation rate of the own ethnic group (based on a separate participation regression on the exogenous characteristics of the ethnic group); (2) the size of the own ethnic group in the village, and its square (3) the predicted relative participation rate divided by the own group size. The exclusion restrictions for all these instruments are made more plausible by including extensive controls and individual effects.

Finally, when included, the endogenous interaction terms are instrumented by combining the instruments in the same way than their endogenous counterpart, that is: by interacting them. Moreover, as a consequence of the projection in the 2SLS estimator formula, the relative participation variable and the violence variables are instrumented with the same full set of instruments still and only for the regressions with the interaction terms. To simplify the discussion, let us denote the interaction of variables with the operator '*'. Thus, the violence variables, the violence*(high polarization variables), and the violence*(high polarization)*(relative own-group participation) variables are instrumented by using: (1) The share of neighboring districts with 1-9 conflict-related fatalities; (2) the share of neighboring districts with 10 or more conflict-related fatalities; (3) the two former shares interacted with the high polarization dummy; (4) the (predicted own-group relative participation) * (low violence in neighboring districts) * (high polarization); (5) the (predicted own group relative participation) * (high violence in neighboring districts) *(high polarization); (6) The same kinds of interactions, using instead of the predicted relative own-group participation: the relative group size, and the predicted participation divided by the relative group size; (7) the squared terms of all these variables

Finally, the standard errors of the estimators are estimated using the bootstrap method. This avoids the explicit calculus of the estimator of the asymptotic standard errors, which may be complicated due to the instrumentation of the possibly endogenous variables. Let us now turn to the empirical results.

IV. Empirical Results

A. Descriptive Statistics

Table 3 describes the prevalence of each activity category at village level, along with the distribution of individual participation across the sample. Information on prevalence is obtained in two ways: from interviews with village heads from the IFLS Community-Facility Survey on the one hand, and reports on activity prevalence and individual participation from the individual respondents, on the other.[11]

These statistics confirm an almost universal prevalence of all categories of activities during both survey years. We can hence rule out endogeneity related to the potential emergence or disappearance of activities (e.g., security groups) at village level in conflict times. Slightly distinct are the cooperatives, which are present in 71 percent (1997) and 79 percent (2000) of the villages, respectively.

We observe significant differences in participation rates across activity categories and over time. In 1997, local governance events and social services were frequented by around half of those individuals aware of their existence, whereas participation in activities related to infrastructural development and neighborhood security groups was substantially higher. Comparably low participation rates are reported for cooperatives both in 1997 and 2000.

Overall, a substantial decline in citizen participation between 1997 and 2000 is observed. People appear less willing to engage in common activities during the early phase of the country's transition. A time dummy is included in the regression analysis to distinguish this trend from the effect of local violent conflict.

Over the 1990–2003 period, conflict deaths steeply rose in 1997, coinciding with the outbreak of the Asian financial crisis. The number of fatalities peaked in the first years after President Suharto's fall, before the level of violence tended to decrease again from 2001 onwards. Fatal violence was therefore rather locally concentrated: out of the 96

[11] Additionally, interviews with the heads of the women's groups provide information on the existence of cooperatives. We therefore assume the prevalence of an activity when either the village head, or his wife, state the existence, or when at least one surveyed village member reports participation.

districts in the sample, only 11 districts reported ten or more deaths from group violence in the years 1998 and 1999, while more than 50 percent had no fatalities at all (Table 2).

For the 1998–1999 period, aside from the capital city, violence was often observed in the western and central parts of Java, while large parts of East Java remained relatively peaceful. The islands of West Nusa Tenggara show low conflict intensity; ten fatalities are reported from the northern districts of South Sulawesi, Luwu, and North Luwu. On the whole, this spatial heterogeneity in violence outbreaks makes these data suitable for econometric exploitation. Table 4 reports descriptive statistics for the variables used in the regression analysis to which we now turn.

B. Base Random Effect Logit Regression Results

We first run separate random-effect logit regressions for individual participation in each constructed activity category.[12] Since Muller and Vothknecht (2017) already provide a detailed analysis of the general determinants of community activity participation in Indonesia, we only briefly refer to the main effects in order to focus on the analysis of violence and ethnicity factors. Our base regression results are presented in Table 5. The estimated models include a large variety of socio-economic characteristics of individuals, households, villages and districts. The two dummies for violence at district level are included, accompanied by diverse ethnic characteristics of the village, notably its ethnic polarization index and the relative own-group participation rates in each of the respective activities. Finally, interaction terms of the district violence levels with village ethnic polarization are incorporated.

As the correction for endogenous interaction terms is hard in binary panel models, we employ least-squares estimation for an easier implementation of the IV estimation, which will be discussed later on. We also run linear RE regressions of the individual participation in the various activities, without instrumentation. This is useful for assessing the robustness of the RE logit results, and as a baseline for the comparison with the IV estimates. Similar to Table 5, Table 6 displays the obtained coefficient estimates for the conflict and ethnicity variables, still without instruments. While not efficient under an hypothesis of extreme value errors or other non-normal errors, these estimates are consistent and they turn out to be qualitatively very similar to the RE logit results. The effects of the main controls are briefly discussed in the Online Appendix.

[12] Using single waves of the IFLS data, Beard (2005, 2007) estimates ordinary logit models of citizen participation in Indonesia with a much reduced set of covariates compared to ours. In particular, there is no violence variable in her specification. Also, as she does not make use of panel data, her estimates do not control for unobserved individual heterogeneity, a crucial component of individual decisions. Nor does she control for endogeneity and selectivity issues as we do. Finally, our nomenclature of activities differs. However, we find similar signs of coefficients for general participation in the case of several demographic and education variables, which is reassuring.

C. The Roles of Ethnic Polarization and Ethnic involvement

We now turn to the heterogeneous impacts of violence on community participation in ethnically polarized areas. Indeed, local tensions among ethnic groups might disturb cooperation among and across ethnic groups. For investigating this, a measure of ethnic polarization, *PQ*, proposed by Reynal-Querol (2002), is calculated for each community *j*:

$$PQ_j = 4\sum_{i=1}^{nj} s_i^2\,(1 - s_i), \qquad (3)$$

where s_i is the relative size of the *i*-th ethnic group and *nj* is the number of ethnic groups in community *j*.[13] *PQ* index indicates the level of ethnic polarization in the community. It is at its minimum, 0, for an ethnically homogeneous community and at its maximum, 1, for two ethnic groups of the same size.

When PQ is included without instrumenting (Table 5 and Table ? in the Online Appendix), participation is increased in areas with high level of polarization, for social services, and especially governance activities. However, polarization has no effect on participation in the other activities. The local proportion of the own ethnic group has a similar effect to polarization, which is to spur participation in governance and social services. Interestingly, dummies for specific ethnic groups, or for the ethnic minority in the village, have no significant effect. Thus, polarization and own-group proportion seem to capture well most roles of ethnic characteristics in this context.

D. The Impact of Violence

As mentioned before, in the base specification, two dummy variables describe prevalent violence: districts with fewer than ten reported fatalities form the group of *low intensity conflict* districts, while districts with ten or more fatalities are categorized as *high intensity conflict* areas. Overall, the estimated conflict coefficients reveal substantially lower individual involvement in activities in districts affected by violence (except rare non-significant cases for: low conflict and security; high conflict and cooperatives or infrastructure). Moreover, this negative effect of conflict on civic

[13] The calculation of some village characteristics —e.g., ethnic polarization— is based on the survey sub-sample in each village. Although these sub-samples were drawn randomly, and are therefore representative, they involve some small sampling variations of the polarization index which are not accounted for in the estimation. However, since we have 197 such villages and on average about 60 interviewed individuals in most villages, these random variations are smoothed out and should not affect the analysis substantially.

engagement increases with conflict intensity across almost all activities (except for the non-significant cases).[14] In contrast, the presence of locally high polarization between ethnic groups makes violence a stimulus for participation in governance and social services, and the more so when this violence is high. This effect is less obvious for cooperation under low violence, but it is very pronounced under high violence.

