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Cooperation Among Community Leaders

The Role of Women's Leadership and Exposure to Conflict

Halefom Yigzaw Nigus

Kibrom A. Abay

Development Strategies and Governance Unit

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

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AUTHORS

Halefom Yigzaw Nigus (halefom23@gmail.com) is a Research Fellow at the Policy Studies Institute (PSI), Addis Ababa, Ethiopia.

Kibrom A. Abay (K.Abay@cgiar.org) is a Senior Research Fellow with IFPRI's Development Strategies and Governance Unit, Washington DC.

Abstract

In rural settings, community leaders play important roles in mobilizing resources and delivering public goods and services. However, little is known about their attributes and incentives in delivering these public goods and services. Exploiting survey, lab-in-the-field experiment, and geo-referenced data, we study the role of leaders, especially women's leadership, and their exposure to conflict in explaining differences in cooperation among com-munity leaders in Ethiopia. We measure cooperation through a public-good experiment and examine the implications of community leaders' characteristics. We then merge these lab-in-the field experimental data with geo-referenced data on conflict exposure to examine the implication of different types of conflict on community leaders' cooperation behavior. We find that female leaders contribute more to public goods than their male counterparts. For example, compared to those assuming the highest official administrative responsibility in the village, women leaders contribute about 11 percent more to the public good. We also document nuanced findings that reconcile existing mixed evidence on the implication of exposure to conflict on cooperation: while conflict events that affect the whole community, such as political violence (including battles) are associated with higher cooperation, other types of conflict (e.g., demonstrations and riots) are associated with lower levels of cooperation. Finally, we identify additional predictors of cooperation among community leaders, including beliefs about other leaders' cooperative behavior. These findings shed light on potential avenues for facilitating and fostering cooperation among community leaders.

Keywords: Ethiopia, cooperation, public good experiment; conflict; war; local leaders

Acknowledgements

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1. Introduction

Cooperation is a key factor for the provision of public goods and fostering economic development (Axelrod and Hamilton, 1981; Nowak, 2006; Gross et al., 2023). It is particularly important in rural and fragile settings where well-functioning institutions and markets meant to encourage and incentivize cooperation are missing. Understanding how to promote and maintain cooperation among people in contexts where social dilemmas are ubiquitous, that is, situations in which private and social benefits are in conflict, is therefore crucial (Hardin, 1968). Evolving evidence from the experimental economics literature shows that cooperation among individuals can be induced using several instruments, including proper sanctioning systems (punishment and reward) (Molenmaker et al., 2023), repeated interactions (Sefton et al., 2007), reputation (Cuesta et al., 2015), and other mechanisms (genetic and cultural evolution) (Henrich and Muthukrishna, 2021) that affect incentives and behaviors of actors.

Emerging evidence shows that leaders play a pivotal role in inducing and maintaining cooperation within groups. This is particularly the case in rural settings where administrative functioning of governments remains weak and hence relies on community or traditional leaders (Herbst, 2000; Van der Windt and Voors, 2020). In most parts of rural Africa, these community and traditional leaders are responsible for the provision of public goods and services (Logan, 2013), allocation and reallocation of land (Goldstein and Udry, 2008; Jayne et al., 2021), ensuring and nurturing peace (Haider, 2009; Casey, 2018), targeting and allocation of social assistance and safety net programs (Berhane et al., 2014; Basurto et al., 2020; Duchoslav et al., 2023), mobilization of the public for collective action (Vedeld, 2000; Kahsay and Medhin, 2020; Kahsay and Bulte, 2021; Kahsay et al., 2021), response to pandemics (Van der Windt and Voors, 2020), and environmental and ecological protection (Rust, 2017). This allows these leaders to play critical roles in the livelihood and economic development of their communities. Leaders can stimulate cooperation through mechanisms like leading by example (motivating followers to cooperate by taking the initiative and cooperating first) (Jack and Recalde, 2015; Hermalin, 1998; Potters et al., 2005, 2007) and norm enforcement (reward and punishment) (Fehr and Gachter, 2000; Kosfeld and Rustagi, 2015; Fehr and Fischbacher, 2004; Fehr and Gächter, 2002; Lergetporer et al., 2014; Beekman et al., 2018; Nikiforakis and Mitchell, 2014). As much as they may contribute to communities constructively, community leaders lacking the appropriate incentives and accountability to serve communities can undermine the delivery of public goods and services, for example, by facilitating elite capture (Bardhan, 2002; Bardhan

and Mookherjee, 2000, 2006; Casey, 2018). But it is not obvious about what type of community leaders are most cooperative. Similarly, what drives cooperation among community leaders and how we may increase the willingness to cooperate among these important actors has not been well explored, especially in rural settings of Africa.[1]

Recognizing the importance of community leadership in rural development, particularly for provision of public goods in rural settings, this paper seeks to understand important attributes and factors that explain and facilitate cooperation among community leaders with the aid of incentivized experimental games, specifically public good games. This paper addresses two broad objectives. First, with the aim of identifying avenues for fostering cooperation among community leaders in rural areas, we examine the role of women's leadership in the provision of public goods and associated willingness to cooperate in delivering these public goods. Recently, a small but growing literature on women leadership and public goods provision. However, findings of these studies remain mixed. While some studies show that women leaders improve the provision of public goods (Chattopadhyay and Duflo, 2004; Agarwal, 2009a,b; Coleman and Mwangi, 2013; Leisher et al., 2016; Kahsay et al., 2021), others suggest that women's leadership might reduce the quality of public goods provision (Gajwani and Zhang, 2015; Deininger et al., 2015; Ban and Rao, 2008; Bardhan et al., 2010). The rural setting and actors we study in this paper offer an interesting case to examine whether women's leadership facilitates cooperation among community leaders. Second, in addition to examining community leaders' cooperation and willingness to contribute to public goods, we also aim to generate more nuanced understanding on existing mixed evidence on the implication of exposure to conflict on cooperation. For example, while Bauer et al. (2016) and several other studies (Bellows and Miguel, 2009; Blattman, 2009; Bauer et al., 2014, 2018; Gilligan et al., 2014; Cecchi et al., 2016b; Voors et al., 2012) argue that war fosters cooperation and pro-social behavior, some other recent studies find evidence to the contrary (e.g., Kıbrıs and Cesur 2023; Cassar et al. 2013). In this paper, we hypothesize that conflict takes different forms and different types of conflict can have distinct implications for cooperation and pro-social behavior. Armed conflicts such as battles are likely to be perceived as external threats to survival, which in turn, can encourage collective response and cooperation among community members (Bauer et al., 2016). However, other types of conflict events such as protests, demonstrations, and riots are likely to divide political opinion among elites and

[1]We define community leaders as individuals within a community who hold influential roles and are in charge of representing and advocating for the interests of their community members. These leaders may include local government officials, religious leaders, tribal elders, heads of community organizations, or influential community members. They often play crucial roles in mobilizing resources, resolving conflicts, organizing community events, and addressing the needs and concerns of community members.

community leaders, which in turn can erode trust and cooperation among community leaders. Despite the increasing trend in armed conflicts in Africa in the last decade (World Bank, 2020), how and which type of conflict affects cooperation remains poorly understood. This is particularly the case for grassroots community leaders, who are important actors in rural development programs and initiatives.

Ethiopia experienced various forms of conflict during the last three years, including battles among armed groups as well as protests, violent demonstrations, and riots (Gesesew et al., 2021; Kumar et al., 2022; Abay et al., 2023; ACLED, 2023; Nyssen et al., 2023). Some of these armed conflicts followed ethnic lines and hence have affected the social fabric and social networks among community members and leaders. This provides a fertile ground to test whether different types of conflict have varying implications on community leaders' level of cooperation and hence willingness to contribute to public goods. The nature and widespread coverage of our sample offers unique setting and substantial variation in willingness to cooperate.

Our main findings can be summarized as follows. First, women community leaders exhibit high level of cooperation and contribute more to the public goods than men community leaders. For example, compared to those assuming the highest official administrative responsibility in the village, who are all male, women leaders (and representatives) contribute about 11 percent more to public goods. Second, we find that exposure to conflict events that affect the whole community, such as political violence (including battles and violence against civilians), is associated with greater cooperation, while those conflict events that trigger division along ideological, political, or social lines (e.g., demonstrations and riots) are associated with lower cooperation. Third, consistent with previous studies (Fischbacher and Gächter, 2010; Chaudhuri, 2011; Kocher et al., 2015), most of the community leaders are conditional cooperators. We find that *ex-ante* belief about other leaders' cooperation behavior positively and significantly explains cooperation among community leaders. These findings have important policy implications, especially in the rural settings of Sub-Saharan Africa, where weak functioning of administrative governments is widespread and the role of community leaders is indispensable. For example, our findings imply that including women in community leadership can improve cooperation and collective action.

This paper contributes to three strands of literature. First, it contributes to and extends the literature on the factors that explain cooperation among various actors and decision-makers.

To date, the existing literature primarily focus on understanding cooperation among student subjects and individuals (Chaudhuri, 2011; Kocher et al., 2015). However, we argue that the drivers of cooperation among student subjects and individuals may differ from those driving cooperation among community leaders. Hence, unlike previous studies, this paper provides new evidence on what factors explain cooperation among community leaders, important actors for delivering public goods and services in rural Africa.

