Community organization and armed group behaviour

Evidence from Colombia

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Abstract: This paper investigates how armed groups affect the organization of local communities during armed conflict in Colombia. We estimate the effect of communities' exposure to armed groups with an econometric specification that takes into account individual and municipality-year fixed effects and an instrumental variable approach that exploits variations in the presence of armed groups in rural communities induced by the peace negotiations with members of the Revolutionary Armed Forces of Colombia—People's Army. Our results show that the presence of armed groups in each community between survey rounds is accompanied by a reduction in the participation of individuals in local organizations in communities with a strong institutional set-up before the arrival of the armed group. We observe the opposite effect in communities with weaker pre-existing institutions. These results are consistent with a theoretical model in which armed groups capture local organizations for strategic war purposes.

Note: online appendix available here (https://www.wider.unu.edu/publication/community-organization-and-armed-group-behaviour)

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1   Introduction

Armed groups entering new territories need to find strategies to control them and the populations within. Control over the civilian population by non-state armed groups is often exercised through violent means, but not always, nor everywhere (Arjona et al. 2015; Justino 2013; Justino and Stojetz 2019; Kalyvas 2006; Mampilly 2011). This is particularly the case for rural-based insurgencies where rebel groups, unable to directly confront larger and better-equipped state forces through military means, must resort to co-opting and organizing civilians to gain the necessary strength to effectively contest opposing factions and control key territories (Kalyvas 2006; Weinstein 2007). Well-known examples of actors shaping these local wartime dynamics include Hezbollah in Lebanon, the Liberation Tigers of Tamil Eelam (LTTE) in Sri Lanka, the Taliban in Afghanistan pre-2021, and the Revolutionary Armed Forces of Colombia—People's Army (FARC) in Colombia, among many others.

One way in which armed groups ensure the control of local communities is by capturing and controlling local institutions that organize community daily life. By doing so, armed groups capture and co-opt local organizations, replace local leaders, and make use of local organizations to ensure the indoctrination and compliance of local civilians. The capture and co-optation of local institutions during wars has been well documented, ranging from the capture of civic organizations by the Nazi and Fascist parties in Germany and Italy during the Second World War (Riley 2005; Satyanath et al. 2017) to more modern civil wars (Arjona et al. 2019; Kaplan 2017; Mampilly 2011; Tambiah 1986; Wood 2008). Civilians are not passive towards these actions. Some may decide to support armed groups, while others may organize themselves to resist and repel them and maintain their autonomy (Gupte et al. 2014; Justino 2015; Kaplan 2017; Krause 2018).

Understanding these complex interactions between armed groups and civilians during wartime is important because they may shape the course of the war and lead to different pathways of recovery and state-building in the post-conflict period. Yet, to date, we have limited knowledge about how decisions made by armed groups and civilians in wartime shape each other and what institutional frameworks may result from such interactions. This paper seeks to advance this area of research by building a theoretical framework to formally model the choices faced by armed groups and civilians with respect to the organization of local communities. Some of the model predictions are then tested for the case of Colombia.

The theoretical model explores the interplay between the strategies used by armed groups towards local organizations and the response of the local population to these strategies. According to the model, a community characterized by a predetermined level of institutional capacity is assessed by the armed group in terms of its attractiveness for the group's general war strategy. Once in the community, the group decides to capture local organizations as a mechanism to control the population (dominance strategy) or decides not to interfere in community-driven initiatives (libertarian strategy). The gains of capture for the armed group increase with the share of the population that participates in these organizations, while its costs are fixed. The local population observes the actions of the armed group and chooses whether to participate in local organizations. Capture by the armed group decreases the utility of participation in communities with strong pre-existing institutional capacity and increases it in communities with weaker pre-existing institutional capacity. Agency losses and the risk of victimization might explain the former, while the use of participation to show obedience and compliance to the armed group explain the latter. Regardless of the level of pre-existing institutional capacity, the utility of participation in communities where a libertarian armed group is present is identical to the utility of participation when the armed group is not present. In equilibrium, the armed group will only capture organizations with a sufficiently

high level of pre-existing institutional capacity, where it can reach a sufficiently large share of the population through these organizations.

We extend the model to allow for civilian agency in the use of local organizations as a mechanism of resistance towards the dominance of the armed group. Resistance increases the cost of capture to the armed group. The armed group anticipates effective resistance in communities with pre-existing strong institutional capacity and adopts a libertarian position in these communities. In a situation of equilibrium with resistance, we should not observe changes in participation induced by the presence of the armed group in communities with strong pre-existing institutional capacity, while participation should increase in communities with weak institutional capacity. The heterogeneity in the predictions of the model about the effects of the armed group in equilibrium with dominance and with resistance respectively allow us to empirically test these alternative mechanisms.

This empirical analysis is based on a panel dataset collated in Colombia in 2010, 2013, and 2016, which collected detailed data on how community members participate in and engage with local organizations and on armed groups' presence across 224 communities during the latter part of the Colombian conflict. To measure pre-existing institutional capacity at the community level, we compiled information from public records on parliamentary fiscal transfers from the National Congress to social organizations in rural communities in 1977.[1] We estimate the effects of the presence of armed groups on participation across communities with different levels of pre-existing institutional capacity. The main identification strategy exploits the panel structure of the data to estimate the effects of the presence of armed groups on differences in individuals' participation in local organizations between survey waves. We control for individual and municipality-wave fixed effects and time-variant community characteristics. In alternative specifications, we propose an instrumental variable that exploits the decrease in the presence of armed groups in rural communities caused by the peace negotiations between the Colombian government and the FARC, and conduct robustness checks on potential biases due to sample selection and sorting induced by individual migration. We find that changes in the presence of armed groups in any given community between survey waves increase the participation in community organizations of individuals living in communities with low pre-existing institutional capacity and reduce the participation of individuals in local organizations in communities with high pre-existing institutional capacity. This result is consistent with the theoretical predictions of a model with a dominance equilibrium.

This analysis offers a significant contribution to how we understand the emergence of order and control in conflict areas, by better elucidating the complex interactions between armed groups and civilians during wartime. In the case of Colombia, the empirical results indicate the prevalence of a dominance equilibrium whereby armed groups captured and co-opted local organizations to advance their purposes. The model identifies, however, the conditions under which other equilibria—libertarian and resistance—may emerge in other settings. This offers an integrated framework within which to study how institutional change emerges and evolves in conflict areas. This is important because it may lead to different pathways of institutional change in the post-conflict period. Greater capture of institutions by armed groups may facilitate their consolidation of power and strengthen their institutional capacity but may also hinder the ability of civilians to exercise autonomy and set in place effective forms of collective action in the aftermath of war. Greater resistance by civilians may lead to more fluid relations between armed groups and civilians and reduce the institution-building capacity of rebel groups. However, it may also increase the

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[1] We thank Robert Karl for sharing these data with us.

autonomy of local communities (Kaplan 2017), as well as their capacity for mobilization and collective action, which in turn may increase the likelihood of democratization in post-conflict countries (Huang 2016).

2   Theoretical model

During wartime, different actors contest and sometimes win control of territories and populations, transforming social, economic, and political structures, organizations, and norms (Kalyvas 2006; North et al. 2009). Non-state armed actors opt for varying strategies when attempting to control local populations: from victimizing, displacing, and looting, to capturing or creating local institutions for the provision of public goods and security, the organization and control of local markets and political structures, and the enforcement of social norms. Recent literature has shown that while some armed groups act in violent and predatory ways towards local populations, others—particularly in the case of insurgencies due to the asymmetrical military power between government forces and insurgencies—concentrate on gaining the support of civilians (or at least ensuring their compliance). To this purpose, insurgent groups make use existing local institutions, or build new ones, to better exercise control of territories they have gained by establishing (voluntary or coercive) alliances, coalitions, and other forms of interaction and negotiation with local communities (Kalyvas 2006; Mampilly 2011; Wood 2003, 2008). These may reflect patterns of (overt or covert) social and political mobilization prior to the conflict, or they may be new alliances and networks shaped by the conflict itself (Wood 2008).

Local populations, on their part, exercise some degree of agency despite the hardship of living under (the threat of) violence. Individuals in communities where a new armed group arrives may join together in forms of collective action to either collaborate with armed groups or resist them (or other behaviours in between). Some endure the presence of armed actors by obeying their rules, others resist, either peacefully or by forming armed defence groups, and others voluntarily participate and support a variety of armed groups (Arjona 2016; Petersen 2001; Wood 2003).[2] Collaboration may happen when communities share the ideological views or strategic objectives of armed groups, or when the alliance brings economic advantages (Acemoglu et al. 2014; Kalyvas 2006; Kaplan 2017; Wood 2003, 2008). Alternatively, armed groups may employ coercive means, appropriate local institutions for their own purposes, or replace community leaders with their own supporters (Acemoglu et al. 2014; Kaplan 2017).

The effect of these complex interactions on local institutional dynamics has remained weakly understood at both theoretical and empirical levels. We attempt here to build on this body of literature to develop a theoretical model and extract a set of testable hypotheses on the causal mechanisms that may shape the effects of armed groups on local community organizations. Below, we present a model that explains the decision of armed groups to establish a presence in a given territory and the participation choices of rural residents in contexts of conflict. In the appendix, we show explicitly all the proofs for the propositions of the model below.