However, diverse responses to violence seem to characterize the different socioeconomic activities. Other attempted representations of districts by violence severity instead of violence incidence did not improve these inference results. [15] [16]

E. Instrumented Results

While we control for an exceptionally large number of factors, we cannot fully rule out the presence of residual unobserved and non-fixed community characteristics that may simultaneously cause low participation on the one hand, and violent tensions or low own-group participation, on the other. As a consequence, we rely on the above-mentioned instruments in the EC2SLS estimation.

We assess the endogeneity of the conflict indicators by running Hausman tests that compare the linear RE estimates and the linear IV-RE estimates. As expected from the close proximity of the RE and the IV-RE estimates of the coefficients, and from the large sample size, the null hypothesis of systematic equality between these two vectors of coefficients is never rejected throughout (P-values of 0.97 for governance, and almost 1 for the other activities). This supports the general consistency of our results without absolute need to use instruments. Therefore, one approach could be to stick to the results without instrumentation. However, the power of Hausman's tests is often limited, and some instrumented results provide additional insight. The instrumented results are also worth examining because the extensive controls and individual effects included imply that the exclusion restrictions are rather plausible. Finally, more arguments supporting these restrictions are discussed in the robustness and diagnosis subsection.

The instrumentation concerns the conflict intensity dummies, the conflict dummies interacted with high ethnic polarization, and finally their interaction with own-group relative participation. Tables 7 (A) and (B) show the first-stage estimation for own-

14 With the exception of participation in cooperatives in high intensity conflict areas, in which case the effect is insignificant.

15 We cannot normalize fatalities by the distance to the violent event since these data are not available.

16 Note that the exaggerated marginal effect of the own-group relative participation in the logit model (4.64) is correct to a more realistic estimate in the linear model (0.39), which supports the linear specification. Similarly, the effects of the two violence dummies are attenuated in the linear specification, while they remain generally significant for the same activities. It may be that a misspecified logit functional form generates biases, which are not present asymptotically when using the linear estimators.

group relative participation and for domestic violence dummies that look as promising as significant coefficients of the instruments occur for all activities and substantial R-squared statistics for all activities.

Table 8 reports the estimated coefficients of the participation model for the main variables of interest. Instrumenting does not dissipate the significance of the most interesting coefficients. After instrumentation, there is still lower participation levels in areas affected by violent conflict, while this fall is more than offset in areas with high ethnic polarization.[17]

In the base specification, without the 'triple' interaction terms, the impact of the relative presence of the own ethnic group on citizen participation is corrobated whether running linear RE regressions (Table 6), without instrumenting.

In conflict-affected districts, citizens are more likely to get engaged in activities characterized by a strong presence of their own ethnic group. This is significantly the case for local governance, social services, and infrastructure development. Moreover, (non-interacted) ethnic polarization fosters participation in governance and social services.

However, when the conflict variables and the own-group relative participation variables are instrumented in Table 8D **AV**, [18] the sign of the coefficient of the (non-interacted) polarization index changes dramatically to negative for most activities, significantly for governance and social services.[19] These newly emerging negative impacts are consistent with other findings in the literature. For example, Alesina, Baqir and Easterly (1999) find although in the clearly different context of the US, that ethnic divisions are associated with lower local public good investment. Likewise, Chadha and Bharti (2017) find in India that ethnic fragmentation negatively impacts the provision of private and public schools. Another possible explanation channel of the effect of polarization is that when there is no local violence, ethnic polarization diminishes the participation in governance of individuals from ethnic groups whose candidates have been beaten in village elections because they do not agree with the new governance orientation of the village. When polarization is high, the participation of these individual is also high.

The change in the sign of the coefficient of the polarization index, following the instrumentation, suggests that news about domestic district violence generate opposite responses in areas with and without polarization. The negative impact of communal

[17] Using too many instruments based on the squares and the products of the original instruments reduces the significance of the results, as well known in the econometric literature.

[18] The estimates for the other correlates are hardly affected by the inclusion of the *PQ* interaction terms. Full regression results are available from the authors upon request.

[19] The high polarization dummy equals 1 if $PQ > 0.5$, which is the case for 28.5 percent of the villages in our sample.

violence on citizen participation is partly offset by the interaction term in conflict-affected communities with high ethnic polarization. In contrast to the overall decrease in participation in governance meetings and social services in conflictual areas, citizen participation is found to be hardly affected by violence in villages characterized by a high ethnic polarization. That is, the depressing impact of conflict on community participation is found to be significantly stronger in ethnically homogeneous areas.

The coefficients of the interaction term between polarization and violence are more significant**.**

F. Bonding versus Bridging Social Capital under Violence

When engagement in the local community runs along ethnic lines, social networks organized within ethnic groups may be strengthened and existing gaps between ethnic groups may be widened. To address this, we investigate the ethnic composition of communal groups in more detail. For each activity, we have already included a measure of the relative engagement of own ethnic group. Now, and additionally, we interact this indicator with the conflict and high polarization variables together. In this way, we will be able to check whether the actual engagement of the own group and not just the relative presence of the own group affects participation in tense local political contexts. This is related to the strength of ethnic network interactions in some community activities. Table 9 reports the estimated coefficients for all the included ethnicity and conflict variables.

We find similar effects for those variables and cross-effects already included in the previous regression setup, which are confirmed. Generally, the relative size of the own ethnic group, measured as the share of the total local population, is positively linked to community participation in governance, risk-sharing **???**, and social service activities. Furthermore, a relatively high presence of the own ethnic group in a given community activity has an overall positive effect on participation in governance groups and cooperatives. **UX**

However, when focusing on conflict areas with a high ethnic polarization, we find that citizen participation in security groups increases substantially in the relative share of participants from the own ethnicity. Put differently, the willingness to become involved in security groups decreases with the relative engagement of people from other ethnic groups.[20] In contrast, still in high polarization of high conflict areas, the other-groups relative participation reduces involvement in social services.

Interestingly, the instrumentation was useful in revealing that most of the own group effects in Tables 5 and 6 were often illusions generated by nuisance reflection

[20] This finding not only holds for highly polarized regions, but is also found for governance activities in high conflict intensity areas with lower levels of ethnic polarization (Table A2).

effects. However, some now more credible, group effects have survived the endogeneity correction.

The presence of severe violence hence strengthens bonding networks and sharpens local divisions along ethnic lines for some activities. One possible explanation is that engagement in these activities is partly motivated by responding to conflict situations. These community activities may facilitate bargaining between groups, contribute to organize fighting and security measures against other groups, or even be held for protection and insurance motives within specific groups **AV**. In these areas of fierce opposition between groups, large participation changes may be fostered by violence, however in a heterogeneous fashion across activities, from much reduced participation to participation instigation. This is the case, especially for social services and cooperative activities. It may also be the case that some activities may help to mitigate the damages of violent initiatives or limit violence.

We now dwell on the changes in the magnitude of the estimated coefficients caused by including all the interactions and correcting for endogeneity issues with our instruments. We focus on the main variables of interest. For these, no other change of coefficient sign emerges, beyond the change in sign of the coefficient of the (non-interacted) polarization index, which has been already commented. However, the magnitude and the significance of many coefficients differ significantly in the final specification (Table 9) from that the base results (Tables 5 and 6). The initially exaggeratedly strong own-group participation effects for governance and cooperatives are reinforced by the instrumentation (initially, respectively, 0.09, 0.04 and 0.39, now reaching 0.48 and 0.87), while the coefficient for social services is now insignificant. The population share of the own group in the village, which seemed initially important, has no longer any significant impact on local activities. Its initially apparent influence has been totally captured by the impact of the own-group participation rates in each activity when there is polarization and violence.