Second, this paper contributes to the literature on the role of women leadership in public goods provision and economic development (Duflo, 2012; Beaman et al., 2012; Chattopadhyay and Duflo, 2004). The existing evidence on the role women leaders play in the provision of public good is mixed. Some earlier studies find that bringing women to leadership positions may ensure better provision of public goods, particularly, goods that women would prefer. For instance, a study by Chattopadhyay and Duflo (2004) shows that women's representation in leadership is associated with higher investment in public goods that are directly relevant to the needs of women, such as roads, drinking water, and fuel. An emerging literature also documents that women participation in communal decision-making, particularly their participation in executive committees of forest user groups is associated with improved public goods (fishery and forest management) outcomes (e.g., Agarwal, 2009a,b; Coleman and Mwangi, 2013; Leisher et al., 2016; Kahsay et al., 2021). However, recent studies have uncovered a contrasting effect, indicating that political quotas for women might lead to a reduction in public goods provision (e.g., Gajwani and Zhang, 2015; Deininger et al., 2015; Ban and Rao, 2008; Bardhan et al., 2010). For instance, Gajwani and Zhang (2015) demonstrates that villages with women chairpersons tend to have fewer public goods available, including infrastructure such as roads and schools.[2] This paper, therefore, complements the existing studies by examining the link between the representation of women in community leadership and the provision of public goods in the rural settings of Africa. Particularly, we test if women community leaders are more likely to contribute to the provision of public goods than their male counterparts. In contrast to earlier research, which typically compares public goods provision between villages with and without gender quotas or reservations for women in leadership roles, this paper directly compares the contributions of women leaders to public goods with those of their male counterparts.

Third, this paper contributes to the emerging literature that focuses on the effect of conflict on cooperation (Bauer et al., 2016). The interplay between conflict and cooperation is complex

[2]See Clots-Figueras and Iyer (2023) for a review of this literature.

and has garnered substantial attention among researchers and development practitioners over the last few decades. However, existing studies show mixed evidence. While some studies find that conflict fosters cooperation (Bauer et al., 2014, 2018; Cecchi et al., 2016b; Blattman, 2009; Bellows and Miguel, 2009; Voors et al., 2012), other studies document that conflict reduces cooperation (Cassar et al., 2013; Rohner et al., 2013; Hager et al., 2019). This paper complements previous studies by providing nuanced findings that might reconcile existing mixed evidence on the interplay between exposure to conflict and cooperation. Specifically, we differentiate between conflict events that affect the whole community such as political violence (including battles and violence against civilians), and conflict events (e.g., demonstrations and riots) that trigger division along ideological, political, or social lines.

The remainder of the paper is organized as follows: The subsequent section provides an overview of the context and data, including our method of measuring cooperation. Section 3 outlines our estimation strategy. In section 4, we present our main findings along with several robustness checks. Section 5 offers concluding remarks.

2. Context and Data

2.1. Context

This study covers an extensive geographic area, spanning all regional states of Ethiopia with the exception of the Benishangul-Gumuz and Gambela regional states, as well as the capital city, Addis Ababa. The study targeted 180 villages (kebeles) across the country, providing a comprehensive representation of diverse communities. This allows us to examine substantial variation in our outcomes of interest. However, due to the prevailing security concerns, some areas within the Amhara and Oromia regions were not included in our survey and experiment. Figure 1 presents the distribution of sample kebeles included in our survey.

Ethiopia, characterized by its diverse ethnic groups and agrarian landscape, faces unique challenges in social and economic development. Some of these challenges include: (i) limited access to essential infrastructure, such as roads, health, education, and irrigation facilities, (ii) recurrent conflicts, drought, and other shocks, and (iii) high levels of deforestation and environmental degradation.[3] More recently, violent conflicts continue to disrupt peace, security, and social cohesion in the country, especially after the outbreak of an armed conflict in Northern Ethiopia

[3]Notably, forest cover in the country has dwindled significantly from approximately 40% in the late 19th century to around 4% in recent years (Dessie and Christiansson, 2008).

in November 2020. This conflict has resulted in substantial loss of life and public infrastructure, reversing important gains in poverty reduction Ethiopia had achieved over the past two decades.[4] The nation had also contended with recurring and severe droughts in recent years, exacerbating existing challenges of high levels of food insecurity and poverty.

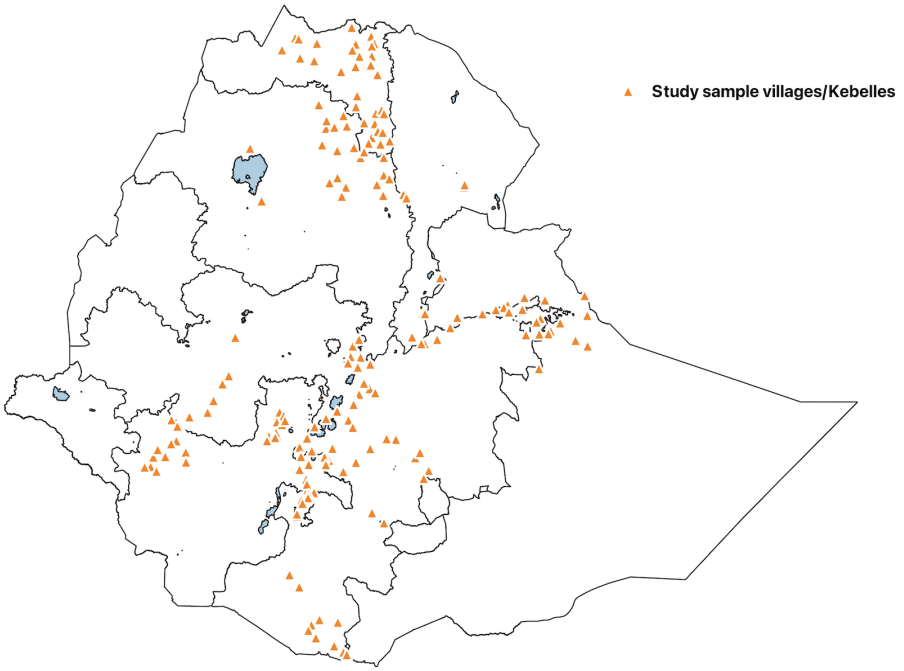

Figure 1: Distribution of study villages. Source: Authors' compilation based on survey data.

In countries like Ethiopia that are grappling with compounding crises, promoting cooperation among communities is crucial for mobilizing collective action to address these challenges. Addressing these crises and challenges, including peace-building efforts, entails collective problem-solving, resource-sharing, and the development of sustainable solutions that are more likely to have a lasting impact on community well-being. Cooperation among major actors can facilitate the provision of essential infrastructure, environmental protection, and promotion of social cohesion, and stability. In both urban and rural settings of Ethiopia, community leaders play a pivotal role in shaping the trajectory of local initiatives, from infrastructure development to social cohesion. However, the attributes and factors that influence and facilitate cooperation among these leaders remain understudied. Against this backdrop, the current paper aims to delve into the intricacies of cooperation among community leaders in rural Ethiopia. The significance of such cooperation is paramount for the successful implementation of community-driven projects and hence the overall well-being of community members. By focusing on urban and

[4]Up until the conflict in 2020, Ethiopia recorded one of the fastest rates of economic growth in the world (Bachewe et al., 2018).

rural settings of Ethiopia, where communal ties and governmental and traditional leadership structures often play a crucial role, we seek to uncover the nuanced factors that contribute to or hinder collaborative efforts among community leaders.

2.2. Data

The data for this paper come from two sources. First, we conducted a comprehensive community survey and a public good experiment with community leaders.[5][6] We selected six community leaders from each of the 180 villages, resulting in a total sample size of 1,080 community leaders. The community leaders include: (i) a village/kebele leader, (ii) an elder from the community, (iii) a religious leader, (iv) a teacher or agricultural or health extension worker, (v) a women representative, and (vi) a youth representative. We used teachers and agricultural and health extension agents interchangeably. In villages where a teacher was unavailable, an agricultural extension agent was enlisted, and in the absence of agricultural extension workers, a health extension worker was included.[7]

We note that although the source of legitimacy and influence for each type of leader described above emanates from different agents and institutions, these leaders play important roles in delivering various services to communities. From a government administrative bureaucracy point of view, the village/kebele leader assumes the highest administrative responsibility in the village. However, the other leaders, including the elders, religious leaders, and women and youth representatives play an active role in rural communities, including in mobilizing collective action and delivering public goods and services. Teachers, development agents, and health extension workers in Ethiopia are well-integrated into rural administration through various committees and task forces. To probe this, we asked each community leader about their role and participation in: (i) village/kebele-level food security task force, and (ii) targeting of the flagship national safety net program in Ethiopia, the Productive Safety Net Program (PSNP). In Table A1, we report that large share of these community leaders serve as members of village-level food security task forces and most have participated in targeting of the PSNP.

The community survey and the public good experiment were conducted between November and December 2023. The community survey contains modules on community leaders' demographic

[5]We discuss the public good experiment in more detail in section 2.3.

[6]This paper was part of a large project that aims to evaluate the effectiveness of alternative targeting approaches in identifying impoverished households and determining the extent of social assistance transfers distributed within communities in fragile and conflict-affected settings which was previously preregistered at the American Economists Association's RCT registry (AEARCTR-0012677).

[7]When the kebele leader was not available during the survey period, we replaced him/her with the deputy.

characteristics, preference for redistribution, and subjective and relative poverty status. In addition, the community survey contains information on village characteristics and access to basic services.[8] Importantly, the community survey data also include information on the GPS coordinates of the villages (kebeles), which allowed us to integrate it with the conflict data from the Armed Conflict Location Events Dataset (ACLED).