2.1   Model general set-up

We start with a rural community of agents of size 1 denoted by sub-index i. For simplicity, we assume that only one armed group is present (or not) in the community. There is an infinite

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[2] Local populations may also resort to armed groups for physical and economic protection, especially when the state is weak, inadequate, or abusive (Goodwin 2001; Justino 2009, 2013; Kalyvas and Kocher 2007).

number of time periods, which we denote by t. At every period, the armed group makes choices about whether to establish a presence in the community and about the type of strategy it adopts regarding local organizations (predation or not). Once rural residents observe the choices made by the armed group, they decide whether to participate in community organizations. The community has a pre-existing level of institutional capacity, $s \in S$, which is fixed and does not depend on time-varying choices of agents in the community.[3] We assume that pay-offs are realized at the end of every period and depend only on the contemporaneous actions of the rural residents and the armed group. Figure 1 depicts the choices of the armed group and of community members in the form of an extensive game representation.

Figure 1: Armed group and community members: choices and pay-offs
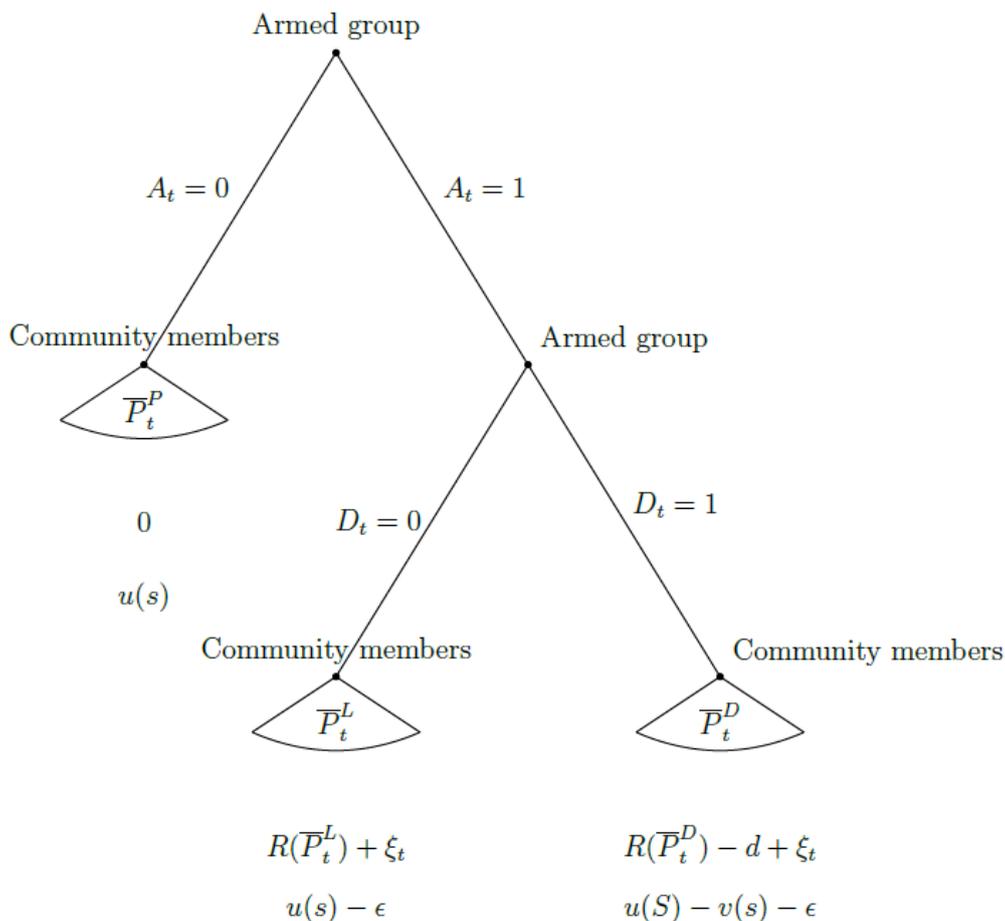
Note: the figure depicts the structure of the game proposed in the theoretical framework; see text for more details.

Source: authors' construction.

2.2 To capture or not: armed group choices

At the beginning of every period, the armed group assesses the attractiveness of a given rural community. This attractiveness depends on the stage of the war and on how predetermined community characteristics contribute to the armed group's war strategy at that stage. These characteristics may have to do with the geographical location of the community, their resource endowments, or other exogenous characteristics that may induce the armed group to control the community as part of its war strategy at specific periods. For simplicity, we assume that the attractiveness of the community at time t can be summarized by the index ξ_t. The armed group observes ξ_t and decides whether or not to establish a presence in the community. We denote the choice of presence by the armed group by $A_t = \{0,1\}$, where $A_t = 1$ if present at time t. Without loss of generality, we normalize the index such that $A_t = 1$ if $\xi_t \geq 0$.

Once in the community, the armed group gains full information about the preferences of community members and levels of pre-existing institutional capacity. With this information, the armed group decides about the type of strategy it will adopt towards community organizations. One choice is to adopt a predatory strategy by capturing community organizations to control local populations and the territory. Evidence from Italy and Germany has revealed how the Fascist and Nazi parties captured pre-existing civic organizations to spread their message, recruit members, co-opt leaders, and take advantage of pre-existing successful organizational techniques (Riley 2005; Satyanath et al. 2017). In more recent civil wars, Wood (2008) discusses how the Sendero Luminoso in Peru forced people to attend meetings and publicly killed community leaders to impose control over local communities. Similar accounts are described in Tambiah (1986) in the case of the LTTE in Sri Lanka and in Kaplan (2017) in the case of Colombia. The capture and control of organizations allow armed groups to impose governance rules, raise revenue, exercise political authority, control territory, and gather information (Kalyvas 2006; Mampilly 2011, 2015; Weinstein 2007). Throughout this section, we refer to this predatory strategy as a *dominance strategy* towards community organizations, or *capture*. Alternatively, the armed group can seek to gain the support of civilians by not interfering in community-driven initiatives and organizations. We refer to this as a *libertarian strategy* towards community organizations.

Let $D_t = 1$ if the armed group adopts a dominance strategy towards community organizations and $D_t = 0$ otherwise.[4] We assume that the gains of capture for the armed group increase with the share of rural residents that participate in these organizations, since this represents the share of residents the armed group can reach through capture. Let $\overline{P}_t$ be the share of rural residents that participate in community organizations at time t. The gains from capture are determined by the function $R(\overline{P}_t)$, which is continuous, differentiable, and monotonically increasing. We assume that capture generates a cost d for the armed group. The armed group adopts a dominant strategy, $D_t = 1$, if $R(\overline{P}_t) > d$.

2.3 Participation in community organizations: civilian choices

Rural residents observe the behaviour of the armed group in the community and decide whether to participate in community organizations. This decision depends on the utility they derive from

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[4] For simplicity, we assume that a predatory strategy implies capturing all community organizations. An equivalent assumption is that there is only one organization in the community.

participating, relative to not participating. We refer to this as their outside option.[5] We denote the participation decision by $p_{it} = \{0,1\}$, with $p_{it} = 1$ if individual i participates at time t. We assume that the presence of the armed group in the community decreases the utility of rural residents by a constant factor, ϵ, regardless of individual participation in community organizations. This decrease in utility reflects a general risk of victimization, the imposition of taxes, rules of behaviour, ideological disagreement, and other economic and social costs associated with the arrival of non-state armed actors in the community (Kaplan 2017). We also assume that the utility from participating in local organizations is identical across individuals in the community and depends on (i) the pre-existing institutional capacity of the community, s, and (ii) the dominance strategy of the armed group in the case of presence D_t.

Let W_t represent the utility for residents of participating in community organizations at time t. This utility can be written as:

$$W(s; A_t, D_t) = u(s) - v(s)A_t D_t - \epsilon A_t \tag{1}$$

with u and v increasing and continuously differentiable. The function u captures the direct utility of participating in community organizations. We assume that this utility increases with the level of the community's pre-existing institutional capacity, because collective action might be more successful in communities with stronger institutions. The function v represents the cost or benefit for community members of participating in organizations that have been captured by the armed group. We also assume that this cost increases with higher levels of pre-existing institutional capacity, as the risk of victimization may be higher for politically active individuals in institutionally stronger communities,[6] and agency losses due to the capture of the armed group might also be larger in these communities. In communities with sufficiently low pre-existing institutional capacity, rural residents may use participation in community organizations as a way of showing obedience to and compliance with the armed group, resulting in additional gains from participation when armed groups decide to capture these organizations under the dominance strategy. Assumption 1 summarizes these ideas.