The magnitude of the effects of the two (non-interacted) violence dummies are much stronger after interaction and instrumentation, which is consistent with a need for endogeneity correction**IIT** and the relevance of the inclusion of the interaction terms. There are still strong direct depressing effects of violence on governance (marginal effects of -0.06 and -0.10 before; of -0.17 and -0.23 now) and social security (now -0.14 and -0.46), and slightly less perhaps on infrastructure groups. The interaction of polarization with a low (respectively, high) level of violence is clearly stronger (respectively, lower) after instrumentation, and positive (0.62 and 0.37 for governance, 0.45 and 0.53 for social services), to mention only the very significant coefficients. The general picture of these

effects is relatively robust on the whole to the inclusion or not of the triple interaction effects, with the anomaly of the coefficients for cooperatives and high violence 0.19 and 0.32 without triple interaction that vanishes after its inclusion (0.12 and 0.18). Finally, when considering the interaction of polarization with the violence dummies and with the own-group participation, only two significant effects at the 5 percent level emerge after instrumentation, for social services and high violence (-2.6) and security group and low risk violence (1.78).

IIIUWe quantify the magnitude of the observed effects of violence and ethnic polarization through estimated participation probabilities in Table 10 by low and high conflict intensity and by degree of ethnic polarization. The probabilities of participation are calculated for each individual and activity type as the fitted values obtained from the regressions. In a second step, the estimated average participation probability in conflict-affected regions can be compared to a counterfactual 'no violence' case.[21]

In areas with low ethnic polarization (Panel I), average participation propensity is estimated to be substantially lower in the presence of group violence (down to 15 percentage points lower in high intensity conflict areas as compared to the counterfactual 'no violence' case). This effect is strongest for social services, security groups, and governance activities, whereas cooperatives seem to be hardly affected by violence.

However, a different picture emerges in areas with a high degree of ethnic polarization (Panel II). In the presence of group violence, average participation probabilities in polarized communities fall comparably little. In particular, participation in community meetings is barely affected, and the estimates even point to increasing involvement in cooperatives in those districts most affected by violence. Hence, the generally negative impact of communal violence on citizen engagement at the local level is not observed in areas with a high ethnic polarization. Participation in some community groups may even rise in the wake of violent conflict.

Let us move to average participation probabilities in highly polarized areas with high conflict intensity, stimulated by the relative participation share of the respondent's ethnic group. Focusing on local governance and social services, the results indicate a decrease in participation by around one third in the presence of violence whenever members of other ethnic groups are relatively more involved in these groups. In contrast, the likelihood of participation increases when activities are relatively strongly frequented by members of the own ethnicity. Similar patterns are observed for infrastructure

[21] The same estimated regression model is used and a zero level of violence is imposed *for all districts* to calculate the counterfactual participation propensities.

development, while participation in cooperatives seems to increase in times of conflict irrespective of the relative involvement of local ethnic groups.

G. Robustness and Diagnosis Checks

To assess the robustness of our findings, many variants have been tried—for example, adopting different error shapes and correlation hypotheses, or diverse logit vs. OLS linear regressions. The signs and significance of estimated marginal effects for the individual, household, and village level control variables are relatively robust to these specification changes. The results for these alternative sub-samples and conflict definitions are reported in Table A1.[22]

As placebo tests, we tried many variants of the estimated equations, while substituting the *dependent variables* with socio-demographic variables (mean income, economic shocks, asset inequality, hours worked, share of migrants) that are shown not be correlated with the chosen instruments, while they are obviously correlated with diverse activities, because of various motivations **m.d.**. Some of these estimates are shown on Table 11. Clearly, the violence levels in the neighboring districts are not significantly related to any of these local characteristics. It is therefore hard to imagine how violence levels in the neighboring districts could directly influence activity participation in this context. In addition, *future violence* in neighboring districts is not correlated with current violence in the domestic district, which is reassuring that we capture causal effect instead of the effects of some unobserved local confounders.

Further, Figures 1a to 1e display placebo plots, for each activity category that show the regression lines of the residual participation (conditional on the exogenous controls) on violence in the neighboring districts. The lines are drawn separately for the

[22] Since the main trends hold when the capital city of Jakarta is excluded, or when the sample is restricted to the Javanese provinces (Table A1, Panels I and II), the findings are not entirely driven by a single conflict region. Results are also confirmed for a five fatalities threshold from low to high intensity violence and for a continuous indicator of the number of fatalities and its squared term (Table A1, Panels III and IV). Furthermore, we repeat the analysis for the whole sample—i.e., including individuals without knowledge of activity existence (Table A1, Panel V). The results are similar to the estimates from the main regressions and mitigate concerns about sample selection bias. The use of the Herfindahl index of ethnic fragmentation as an alternative way of capturing ethnic diversity results in estimates similar to those obtained with the *PQ* measure (Table A1, Panel VI). Finally, media reports put some emphasis on the victimization of Chinese households during violence. The Chinese community may be more visible and vulnerable because of its presence in trade and business activities throughout the country. However, an additional dummy for ethnic Chinese is insignificant in all specifications. Another possibility is that violence against the Chinese is under-reported in newspapers. However, Panggabean and Smith (2009) also show that, even though there is much anti-Chinese resentment, anti-Chinese violence was relatively rare in this precise period, and more localized than often thought. This may be in contrast with earlier violence against the Chinese following the 1965 coup attempt.

districts without violence, where they appear to be horizontal lines, and for the districts with violence, where the mean slope is generally negative. This supports the validity and the efficiency of the chosen instrument for violence. The effect of the instrument in the reduced form is therefore significant when there is violence and not in the opposite case. This suggests that the effect of the instrument exclusively goes through its correlation with the local violence variable.

As a final robustness check, we have also employed an alternative source of data on violence, the PODES village survey, which is conducted three times per decade and, since 2003, includes a section on conflict and violence. With these data, we can use the 2007 IFLS wave and include an indicator of conflict fatalities at district level. Two thirds of the districts report no conflict-related fatality, and in the remaining third of the districts we never observe more than five fatalities, which suggests that the PODES conflict data suffer much more from omissions than the one we use. However, we still ran RE logit regressions for the three-wave sample. Overall, results (not shown to save space) are broadly similar to the previous results using only IFLS2 and ISFL3. This notably applies to the estimates of the conflict coefficients. Some effects of other variables vanish, while the results for violence turn out to be stronger for governance and social services.

H. Other Individual Determinants of Participation in Conflict Areas

In a last step, we turn to a few individual socioeconomic characteristics, distinct from ethnicity, and that might affect engagement in one's community in the presence of violence: individual education, age and household wealth. Then, the conflict variables are interacted with them. Table 12 reports the most relevant results, which are *much less significant than when interacting with ethnicity*. Respondents with at least secondary education show a higher propensity to join local cooperatives in high intensity conflict areas (Table 12, Panel I). These well-educated individuals may be better able to take advantage of this form of mutual insurance during conflict.

Panels II and III of Table 12 illustrate the different effects of violent conflict on the community participation for the poorest and the wealthiest households, respectively. A few tentative interpretations come to mind. Poor households, as defined by the first quartile of asset levels, tend to withdraw more from the infrastructure development projects in violent times, perhaps because these activities, in which they provide manual labor are interrupted or disrupted in bad times. However, a comparably higher participation of the poor is observed for the social services, which likely supply them with necessary assistance in these situations. On the other hand, the better-off, in the fourth

quartile of assets, may seek protection for their capital or their economic activities through participating in the cooperatives and the infrastructure groups. They may also be invited to accept responsibilities within these organizations in order to help the community to respond to the violent context. Finally, their drop out from neighborhood security organizations might be explained by a greater ability to employ private measures of protection.

Interestingly in conflict-affected regions, apart from the ethnic dimensions, we do not find a particularly strong effect of the assertiveness of these kinds individuals, defined in terms of the above sociodemographic and economic characteristics. This suggests that there is something specific about the interaction of violence and ethnicity.

Finally, an interpretation that we have not emphasized yet is that of the group capture of some activities. These groups could be ethnic communities specializing in specific activities linked to their economic or political background. Certain social classes may be better positioned to access and control some of these social benefits — for example, on network, localization, or information grounds. However, these dimensions are already controlled by the variable OGRP, which is made exogenous through instrumentation.