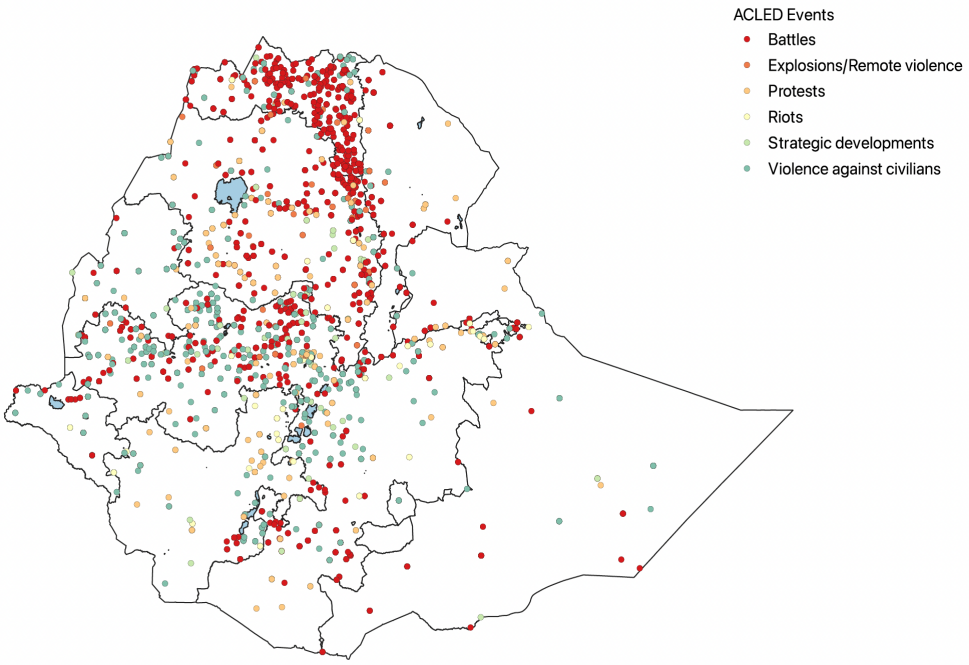

Figure 2: Conflict events between 2020 and 2023. Source: Authors' compilation based on ACLED data.

Second, we use data on the exact timing and location of different conflict events from the ACLED database. The ACLED database is widely used to study the consequences of conflicts in different settings. ACLED provides detailed information on a wide range of conflict events, both violent and non-violent. It provides information on six conflict event types: battles, protests, riots, explosions/remote violence, violence against civilians, and strategic developments. To facilitate analysis and enhance power, the different conflict events are also further categorized into three overarching types of conflict: (1) *political violence*, (2) *demonstrations*, and (3) *strategic developments*. Following the description and characterization in the ACLED database, battles, explosions/remote violence, and violence against civilians are categorized into the *political violence* while protests and riots are grouped into *demonstrations*. Figure 2 presents the distri-

[8]Data collection was conducted with the aid of tablets by trained and experienced enumerators. The survey was translated into three local languages, namely Amharic, Tigrigna, and Afan Oromo, to ensure a majority of leaders could be interviewed in their local language.

bution of different conflict events across all regions of Ethiopia from 2020 to 2023. Notably, the dominant conflict type is battle followed by protests and violence against civilians. In this paper, we focus on the number of conflict events that occurred between 2020 and 2023 to capture many of the armed conflicts in Northern Ethiopia as well as other parts of Ethiopia. While the conflict between the Tigray regional forces and the Federal army continued until both parties agreed to a "permanent cessation of hostilities" in November 2022 through the *Pretoria agreement*, there are still some on-going conflicts in Amhara and Oromia regions of Ethiopia, some of which erupted after the agreement was signed.[9]

2.3. Measuring cooperation

Cooperation is a broad concept and has been defined and measured in several ways. In the literature cooperation has been measured using both survey and experimental measures (Bauer et al., 2016). The survey measures proxy cooperation by participation in local social groups or community organizations, participation in community leadership and engagement (including local meetings, volunteering for community works), trust levels among in-group and out-group members, voting in local and national elections, knowledge of and interest in politics, willingness to host refugees, and trust in local government (Rohner et al., 2013; Bateson, 2012; Casey et al., 2012). Similarly, cooperation has been measured using comparable experimental measures—behaviors observed in experiments such as Trust, Dictator, Public Goods, Ultimatum, and Social Value Orientation games (Gneezy and Fessler, 2012; Voors et al., 2012; Cassar et al., 2013; Gilligan et al., 2014; Hopfensitz et al., 2014; Cecchi et al., 2016b).

In this paper, we measure cooperation among community leaders using behavior observed in a Public Good experiment. As mentioned above, using the Public Good experiment to measure cooperation in an incentive-compatible way is a widespread practice in empirical economic literature (Karlan, 2005; Rustagi et al., 2010; Fehr and Leibbrandt, 2011; Gilligan et al., 2014; Hopfensitz et al., 2014; Attanasio et al., 2015; Kosfeld and Rustagi, 2015; Cecchi et al., 2016a; Nigus et al., 2023).

As mentioned above, we selected six community leaders from each village. We note that these leaders play important roles in the communities even though not all of them hold official governmental positions. For example, they commonly participate in community-based targeting of beneficiaries of social safety net programs and they are members of community-level task

[9]See Gesesew et al. (2021); Kumar et al. (2022); Abay et al. (2023); ACLED (2023); Nyssen et al. (2023) for detail discussion on the conflict in Northern Ethiopia.

forces for mobilizing community members for collective action. Table A1 shows that most of these leaders are active members of village-level food security task forces and hence participate in targeting of social protection programs, including for the national Productive Safety Net Program (PSNP). Once we identified these six leaders, we randomly assigned them into two experimental groups. Each group comprised three leaders. By playing with a group of three instead of six, we enhance the significance of the social dilemma. Additionally, playing the experiment with a group of three people may reduce complexity and potentially minimize fatigue associated with calculating contributions and payoffs. We conducted a total of 180 experimental sessions, one per village, with only one session administered per enumerator per day.

Below we describe how the experiment was conducted. Consider a scenario where $n=3$ community leaders participate in a one-shot public good game.[10] At the beginning of the game, each leader (l) receives an endowment e and has to decide how much to keep in his or her "private account" and how much to invest into the "group account". The total contributions invested in the group account are doubled by the experimenter and subsequently distributed equally among all three group members, irrespective of individual contributions. The portion of the endowment retained in the private account is only beneficial to the individual who invested in it. The payoff function for a community leader l from the public good experiment is as follows;

$$\pi(l) = (e_l - c_l) + \alpha(\sum_{n=1}^{3} c_l) \tag{1}$$

where $\pi(l)$ represents the payoff of leader l, e_l denotes the initial endowment, and c_l is the contribution of leader l to the group account. The parameter α denotes the marginal propensity to cooperate or marginal per capita return (MPCR) from the public good. In this experiment, the MPCR is approximately 0.67, implying that each leader would receive 0.67 Ethiopian birr (ETB) for every token contributed to the public good by any other member in the group. At the beginning of the experiment, each leader receives an endowment, e_l, of 100 tokens which is equivalent to 100 ETB.[11]

We invited community leaders to come to public offices (such as public schools and kebele

[10] We opted for a one-shot version to circumvent the impact of learning and reputation effects, which is the main concern in repeated public good games (Cecchi et al., 2016a). Additionally, a one-shot public good game helps to minimize participant's fatigue. However, it is essential to recognize that the one-shot version may not capture the intended outcome if participants lack a thorough understanding of the game. In this paper, meticulous steps were taken to ensure participants' comprehension. They engaged in multiple trial rounds and were presented with comprehension questions, requiring accurate responses before their involvement in the actual game.

[11] At the time of data collection, $1 was equivalent to approximately 56 ETB .

offices) to take part in a public good experiment. Upon arrival, we recorded the names and individual IDs of the community leaders. We obtained informed consent from all leaders. [12] The experimenters provided oral instructions regarding the public good game. Before the actual game began, to ensure they all understood the game and the calculation of payoffs, we provided them with several examples. We checked for comprehension through several exercises to make sure that all leaders understood the procedures. At the beginning of the experiment, we provided leaders with two envelopes: one labeled as a "private account" and the other as a "group account", along with 100 tokens. We then asked each leader how much to contribute to the "group account" and how much to keep in his/her "private account". Community leaders made their own decisions individually. We informed them that their earnings from the game would be determined by their own decisions and the decisions of two other leaders. We also informed the leaders that their participation in the game is entirely voluntary, and they can withdraw at any time without giving reasons. Including a show-up fee of 200 ETB, leaders earned an average of approximately $6.34. A total of 1,080 community leaders took part in the experiment.[13]

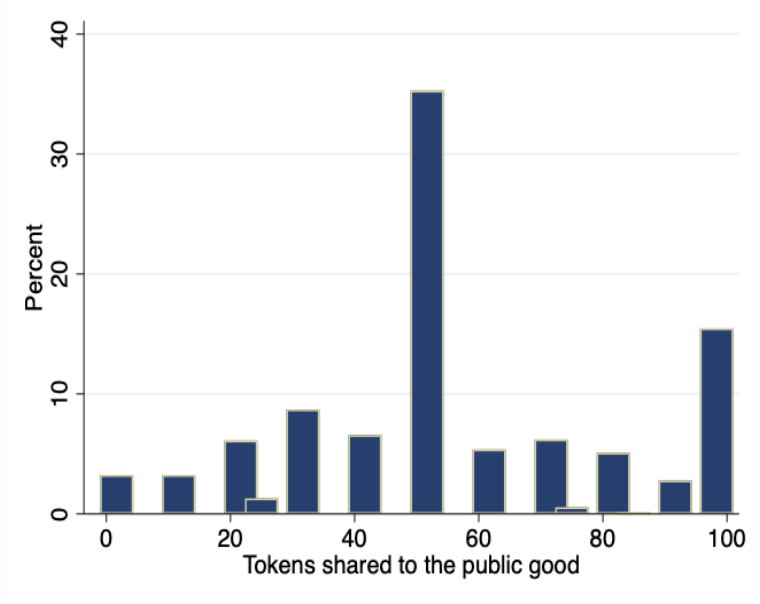

Figure 3: Distribution of tokens shared to the public good

[12] Before they start the public good experiment, the community leaders were invited to participate in a community survey followed by a targeting experiment exercise where they were asked to distribute a specific amount of cash to community members following different targeting criteria. This targeting experiment is described in Abay et al. (2024). We note that the experimental setting associated with the different variants of the targeting experiment as well as community leaders' behavior in the targeting experiment do not predict their behavior in the public good game

[13] In this paper, we measured cooperation using a public good game only. Cooperation can also be gauged using self-report surveys. Interestingly, previous studies find a significant correlation between experimental and survey-based measures of cooperation. For instance, Attanasio et al. (2015) finds a strong correlation between cooperation observed in a public good game and participation in community volunteer work, voting patterns in elections, and affiliation with civic groups.