Assumption 1. *Functions u and v are monotonically increasing and continuously differentiable functions that satisfy the following properties:*

i. $u' > 0$, $v' > 0$, and $u' > v'$ for all $s \in S$

ii. $u(s) > 0$ for all $s \in S$

iii. $\exists \, \bar{s} \in S$ such that for $s \in S, v(s) \leq 0$ if $s \leq \bar{s}$ and $v(s) > 0$ if $s > \bar{s}$

The first part of Assumption 1 implies that pre-existing institutional capacity always increases the overall utility of participation, despite higher utility losses from armed group capture in communities with pre-existing stronger institutional capacity.[7] The second part of the assumption implies that rural residents always derive positive utility from participation in community organizations in the absence of the armed group. The last part of the assumption implies that if

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pre-existent institutional capacity in the community is sufficiently low, the dominance of armed groups makes participation more attractive. Civilians may, for example, participate in captured organizations to show obedience towards the armed group and thus minimize the risk of victimization (Kalyvas 2006; Kalyvas and Kocher 2007; Korf 2004). By contrast, if the pre-existing institutional capacity of the community is sufficiently high, any dominance strategy adopted by the armed group will reduce the individual utility of participation. This reduction in utility might reflect the risk of being targeted due to political involvement or the utility losses that result from armed groups using social networks and structures in communities with strong institutions as a mobilization and recruitment mechanism (Daly 2016; Kalyvas 2006;).

Rural residents make their participation choices by taking into account their reservation utility in case of not participating, which is given by:

$$\overline{U}_i = \overline{u}_i - \epsilon A_t \tag{2}$$

This reservation utility has an idiosyncratic component, $\overline{u}_i$, which depends on individual characteristics and represents a heterogeneous utility that each community member would get in case of not being involved in local organizations. We assume that $\overline{u}_i$ is independent and identically distributed within the community, with cumulative distribution function G. The reservation utility also has a common component for all community members, capturing the common utility losses resulting from the presence of armed groups in the community ϵ.

Every period, rural residents participate in community organizations ($p_{it} = 1$) if the utility of participation exceeds their reservation utility:

$$W(s; A_t, D_t) \geq \overline{U}_i \tag{3}$$

2.4 Equilibrium

Every period, the equilibrium is characterized by the participation choices of community members, p_{it}^*, armed group presence, A_t^*, and dominance strategy of the armed group, D_t^*, such that

$$p_{it}^* = \begin{cases} 1 & \text{if } W(s; A_t^*, D_t^*) \geq \overline{U}_i \\ 0 & \text{otherwise} \end{cases} \tag{4}$$

$$A_t^* = \begin{cases} 1 & \text{if } \xi_t \geq 0 \\ 0 & \text{otherwise} \end{cases} \tag{5}$$

$$D_t^* = \begin{cases} 1 & \text{if } R(Pr(\overline{U}_i \leq W(s; A_t^* = 1, D_t^* = 1))) > d \\ 0 & \text{otherwise} \end{cases} \tag{6}$$

We define three types of equilibria depending on the presence of the armed group in the community and its dominance strategy. Below, we discuss the average participation in each of these equilibria.

Dominance equilibrium

Dominance equilibrium takes place at time t if the armed group is present in the community, $A_t^* = 1$, and captures community organizations, $D_t^* = 1$. In this case, average participation is given by:

$$\overline{P}_t^D = E[p_{it}^* | A_t^* = 1, D_t^* = 1, s] = Pr(\overline{u}_i \leq u(s) - v(s)) \tag{7}$$

Libertarian equilibrium

Libertarian equilibrium takes place at time t if the armed group is present in the community, $A_t^* = 1$, but does not capture community organizations, $D_t^* = 0$. In this case, average participation is given by:

$$\overline{P}_t^L = E[p_{it}^*|A_t^* = 1, D_t^* = 0, s] = Pr(\overline{u}_i \le u(s) \tag{8}$$

Peaceful equilibrium

Peaceful equilibrium takes place at time t if the armed group is not present in the community. In this case, average participation is given by:

$$\overline{P}_t^P = E[p_{it}^*|A_t^* = 0, s] = Pr(\overline{u}_i \le u(s)) \tag{9}$$

The following proposition compares average participation in the peaceful equilibrium with participation in the two alternative equilibria in which the armed group is present in the community.

Proposition 1. *For every time period t and r, we have*

i. $\overline{P}_t^L - \overline{P}_r^P = 0$

ii. If $s \le \overline{s}$, then $\overline{P}_t^D - \overline{P}_r^P \ge 0$

iii. If $s > \overline{s}$, then $\overline{P}_t^D - \overline{P}_r^P < 0$

Proof. See appendix.

Proposition 1 implies that the effect of the dominance strategy adopted by armed groups on average individual participation depends on the pre-existing institutional capacity of the community. If pre-existing institutional capacity is sufficiently low, average participation under dominance is greater than average participation when the armed group is not present in the community. By contrast, if pre-existing institutional capacity is sufficiently high, the adoption of a dominance strategy by the armed group will decrease average participation compared with the peaceful equilibrium. For example, some individuals may remove themselves from local organizations for fear of being targeted or are removed forcibly by the armed groups and replaced by more compliant leaders (Kaplan 2017).

The type of equilibrium that takes place in the community depends on the attractiveness assessment by the armed group, and on whether the armed group adopts a dominance strategy when it arrives in the community. The latter depends on the participation of community members in local organizations relative to the cost of capture. If attractiveness assessment $\xi_t \ge 0$, then there is a dominance equilibrium if and only if:

$$R(E[p_{it}^*|A_t^* = 1, D_t^* = 1]) = R(Pr(\overline{u}_i \le u(s) - v(s))) > d \tag{10}$$

Since $u(s) - v(s)$ is increasing in s and R is monotonically increasing, $R(Pr(\overline{u}_i \le u(s) - v(s)))$ is also increasing in s. The expression in 10 implies that the armed group will adopt a dominance strategy if the community's pre-existing institutional capacity is sufficiently high, such

that a sufficiently large share of rural residents can be reached through the capture of community organizations. Also, the armed group will always capture community organizations if the cost of doing so, d, is sufficiently low relative to s. In Proposition 2, we formalize this argument and define the effect of armed group presence on average participation, taking into account the optimal capture strategy of the armed group, which varies with the pre-existing institutional capacity of the community and the cost of dominance.

Proposition 2. *Let $\hat{s}$ be a level of pre-existing institutional capacity such that $R(Pr(\overline{u}_i \leq u(\hat{s}) - v(\hat{s}))) = d$. Then,*

i.   If $s \leq \hat{s} \Rightarrow R(Pr(\overline{u}_i \leq u(s) - v(s))) \leq d \Rightarrow D_t^*|_{\xi_t \geq 0} = 0$

     If $s > \hat{s} \Rightarrow R(Pr(\overline{u}_i \leq u(s) - v(s))) > d \Rightarrow D_t^*|_{\xi_t \geq 0} = 1$ (11)

ii. *For a lower d, the threshold of pre-existing institutional capacity for dominance in the community ($\hat{s}$) is lower.*

Proof. See appendix.

Proposition 2 implies that if the pre-existing institutional capacity of the community is above (below) the threshold $\hat{s}$, then it is optimal for the armed group to adopt a dominance (libertarian) strategy. The participation response to the presence of an armed group in the community would then depend on the dominance strategy of the armed group (determined by the magnitude of s relative to $\hat{s}$) and how participation is affected by dominance (determined by the magnitude of s relative to $\overline{s}$).

Proposition 3

i. If $s > \max\{\hat{s}, \overline{s}\}$, *then a dominance equilibrium takes place whenever the armed group is present in the community, and average participation decreases in the presence of the armed group: $E[p_{it}^*|A_t^* = 1, s] - E[p_{it}^*|A_t^* = 0, s] < 0$.*

ii. If $s \leq \max\{\hat{s}, \overline{s}\}$, *either a dominance or a libertarian equilibrium can take place when the armed group is present, and average participation does not decrease in the presence of the armed group: $E[p_{it}^*|A_t^* = 1, s] - E[p_{it}^*|A_t^* = 0, s] \geq 0$.*

Proof. See appendix.

Proposition 3 implies that if the community has sufficiently high pre-existing institutional capacity ($s > \max\{\hat{s}, \overline{s}\}$), the armed group will adopt a dominance strategy and participation will decrease with the presence of the armed group. Proposition 1 implies that we will observe changes in the participation of community members across time, depending on the presence of the armed group in each period.

Proposition 3 also implies that if the pre-existing institutional capacity of the community is below $\max\{\hat{s}, \overline{s}\}$, participation does not decrease in the presence of the armed group. Whether the armed group adopts a dominance strategy or not in this case depends on the size of s relative to $\hat{s}$. According to the first part of Proposition 2, if $s > \hat{s}$ then the armed group captures community organizations. According to the second part of Proposition 2, if the cost of dominance is low, the threshold of pre-existing institutional capacity that will determine the adoption of a dominance strategy becomes low too, increasing the likelihood that $s > \hat{s}$.

Note that if the cost of dominance is sufficiently low that $\hat{s} < \inf S,$ there is a dominance equilibrium whenever the armed group is present in the community. If this is the case, if $s > \bar{s}$, participation decreases with the presence of the armed group, and if $s \leq \bar{s}$, participation does not decrease the presence of the armed group.