VI. Conclusion

A. Questions and methods

How do ethnic solidarities and rivalries, among other things, determine citizen participation in heterogeneous local community activities in Indonesia and help overcome free riding? Our strategy to answer this question is to study the impact of moderate violent conflict on these participations to learn about hidden mechanisms by examining how violence interacts with local ethnic configuration for different activity types.

AVThis paper analyses how citizen participation in a broad range of local socio-economic community activities in Indonesia diversely responds to low intensity forms of violent conflict, and how they interact with local ethnic configurations. It is based on micro-level activity participation and conflict event panel data in Indonesia at the turn of

the millennium. A causal identification strategy is grounded on spatial and ethnic network relationships.

We find causal evidence for heterogeneous effects of moderate violence on a set of permanent local community activities, which interacts with local ethnic configuration and involement. The results show the danger of generalization when dealing with these issues since a variety of responses emerges depending on the socio-economic functions of the activities and the local ethnic context.

B. Results

Citizen participation is found to substantially decline in the areas affected by group violence over this period. This is ascertained separately for a large scope of local groups, ranging from local governance to social services, and risk-sharing activities, though to varying extents.

However, in communities with a high degree of ethnic polarization, local involvement in community activities is far less impacted by conflict than in ethnically homogeneous environments. Participation in risk-sharing activities is even rising, perhaps as a response to violence. Though, when considered in districts without violence, ethnic polarization rather discourages individual participation in local community activities.

Individual engagement in most community activities is stimulated by the relative presence of one's own ethnic group and discouraged by the participation of people from the other ethnic groups. We find evidence for reinforcing interactions between local ethnic configuration, involvement of each ethnic group in each activity and the effect of a diffuse context of violence.

Ethnic divisions are hence likely to worsen in times of violence. The homophile tendency extends beyond ethnic identity, to the better-off and the well-educated, still in times of violent conflict.

This points to a greater risk of exclusion for some ethnic, social, or economic minorities.

IIRPWhat has been learned about the functioning of community activities by looking at how violent conflict affects them? First, we found that local community activities are not immune to violence. They cannot constitute a sufficient safety net when market and state institutions are disrupted by conflict.

Another valuable finding is that observed and unobserved individual heterogeneities are crucial in understanding community activities and their relationship with violence. Controlling for activity heterogeneity reveals diverse and original effects then vary with the activity type. There are broad classes of social and economic activities that differ in their responses to the risk of violence and their interactions with ethnic characteristics. The infrastructure groups, security groups and cooperatives are relatively weakly influenced by violence and local ethnic situations. However, the activities of infrastructure development and maintenance are slightly depressed by high violence intensity recorded in the same district. The security groups appear to be stimulated by the combination of a violent environment, high polarization and prominent involvement of the own ethnic group. The cooperatives are fostered by the relative participation of the own group, and by high violence intensity in highly ethnically polarized villages. There may be an ethnic capture of cooperatives, notably in stressful times.**IIT**

In contrast, governance activities and social services are massively affected by violence and local ethnic configurations. Moreover, they share relatively similar patterns for these effects. When they are not combined, polarization and violence both tend to diminish citizen engagement in these activities. On the opposite, the interaction of these variables raises participation. Finally, in violent and ethnically polarized contexts, the participation of the own-group contributes to further reduce participation in social services and governance but to raise it in security groups.

Security, infrastructure and cooperative groups are weakly influenced by violence and ethnicity **IIT**. Still, infrastructure groups are slightly depressed by a high degree of violence. Participation in security groups is stimulated by the combination of violence, ethnic polarization and own-group involvement. Participation in cooperatives is fostered by own group presence participation and by violence under polarization.

In contrast, other activities are massively affected by violence and ethnicity. Governance and social services share similar patterns in this respect. When considered separately, violence and polarization reduce participation in these activities. However, the combination of polarization and violence spurred these participation. Finally, the combination of these two factors with participation of the own ethnic groupe depresses participation in social services and governance, but increases participation in security groups.

Local community activities are not immune to violence. Furthermore, participation responses - including to: violence, ethnic configuration and other factors - substantially vary across activity types. Besides, it is incorrect to assume that homogeneous effects of violence on community activities would uniformly apply to any context. Notably, the local ethnic context matters a lot for the realized impact of news about local violence. The effect of violence on activities is heterogeneous along ethnic lines and with respect to unobservables.

The results suggest, at least for Indonesia, that participation in some activities can stimulated by conflict situations, because they may be part of socio-economic of political strategic responses of ethnic groups, which are observable by violence shocks and that relative group positions matter for these responses.

Some community activities turn out to be resistant to conflict when there is ethnic polarization locally, whereas polarization rather depletes participation in a non-violent contexts. However, this outcome is offset by the additional inequity that may emerge

when the activity is captured by a given group. This generates an original kind of efficiency-equity trade-off.

C. Ethnic cohesion under violence

In our data, different ethnic configurations are found to correspond to distinct participation responses to violent conflict contexts. Local own-group presence, ethnic polarization and own-group relative participation in the considered activity, including when they are interacted with violence, provide a decent summary of the roles of the ethnic links in participation processes.

The influence of the ethnic configuration raises questions**?** about the political, social and economic bases of ethnic relationships, and their origin, as discussed in Kanbur, Rajaram, and Varshney (2011). If violence worsens group divisions, it also tightens some social groups. Accordingly, involvement in common activities may facilitate the emergence of future social links.[23]. In the long term, new social groups may result from individual grouping dynamics, and engagement in community activities may facilitate this processes. In that case, news about violent conflict may speed up this construction in polarized contexts. However, what we also see is that locally existing and dominating ethnic groups benefit more from these reinforcements, and that some ethnicities can be excluded from these processes. As a consequence, a strong pre-existing ethnic root in some activity groups may makes these group-emergence mechanisms more powerful. This is also the case when there is more ethnic polarization locally.

A few theoretic mechanisms can be evoked to interpret the estimated results. Although such reflections are clearly speculative, they may suggest fertile research directions. First, more cooperative behavior with own kin and oppositions to other ethnic

[23] For example, Das Gupta and Kanbur (2007) investigate theoretically how ethnic and class divisions interrelate.

groups may emerge when a local political equilibrium is shocked by news about violence. Second, cooperation may emerge as reflecting greater demand for insurance, spurred by these news. This may be insurance against risk affecting personal physical safety or household property. Third, as mentioned before, under violence, community activities may substitute for social and economic functions that are normally ensured by markets and public institutions. Fourth, adverse expectations about the capacity of these markets and public institutions to function properly or even to exist in the future may incite some individuals to get more engaged in local social capital, with strategies that may account for the local ethnic configuration. Finally, news about violence may also change people beliefs and expectations about what actions other community members could pursue, including the way these actions are likely to vary according to ethnic lines.

- Within-group cooperation increases, as well as the opposition to other groups, when the local political equilibrium between ethnic groups is shocked by news about local violence. For example, some concrete payoffs may be changed, such as trade opportunities.

- Within-group cooperation increases when insurance demand increases because informal insurance systems often operate within ethnicities. This is notably the case for insurance against violence, following news about local violence.

- Following news about local violence, there is substitution of community activities for public and market institutions. If different ethnicities control different public administrations, market networks and community activities. This implies rise in within-ethnicity ties and relaxation of inter-ethnicity ties.

- News about local violence change beliefs and expectations in the local strategic political game among ethnic groups. In that case, polarization may stimulate more radical strategies. In particular, the increase in participation in some activities under violence may be part of the strategic responses of opposing ethnic groups.

- Elite capture, and ethnic capture, of some strategic activities (governance, business support, social services) can be made more urgent by news about violence that raise feelings of uncertainty.

What the results also suggest is that noxious social phenomena may occur within community groups: conflict between ethnicities, corruption, kleptocracy, exclusion, and capture by an ethnic group or by elites. Part of these may correspond to the estimated relationships. Because of them, local community activities should not be considered as a development panacea, as too often the case. As for any human organization, they are subject to human interests and greed, and to struggles between groups. In that sense, CDD involve efficiency-equity trade-offs with some activities made more resistant to violence but generating higher inequity, when they are captured by a specific ethnic group.