Figure 3 presents the distribution of community leaders' contributions to the public good. On average, community leaders contributed about 55 ETB, more than half of the amount of the initial endowment. The modal contribution appears to be 50 ETB. About 3 percent of the leaders contributed nothing, while 16 percent of the community leaders contributed their entire endowment, suggesting a substantial variation in their willingness to contribute and free ride.

2.4. Descriptive statistics

Table 1 presents the summary statistics of community leaders. The distribution among kebele leaders, community elders, religious leaders, teachers, women and youth representatives is fairly uniform, each constituting approximately 17 percent of the sample. The vast majority of the leaders are relatively poor and nearly 13 percent of them reported that they are richer than most households. The average age of a community leader is about 42 years. Most leaders are literate. While about 39 percent and 17 percent of the leaders have primary and secondary levels of education, respectively, a non-trivial share of the leaders (26 percent) have above secondary education. Approximately 18 percent of the respondents report no literacy. Almost all leaders, except the women representative, are male. On the other hand, all women representatives are female. The overwhelming majority of the leaders (about 84 percent) reside in rural areas. We also asked community leaders to indicate how much they would agree with the statement that "It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes, perhaps by raising the taxes of wealthy families or by giving income assistance to the poor" using a Likert scale, which ranges from 1 to 5, where 1 represents "Strongly disagree" and 5 represents "Strongly agree". Most community leaders agreed with this statement. Regarding the regional distribution of our sample, we recruited around one-third (32 percent) of the community leaders from the Oromia region. We also recruited about 22 percent and 18 percent of them from Southern Nations Nationalities People region (SNNPR)[14] and Tigray region, respectively. About 12 percent of the sample leaders were recruited from Amhara[15] and 11 percent of them come from Somali region.

On average, leaders contributed about 55% of their 100 ETB endowment to the public good, which is consistent with previous evidence from the public good game (Hopfensitz et al., 2014). This contribution level is comparable to average contributions observed in previous public good

[14]Following a recent referendum, the SNNPR is splited into three regions, namely South Ethiopia, Sidama, and Central Ethiopia Regional States.

[15]In comparison to the Amhara region's share of the total population (25-30%), its representation in our sample is relatively lower. This is primarily attributed to the security challenges that has erupted after November 2022 in the region.

experiments among farm households in rural Ethiopia. For instance, a study conducted by Nigus et al. (2023) in the Tigray region of Ethiopia finds that households contributed about 45% of their endowment to the public good. The community leaders also anticipated that other leaders in their community would contribute about 52% of their 100 ETB endowment.

Table 1 also presents the conflict events coming from the ACLED database, including information on battles, explosions, remote violence and protests, riots and attacks against civilians. We construct community-level measure of exposure to different conflict events by simply counting the number of conflicts within a 10 and 20 km radius distance around the kebele office or other central locations where the community leaders' met. Most of the conflict events recorded by ACLED between 2020 and 2023 were battles, followed by attacks against civilians, and protests. Figure 2 also presents the distribution of the conflict events across all regions of Ethiopia.

3. Empirical strategy

We use alternative empirical methods to characterize the distribution and variation in community leaders' cooperation. As we aim to test alternative hypotheses and relationships, we run multiple and separate empirical specifications characterizing the distribution of cooperation as measured by community leaders' contribution to public goods. We first characterize the distribution of cooperation among community leaders to address what explains and drives cooperation among community leaders. We consider the role of (i) community leaders' individual attributes and roles in communities, especially women's leadership, (ii) belief/expectation about other members' cooperation and contribution, and (iii) culture and norms in communities. In our second stage analysis, we focus on the role of exposure to external threats, mainly conflict, focusing on different types of conflict that may affect communities differently. We estimate our first stage equation that characterizes the distribution and variation in cooperation among community leaders using the following simple specification:

$$C_{ic} = \beta_1 Ind_{ic} + \beta_2 Expect_{ic} + \beta_4 X_{ic} + \theta_c + \epsilon_{ic} \tag{2}$$

where C_{ic} stands for the contribution of community leader i in community c. Ind_{ic} stands for a vector of community leaders' individual characteristics and roles in communities, including an indicator variable for women's leadership. $Expect_{ic}$ stands for community leaders' expectation and belief about their peers' contribution to the public good game.[16] X_{ict} captures additional

[16] In the interest of capturing non-linear patterns and relationships, we also considered including higher-order polynomial terms in our estimation and kept them whenever these nonlinear terms appears to be statistically

Table 1: Summary Statistics

	Mean	Std. Dev.	Min.	Max.	N
Tokens shared to the public good	54.847	26.948	0	100	1080
Belief about other's cooperation	51.571	25.304	0	100	1080
Gender of the leader (Female=1)	0.185	0.389	0	1	1080
Age (years)	41.905	13.175	18	97	1080
Illiterate	0.179	0.383	0	1	1080
Primary education	0.393	0.489	0	1	1080
Secondary education	0.164	0.37	0	1	1080
Above secondary education	0.265	0.441	0	1	1080
Urban (Urban=1)	0.156	0.363	0	1	1080
Kebele leader	0.167	0.373	0	1	1080
Community elder	0.166	0.372	0	1	1080
Religious leader	0.165	0.371	0	1	1080
Teacher	0.169	0.374	0	1	1080
Women representative	0.167	0.373	0	1	1080
Youth representative	0.168	0.374	0	1	1080
Poorest in the village	0.044	0.206	0	1	1079
Among the poorest in the village	0.112	0.316	0	1	1079
Poorer than most households	0.114	0.318	0	1	1079
About average	0.614	0.487	0	1	1079
Richer than most households	0.095	0.294	0	1	1079
Amongst the richest in the village	0.019	0.135	0	1	1079
Richest in the village	0.002	0.043	0	1	1079
Preference for redistribution	3.942	1.007	1	5	1080
Number of battles 20 km	8.644	15.217	0	83	1080
Number of explosions 20 km	0.828	2.122	0	13	1080
Number of protests 20 km	1.933	3.822	0	24	1080
Number of riots 20 km	0.333	0.895	0	5	1080
Number of strategic developments 20 km	0.939	2.115	0	13	1080
Number of violence against civilians 20 km	2.217	3.411	0	16	1080
Number of battles 10 km	3.233	6.198	0	31	1080
Number of explosions 10 km	0.289	0.922	0	7	1080
Number of protests 10 km	0.65	1.974	0	11	1080
Number of riots 10 km	0.122	0.574	0	4	1080
Number of strategic developments 10 km	0.306	0.973	0	7	1080
Number of violence against civilians 10 km	0.700	1.623	0	12	1080
Tigray	0.183	0.387	0	1	1080
Afar	0.039	0.193	0	1	1080
Amhara	0.117	0.321	0	1	1080
Oromia	0.322	0.468	0	1	1080
Somali	0.106	0.307	0	1	1080
SNNPR	0.222	0.416	0	1	1080
Dire Dawa	0.011	0.105	0	1	1080

observable demographic and socioeconomic characteristics of community leaders, including age, education level and their role in the community. θ_c represents a vector of geographic fixed effects, which can control for any unobservable time-invariant differences across communities, including culture and norms. We control for a set of regional dummies (fixed-effects) to capture differences in livelihoods, culture, and norms related to cooperation and collective action. ϵ_{ic} captures additional unobservable factors that may explain variation in cooperation.

We also aim to uncover the implication of different types of conflicts on community leaders' willingness to cooperate or free ride. We hypothesize that different types of conflicts can affect community members and leaders differently, both in terms of their perception and their actual impacts. For example, some conflicts, such as battles between organized entities and groups, that usually affect the whole community or related public infrastructure can foster cooperation within communities while increasing enmity towards other (out of group) members of communities (Bauer et al., 2016). On the other hand, protests and riots can divide political opinions among community leaders and opinion makers, which in turn can beget mistrust and division among community leaders. For this purpose, we disaggregate exposure to different types of conflict events and estimate the following empirical specification:

$$C_{ic} = \alpha_1 Battle_{ic} + \alpha_2 OtherConflict_{ic} + \alpha_3 Ind_{ic} + \alpha_4 Expect_{ic} + \alpha_5 X_{ic} + \theta_c + \phi_{ic} \quad (3)$$

where all terms except $Battle_{ic}$ and $OtherConflict_{ic}$ are as defined in Eq. 2. $Battle_{ic}$ and $OtherConflict_{ic}$ stands for the number of battles and other types of conflict events experienced within a 20 km radius of the community. We anticipate that while battles and related covariate shocks may trigger cooperation as a response to external threat, other types of conflict can divide opinions and erode trust among community members. Thus, we hypothesize α_1 to be positive and statistically significant, while α_2 assumes the opposite. To probe the robustness of our results, we use both event counts associated with battles and other types of conflict events (such as riots and demonstration) as well as the corresponding number of fatalities recorded.

The empirical model specified in Eq. 2 and 3 exploit spatial variation exposure to conflict events and willingness to cooperate. However, such specifications can be susceptible to omitted variables bias, as exposure to conflict may not be purely exogenous. Although we anticipate that community leaders have limited influence to shape the type of large-scale battles that have occurrred in many parts of Ethiopia in the past three years, their attributes may affect social

significant.

fabric and social cohesion among community members. For example, some types and attributes of community leaders may correlate with the breadth and spread of conflict in communities, especially small-scale conflicts. Thus, although we are controlling for a comprehensive list of observable characteristics and geographic variables, our estimates might not carry causal effects due to potential endogeneity problems arising from omitted attributes of community leaders that may affect exposure to conflict and willingness to cooperate. We thus interpret our results as associational evidence on the relationship between the important characteristics of community leaders and cooperation. That said, such associational evidence is important to inform strategies to nurture cooperation among leaders and other members of communities grappling with different types of conflicts. In particular, identifying which type and how community leaders can be more cooperative is crucial for effective delivery of public goods and services.

We note that leaders for each community come from a narrowly defined area belonging to the same community and ethnic group. Thus, cooperation in our context mostly stands for within community or in-group cooperation rather than out-group cooperation. We have six community leaders from each community, who are likely to face similar shocks, including conflict, which could generate spatial correlation of unobserved effects (error terms) across leaders within the same community. To account for this, standard errors are clustered at the community level, which is the level at which exposure to conflict varies, thus, the recommended level of clustering for standard errors (Abadie et al., 2023).