Similarly, if the cost of dominance is sufficiently high that $\hat{s} > \sup S,$ there is a libertarian equilibrium whenever the armed group is present in the community and for any level of pre-existing institutional capacity, $s \in S$, participation in community organizations does not change in response to the presence of the armed group.

To summarize, the theoretical model implies that the armed group captures organizations in communities with high pre-existing institutional capacity and adopts a libertarian strategy otherwise. The individual participation of rural residents in community organizations with a libertarian armed group does not change relative to participation when the armed group is not present in the community. By contrast, armed group dominance reduces individual participation in community organizations if pre-existing institutional capacity is high and increases participation if pre-existing institutional capacity is relatively low.

2.5   Civil resistance

In this section, we consider the possibility that civilians join local organizations as a way of strengthening local institutions and resisting the dominance of the armed groups. People in areas of conflict are not necessarily always pawns used in strategic warfare. All suffer greatly from the effects of violence, but many resist armed groups and shape the dynamics of conflict and violence on the ground (Justino 2009; Kalyvas 2006; Petersen 2001). Civilians may adopt open or hidden ways to resist armed groups (Petersen 2001; Wood 2003). Open resistance methods include armed defence groups. Wood (2003) reports how peasants in El Salvador resisted the state army by sometimes joining the rebel movement. Other resistance movements have taken the form of militia or civil defence groups, such as the Kamajor in Sierra Leone or paramilitary groups in El Salvador, Peru, and Colombia (Brockett 1990; Wood 2008). In Colombia, several accounts show that communities have taken control over their own security by creating self-defence and neighbourhood watch groups (Kaplan 2017). Covert resistance methods include acting as informants for opposing factions, undermining the activities of the groups, or forming hidden resistance groups (Arjona 2016; Petersen 2001; Wood 2003), such as the Lithuanian resistance against Soviet occupation in the 1940s (Petersen 2001), the actions of grassroots resistance movements against ETA (Euskadi Ta Askatasuna, 'Basque Homeland and Liberty') in the Spanish Basque country (Funes 1998), and peasant resistance ('*rondas campesinas*') against Sendero Luminoso in Ayacucho in Peru (Fumerton 2001). We modify the expression in Equation 1 to incorporate the effect of resistance on the utility of individuals participating in local organizations. In particular:

$$W(s; A_t, D_t) = u(s) - (v(s) - r(s))A_t D_t - \epsilon A_t \tag{12}$$

where the function r captures the role of resistance in mitigating the negative effects of dominance by the armed group. We modify Assumption 1 as follows:

Assumption 2. *The functions u, v, and r are increasing and continuously differentiable functions that satisfy the following properties:*

i. $u' > 0$, $v' > 0$, and $r' > 0$, $u' > v' - r'$ for all $s \in S$

ii. $u(s) > 0, v(s) > 0, r(s) > 0, r(s) > v(s)$ for all $s \in S$

The first part of Assumption 2 implies that the utility of participation increases with higher levels of pre-existing institutional capacity in a community. The second part implies that resistance is more effective in communities with stronger pre-existing institutional capacity. However, even in communities with low pre-exiting institutional capacity, resistance may allow communities to mitigate the potential negative effects of capture by armed groups.

Individual i participates in community organizations if:

$$u(s) - (v(s) - r(s))A_t D_t \geq \overline{u}_i \tag{13}$$

Resistance by the community increases the cost of capture for the armed group. In particular, we define the cost function, $d(\overline{P}_t)$, as monotonically increasing with $d'' > 0$. Thus, in equilibrium the armed group captures the organization if:

$$R(Pr(\overline{u}_i \leq u(s) - v(s) + r(s))) > d(Pr(\overline{u}_i \leq u(s) - v(s) + r(s))) \tag{14}$$

Proposition 4. *If there exists a $\overline{s}^r \in S$ such that* $R(Pr(\overline{u}_i \leq u(\overline{s}^r) - v(s) + r(\overline{s}^r))) = d(Pr(\overline{u}_i \leq u(\overline{s}^r) - v(\overline{s}^r) + r(\overline{s}^r)))$, *then*

i. If $s > \overline{s}^r$, libertarian equilibrium emerges whenever the armed group is present in the community, and average participation does not change with the presence of the armed group: $E[p_{it}^* | A_t^* = 1, s] - E[p_{it}^* | A_t^* = 0, s] = 0$.

ii. If $s \leq \overline{s}^r$, dominance equilibrium emerges and average participation increases with the presence of the armed group: $E[p_{it}^* | A_t^* = 1, s] - E[p_{it}^* | A_t^* = 0, s] > 0$.

Proof. See appendix.

Proposition 4 implies that if the community has sufficiently high pre-existing institutional capacity, then the armed group anticipates the effectiveness of resistance and adopts a libertarian strategy. Arjona (2016) shows that communities in Colombia with a history of stronger institutions were more likely to resist armed groups. In this case, average individual participation in community organizations does not change with the presence of armed groups. On the other hand, if the community has pre-existing institutional capacity that is below the threshold $\overline{s}^r$, individual participation in community organizations increases as a form of resistance to the dominance of the armed group. This increase in participation may not be high enough to dissuade the armed group from capturing local organizations. As a response to resistance, armed groups may in turn inhibit the functioning of local collective organizations to prevent civil resistance movements or alienate support for the opponent group (Azam and Hoefler 2002; Engel and Ibáñez 2007).

Resisting armed groups has considerable costs, including the risk of death, injury, displacement, or ostracism (Kalyvas and Kocher 2007; Kaplan 2017). In the case of the Colombian conflict, Arjona (2016) discusses how communities with high capacity for resistance were targeted and victimized by armed groups aiming to gain territorial control in strategic areas. But civilian resistance and the fight for autonomy in Colombia has also been widely reported (Kaplan 2017). We explore in the next section how processes of coalition formation, control, and capture by armed groups and resistance by civilians have shaped the relationship between armed group presence and local institutions in Colombia, before empirically testing the predictions of the theoretical model in Section 4.

3   The Colombian context

Colombia has been characterized by profound forms of institutional transformation as a result of decades of armed conflict. Two major internal conflicts have affected Colombia since 1940. The first erupted during the first half of the twentieth century due to a struggle between the two main political parties, the Liberals and the Conservatives. This period, known as La Violencia, ended in 1958 with a power-sharing agreement between the two parties which excluded leftist movements. Peasant organizations that emerged during the late period of La Violencia turned into liberal left-wing guerrilla groups during the early 1960s, after the incomplete implementation of a peace process (Karl 2017; Sánchez and Meertens 1983). The emergence of the illegal drug trade intensified the conflict by providing resources to left-wing guerrilla groups and promoting the creation of private armies to protect drug barons and some large landowners from guerrilla attacks (Sánchez and Palau 2006; Gutiérrez and Barón 2005). The conflict then expanded from isolated areas to areas with an abundance of natural resources and economic dynamism, and aggressions against the civil population escalated sharply. The paramilitary demobilization in 2003, along with an increase in public efforts to improve the provision of national security, resulted in a reduction in levels of violence. In 2016, a peace agreement with the FARC, the largest guerrilla group in the country, demobilized more than 13,000 combatants. However, violence persists in isolated areas of the country as the National Liberation Army, spoilers of the negotiation process with the FARC, and illicit drug trade groups continue to operate.

Violence against the civil population was intense in both conflicts. The period of La Violencia resulted in more than 200,000 deaths in rural areas (Sánchez and Meertens 1983). Between 1958 and 2012, approximately 220,000 people died due to the conflict, more than 4,700,000 people were forcibly displaced, 27,000 people were kidnapped, and 25,000 people were abducted (Grupo de Memoria Histórica 2013). During the peace agreements, violence against the population eased, and some of these reductions persist today. Homicide rates, sexual violence, forced displacement, and other forms of violence fell to their lowest levels in decades. However, other forms of violence have intensified significantly. More than 970 social leaders were killed between the signing of the peace agreement in 2016 and July 2020 (Noguera Montoya), and 42 incidences of massacres against civilians were reported by the United Nations in 2020 (UN 2020).

The presence of a range of armed groups and their strategic objectives strongly influenced social relations and local organizations due to their imposition of norms of behaviour and economic regulations. Guerrilla and paramilitary groups regulated day-to-day matters, controlled movements of the population, and assumed the role of the state in the regions under their control to marshal the support of the civil population (Arjona 2016; Grupo de Memoria Histórica 2011b; Gutiérrez and Barón 2005; Ronderos 2014). These groups enforced economic regulations by defining rules of extraction for natural resources, acting as intermediaries between communities and private enterprises, levying taxes, and defining rules for illicit crop cultivation (Grupo de Memoria Histórica 2010, 2011b; Ronderos 2014).

Non-state armed actors also co-opted or joined local authorities to control the population and capture local rents (Arjona 2016), aided by the decentralization process that started in 1988 and facilitated a closer relationship between local authorities and armed groups (Sánchez and Palau 2006). Armed actors sought to directly influence elections and frequently audited local authorities to enforce their government programme (Acemoglu et al. 2012; Grupo de Memoria Histórica 2010; Ronderos 2014).