REFERENCES

Alesina, A., R. Baqir, and W. Easterly. 1999. "Public Goods and Ethnic Divisions." *Quarterly Journal of Economics*, Vol. 114(4), 1243–1284, November.

Alesina, A., and E. La Ferrara. 2002. "Participation in Heterogeneous Communities." *Quarterly Journal of Economics*, 115(3), 847–903.

Alesina, Michalopoulos and Papaioannou (2016), 'Ethnic Inequality,' *Journal of Political Economy*, Vol. 124, N. 2, 428-488, April.

Arcand, J.-L., and M. Fafchamps. 2012. "Matching in Community-Based Organizations." *Journal of Development Economics*, 96, 203–219.

Attanasio, O., A. Barr, J. Camilo Cardenas, G. Genicot, and C. Meghir. 2012. "Risk Pooling, Risk Preferences, and Social Networks." *American Economic Journal: Applied Economics*, 4(2), 1–37.

Baland, J.-M., and J.-P. Platteau. 1997. "Wealth Inequality and Efficiency in the Commons. Part I: the Unregulated Case." *Oxford Economic Papers*, 49, 451–482.

Baltagi, B. and Young-Jae Chang. 1994. "Incomplete Panels: A Comparative Study of Alternative Estimators for the Unbalanced One-Way Error Component Regression Model," *Journal of Econometrics*, Vol. 62, Issue 2, 67-89.

Baltagi, B. and Young-Jae Chang. 2000. "Simultaneous Equations with Incomplete Panels," *Econometric Theory*, Vol. 16, April, 269-279.

Banerjee, A., L. Iyer, and R. Somanathan. 2008. "Public Action for Public Goods." *The Handbook of Development Economics*, Volume 4, Chapter 49, Amsterdam, Elsevier B.V.

Bauer, M., A. Cassar, and J. Chytilova. 2011. “Warfare and Social Preferences in Children.” University of San Francisco Discussion Paper.

Bauer, Michal, Christopher Blattman, Julie Chytilova, Joseph Henrich, Edward Miguel, and Tamar Mitts. 2016. "Can War Foster Cooperation?", *Journal of Economic Perspectives*, 30(3): 249-274.

Beard, V. A. 2005. “Individual Determinants of Participation in Community Development in Indonesia.” *Environment and Planning C: Government and Policy*, 23, 21–39.

Beard, V. A. 2007. “Household Contributions to Community Development in Indonesia.” *World Development*, 35(4), 607–25.

Bell, A. and K. Jones, “Explaining Fixed Effects: Random Effects Modeling of Time-Series Cross-Sectional and Panel Data,” *Political Science Research and Methods*, Vol. 3(1), 133-153, January 2015.

Bellows, J., and E. Miguel. 2009. “War and Local Collective Action in Sierra Leone.” *Journal of Public Economics*, 93(11–12), 1144–57.

Blattman, C. 2009. “From Violence to Voting: War and Political Participation in Uganda.” *American Political Science Review*, 103(2), 231–47.

Blattman, C., and E. Miguel. 2010. “Civil War.” *Journal of Economic Literature*, 48(1), 3–57.

Blomberg, S. B., and G. D. Hess. 2006. “How Much Does Violence Tax Trade?” *The Review of Economics and Statistics*, 88(4), 599–612.

Bowen, J. R. 1986. “On the Political Construction of Tradition: Gotong Royong in Indonesia.” *Journal of Asian Studies*, 45(3), 545–61.

Cameron, L. A. 2000. “Poverty and Inequality in Java: Examining the Impact of the Changing Age, Educational and Industrial Structure.” *Journal of Development Economics*, 62, 149–80.

Campbell, D. E. 2009. “Civic Engagement and Education: An Empirical Test of the Sorting Model.” *American Journal of Political Science*, 53(4), 771–786.

Chadha, N. and N. Bharti. 2017. “Ethnic Fragmentation and School Provision in India.” Mimeo India Development Foundation.

Chamberlain, G. 2010. “Binary Response Models for Panel Data: Identification and Information.” *Econometrica*, 78(1), 159–168.

Chen, D. L. 2010. “Club Goods and Group Identity: Evidence from Islamic Resurgence during the Indonesian Financial Crisis.” *Journal of Political Economy*, 118(2), 300–354.

Choi, J.-K., and S. Bowles. 2007. “The Coevolution of Parochial Altruism and War.” *Science*, 318, 636–40.

Colletta, N. J., and M. L. Cullen. 2000. *Violent Conflict and the Transformation of Social Capital*. Washington DC: The World Bank.

Collier, P. 1999. “On the Economic Consequences of Civil War.” *Oxford Economic Papers*, 51, 168–183.

DasGupta, I., and R. Kanbur. 2007. “Community and Class Antagonism.” *Journal of Public Economics*, 91, 1816–42.

De Luca, G. 2011. “Civil War and Political Participation in Uganda.” Paper presented at the 2011 HiCN network workshop, Barcelona.

Esteban, J. and D. Ray (1994), 'On the Measurement of Polarization,' *Econometrica,* Vol. 62, No. 4, pp. 819-851.

Esteban, J. and D. Ray (2011), 'Linking Conflict to Inequality and Polarization,' *American Economic Review*, 101, 1345-1374, June.

Esteban, J., L. Mayoral and D. Ray (2012), 'Ethnicity and Conflict: An Empirical Study,' *American Economic Review*, 102(4), 1310-1342.

Gilligan, M., B. Pasquale, and C. Samii. 2014. "Civil War and Social Capital: Behavioral Game Evidence from Nepal." *American Journal of Political Science*, 58(3), 604-19.

Grosjean, P. 2014. "Conflict and Social and Political Preferences: Evidence from World War II and Civil Conflict in 35 European Countries," *Comparative Economic Studies*, September, Volume 56, Issue 3, pp 424–451.

Gugerty, M. K., and M. Kremer. 2008. "Outside Funding and the Dynamics of Participation in Community Associations." *American Journal of Political Science*, 52(3), 585–602.

Kanbur, R., P. K. Rajaram, and A. Varshney. 2011. "Ethnic Diversity and Ethnic Strife: An Interdisciplinary Perspective." *World Development*, 39(2), 147–58.

La Ferrara, E. 2002. "Inequality and Group Participation: Theory and Evidence from Rural Tanzania." *Journal of Public Economics*, 85, 235–273.

Levinson, D., and K. Christensen. 2003. *Encyclopedia of Modern Asia.* New York: Charles Scribner's Sons.

Lee, L-F. 2007. "Identification and estimation of econometric models with group interactions, contextual factors and fixed effects," *Journal of Econometrics*, vol. 140(2), 333-374, October.

Lin, J. Y., and J. B. Nugent. 1995. "Institutions and Economic Development," in J. Behrman and T. N. Srinivasan (Eds.), *Handbook of Development Economics,* Volume II, Chapter 38, Amsterdam: Elsevier S.B.V.

Madden, D., and P. Barron. 2002. *Violence & Conflict Resolution in 'Non-Conflict' Regions: The Case of Lampung, Indonesia*. Kuala Lumpur, Indonesia: The World Bank.

Montalvo, J., and M. Reynal-Querol (2005a), 'Ethnic Polarization, Potential Conflict, and Civil Wars,' *American Economic Review*, 95(3), 796-816.

Montalvo, J., and M. Reynal-Querol (2005b), 'Ethnic diversity and economic development,' *Journal of Development Economics*, 76, 293-323.

Muller, C., and M. Vothknecht. 2017. *Participation in Community Activities in Indonesia*, mimeo Aix-Marseille University.

Panggabean, A. R., and B. Smith. 2009. *Explaining Anti-Chinese Riots in Late 20th Century Indonesia*, mimeo, University of Florida.

Patriat, L. 2008. *La décentralisation indonésienne - Une expérience de démocratisation radicale et chaotique*, IRASEC.

Pinchotti, S., and P. Verwimp. 2007. "Social Capital and the Rwandan Genocide: A Micro-Level Analysis." HiCN Working Paper 30.