4. Results and discussions

In this section, we first present empirical evidence on the implications of community leaders attributes, including gender and beliefs about others' cooperation, on their cooperation behavior (i.e., contribution to the public good). We next delve into the implication of conflict and fatalities on cooperation among community leaders. We further perform several robustness checks to ascertain whether conflict promotes or inhibits cooperation.

4.1. Community leaders' attributes, beliefs, and cooperation

Table 2 provides estimates of Eq. 2, which explains community leaders' cooperation behavior as a function of community leaders' attributes and roles in communities, belief about others' cooperation as well as a battery of characteristics at both the leader and community levels. We provide estimation results for different specifications. We first report baseline specifications controlling for leaders' attributes and roles as well as belief about other leaders' cooperation.

We extend this by controlling region fixed effects in the second column. We then add a battery of community leaders' socioeconomic characteristics in the third column.

The estimation results in Table 2 show that women leaders (captured by women representative) are more likely to contribute higher amounts of money to the public good. More specifically, women community representatives contributed significantly more to the public good than the kebele leaders. The size of the estimate is reasonably large: on average women leaders (women representatives) contribute 6 ETB more to the public good than the keble leader (the base group). Considering the mean contribution to the public good reported in Table 1 (55 ETB), this translates to an 11 percent higher contribution. This is surprising, given that the kebele leaders assume the highest official administrative responsibility in the village. We note that as almost all the community leaders, except the women representatives, are male, using an indicator variable for women representative or an indicator variable for gender of community leaders generates similar results. In Table A2, we report similar results using an indicator variable for gender of community leaders. This implies that including women in community leadership can increase cooperation in the provision of public goods and services. This finding contributes to the existing mixed evidence concerning the impact of women leaders on public goods provision. The majority of findings from experimental and quasi-experimental studies on women's leadership roles in public goods provision vary across different contexts, even within the same country. While some studies have shown a positive effect of women's leadership on public goods provision (e.g., see Deininger et al., 2020; Duflo and Topalova, 2004), others find that women's leadership is associated with a reduction in public goods provision (Gajwani and Zhang, 2015; Deininger et al., 2015; Ban and Rao, 2008; Bardhan et al., 2010; Rajaraman and Gupta, 2012).

Although we lack additional data to uncover the mechanisms driving these differences across men and women community leaders, we can suggest the following alternative mechanisms. First, evolving literature in economics (Eckel and Grossman, 2008; Vieider et al., 2015; Charness and Gneezy, 2012; Falk et al., 2018; Croson and Gneezy, 2009) and psychology (Maccoby and Jacklin, 1978) documents important differences in social preferences between men and women. Many of these studies show that women exhibit higher levels of altruism, cooperation, trust, and positive reciprocity than men (Falk et al., 2018; Ho et al., 2024; Kamas and Preston, 2015). Interestingly, Falk et al. (2018) find that these gender differences in pro-social behaviors are relatively universal across countries and cultures, rather than being limited to specific cultural or developmental contexts. Previous studies have also suggested that these gender differences

in preferences may stem from biological factors and social norms (Croson and Gneezy, 2009). Pro-social behavior and motivations are important ingredients and incentives for delivery of public goods and services (Besley and Ghatak, 2018; Gregg et al., 2011). Second, women may exhibit higher levels of empathy and responsibility to their constituency than men (Beutel and Marini, 1995; Adams and Funk, 2012; Kamas and Preston, 2021). Third, the experimental setting that put women as minority in the group may trigger pressure to contribute more to the public goods as demonstrated by DellaVigna et al. (2013).

However, we find no significance difference in contribution to the public good between the kebele leader and community elder, religious leader, teacher, and youth representative. Furthermore, Table 2 indicates no significant association between community leaders' demographic characteristics (such as age and education) and contribution to the public good.

Furthermore, the results in Table 2 show that community leaders' belief about other leaders' contributions is strongly associated with their own contribution to the public good. The estimates in column (1) show that a one birr increase in the belief of leaders about others' contributions is associated with a 0.4 ETB increase in their own contribution to the public good. These results are robust even when we control for a set of leader characteristics in column (3) and consistent with the findings in previous studies (Kocher et al., 2015). Specifically, the study by Kocher et al. (2015) finds that student subjects at the University of Munich contributed about 6.83 points (34.2 percent of their 20 points endowment) to the public good. The corresponding guessed contribution by other student subjects is also about 7.32 points, meaning about 36.6 percent of their endowment.[17] Consistent with the findings from other lab-in-the-field experiments (Hopfensitz et al., 2014; Nigus et al., 2023), the community leaders in our study made a substantial contribution (leaders contributed about 55 percent of their endowment) to the public good. This contribution surpassed that of student subjects in lab-experiments, which averaged around 34 percent. Likewise, the community leaders exhibit a higher expectation that their fellow leaders will contribute to the public good (approximately 52 percent of their endowment), compared to student subjects (who expect around a 36 percent contribution from their peers).

We are also interested in examining the role of culture and norm on community leaders' cooperation behavior. To this end, we control for geographic fixed effects—region fixed effects—in

[17] Other similar studies also find qualitatively similar results (Fischbacher and Gächter, 2010; Fischbacher et al., 2001).

Table 2: Leader's role, belief, and cooperation among community leaders

	(1) Cooperation	(2) Cooperation	(3) Cooperation
Community elder	-0.514	-0.453	-0.307
	(2.323)	(2.333)	(2.620)
Religious leader	2.596	2.644	2.823
	(2.171)	(2.171)	(2.268)
Teacher	1.937	2.009	1.411
	(2.460)	(2.456)	(2.944)
Women representative	5.127**	5.099**	6.013**
	(2.178)	(2.176)	(2.455)
Youth representative	2.802	2.814	2.537
	(2.213)	(2.213)	(2.575)
Belief about other's cooperation	0.415***	0.395***	0.395***
	(0.052)	(0.051)	(0.051)
Age (in years)			0.017
			(0.086)
Primary education			3.112
			(2.010)
Secondary education			3.410
			(2.640)
Above secondary education			3.443
			(3.043)
Urban			-2.008
			(3.187)
About average			-1.762
			(1.981)
Richer than most households			-0.217
			(2.909)
Preference for redistribution			-1.398*
			(0.832)
Afar		25.117***	28.628***
		(7.504)	(7.982)
Amhara		10.199***	10.747***
		(3.352)	(3.371)
Oromia		6.229**	7.049**
		(2.950)	(3.105)
Somali		6.061	7.903*
		(4.067)	(4.533)
SNNPR		4.232	4.594
		(3.367)	(3.495)
Dire Dawa		25.561***	26.529***
		(7.284)	(8.021)
Constant	31.444***	26.393***	29.121***
	(3.110)	(3.650)	(7.275)
Observations	1,080	1,080	1,079
R-squared	0.155	0.193	0.198

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. The base group is kebele leaders. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

columns (2) and (3). As stated above, accounting for geographic fixed effects allow us to control for any unobservable time-invariant differences across communities, including culture and norms. Table 2 reveals that community leaders based in Tigray region contributed less to the public good compared with those based in Afar, Amhara, and Oromia regions as well as those resided in Dire Dawa city administration. This highlights important regional heterogeneity in culture and norms that defines cooperative behavior and associated attributes. Accounting for a large set of regional fixed effects improves the predictive power of our estimation, suggesting that these regional fixed effects capture important differences in culture and norms related to cooperation and collective action.

4.2. Conflict and cooperation

Table 3 provides estimates of Eq. 3, which explains the implications of different types of conflict events on community leaders' cooperation behavior. Particularly, it provides estimates on the relationship between exposure to different types of conflict events and cooperation among community leaders. To enhance power and test our main hypothesis, we categorized the different conflict events into two broad types of disorder: (1) *political violence* and (2) *demonstrations*, and *strategic developments*. As discussed in section 2, we categorize battles, explosions/remote violence, and violence against civilians into the *political violence* disorder type. We then categorize the remaining conflict events—protests, riots and strategic developments—into *demonstrations and strategic developments*.

Column (1) of Table 3 presents the most parsimonious model, wherein only conflict events and region fixed-effects are included as explanatory variables. The estimation results reveal a significant association between different conflict events and cooperation, albeit in divergent directions. Specifically, exposure to political violence within a 20 km radius distance exhibits a positive and significant association with cooperation among community leaders, while exposure to demonstrations and strategic developments within the same radius is negatively associated with cooperation. These estimation findings remain robust even after controlling for beliefs about other leaders' cooperation and the role of community leaders in column (2), as well as community leaders' individual characteristics in column (3). The results in Table 3 indicate that, on average, an additional incident of political violence that took place within a 20 km radius of the kebele is associated with a 0.15 ETB increase in the contribution to the public good. On the other hand, an additional demonstration or strategic development that took place

within 20 km radius of the kebele, on average, is associated with a 0.43 ETB decrease in the contribution to the public good.

In section 3, we hypothesized that different types of conflicts may affect community leaders' cooperation behavior differently. Some conflict events such as battles, remote violence, and violence against civilians between organized groups that usually affect the whole community, including essential public infrastructure, may foster cooperation within communities. On the other hand, protests and riots may deter cooperation by dividing political opinions and increasing division among community leaders. The estimation results in Table 3 lend support to our hypothesis in the sense that conflict events such as political violence (exposure to battles, explosions/remote violence, and violence against civilians) that usually affect the whole community is positively and significantly associated with cooperation. Despite the immediate disruption and destruction they cause, such events can paradoxically foster cooperation within communities (Bauer et al., 2014). As hypothesized by previous studies, shared identity and adversity can drive cooperation—community members may unite in solidarity to confront and overcome the common enemy (Bauer et al., 2014). The shared adversity can lead to a sense of collective identity and purpose, fostering cooperation among community members, the need for mutual support, and recognizing the strength in numbers can drive communities to unite. These results are consistent with the findings in previous studies that examine the effect of conflict on social capital and cooperation. For instance, the study by Rohner et al. (2013) in Uganda finds that conflict (battle, violence against civilians, and internally displace people) has a negative and significant effect on social capital (trust). However, they also show that these conflict events have no significant effects on trust towards inter-group members, such as known people and relatives, indicating that conflict erodes trust mainly towards out-group members by strengthening ethnic identity and within group ties. Similarly, Bauer et al. (2014) study the effect of armed conflict on altruism and inequality aversion using allocation games in Sierra Leone and finds that conflict increases altruistic behavior and makes individuals more inequality averse but only towards in-group members. Cecchi et al. (2016b) find evidence that conflict leads to differential pro-social behavior towards in-group and out-group members.