These strategies debilitated many social networks and community organizations. Non-state armed actors instilled fear among the population and deliberately targeted community leaders and some

organizations to force collaboration. Willingness to participate in community organizations or collective activities decreased in many communities. Fear and the risk of aggression for anyone perceived as collaborators with opponent groups generated mistrust among the population. Many households retreated to private life and restricted social interactions to family and some close friends. The destruction of infrastructure, land mines, and compulsory confinement created further physical obstacles to collective activities (Grupo de Memoria Histórica 2010, 2011a).

Armed groups also captured local organizations and created new ones, imposing leaders and new members. For example, guerrilla groups used some religious and productive organizations, as well as trade unions, to disseminate their political agenda. In some areas, community organizations became a protection mechanism against violence. In others, armed groups faced civil resistance in communities with strong organizations (Kaplan 2017). In these places, armed groups busted into communities by influencing the actions of the JACs (Juntas de Acción Comunal), community action boards formed in 1958 for the purpose of counteracting weak state presence in geographically isolated areas and strengthening social networks. Armed groups forced the population to attend JAC sessions and coerced their members into participating in public work. Community members attended meetings and participated in organizations out of fear. Paramilitary groups, in particular, used the JACs to construct infrastructure, disseminate their rules of social behaviour, and collect valuable information for war activities (Ronderos 2014).

At the same time, some communities devised creative strategies to avoid total control over their organizations and collective life by non-state armed actors. Communities created new organizations with an apparent non-political purpose, such as sports, religious, and cultural organizations, to avoid targeting. Massive protests relying on religious signs were organized after the occurrence of overt human rights violations. Direct negotiations between armed groups and community representatives took place to ease rules of conduct, request mercy for threatened community members, and prevent asset seizure. Women started to play a predominant role in community organizations to reduce the visibility of men or after their death (Grupo de Memoria Histórica 2011a, 2013).

In subsequent sections, we empirically explore these complex interactions between armed groups and local institutions in conflict-affected areas in Colombia.

4   Data and empirical strategy

4.1   Data

We make use of several sources of data to investigate the impact of armed group presence on individual participation in local organizations in Colombia. Our main dataset is the Colombian Longitudinal Survey conducted by the Universidad de los Andes (ELCA).[8] It includes a sample of 10,800 households: 6,000 in urban areas and 4,800 in rural areas, over three panel waves (a baseline collected in 2010 and two follow-ups in 2013 and 2016). In this paper we use the rural sample, since the conflict in Colombia has mostly taken place in the rural areas. The survey includes a household and a community questionnaire. The household questionnaire collected detailed information on individual participation in social organizations for household heads and their spouses, among other socioeconomic variables. The rural community questionnaire was conducted among community leaders and elicited information on public infrastructure, economic

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[8] See https://encuestalongitudinal.uniandes.edu.co/es.

conditions, social interactions, and conflict dynamics in the community. For the 2010 sample, we have the exact geographical location of communities and the GPS co-ordinates of each household.

The rural sample of the ELCA is representative of small agricultural producers in four micro-regions: Atlantic, Central, Coffee-Growing, and South. Within each region, municipalities and communities were randomly chosen. The baseline sample includes 17 municipalities and 224 rural communities (each covering between 500 and 1,000 inhabitants). In every subsequent wave, enumerators resurveyed all households and, if the household had split off or migrated, tracked the household core group in their new households or host communities. This core group comprises the head, spouse, and children under nine in 2010. The attrition rate after three waves in 2016 was 13.5 per cent. Table D1 in the online appendix presents the total number of household heads and spouses included in the sample every year.[9]

We complement the information in the ELCA with two other sources of data. First, we digitized public records on parliamentary fiscal transfers from the National Congress to communities across Colombia in 1977. During the 1960s and 1980s, Congress members relied on these fiscal transfers to funnel resources for public investment in their regions. In rural areas, the allocation of these resources generally took place through local community action boards (JACs), which received and managed the funds (Rodríguez Valero and Maldonado Gómez 2020), creating a direct relationship between community organizations and Congress members. The latter used these relationships to strengthen their political support in the regions (Leal Buitrago and Dávila Ladrón de Guevara 1990).

We use data on parliamentary transfers as a measure of the pre-existing strength of institutional capacity in the community. We expect stronger community boards, with the capacity to mobilize more voters and closer contacts with Congress members, to be more likely to receive larger and steadier transfers. To match the information on fiscal transfers to community boards in the 1970s with communities today, we match names and geographical locations of the ELCA communities with the public records on parliamentary transfers. We are able to do this for all baseline communities for which we have the exact name and geographical location. This exercise allows us to compute a measure of pre-existing institutional capacity for all non-migrants and migrants living in baseline ELCA communities.[10] Table D1 in the online appendix presents the total number of migrants in this sample and the number of migrants for whom we have data on fiscal transfers in 1977. Further details about the sources of information and the matching procedure are provided in online Appendix B. Below, we present descriptive statistics for our main variables of interest.

We also use data from the Facultad de Economía Datos (CEDE) Municipality Panel on the presence of FARC in ELCA municipalities before the first survey wave, and data on total rainfall between survey rounds from the Colombian Institute of Hydrology, Meteorology (IDEAM).

4.2 Descriptive statistics on participation and armed group presence

Figure 2 shows the share of ELCA communities in which armed groups are present over time. Overall, there is a decrease in the presence of armed groups in the surveyed communities. Between 2002 and 2004, 16.5 per cent of communities had armed groups present. This share decreased to

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[9] This number may increase between rounds due to household divisions and decrease due to attrition or death.

[10] This is the case, for example, for those who migrate after the baseline and return to their community of origin by the last follow-up survey.

6.8 per cent between 2008 and 2010, and to 1.4 per cent after 2013, as the Colombian conflict reduced in intensity.

Figure 2: Proportion of ELCA communities with armed group presence across time
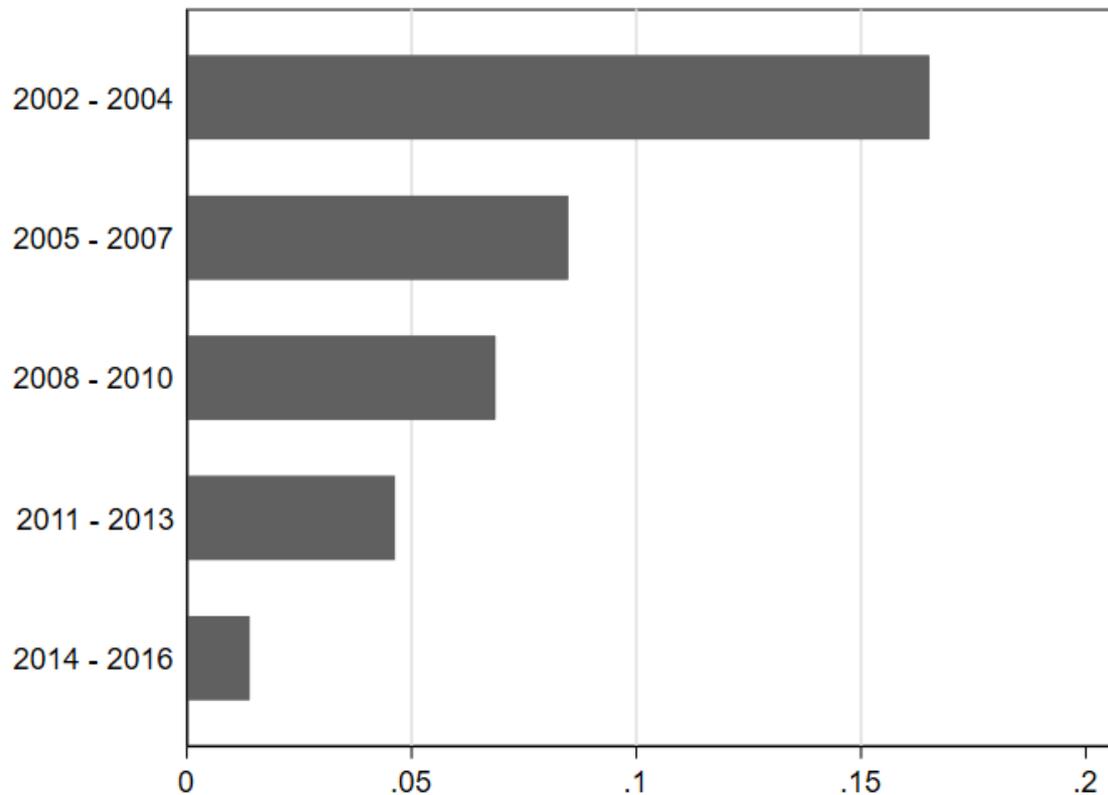
Source: authors' calculations based on ELCA data; data on armed group presence between 2002 and 2010 come from baseline survey, while data on presence between 2011 and 2013 and between 2014 and 2016 come from 2013 and 2016 follow-ups, respectively.