Ravallion, M., and M. Lokshin. 2007. "Lasting Impacts of Indonesia's Financial Crisis." *Economic Development and Cultural Change*, 56, 27–56.

Reynal-Querol, M. 2002. “Ethnicity, Political Systems, and Civil Wars.” *Journal of Conflict Resolution*, 46(1), 29–54.

Rohner, D., M. Thoenig, and F. Zilibotti. 2013. “Seeds of Distrust: Conflict in Uganda.” *Journal of Economic Growth*, 18(3), 217-52.

Strauss, J., K. Beegle, B. Sikoki, A. Dwiyanto, Y. Herawati, and F. Witoelar. 2004. “The Third Wave of the Indonesia Family Life Survey (IFLS): Overview and Field Report.” WR-144/1-NIA/NICHD.

Varshney, A. 2001. “Ethnic Conflict and Civil Society: India and Beyond.” *World Politics*, 53, 362–398.

Varshney, A., R. Panggabean, and M. Z. Tadjoeddin. 2004. “Patterns of Collective Violence in Indonesia (1990–2003).” UNSFIR Working Paper 04/03.

Verpoorten, M. 2009. “Household Coping in War- and Peacetime: Cattle Sales in Rwanda, 1991–2001.” *Journal of Development Economics*, 88(1), 67–86.

Voors, M. J., E. E. M. Nillesen, E. H. Bulte, B. W. Lensink, and P. Verwimp. 2012. “Violent Conflict and Behavior: A Field Experiment in Burundi.” *American Economic Review*, 102(2), 941–64.

Weinstein, Jeremy M. 2007. *Inside Rebellion: The Politics of Insurgent Violence*. Cambridge and New York: Cambridge University Press.

Wilson, C. 2005. *Overcoming Violent Conflict: Peace and Development Analysis in Indonesia*. Jakarta: CPRU-UNDP.

Table 1. Overview of Community Organizations

CATEGORY	**Activity** *(Indonesian Term)*	**Background Information**
LOCAL GOVERNANCE	**Community Meeting** Including Village Advisory Board activities *Pertemuan Masyarakat*	Community meetings are organized at various levels. The RT (*Rukun Tetangga*, neighborhood) is the lowest tier of governmental hierarchy and comprises about 20–50 households. The neighborhood association is supposed to manage various community matters, and usually also organizes the neighborhood watches.
	Women's Association activities *Kegiatan PKK*	The Women's Family Welfare Organization (PKK) was first promoted in 1972 as a national organization. The PKK is organized at all administrative tiers, from the neighborhood to the national level, and mainly organizes health and education services.
SOCIAL SERVICES *(Females Only)*	**Community Weighing Post** *Posyandu*	The integrated community health post (*Posyandu*) is run by volunteers and provides preventative health care for young children. There are over 200,000 *Posyandu* spread out in urban and rural areas, in general supported by sub-district health centers and their trained staff.
	Voluntary Labor *(Jumat Bersih)*	*Jumat Bersih* ("Clean Friday Movement") is intended to promote healthy living behavior with emphasis on personal, domestic, and community hygiene starting on Thursday evenings.
INFRASTRUCTURE DEVELOPMENT *(Males Only)*	**Program to Improve the Village/Neighborhood** Street improvement, public facilities *Program Perbaikan Kampung (KIP, MHT, Konblokisasi)*	The Kampung Improvement Program (KIP) mainly addresses the housing problems of low- and middle-income households. Typical activities include the building or renovation of school and health facilities, the improvement of the living space (lighting, footpaths), or the reduction of housing density. MHT is a part of the nation-wide KIP program.
	System for Drinking Water *Sistem mengelola air untuk minum*	Activities aimed at the improvement of the neighborhood infrastructure, such as the installation of a public pump system or the construction of public washing areas (MCK, referring to bath, wash, toilet).
	System for Garbage Disposal *Sistem mengelola sampah padat*	Set-up and maintenance of a system for garbage disposal.
MUTUAL INSURANCE	**Neighborhood Security Organization** *Ronda/Siskamling*	*Ronda*, neighborhood watches, have a long tradition, especially on Java. This non-paid community service is provided by volunteers and typically organized at the neighborhood or street level. *Siskamling* describes private security units whose guards might receive a small salary and also protect public or business facilities.
	Cooperatives Includes all types and levels of cooperative *Kooperasi*	Cooperatives encompass a wide range of organizations. In general, a cooperative is intended to pool resources and to share risks among a group of actors with similar economic or social needs. This might include retailers' cooperatives, credit unions, or agricultural cooperatives.

Table 2. Conflict Indicators – Summary Statistics

Variable	N. Obs.	Mean	Std. Dev.	Min	Max
Whole Sample					
Violence at district level: Number of fatalities	192	7.8	39.7	0	263
Violence at district level: No fatalities (dummy)	192	0.625	0.485	0	1
Violence at district level: ≥ 5 fatalities (dummy)	192	0.089	0.285	0	1
Violence at district level: ≥ 10 fatalities (dummy)	192	0.057	0.233	0	1
Whole Sample – Jakarta Excluded					
Violence at district level: Number of fatalities	182	1.3	4.3	0	40
Violence at district level: No fatalities (dummy)	182	0.648	0.479	0	1
Violence at district level: ≥ 5 fatalities (dummy)	182	0.060	0.239	0	1
Violence at district level: ≥ 10 fatalities (dummy)	182	0.033	0.179	0	1
Java Only					
Violence at district level: Number of fatalities	154	9.5	44.2	0	263
Violence at district level: No fatalities (dummy)	154	0.617	0.488	0	1
Violence at district level: ≥ 5 fatalities (dummy)	154	0.097	0.297	0	1
Violence at district level: ≥ 10 fatalities (dummy)	154	0.071	0.258	0	1

Table 3. Prevalence of Activities and Individual Participation Rates

Category	Prevalence of Activities (%)		Individual Participation			
	1997	*2000*	*1997*		*2000*	
			Obs. *	*Share PA***	*Obs.*	*Share PA*
Local Governance	99.5	100.0	5,675	48.2	7,607	30.2
Social Services****	100.0	100.0	4,257	52.3	5,244	34.7
Infrastructure Development*****	96.5	96.5	1,795	77.8	1,979	59.6
Neighborhood Security Groups*****	98.5	96.5	2,012	73.5	1,197	54.8
Cooperatives	70.5	79.4	1,066	23.1	2,412	13.6

* Conditional on the Individual Knowledge of the Existence of Activities.

** Participation (PA) equals 1 if engaged in at least one of the activities in a category. Participation is 0 when the respondent is not participating, but aware of at least one of the activities in a given category.