Table 3 also shows that conflict events such as protests and riots, that affect only a certain portion of the community and hence can trigger division among the community members, are negatively and significantly associated with cooperation. This result is consistent with the evidence that conflicts within a complex and diverse network of rivalries may decrease

cooperation. For instance, the study by Cassar et al. (2013) finds that in situations where conflict was perpetrated by people from within the communities (intra-group conflicts) and neighbors fight with neighbors, conflict decreases trust among community members from the same village. Notably, the estimated coefficients remain consistent across different specifications.[18]

We also measured exposure to conflict using the cumulative number of *fatalities* caused by different conflict events that have taken place within a 20 km radius of the community. Table 4 and Table A4 in the appendix report the association between fatalities caused by different conflict events and cooperation among community leaders. More specifically, we measured fatalities as those caused by political violence, and demonstrations and strategic developments, consistent with the method used for categorizing different conflict events. Columns (1)–(3) of Tables 4 and A4 present the estimation results ranging from the parsimonious model (column (1)), where we only control for fatalities and region fixed effects as explanatory variables, to our most preferred specification (column (3)), which includes a comprehensive list of community and leader level characteristics.

Table 4 shows that fatalities caused by different conflict events have differential associations with cooperation. We find closely consistent results with the association between different conflict events and cooperation in Table 3. Specifically, fatalities caused by conflict events that affect the community as a whole tend to enhance cooperation among its members. Table 4 also echoes the estimation results reported in Table 3, suggesting that fatalities stemming from conflicts capable of fracturing community unity and weakening interpersonal bonds may decrease cooperation. For instance, fatalities caused by riots and protests have the potential to undermine cooperation within communities by fostering division along ideological, political, or social lines, eroding trust, instilling fear, and diverting resources.[19] [20]

[18] In Table A3, we present the relatively more disaggregated results. As hypothesized, the association between the disaggregated conflict events and cooperation remain broadly consistent. The link between exposure to political violence and cooperation is significant at the 10% significance level in our most preferred specification in column (3) that includes a set of relevant covariates and region fixed-effects. Demonstrations as well as strategic developments have the expected sign but the later appears to be statistically insignificant, potentially due to lack of power because of the limited variation in this variable of interest.

[19] Table A4 presents the relationship between a relatively more disaggregated fatality counts and cooperation. The estimation results are in line with those reported in Table A3, While fatalities arising from political violence and demonstrations demonstrate significant positive and negative associations with cooperation, respectively, no significant association is observed between fatalities caused by strategic developments and cooperation. Nonetheless, the results presented in Table A4 reinforce the conclusions drawn from Tables 3 and 4, indicating that conflicts affecting the entire community may foster cooperation, whereas conflicts specific to the community may dampen cooperation.

[20] Moreover, we examine whether women generally contribute to the public good than men leaders while controlling for different conflict events. As shown in Table A5, women contribute approximately 4 ETB more to the public good than their male counterparts.

Table 3: Conflict and cooperation

	(1) Cooperation	(2) Cooperation	(3) Cooperation
Political violence in 20km	0.207***	0.169**	0.158**
	(0.078)	(0.074)	(0.074)
Demonstrations and strategic dev'ts in 20km	-0.527**	-0.450**	-0.422**
	(0.226)	(0.187)	(0.187)
Community elder		-0.432	-0.241
		(2.338)	(2.632)
Religious leader		2.672	2.900
		(2.172)	(2.270)
Teacher		2.016	1.549
		(2.456)	(2.915)
Women representative		5.091**	5.976**
		(2.175)	(2.458)
Youth representative		2.814	2.577
		(2.215)	(2.570)
Belief about other's cooperation		0.390***	0.390***
		(0.051)	(0.050)
Age (in years)			0.016
			(0.085)
Primary education			3.002
			(2.015)
Secondary education			3.400
			(2.650)
Above secondary education			3.234
			(3.041)
Urban			-1.693
			(3.125)
About average			-1.404
			(1.952)
Richer than most households			-0.238
			(2.848)
Preference for redistribution			-1.167
			(0.821)
Afar	35.676***	30.212***	33.016***
	(6.288)	(6.466)	(6.833)
Amhara	12.150***	12.627***	12.959***
	(3.853)	(3.418)	(3.430)
Oromia	12.816***	11.436***	11.779***
	(4.054)	(3.964)	(3.878)
Somali	8.868*	11.473**	12.734***
	(5.244)	(4.700)	(4.842)
SNNPR	9.282**	9.991**	9.879**
	(4.468)	(4.148)	(4.108)
Dire Dawa	41.178***	33.808***	34.115***
	(6.205)	(5.852)	(6.471)
Constant	43.729***	22.053***	24.105***
	(3.041)	(4.230)	(7.744)
Observations	1,080	1,080	1,079
R-squared	0.071	0.203	0.207

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Political violence in 20 km and Demonstrations and strategic developments in 20 km are continuous cumulative number of political violence (battle, violence against civilians, and explosions/remote violence) and demonstrations (riots and protests) and strategic development, respectively, experienced within 20 km radius distance from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Fatalities and cooperation

	(2) Cooperation	(3) Cooperation	(4) Cooperation
Fatalities - political violence in 20km	0.001***	0.001**	0.001**
	(0.000)	(0.000)	(0.000)
Fatalities - demonstrations and strategic dev't in 20km	-0.003*	-0.003*	-0.002*
	(0.002)	(0.001)	(0.001)
Community elder		-0.436	-0.257
		(2.338)	(2.636)
Religious leader		2.662	2.861
		(2.173)	(2.277)
Teacher		2.021	1.499
		(2.457)	(2.923)
Women representative		5.092**	5.948**
		(2.175)	(2.467)
Youth representative		2.816	2.520
		(2.215)	(2.580)
Belief about other's cooperation		0.390***	0.390***
		(0.051)	(0.050)
Age (in years)			0.014
			(0.086)
Primary education			2.987
			(2.034)
Secondary education			3.294
			(2.657)
Above secondary education			3.202
			(3.070)
Urban			-1.812
			(3.194)
About average			-1.540
			(1.971)
Richer than most households			-0.315
			(2.890)
Preference for redistribution			-1.314
			(0.810)
Afar	32.363***	27.418***	30.591***
	(7.398)	(7.341)	(7.788)
Amhara	9.622**	10.365***	10.875***
	(3.946)	(3.581)	(3.596)
Oromia	9.829***	8.948***	9.533***
	(3.337)	(3.237)	(3.274)
Somali	5.665	8.797**	10.355**
	(4.810)	(4.227)	(4.589)
SNNPR	5.547	6.887*	7.056**
	(3.840)	(3.501)	(3.540)
Dire Dawa	36.053***	29.372***	30.068***
	(7.202)	(6.743)	(7.383)
Constant	46.261***	24.068***	26.784***
	(2.282)	(3.779)	(7.356)
Observations	1,080	1,080	1,079
R-squared	0.068	0.200	0.205

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Fatalities - political violence in 20k and demonstrations and strategic developments in 20 km are continuous cumulative number of fatalities caused by political violence (battle, violence against civilians, and explosions/remote violence) and demonstrations (riots and protests) and strategic developments, respectively, experienced within 20 km radius distance from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

4.3. Robustness

We probe the robustness our results by measuring exposure to conflict by counting the number of conflict events within a 25 km and 30 km radius around the community. We hypothesize that the 25 km and 30 km radius buffers are reasonable distance to ensure that conflicts occurred within close proximity, thereby potentially detecting any significance association between conflict events and cooperation behavior. To test if the observed results in Tables 3 and 4 remain consistent, we explore the relationship between the cumulative number of conflicts in 25 km and 30 km radius and cooperation. The estimation results in Tables A6 through A9 in the appendix are consistent with the main results in Tables 3 and 4. The estimation results show that different conflict events can have varied effects on cooperation. The results show that conflict events that affected the whole society may foster cooperation and strengthen social bonds in the face of adversity. Such types of conflict events promote in-group cooperation. On the other hand, conflict events that triggers division among in-group community members are negatively associated with cooperation.[21]

To probe if the observed relationship between conflict and cooperation is channeled through changing beliefs about other leaders cooperation behavior, we test the link between exposure to conflict and beliefs about others' contribution in Table A10. Political violence is positively associated with belief about other leaders' cooperative behavior in our parsimonious models (columns (1) and (2)). However, this relationship dissipates gradually in our most preferred specification (column (3)). In addition, we find no significant association between demonstrations and strategic developments and belief about others leaders' cooperation behavior. In Table A11, we explore the relationship between fatalities and belief about other leaders cooperation behavior. We observe no substantial association between fatalities and belief about others' behavior, with the estimated coefficients less economically meaningful. The estimation results in Tables A10 and A11 suggest that conflict may affect cooperation through channels other than shaping beliefs.

[21] To further probe if the observed results in Tables 3 and 4 as well as Tables A6 through A9 remain robust, we measure exposure to conflict events at 10 km radius distance. We find statistically weak association between different conflict events and cooperation. This could be attributed to the relatively limited number of conflict events within a 10 km radius distance. Supporting this notion, Table 1 indicates that the occurrences of conflicts within a 10 km radius distance are notably fewer compared to those within a 20 km radius distance. For instance, the number of battles within a 10 km radius distance is about one-third of the number of battles occurred within a 20 km radius distance. Moreover, this paper focuses on villages (Kebeles) rather than individual households, suggesting that villages cover a larger geographic expanse. Hence, a 10 km radius distance might not necessarily entail a broad scope for the exposure to conflict events. The results are available up on request.