We split the sample of communities across three groups of pre-existing institutional capacity based on the distribution of the value of parliamentary transfers in 1977. [11] According to these data, 48 per cent of communities in the sample did not receive any transfers during this period. We define these as communities with low pre-existing institutional capacity. Twenty five per cent of the communities received up to 20,000 Colombian pesos (COP) in 1977 (equivalent to 8.5 times the minimum wage in 1977[12]). We define these as communities with intermediate levels of institutional capacity. Twenty seven per cent received a transfer of between COP20,000 and 230,000 (equivalent to between 8.5 and 98.3 times the minimum wage). These are communities defined as having high pre-existing institutional capacity (Figure D1 in online Appendix D).

Table D2 in the online appendix shows that communities defined as having strong pre-existing institutional capacity (according to the level of parliamentary transfers) benefit from a stronger presence of public institutions overall today. Communities with intermediate levels of pre-existing institutional capacity are more likely to have armed groups present. As shown in Figure 3, in earlier

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[11] The thresholds we use are equivalent to the terciles of the distribution of transfers, taking into account the density of the distribution at 0. In the online appendix we show that our results are robust to alternative thresholds.

[12] The minimum wage in 1977 was 2,340 COP per month.

years, communities with intermediate levels of parliamentary transfers have a higher presence of armed groups. These communities, as well as communities with high pre-existing institutional capacity, experience a sharp decrease in armed group presence after 2010. By 2014, armed groups are only present in communities with low pre-existing institutional capacity.

Figure 3: Proportion of ELCA communities with armed group presence, by pre-existing institutional capacity
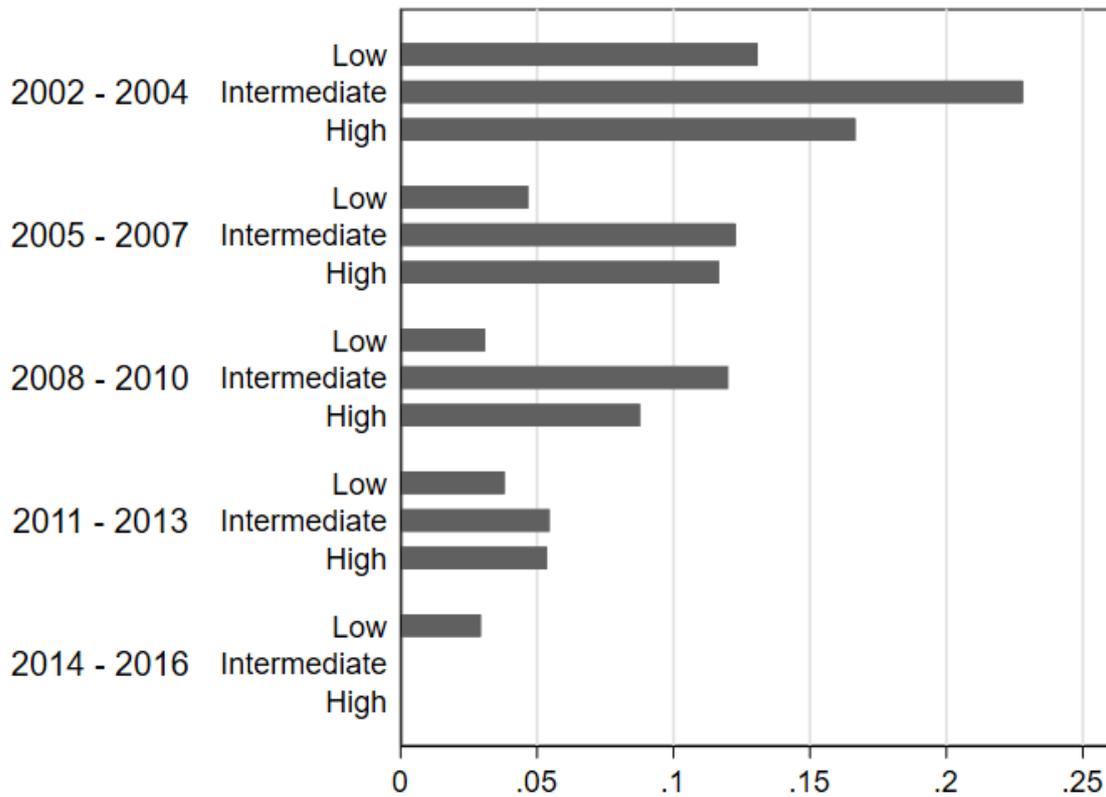
Source: authors' calculations based on ELCA data and public records on parliamentary transfers; data on armed group presence between 2002 and 2010 are compiled from the ELCA baseline survey; data on presence between 2011 and 2013 and between 2014 and 2016 are compiled from the 2013 and 2016 ELCA follow-ups, respectively; low, intermediate, and high pre-existing institutional capacity correspond to terciles of the distribution of parliamentary transfers in 1977.

The ELCA surveys include several detailed questions on local community organizations, which allows us to distinguish between different dimensions of how individual community members participate in those organizations. These dimensions include whether individuals take on leadership positions, attend meetings, and engage in decision-making processes within each local organization. These data allow us to assess not only *whether* individuals join collective organizations, but also *how they engage* in them. About 30 per cent of individuals in our sample participate in local collective organizations (see Table D3 in the online appendix). Twenty eight per cent regularly attend meetings and 13.2 per cent hold leadership roles. We observe some variation in individual participation in community organizations across survey rounds, with the highest levels of involvement in local organizations in 2013. Overall participation, leadership, and meeting

attendance are higher in communities with a presence of armed actors (see Table A 4.4 in the online appendix).[13]

4.3   Empirical strategy

The theoretical model outlined in Section 2 implies that if armed groups decide to control local communities by capturing local organizations (dominance strategy), we should observe an increase in individual participation in local organizations in communities with low pre-existing institutional capacity. Conversely, communities with high pre-existing institutional capacity should experience a reduction in individual participation in local organizations. On the other hand, if civilians use local organizations to resist the dominance of armed groups, in equilibrium we should not observe changes in individual participation in local organizations in communities with strong pre-existing institutions. We should, however, observe an increase in participation in communities with low pre-existing institutional capacity.

To test these predictions, we estimate the effect of armed group presence on individual participation in local organizations with the following equation:

$$P_{i,c,m,r} = \alpha_i^s + \gamma_{m,r}^s + \beta^s A_{c,m,r} + \Theta^s X_{i,c,m,r} + \epsilon_{i,c,m,r} \tag{15}$$

where $P_{i,c,m,r}$ takes the value of 1 if individual i (household head or spouse) in community c of municipality m and wave r participates in local organizations. $\alpha_i^s, \gamma_{m,r}^s$ are individual and municipality-wave fixed effects. $A_{c,m,r}$ takes the value of 1 if armed groups were present in the community between rounds.[14] $X_{i,c,m,r}$ are individual, household (age, sex, years of education, number of household members, number of children under five years of age, wealth index), and community (time to reach the municipal urban centre, total number of households, agricultural wages, total rainfall between rounds, number of public institutions, and public investment) controls. We estimate standard errors with two-way clustering at the community and municipality-wave level to allow for individual errors to be correlated within communities and municipality-waves.

We split the sample of communities across terciles of parliamentary transfers in 1977 and estimate Equation 15 independently for each sample, $s = \{q_1, q_2, q_3\}$. Table D5 in the online appendix reports descriptive statistics for the individual and household variables included in the regression across our three samples of pre-existing institutional capacity.[15]

Since we do not directly observe the actions of the armed groups in each community, we cannot estimate directly the parameters $\bar{s}$ and $\hat{s}$ of the theoretical model. However, observing a positive or null coefficient estimate for communities in the lowest tercile of parliamentary transfers, $\beta^{q_1} \geq 0$, together with a negative coefficient for communities in the highest tercile, $\beta^{q_3} < 0$, would indicate the adoption of a dominance strategy according to the model's predictions. In contrast, a null effect in communities with pre-existing institutional capacity, $\beta^{q_3} = 0$, together with a

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[13] We define a dummy variable equal to 1 if an armed group was present in the community in the year of the survey or within two years before that. For 2013 and 2016, this corresponds to the presence of armed groups between rounds.

[14] For the 2010 survey round, we computed the presence of armed groups between 2008 and 2010.

[15] As shown in the online appendix, in the theoretical framework the thresholds $\bar{s}$ and $\hat{s}$ can generate a partition of S in three categories; these can represent the three groups of communities that we explore here. However, since we cannot estimate $\bar{s}$ and $\hat{s}$, the choice of thresholds here is arbitrary.

positive coefficient in communities with pre-existing weak institutional capacity, $\beta^{q_1} > 0$, would provide evidence of a resistance equilibrium.