*** Females only; ***** males only.

Table 4. Descriptive Statistics

Variable	N. Obs.	Mean	Std. Dev.	Min	Max
Individual Characteristics					
Age	24974	37.5	16.7	14	111
Sex (1: Male)	24974	0.462	0.499	0	1
No education	24974	0.154	0.361	0	1
Primary education	24974	0.444	0.497	0	1
Junior high school	24974	0.153	0.360	0	1
Senior high school	24974	0.195	0.396	0	1
Higher education	24974	0.054	0.227	0	1
Employment: private worker	24972	0.253	0.434	0	1
Employment: self-employed	24972	0.265	0.441	0	1
Employment: unpaid family worker	24972	0.083	0.276	0	1
Employment: government worker	24972	0.039	0.195	0	1
Hours normally worked per week	24974	28.2	27.9	0	112
Monthly income (in 1,000 Rp.,[a] 2000 prices)	24973	235.3	717.6	0	30,000
Married	24974	0.643	0.479	0	1
Household head or spouse	24974	0.602	0.489	0	1
Dummy: seriousness of the respondent not excellent or good[b]	24974	0.223	0.416	0	1
Household Characteristics					
Age household head	9002	47.6	14.5	15	111
Household consumption (adult equivalent, in 1,000 Rp., 2000 prices)	8507	215.4	282.2	3.5	6,526.3
Household asset value, relative rank in the community	9002	0.522	0.289	0.022	1
Household with farm production	9002	0.349	0.477	0	1
Household with income from non-farm business	9002	0.349	0.494	0	1
Female-headed household	9002	0.179	0.381	0	1
Number of household adults	9002	4.0	2.0	1	20
Experience of a shock (natural disaster)	9002	0.281	0.449	0	1
Household has moved to this community in the last two years	9002	0.014	0.117	0	1
Household owns a television	9002	0.539	0.499	0	1
Community Characteristics and Province Dummies					
Rural	394	0.389	0.487	0	1
Total population	394	12,867	19,587	825	236,500
Average HH asset value in the village (in Mio. Rp.)	394	71.4	102.3	5.7	1,079.18
Within-village Gini index of asset inequality	394	0.530	0.123	0.171	0.885
Index of ethnic polarization	378	0.354	0.361	0	0.99
Index of ethnic fractionalization	378	0.222	0.240	0	0.82
Province dummy: Jakarta	394	0.175	0.381	0	1
Province dummy: Jawa Barat	394	0.259	0.439	0	1
Province dummy: Jawa Tengah	394	0.183	0.387	0	1
Province dummy: Jawa Timur	394	0.226	0.419	0	1
Province dummy: Nusa Tenggara Barat	394	0.081	0.274	0	1
Province dummy: Sulawesi Selatan	394	0.076	0.266	0	1

[a] Exchange rate in 2000: 1 US-$ ~ 3,000 IDR

[b] As assessed by the interviewer.

Table 5: Base linear RE regression results:

(only ethnicity and violence variables reported)

Continued…	*Governance*	*Social Service*	*Infrastructure*	*Security*	*Cooperatives*
Village Characteristics					
Index of Ethnic Polarization	0.06**	0.08***	0.05	0.04	0.05
	(0.015)	(0.009)	(0.281)	(0.312)	(0.147)
Population Share of one's own Ethnicity in the Village	0.06**	0.06**	0.07	0.07	0.03
	(0.012)	(0.049)	(0.120)	(0.118)	(0.362)
Relative Participation Share Own vs. Other Ethnic Groups	0.09***	0.04**	0.02	0.05	0.39***
	(0.000)	(0.048)	(0.545)	(0.200)	(0.000)
Conflict Coefficients					
Low Intensity: 1-9 Fatalities	-0.06***	-0.08***	-0.05**	-0.02	-0.05***
	(0.000)	(0.000)	(0.015)	(0.408)	(0.009)
High Intensity: ≥ 10 Fatalities	-0.10***	-0.13***	-0.07	-0.13**	-0.03
	(0.000)	(0.000)	(0.175)	(0.043)	(0.293)
IA: Low Intensity x High Polarization	0.04*	0.04*	0.04	-0.04	0.07**
	(0.051)	(0.088)	(0.294)	(0.227)	(0.028)
IA: High Intensity x High Polarization	0.07**	0.09**	-0.05	0.06	0.12***
	(0.030)	(0.021)	(0.427)	(0.437)	(0.003)
Observations	12100	8628	3414	2851	3195
Individuals	8601	5481	2760	2381	2754
Average Obs. per Individual	1.407	1.574	1.237	1.197	1.160
Rho	0.221	0.156	0.155	0.170	0.104

Linear RE Regression. Reported: coefficient estimates. P-values in parentheses. Same control variables as in Table 1. * significant at 10%; ** significant at 5%; *** significant at 1%. [a] Reference category: Age Group 15-24 Years, [b] Reference category: Primary education; [c] Reference category: Individuals not working, [d] Reference category: 2nd and 3rd Quantile. [e] Reference category: Central Java.

*Table 6: IV regression results: instrumented for violence and violence*polarization and for relative participation share of own group*

Continued…	***Governance***	***Social Service***	***Infrastructure***	***Security***	***Cooperatives***
Village Characteristics					
Index of Ethnic Polarization	-0.25***	-0.25**	-0.07	-0.12	-0.05
	(0.00)	(0.01)	(0.62)	(0.42)	(0.43)
Population Share of one's own Ethnicity in the Village	0.09***	0.06*	0.11**	0.10*	0.06
	(0.00)	(0.07)	(0.03)	(0.05)	(0.13)
Relative Participation Share Own vs. Other Ethnic Groups	0.06***	0.10***	0.01	0.04	0.36***
	(0.00)	(0.00)	(0.73)	(0.41)	(0.00)
Conflict Coefficients					
Low Intensity: 1-9 Fatalities	-0.13***	-0.14***	-0.05	-0.09	-0.06
	(0.00)	(0.00)	(0.52)	(0.37)	(0.29)
High Intensity: ≥ 10 Fatalities	-0.39***	-0.39**	-0.09	-0.07	-0.17*
	(0.00)	(0.01)	(0.59)	(0.71)	(0.08)
IA: Low Intensity x High Polarization	0.43***	0.49***	0.23	0.19	0.19**
	(0.00)	(0.00)	(0.29)	(0.38)	(0.05)
IA: High Intensity x High Polarization	0.55***	0.53***	0.06	0.03	0.32***
	(0.00)	(0.01)	(0.76)	(0.89)	(0.01)
Observations	9,414	6,778	2,681	2,385	2,484
Individuals	6,714	4,291	2,169	1,984	2,167
Average Obs. per Individual	1.40	1.58	1.24	1.20	1.15

Linear RE Regression. Reported: coefficient estimates. P-values in parentheses. Same control variables as in Table 1. * significant at 10%; ** significant at 5%; *** significant at 1%. Instrumented variables are indicated in bold. Instruments used: (1) Share of neighboring districts with 1-9 conflict-related fatalities, (2): share of neighboring districts with 10 or more conflict-related fatalities

Hausman test:

	Governance	***Social Service***	***Infrastructure***	***Security***	***Cooperatives***
Hausman chi2:	33.2	16.5	7.24	3.36	10.8
P-Values Hausman Test:	0.80	1.00	1.00	1.00	1.00

Table 8: IV regression results

*Instrumented for violence and violence*polarization, relative participation share of own group and for the interaction of all three variables*

Continued…	***Governance***	***Social Service***	***Infrastructure***	***Security***	***Cooperatives***
Village Characteristics					
Index of Ethnic Polarization	-0.33***	-0.19*	-0.05	0.07	-0.01
	(0.00)	(0.10)	(0.73)	(0.69)	(0.83)
Population Share of one's own Ethnicity in the Village	0.03	0.05	0.07	0.15	0.03
	(0.37)	(0.38)	(0.18)	(0.10)	(0.48)
Relative Participation Share Own vs. Other Ethnic Groups	0.48***	0.21	0.35	-0.55	0.87***
	(0.00)	(0.25)	(0.10)	(0.25)	(0.01)
Conflict Coefficients					
Low Intensity: 1-9 Fatalities	-0.17***	-0.14**	-0.07	0.10	-0.00
	(0.00)	(0.02)	(0.43)	(0.38)	(0.98)
High Intensity: ≥ 10 Fatalities	-0.23***	-0.46***	-0.27*	0.09	-0.05
	(0.00)	(0.00)	(0.09)	(0.57)	(0.56)
IA: Low Intensity x High Polarization	0.62***	0.45***	0.23	-0.25	0.12
	(0.00)	(0.01)	(0.33)	(0.38)	(0.22)
IA: High Intensity x High Polarization	0.37***	0.53***	0.22	-0.23	0.18*
	(0.00)	(0.00)	(0.27)	(0.29)	(0.07)
IA: Low Intensity x High Polarization x Rel. PA Share Own Ethnic Group	-0.63*	-0.16	-0.72	1.78**	0.30
	(0.07)	(0.79)	(0.29)	(0.01)	(0.81)
IA: High Intensity x High Polarization x Rel PA Share Own Ethnic Group	-0.09	-2.61**	0.27	-0.54	-1.18
	(0.83)	(0.04)	(0.66)	(0.75)	(0.38)
Observations	9,414	6,778	2,681	2,385	2,484
Individuals	6,714	4,291	2,169	1,984	2,167
Average Obs. per Individual	1.40	1.58	1.24	1.20	1.15

Linear RE Regression. Reported: coefficient estimates. P-values in parentheses. Same control variables as in Table 1. * significant at 10%; ** significant at 5%; *** significant at 1%. Instrumented variables are indicated in bold. Instruments used: (1) Share of neighboring districts with 1-9 conflict-related fatalities, (2): share of neighboring districts with 10 or more conflict-related fatalities; (3): IA (1)*high polarization; (4): IA (2)*high polarization; (5)-(8): squared terms of (1)-(4); (9) prediction rel. PA of own group, (10) group size, (11) group size squared, (12) prediction / group size; (13) IA (9)*(1)*high polarization; (14) IA (9)*(2)*high polarization; (16) squared terms of 13 and 14.