5. Conclusions

Cooperation is vital for mobilizing collective action and delivering public goods and services. Mounting evidence suggests that leaders are instrumental in promoting and maintaining cooperation within groups. This is particularly pertinent in rural settings of Africa where government administrative capacities are constrained, necessitating reliance on community or traditional leaders. However, the attributes and factors driving cooperation among community leaders and strategies for enhancing willingness to cooperate among community leaders remain relatively uncharted territories. This paper aims to examine the role that women's leadership as well as exposure to armed conflict play in facilitating or limiting cooperation among community leaders. It aims to extend earlier studies by investigating (i) the role women leaders play in the provision of public goods, (ii) the drivers of cooperation among community leaders rather than previously studied student subjects and individuals, and (iii) the implication of exposure to different types of conflict events (both covariate and idiosyncratic) and cooperation.

To this end, we use a unique dataset from about 1,080 community leaders selected from 180 villages/kebeles in Ethiopia. We use a lab-in-the-field experiment, survey, and geo-referenced data on conflict exposure (which come from the ACLED database). We use contributions in the public good game as measure of cooperation. We find that women leaders exhibit a higher level of cooperation than male leaders. For example, compared to those assuming the highest official administrative responsibility in the village, who are all men, women leaders (and representatives) contribute about 11 percent more to public goods.This complements existing contested evidence regarding the role of women leaders in public goods provision.We analyzed the contributions of women representatives alongside other community leaders, potentially contributing to a more nuanced understanding of women's role in public goods provision, as opposed to the limited perspective in the provision of public goods offered by comparing villages with and without female chairpersons. Our findings indicate that including women in community leadership can increase cooperation and the provision of public goods and services.

Ethiopia recently witnessed a widespread armed conflict, which impacted millions of people. This allows to explore the implication of various types of conflicts on community leaders' cooperative behavior by merging the lab-in-the field experiment with conflict data from the ACLED database. We, therefore, test whether exposure to different types of conflict matters for cooperation. We provide nuanced empirical evidence that reconciles existing mixed evidence on the

implication of exposure to conflict on cooperation. We find that covariate conflict events that affect the whole community such as political violence (including battles, explosions/remote violence, and violence against civilians) are associated with higher levels of cooperation. However, localized conflicts impacting specific community segments, such as demonstrations, protests, and riots, are associated with lower levels of cooperation.

While our data cannot pinpoint the exact mechanisms through which women's leadership and conflicts shape cooperation, our findings offer important insights that can help inform strategies to foster cooperation. These findings highlight the role of leaders' attributes as well as their exposure to shocks. That said, although the conclusions drawn in this paper offer valuable insights for policy and future research, they warrant additional investigation using longitudinal data as well as experimental sources of variation. Future research may also focus on uncovering the mechanisms through which leaders' attributes and exposure to conflict can shape cooperative behavior.

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Data availability

Data will be made available on request.

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A. Supplementary Tables

Table A1: Leaders participation in targeting beneficiaries for humanitarian assistance

Leader type	%age participated in kebele food security task force	%age participated in targeting of beneficiaries (e.g. PSNP)
Kebele leader	62.78	74.44
Community elder	39.66	52.51
Religious leader	32.58	49.44
Teacher	36.81	42.86
Women representative	41.67	52.78
Youth representative	36.46	50.83
Observations	1080	1080

Table A2: Female leadership and contribution to the public good

	(1) Cooperation	(2) Cooperation	(3) Cooperation
Gender of the leader	3.364**	3.576**	4.118**
	(1.601)	(1.602)	(1.770)
Belief about other's cooperation	0.415***	0.396***	0.396***
	(0.052)	(0.051)	(0.051)
Age (in years)			-0.015
			(0.067)
Primary education			2.804
			(1.950)
Secondary education			3.147
			(2.601)
Above secondary education			2.763
			(2.637)
Urban			-1.979
			(3.174)
About average			-1.999
			(1.970)
Richer than most households			-0.573
			(2.909)
Preference for redistribution			-1.404*
			(0.823)
Afar		25.258***	28.540***
		(7.486)	(7.985)
Amhara		10.259***	10.646***
		(3.332)	(3.339)
Oromia		6.342**	7.052**
		(2.948)	(3.085)
Somali		6.206	7.866*
		(4.075)	(4.487)
SNNPR		4.298	4.616
		(3.365)	(3.443)
Dire Dawa		25.701***	26.386***
		(7.268)	(7.912)
Constant	32.811***	27.654***	32.283***
	(2.739)	(3.335)	(6.187)
Observations	1,080	1,080	1,079
R-squared	0.152	0.191	0.196

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Standard errors in parentheses (clustered at village level), *** p<0.01, ** p<0.05, * p<0.1.

Table A3: Conflict and cooperation - disaggregated conflict events

Political violence in 20km	0.218***	0.152*	0.144*
	(0.083)	(0.078)	(0.076)
Demonstrations in 20km	-0.463	-0.546*	-0.502*
	(0.369)	(0.293)	(0.300)
Strategic developments in 20km	-0.750	-0.112	-0.141
	(0.742)	(0.606)	(0.605)
Community elder		-0.435	-0.206
		(2.339)	(2.630)
Religious leader		2.669	2.909
		(2.173)	(2.273)
Teacher		2.013	1.497
		(2.457)	(2.907)
Women representative		5.092**	5.955**
		(2.177)	(2.452)
Youth representative		2.813	2.539
		(2.216)	(2.568)
Belief about other's cooperation		0.391***	0.391***
		(0.051)	(0.051)
Age (in years)			0.014
			(0.085)
Primary education			2.974
			(2.008)
Secondary education			3.373
			(2.642)
Above secondary education			3.244
			(3.038)
Urban			-1.587
			(3.154)
About average			-1.441
			(1.948)
Richer than most households			-0.255
			(2.845)
Preference for redistribution			-1.157
			(0.823)
Afar	35.717***	30.134***	32.877***
	(6.288)	(6.468)	(6.828)
Amhara	12.652***	11.866***	12.317***
	(4.398)	(3.872)	(3.844)
Oromia	13.026***	11.114***	11.494***
	(4.098)	(3.991)	(3.883)
Somali	8.914*	11.411**	12.645***
	(5.243)	(4.689)	(4.823)
SNNPR	9.345**	9.896**	9.801**
	(4.444)	(4.121)	(4.076)
Dire Dawa	41.020***	34.027***	34.284***
	(6.501)	(5.604)	(6.255)
Constant	43.518***	22.317***	24.439***
	(3.115)	(4.202)	(7.657)
Observations	1,080	1,080	1,079
R-squared	0.071	0.203	0.207

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Political violence in 20 km, Demonstrations in 20 km, and Strategic developments in 20 km are continuous cumulative number of political violence (battle, violence against civilians, and explosions/remote violence), demonstrations (riots and protests) and strategic developments, respectively, experienced within 20 km radius from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A4: Fatalities and cooperation - disaggregated conflict events

	(2) Cooperation	(3) Cooperation	(4) Cooperation
Fatalities - political violence in 20km	0.001**	0.001*	0.001*
	(0.000)	(0.000)	(0.000)
Fatalities - demonstrations in 20km	-0.009	-0.007*	-0.007*
	(0.005)	(0.004)	(0.004)
Fatalities - strategic developments in 20km	0.004	0.004	0.004
	(0.006)	(0.004)	(0.004)
Community elder		-0.433	-0.247
		(2.340)	(2.639)
Religious leader		2.664	2.873
		(2.174)	(2.278)
Teacher		2.022	1.613
		(2.458)	(2.912)
Women representative		5.091**	5.914**
		(2.176)	(2.461)
Youth representative		2.814	2.530
		(2.216)	(2.578)
Belief about other's cooperation		0.390***	0.390***
		(0.051)	(0.051)
Age (in years)			0.010
			(0.086)
Primary education			2.926
			(2.029)
Secondary education			3.192
			(2.646)
Above secondary education			2.971
			(3.044)
Urban			-1.744
			(3.164)
About average			-1.456
			(1.985)
Richer than most households			-0.016
			(2.910)
Preference for redistribution			-1.305
			(0.810)
Afar	32.118***	27.207***	30.215***
	(7.373)	(7.328)	(7.752)
Amhara	8.810**	9.647***	10.171***
	(4.029)	(3.649)	(3.674)
Oromia	9.322***	8.502***	9.052***
	(3.373)	(3.264)	(3.311)
Somali	5.592	8.729**	10.190**
	(4.816)	(4.228)	(4.574)
SNNPR	5.167	6.550*	6.682*
	(3.854)	(3.520)	(3.567)
Dire Dawa	37.707***	30.840***	31.391***
	(6.025)	(5.646)	(6.300)
Constant	46.813***	24.579***	27.397***
	(2.341)	(3.797)	(7.355)
Observations	1,080	1,080	1,079
R-squared	0.069	0.202	0.206

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Fatalities - political violence in 20k, demonstrations in 20 km, and Strategic developments in 20 km are continuous cumulative number of fatalities caused by political violence (battle, violence against civilians, and explosions/remote violence) and demonstrations (riots and protests), and Strategic developments, respectively, experienced within 20 km radius from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A5: Conflict, female leadership and cooperation