Our identification assumption is that by controlling for individual fixed effects and time-specific shocks at the municipality level, the exposure of individuals to armed groups at a certain period is orthogonal to time-specific shocks that determine participation in community organizations. In other words, our identification assumption implies that there are no unobservable shocks to armed group presence in the community that covary with unobservable shocks to individual participation, once we take into account the effect of time-varying factors at the municipality level and fixed individual characteristics. Violations of this identification assumption would emerge if, for example, within municipalities, armed groups systematically target areas with an increased number of community organizations. Although we cannot entirely rule out this possibility, in Section 5.1 we explore further the correlation between the presence of armed groups and time-varying characteristics of communities that might be correlated with local organizations. We show that once we take into account community fixed effects, the presence of armed groups between waves is uncorrelated with a broad set of time-varying socioeconomic conditions of the community. We interpret this evidence as reassuring in terms of the validity of our identification assumption. We also test the validity of the results in relation to potential selection caused by migration, in Section 5.2 below. We exploit the panel structure of our data to show that the presence of armed groups in the community of residence does not have a statistically significant effect on the likelihood of migration between waves, once we take into account individual fixed effects. There are also no statistically significant differences in participation between migrants and non-migrants before the migration.

5   Empirical results

5.1   Main results

Columns 1 to 3 of Table 1 present the results of the estimation of Equation 15 with community fixed effects. Each column includes the sample of communities in each tercile of the distribution of parliamentary transfers in 1977. In communities with high pre-existing institutional capacity, the presence of armed groups between waves is associated with a decrease in individual participation in community organizations (by 0.122 percentage points). The coefficient estimate for communities with low and intermediate pre-existing institutional capacity is not statistically significant. However, as shown by the 95 per cent confidence interval, in these samples we cannot rule out an effect that is positive and large in magnitude.

Columns 4 to 6 present the results for our preferred specification, which controls for individual fixed effects. For communities in the highest tercile of parliamentary transfers, the coefficient estimate for the presence of armed groups is negative, statistically significant, and similar in magnitude to the estimate controlling for community fixed effects (−0.119), representing a 43 per cent decrease in average individual participation in community organizations. Taken together, the results above strongly suggest that armed groups across ELCA communities largely adopted a strategy of institutional capture while present in the different communities.

Table 1: Participation in community organizations and armed group presence

	Pre-existing institutional capacity					
	Low	Intermediate	High	Low	Intermediate	High
	(1)	(2)	(3)	(4)	(5)	(6)
Armed group presence between waves	0.031	0.028	−0.122***	0.021	0.050	−0.119**
	(0.035)	(0.057)	(0.043)	(0.045)	(0.066)	(0.051)
	[−0.040—0.101]	[−0.088—0.145]	[−0.208—-0.036]	[−0.069—0.111]	[−0.086—0.185]	[−0.222—-0.015]
Observations	7,976	3,828	5,038	7,976	3,828	5,038
R-squared	0.163	0.132	0.162	0.592	0.557	0.592
Fixed effects (FE)	Community	Community	Community	Individual	Individual	Individual
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean dep. var.	0.308	0.294	0.276	0.308	0.294	0.276

Note: standard errors with municipality-year and individual cluster in parentheses, 95 per cent confidence interval in square brackets; all estimations include municipality-year dummies and control variables: age, age squared, sex, years of education, number of household members, number of children under five, wealth index, time to reach municipal urban centre, total number of households in the community, total rainfall between rounds, presence of public institutions in the community, and investments in public infrastructure between rounds; pre-existing institutional capacity defined as terciles of 1977 parliamentary transfers to the community; for the baseline survey, presence between waves corresponds to the presence of armed groups between 2008 and 2010; *** p<0.01, ** p<0.05, * p<0.1.

Source: authors' calculations based on ELCA data.

One possible confounding effect of the results above is the incidence of violence in each community. As discussed in Kalyvas (2006), violence typically intensifies when two groups contest the same territory but is likely to decline when one armed group becomes hegemonic, leading to full control of the territory and its population. The negative coefficients we observe in participation in communities with stronger pre-existing institutional capacity might thus be driven by an escalation of violence, as individuals may decide to reduce their participation in community organizations not because of a dominance strategy by one armed group but due to an increase in violence caused by two or more groups competing for control of what may be perceived as an attractive community to them. In fact, during the Colombian conflict it was not unusual for communities to fall under the control of either the FARC or the United Self-Defense Forces (AUC) at different times (Arjona 2016; Kaplan 2017). Moreover, Table D9 in the online appendix shows that communities with a presence of armed groups are more likely to experience violent events such as homicides. To explore if this was the case, we estimated alternative specifications in which we controlled for dummy variables that indicate whether the household suffered from violence between waves, and for an indicator of violent shocks at the community level. We define violent shocks in the community as those clearly related to conflict such as homicides, illegal land seizure, and kidnapping. Table 2 presents the results for the estimation with individual fixed effects. We observe a negative and statistically significant effect of armed group presence on participation in communities with pre-existing strong institutional capacity. When we only consider household-level exposure to violence, our coefficient estimate is similar in magnitude to our baseline estimate. When we include community-level exposure to violence this coefficient is smaller in magnitude, yet the difference is not statistically significant. In addition, in these communities there is a negative but not statistically significant association between individual participation in community organizations and exposure of the individual's household to violent

shocks. Taken together, these results suggest that part of the negative effect of armed group presence on individual participation in community organizations might occur through a dissuasive effect of violence. However, a direct negative effect of armed group presence on individual participation remains, suggesting that capture of local organizations by armed groups occurs not only through violence.

Table 2: Participation in local organizations and armed group presence: violent shocks controls

| Variables | Pre-existing social capital | | | | | |
| | Low | Intermediate | High | Low | Intermediate | High |
	(1)	(2)	(3)	(4)	(5)	(6)
Presence between rounds	0.021	0.050	−0.119**	0.025	0.051	−0.075*
	(0.045)	(0.066)	(0.051)	(0.048)	(0.072)	(0.043)
	[−0.070—0.112]	[−0.086—0.186]	[−0.222—-0.016]	[−0.071—0.122]	[−0.096—0.198]	[−0.162—0.013]
Household violent shock	0.045	0.030	-0.068			
	(0.062)	(0.104)	(0.087)			
	[−0.080—0.169]	[−0.184—0.243]	[−0.244—0.108]			
Community violent shock: any				−0.024	−0.004	−0.074
				(0.026)	(0.039)	(0.044)
				[−0.076—0.029]	[−0.085—0.076]	[−0.163—0.015]
Observations	7,969	3,826	5,036	7,976	3,828	5,038
R-squared	0.592	0.558	0.592	0.592	0.557	0.593
FE	Individual	Individual	Individual	Individual	Individual	Individual
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Mean dep. var.	0.308	0.294	0.276	0.308	0.294	0.276

Note: standard errors with municipality-year and individual cluster in parentheses, 95 per cent confidence interval in square brackets; all estimations include municipality-year dummies and control variables: age, age squared, sex, years of education, number of household members, number of children under five, wealth index, time to reach municipal urban centre, total number of households in the community, total rainfall between rounds, presence of public institutions in the community, and investments in public infrastructure between rounds; pre-existing institutional capacity defined as terciles of 1977 parliamentary transfers to community; for the baseline survey, presence between rounds corresponds to the presence of armed groups between 2008 and 2010; *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Source: authors' calculations based on ELCA data.

Interestingly, the coefficient estimates for household exposure to violence in communities with low and intermediate levels of pre-existing institutional capacity are positive, although not statistically significant. This might be consistent with the dominance mechanism in our theoretical model, whereby participation in communities with weak institutional capacity may signal obedience towards a violent armed group, preventing higher levels of victimization.

5.2   Validity of results

Migration

Selection into migration is a potential source of threat to our empirical strategy. Colombia has one of the highest rates of internal displacement in the world. The decision to move or stay in a

community might be related to both the presence of armed groups and participation in community organizations. Individual migration might result in two sources of bias in our context. First, we do not observe the full set of community variables for migrants in host communities that are not in the baseline. This may cause a sample selection bias in our estimates. Second, even if we observe both participation and the community characteristics of migrants, because migration occurred before the baseline survey or because the household moved between waves to a baseline ELCA community, neither these communities nor the individuals that we observe in these communities are a random sample of the population. Our coefficient estimates for the population parameters, β^s, with this sample would be biased due to individual sorting. In particular, the coefficient estimates will be overestimated if those who are more likely to participate in community organizations when armed groups are present are also more likely to stay in communities with armed group presence. Supporters or people allied with one particular armed group might prefer to stay in communities controlled by that group and participate in organizations to obtain benefits or protection from attacks by other groups (Steele 2017). On the other hand, the coefficient estimates will be underestimated if those who are more likely to participate when armed groups are present are also more likely to relocate to communities without armed groups. Members of civil resistance movements or threatened community leaders might be in this group.

Table D6 in the online appendix shows the difference in unconditional means between migrants and non-migrants for a set of community and individual characteristics prior to migration. For each wave, we identify migrants as those living in a different community to the one in the previous wave. Migrants are slightly more educated and younger. Agricultural wages are higher in communities of origin of migrants. These communities are also located closer to urban centres, had more rainfall between rounds, and have fewer public institutions. Importantly, the presence of armed groups between waves in communities of migrants is twice as large as the presence of armed groups in communities of those who do not migrate (4 per cent versus 2 per cent), and migrants are less likely to participate in community organizations prior to migration (26 per cent versus 30 per cent). The comparison in raw means across samples does not, however, take into account individual unobserved heterogeneity and time-specific shocks that are likely to be correlated with the likelihood of migration and the variables that we consider above. We make use of the panel structure of our data to explore the correlation between the decision to migrate and these community and individual characteristics, taking into account individual and municipality-wave fixed effects. We estimate the following equation:

$$M_{i,c,m,r} = \alpha_i^s + \gamma_{m,r}^s + \mu^s A_{c,m,r} + \Theta^s X_{i,c,m,r-1} + v_{i,c,m,r} \tag{16}$$

where $M_{i,c,m,t}$ takes the value of 1 if individual i migrated from community c between waves r and $r-1$, $A_{c,m,r}$ is the presence of armed groups in the community between waves; $X_{i,c,m,r-1}$ is the individual and community characteristics prior to migration. As before, we include in the estimations municipality-wave and individual fixed effects.