TO CHECK THE IV LIST

Table 9: Simulations

Mean Participation Probabilities

I. LOW ETHNIC POLARIZATION

Activity	**Low Conflict Intensity Districts**			**High Conflict Intensity Districts**		
	"No Violence" Counterfactual	Mean Participation Probability	*Relative Difference: Violence to Peace (%)*	"No Violence" Counterfactual	Mean Participation Probability	*Relative Difference: Violence to Peace (%)*
Local governance	34.0	26.5	*-7.6*	29.8	18.3	*-11.5*
	(0.46)	(0.41)	*(0.06)*	(1.30)	(1.01)	*(0.35)*
Social services	44.4	35.6	*-8.8*	38.6	23.2	*-15.4*
	(0.47)	(0.44)	*(0.05)*	(1.48)	(1.14)	*(0.41)*
Infrastructure development	75.6	69.6	*-6.1*	71.0	63.4	*-7.7*
	(0.52)	(0.58)	*(0.07)*	(1.72)	(1.86)	*(0.19)*
Neighborhood security group	66.9	64.9	*-2.0*	61.9	47.0	*-14.9*
	(0.97)	(0.98)	*(0.02)*	(3.35)	(3.27)	*(0.50)*
Cooperatives	9.1	5.8	*-3.4*	4.7	2.2	*-2.5*
	(0.48)	(0.36)	*(0.13)*	(0.56)	(0.29)	*(0.27)*

II. HIGH ETHNIC POLARIZATION

Activity	**Low Conflict Intensity Districts**			**High Conflict Intensity Districts**		
	"No Violence" Counterfactual	Mean Participation Probability	*Relative Difference: Violence to Peace (%)*	"No Violence" Counterfactual	Mean Participation Probability	*Relative Difference: Violence to Peace (%)*
Local governance	42.2	39.2	*-3.0*	24.9	22.4	*-2.5*
	(0.78)	(0.77)	*(0.03)*	(0.69)	(0.65)	*(0.04)*
Social services	52.9	48.1	*-4.8*	31.3	26.5	*-4.8*
	(0.82)	(0.81)	*(0.05)*	(0.77)	(0.70)	*(0.08)*
Infrastructure development	74.0	73.0	*-1.0*	48.7	40.3	*-8.4*
	(0.89)	(0.91)	*(0.02)*	(0.87)	(0.84)	*(0.08)*
Neighborhood security group	76.7	70.2	*-6.5*	64.0	54.8	*-9.3*
	(1.02)	(1.14)	*(0.15)*	(1.63)	(1.69)	*(0.16)*
Cooperatives	15.1	14.2	*-0.9*	2.1	5.5	*3.4*
	(1.12)	(1.08)	*(0.05)*	(0.17)	(0.40)	*(0.23)*

Mean estimations. Standard errors in parentheses.

Participation Probabilities by Relative Participation of the Own Ethnic Group

► HIGH ETHNIC POLARIZATION AND HIGH CONFLICT INTENSITY

Activity	*Relative Participation Share of own Group: < 0*		*Relative Participation Share of own Group: [0, 0.25]*		*High Relative Participation of own Group: > 0.25*	
	"No Violence" Counterfactual	Actual Participation Probability	"No Violence" Counterfactual	Actual Participation Probability	"No Violence" Counterfactual	Actual Participation Probability
Local governance	26.2	19.4	24.6	20.9	34.6	36.1
	(1.04)	(0.89)	(1.10)	(1.02)	(1.98)	(1.99)
Social services	30.6	20.9	32.3	29.0	40.3	44.4
	(0.96)	(0.75)	(1.40)	(1.34)	(2.41)	(2.50)
Infrastructure development	45.4	34.0	53.7	47.3	45.4	46.8
	(1.08)	(0.95)	(1.50)	(1.51)	(2.51)	(2.64)
Neighborhood security group	66.0	59.5	61.1	48.0		
	(2.09)	(2.15)	(2.63)	(2.79)		
Cooperatives	1.5	3.2	2.3	5.7	7.7	20.5
	(0.15)	(0.31)	(0.38)	(0.87)	(1.04)	(2.20)

Mean estimations. Standard errors in parentheses.

Table 9: Violence Interacted with Other Variables

I. HIGHER EDUCATION

DV: ***Participation***	*(1)* ***Governance***	*(2)* ***Social Service***	*(3)* ***Infrastructure***	*(4)* ***Security***	*(5)* ***Cooperatives***
Low Intensity: 1-9 Fatalities	-0.096***	-0.103***	-0.051**	-0.051*	-0.018**
	(0.000)	(0.000)	(0.039)	(0.077)	(0.010)
High Intensity: ≥ 10 Fatalities	-0.092***	-0.130***	-0.130***	-0.100	-0.007
	(0.001)	(0.000)	(0.004)	(0.115)	(0.528)
IA: Low Intensity x Secondary Education or More	0.046	0.024	-0.007	0.014	0.019
	(0.121)	(0.556)	(0.859)	(0.780)	(0.230)
IA: High Intensity x Secondary Education or More	-0.002	0.009	0.077*	-0.015	0.080***
	(0.989)	(0.866)	(0.098)	(0.834)	(0.006)

II. LOW ASSETS

DV: ***Participation***	*(1)* ***Governance***	*(2)* ***Social Service***	*(3)* ***Infrastructure***	*(4)* ***Security***	*(5)* ***Cooperatives***
Low Intensity: 1-9 Fatalities	-0.089***	-0.116***	-0.061***	-0.054**	-0.015**
	(0.000)	(0.000)	(0.007)	(0.044)	(0.026)
High Intensity: ≥ 10 Fatalities	-0.094***	-0.146***	-0.046	-0.118**	0.018
	(0.000)	(0.000)	(0.262)	(0.039)	(0.166)
IA: Low Intensity x Low Assets (25th per cent.)	0.015	0.081**	0.035	0.030	0.006
	(0.612)	(0.011)	(0.351)	(0.489)	(0.661)
IA: High Intensity x Low Assets (25th per cent.)	0.000	0.094*	-0.163***	0.038	-0.014
	(0.966)	(0.091)	(0.007)	(0.614)	(0.353)

III. HIGH ASSETS

DV: ***Participation***	*(1)* ***Governance***	*(2)* ***Social Service***	*(3)* ***Infrastructure***	*(4)* ***Security***	*(5)* ***Cooperatives***
Low Intensity: 1-9 Fatalities	-0.095***	-0.091***	-0.070***	-0.044	-0.015**
	(0.000)	(0.000)	(0.003)	(0.110)	(0.029)
High Intensity: ≥ 10 Fatalities	-0.087***	-0.122***	-0.132***	-0.046	-0.003
	(0.001)	(0.000)	(0.003)	(0.408)	(0.831)
IA: Low Intensity x High Assets (25th per cent.)	0.035	-0.031	0.055	-0.008	0.005
	(0.174)	(0.330)	(0.121)	(0.864)	(0.680)
IA: High Intensity x High Assets (25th per cent.)	-0.020	-0.029	0.092**	-0.194**	0.054**
	(0.635)	(0.572)	(0.035)	(0.024)	(0.028)

Each pair of coefficients from a different regression (control variables as in Table 5). Reported: coefficient estimates.
P-values in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.