Columns 1 to 3 of Table D7 in the online appendix show that the presence of armed groups does not have a statistically significant effect on the likelihood of migration between waves in any of the samples that we consider. In columns 4 to 6, we control for an indicator of individual participation in local organizations before migration. The coefficient estimate for participation in the three samples is again not statistically significant, suggesting that there is no systematic correlation between participation and migration. Although we cannot entirely rule out bias due to migration, the results in this section suggest that once we control for individual- and municipality-wave-specific unobservables, the correlations between migration, participation, and armed group presence are weak.

As a final robustness check, we follow Lee (2009) to estimate bounds to the effect of the presence of armed groups on participation in local organizations, taking into account sample selection due to migration or any other source of attrition. Our results in online Appendix C show that the upper bounds for the effects in strong communities are still negative, reinforcing our main result.

Armed group selection

One key assumption in the theoretical model and in our empirical strategy is that armed groups select communities based on an assessment the attractiveness of the community to the armed group's war strategy. This attractiveness depends on how predetermined community variables interact with time-varying conditions of the war that are exogenous to the community.[16] However, rural communities across the country (with and without armed group presence) may differ systematically in terms of their history of violence, development of local institutions, local markets, and geographical characteristics. These differences might result in communities that are systematically more attractive to armed groups. Using the data collected in the community questionnaire, we construct two groups of variables that account for: (i) socioeconomic conditions at the time of the survey, and (ii) events that took place in the community between waves. Tables D8 and D9 in the online appendix show a number of differences in individual (age), household (young children and household members), and community characteristics (distance to urban centres and average rainfall) across communities with and without armed group presence.

We regress the indicator for armed group presence between waves on the two groups of community variables. First, we control for lagged socioeconomic characteristics of the community in the year of the survey,[17] such as the number of households in the community, the presence of public institutions, the value of agricultural wages, and the time to reach the municipal urban centre. Second, we include investments in public infrastructure and total rainfall between waves. We also control for community and municipality-wave fixed effects. This specification allows us to check if baseline community characteristics are correlated with the presence of armed groups between rounds. In alternative specifications, we do not include the fixed effects and include time-invariant community characteristics, such as the tercile of parliamentary transfers and the historical presence of armed groups in the community, to explore the correlation between armed group presence and time-invariant community characteristics.

Table D10 in the online appendix reports the results of these exercises. Columns 1 and 2 show the results with and without municipality-wave fixed effects, respectively. Communities with a stronger presence of armed groups between 2001 and 2007 are more likely to report armed group presence between waves after 2007. Also, armed groups are more likely to be present in communities that are located further away from urban centres and that have lower public infrastructure investment. When we include community fixed effects, the presence of armed groups is not correlated with other time-varying characteristics of the community, which reassures us about the validity of our identification assumptions.

Instrumental variable estimation

As an additional robustness check, we instrument the presence of armed groups in the community. We exploit the fact that in September 2016 the Colombian government and FARC signed a peace

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[16] In our empirical strategy, this exogeneity assumption is weaken by conditioning on community or individual and municipality-wave fixed effects.

[17] When we look at presence between 2010 and 2013, this corresponds to community characteristics in 2010. For presence between 2013 and 2016, it refers to community characteristics in 2013.

agreement that involved the demobilization of FARC troops. The agreement was signed after four years of negotiations between the parties. We expect these negotiations to induce a reduction in the presence of FARC members in rural communities, particularly near the agreement's end. We also expect this reduction to be stronger in communities located closer to municipalities' urban centres, where compliance with the agreement is easier to verify. We use data at the municipality level on the presence of FARC before the peace negotiations to construct an instrumental variable as follows:[18]

$$Peace_{c,m,r} = FARC_m \times Post_r \times distance_{cm}$$

where $FARC_m$ takes the value of 1 if FARC members were present in municipality m in 2006, $Post_r$ takes the value of 1 for the 2016 wave, and $distance_c$ is the distance between the community and the municipality's urban centre in 2010. We estimate a two-stage least squares regression with community and municipality-wave fixed effects. We control, in other specifications, for individual fixed effects instead of community fixed effects. Our identification assumption is that the peace agreement affected participation in community organizations only through its effects on the presence of armed groups after 2016, once we take into account municipality-wave-specific shocks and community fixed effects.

Table 3: Instrumental variable estimates

	Pre-existing institutional capacity					
	Low	Intermediate	High	Low	Intermediate	High
	(1)	(2)	(3)	(1)	(2)	(3)
Armed group presence between waves	0.237	−0.011	−0.579*	0.386*	0.232	−0.422**
	(0.218)	(0.198)	(0.316)	(0.211)	(0.294)	(0.212)
Observations	7,976	3,828	5,038	7,976	3,828	5,038
FE	Community	Community	Community	Individual	Individual	Individual
Controls	Yes	Yes	Yes	Yes	Yes	Yes
F—first stage	33.36	2.725	11.38	26.22	1.681	8.714

Note: standard errors with municipality-year cluster in parentheses; all estimations include municipality-year dummies and control variables: age, age squared, sex, years of education, number of household members, number of children under five, wealth index, time to reach municipal urban centre, total number of households in the community, total rainfall between waves, presence of public institutions in the community, and investments in public infrastructure between waves; pre-existing institutional capacity defined as terciles of 1977 parliamentary transfers to community; for the baseline survey, presence between waves corresponds to the presence of armed groups between 2008 and 2010; *** p<0.01, ** p<0.05, * p<0.1.

Source: authors' calculations based on ELCA data.

Table 3 presents the results for individual participation in local organizations and for participation by type of organization. First-stage estimates are presented in Table D11 in the online appendix. We find a larger negative effect of the presence of armed groups in communities with high pre-existing institutional capacity. We also find that the positive coefficient for (positive) participation

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[18] These data come from the CEDE Municipality Panel. The ELCA did not collect information on the identity of the armed groups in the community.

in communities with pre-existing weak institutional capacity is not statistically significant (at 10 per cent level), which further reinforces our interpretation of a dominance strategy by armed groups across sampled communities.

6 Conclusion

Wars change local institutions and the organization of local communities in dramatic ways. This paper analysed some aspects of this change by examining the effect of armed group presence on local collective organizations in Colombia. Based on a new theoretical model, we explored whether increased participation may be driven by communities organizing themselves to resist or counteract the influence of non-state armed actors, or by non-state armed actors capturing organizations and impose stronger control over the population. The results show that changes in the presence of armed groups in any given community increases the participation in local organizations of individuals in communities with low pre-existing institutional capacity and reduces the participation in local organizations of individuals in communities with high pre-existing institutional capacity. This result is consistent with the theoretical predictions of a capture equilibrium.

These results contribute significantly to a better understanding of the links between armed conflict and institutional change by showing how, in the case of Colombia, local organizations were manipulated by armed groups to advance and cement their war strategies and political objectives. The paper also offers a new theoretical framework through which to identify the prevalence of alternative equilibria—libertarian and resistance—in other conflict cases. This is an important contribution to the literature because different equilibria in how armed groups and civilians interact during wartime may lead to different pathways of institutional change in the post-conflict period. Capture strategies of the type identified in Colombia may signal a stronger institutional capacity for the group but lower capacity for collective- action among civilians. The prevalence of a resistance equilibrium (whereby armed groups interfere less in the organization of local communities) may lead to stronger forms of democratization from below in the post-conflict period (Huang 2016).

This analysis also has important policy implications. In particular, the Colombian results point to the need for some caution about current policy agendas that target aid to post-conflict communities in the hope of strengthening local institutions, governance, and social cohesion (Mansuri and Rao 2012). If the type of institutional capture we observe in Colombia is also present in other countries, post-conflict community-level interventions may well reinforce war dynamics and the power of armed groups and their allies, thereby creating potential sparks for conflict reignition (Crost et al. 2014; Justino 2019). Communities that benefit from resistance-type processes during wartime may experience more positive results from these policy interventions, though much more research is needed to document such cases and the implications of different equilibria proposed by the model for state-building and development processes in the long term.

The results also have implications for the ongoing peace process in Colombia, where the role of local institutions will be central to the economic and social recovery of communities affected by several decades of violent conflict. In particular, real democratic outcomes will require serious investment by the Colombian national government to create strong and independent local institutions that will ensure that the interests of all citizens—and not just those who are part of ongoing patronage networks—are represented in the political arena. This will not be an easy task.

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