	(2) Cooperation	(3) Cooperation	(4) Cooperation
Political violence in 20km	0.207***	0.169**	0.159**
	(0.078)	(0.073)	(0.074)
Demonstrations and strategic dev'ts in 20km	-0.527**	-0.446**	-0.414**
	(0.226)	(0.186)	(0.186)
Gender of the leader		3.465**	3.947**
		(1.598)	(1.773)
Belief about other's cooperation		0.390***	0.391***
		(0.051)	(0.050)
Age (in years)			-0.017
			(0.068)
Primary education			2.664
			(1.958)
Secondary education			3.102
			(2.609)
Above secondary education			2.570
			(2.643)
Urban			-1.665
			(3.120)
About average			-1.655
			(1.943)
Richer than most households			-0.609
			(2.849)
Preference for redistribution			-1.176
			(0.812)
Afar	35.676***	30.325***	32.900***
	(6.288)	(6.454)	(6.849)
Amhara	12.150***	12.661***	12.812***
	(3.853)	(3.397)	(3.411)
Oromia	12.816***	11.529***	11.784***
	(4.054)	(3.953)	(3.869)
Somali	8.868*	11.594**	12.689***
	(5.244)	(4.699)	(4.816)
SNNPR	9.282**	10.033**	9.900**
	(4.468)	(4.138)	(4.095)
Dire Dawa	41.178***	33.895***	33.912***
	(6.205)	(5.856)	(6.438)
Constant	43.729***	23.354***	27.382***
	(3.041)	(3.865)	(6.799)
Observations	1,080	1,080	1,079
R-squared	0.071	0.201	0.205

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Political violence in 20 km, Demonstrations in 20 km, and Strategic developments in 20 km are continuous cumulative number of political violence (battle, violence against civilians, and explosions/remote violence), demonstrations (riots and protests) and strategic developments, respectively, experienced within 20 km radius from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Conflict and cooperation among community leaders - 25 km

	(1) Cooperation	(2) Cooperation	(3) Cooperation
Political violence in 25km	0.206***	0.169**	0.158**
	(0.078)	(0.074)	(0.074)
Demonstrations and strategic developments in 25km	-0.523**	-0.451**	-0.424**
	(0.227)	(0.187)	(0.187)
Community elder		-0.433	-0.245
		(2.338)	(2.632)
Religious leader		2.672	2.898
		(2.172)	(2.270)
Teacher		2.015	1.546
		(2.456)	(2.915)
Women representative		5.091**	5.976**
		(2.175)	(2.458)
Youth representative		2.814	2.577
		(2.215)	(2.570)
Belief about other's cooperation		0.390***	0.390***
		(0.051)	(0.050)
Age (in years)			0.016
			(0.085)
Primary education			3.000
			(2.014)
Secondary education			3.401
			(2.650)
Above secondary education			3.236
			(3.041)
Urban			-1.696
			(3.125)
About average			-1.405
			(1.951)
Richer than most households			-0.252
			(2.846)
Preference for redistribution			-1.170
			(0.821)
Afar	35.652***	30.222***	33.033***
	(6.297)	(6.465)	(6.832)
Amhara	12.135***	12.640***	12.973***
	(3.854)	(3.421)	(3.432)
Oromia	12.795***	11.447***	11.792***
	(4.059)	(3.971)	(3.884)
Somali	8.845*	11.488**	12.753***
	(5.248)	(4.706)	(4.846)
SNNPR	9.296**	10.038**	9.927**
	(4.486)	(4.167)	(4.126)
Dire Dawa	41.131***	33.825***	34.138***
	(6.230)	(5.849)	(6.466)
Constant	43.743***	22.030***	24.089***
	(3.047)	(4.239)	(7.750)
Observations	1,080	1,080	1,079
R-squared	0.071	0.203	0.207

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Political violence in 25 km and Demonstrations in 25 km & strategic developments in 25 km are continuous cumulative number of political violence (battle, violence against civilians, and explosions/remote violence), demonstrations (riots and protests) & strategic developments, respectively, experienced within 25 km radius from the community. Standard errors, clustered at the village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A7: Fatalities and cooperation among community leaders - 25 km

	(1) Cooperation	(2) Cooperation	(3) Cooperation
Fatalities - political violence in 25km	0.001***	0.001**	0.001**
	(0.000)	(0.000)	(0.000)
Fatalities - demonstrations and strategic developments in 25km	-0.003*	-0.003*	-0.002*
	(0.002)	(0.001)	(0.001)
Community elder		-0.436	-0.257
		(2.338)	(2.636)
Religious leader		2.662	2.861
		(2.173)	(2.277)
Teacher		2.021	1.499
		(2.457)	(2.923)
Women representative		5.092**	5.948**
		(2.175)	(2.467)
Youth representative		2.816	2.520
		(2.215)	(2.580)
Belief about other's cooperation		0.390***	0.390***
		(0.051)	(0.050)
Age (in years)			0.014
			(0.086)
Primary education			2.987
			(2.034)
Secondary education			3.294
			(2.657)
Above secondary education			3.202
			(3.070)
Urban			-1.812
			(3.194)
About average			-1.540
			(1.971)
Richer than most households			-0.315
			(2.890)
Preference for redistribution			-1.314
			(0.810)
Afar	32.363***	27.418***	30.591***
	(7.398)	(7.341)	(7.788)
Amhara	9.622**	10.365***	10.875***
	(3.946)	(3.581)	(3.596)
Oromia	9.829***	8.948***	9.533***
	(3.337)	(3.237)	(3.274)
Somali	5.665	8.797**	10.355**
	(4.810)	(4.227)	(4.589)
SNNPR	5.547	6.887*	7.056**
	(3.840)	(3.501)	(3.540)
Dire Dawa	36.053***	29.372***	30.068***
	(7.202)	(6.743)	(7.383)
Constant	46.261***	24.068***	26.784***
	(2.282)	(3.779)	(7.356)
Observations	1,080	1,080	1,079
R-squared	0.068	0.200	0.205

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Political violence in 25 km, and Demonstrations and strategic developments in 25 km are continuous cumulative number of fatalities caused by political violence (battle, violence against civilians, and explosions/remote violence) and demonstrations (riots and protests) and strategic developments, respectively, experienced within 25 km radius distance from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Conflict and cooperation among community leaders - 30 km

	(1) Cooperation	(2) Cooperation	(3) Cooperation
Political violence in 30km	0.206***	0.170**	0.159**
	(0.078)	(0.074)	(0.074)
Demonstrations and strategic developments in 30km	-0.525**	-0.452**	-0.425**
	(0.227)	(0.188)	(0.188)
Community elder		-0.433	-0.246
		(2.338)	(2.632)
Religious leader		2.672	2.897
		(2.172)	(2.271)
Teacher		2.015	1.544
		(2.456)	(2.915)
Women representative		5.091**	5.975**
		(2.175)	(2.458)
Youth representative		2.814	2.576
		(2.215)	(2.570)
Belief about other's cooperation		0.390***	0.390***
		(0.051)	(0.050)
Age (in years)			0.016
			(0.085)
Primary education			2.999
			(2.014)
Secondary education			3.390
			(2.649)
Above secondary education			3.234
			(3.041)
Urban			-1.693
			(3.126)
About average			-1.407
			(1.951)
Richer than most households			-0.267
			(2.845)
Preference for redistribution			-1.171
			(0.821)
Afar	35.673***	30.236***	33.049***
	(6.292)	(6.463)	(6.831)
Amhara	12.139***	12.637***	12.970***
	(3.854)	(3.420)	(3.432)
Oromia	12.807***	11.456***	11.800***
	(4.062)	(3.971)	(3.884)
Somali	8.866*	11.502**	12.768***
	(5.250)	(4.708)	(4.847)
SNNPR	9.339**	10.072**	9.961**
	(4.497)	(4.176)	(4.134)
Dire Dawa	41.168***	33.846***	34.161***
	(6.220)	(5.847)	(6.463)
Constant	43.728***	22.020***	24.094***
	(3.050)	(4.243)	(7.750)
Observations	1,080	1,080	1,079
R-squared	0.071	0.203	0.207

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Political violence in 30 km and Demonstrations in 30 km and strategic developments in 30 km are continuous cumulative number of political violence (battle, violence against civilians, and explosions/remote violence), demonstrations (riots and protests) and strategic developments, respectively, experienced within 30 km radius distance from the community. Standard errors, clustered at the village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Fatalities and cooperation among community leaders - 30 km

	(1) Cooperation	(2) Cooperation	(3) Cooperation
Fatalities - political violence in 30km	0.001***	0.001**	0.001**
	(0.000)	(0.000)	(0.000)
Fatalities - demonstrations and strategic developments in 30km	-0.003*	-0.003*	-0.002*
	(0.002)	(0.001)	(0.001)
Community elder		-0.436	-0.257
		(2.338)	(2.636)
Religious leader		2.662	2.861
		(2.173)	(2.277)
Teacher		2.021	1.499
		(2.457)	(2.923)
Women representative		5.092**	5.948**
		(2.175)	(2.467)
Youth representative		2.816	2.520
		(2.215)	(2.580)
Belief about other's cooperation		0.390***	0.390***
		(0.051)	(0.050)
Age (in years)			0.014
			(0.086)
Primary education			2.987
			(2.034)
Secondary education			3.294
			(2.657)
Above secondary education			3.202
			(3.070)
Urban			-1.812
			(3.194)
About average			-1.540
			(1.971)
Richer than most households			-0.315
			(2.890)
Preference for redistribution			-1.314
			(0.810)
Afar	32.363***	27.418***	30.591***
	(7.398)	(7.341)	(7.788)
Amhara	9.622**	10.364***	10.874***
	(3.946)	(3.580)	(3.596)
Oromia	9.829***	8.948***	9.533***
	(3.337)	(3.237)	(3.274)
Somali	5.665	8.797**	10.355**
	(4.810)	(4.227)	(4.589)
SNNPR	5.547	6.887*	7.056**
	(3.840)	(3.501)	(3.540)
Dire Dawa	36.053***	29.372***	30.068***
	(7.202)	(6.743)	(7.383)
Constant	46.261***	24.068***	26.784***
	(2.282)	(3.779)	(7.356)
Observations	1,080	1,080	1,079
R-squared	0.068	0.200	0.205

Notes. The dependent variable in columns (1)-(3) is the number of tokens shared to the public good. Political violence in 30 km and Demonstrations and strategic developments in 30 km are continuous cumulative number of fatalities caused by political violence (battle, violence against civilians, and explosions/remote violence) and demonstrations (riots and protests) and strategic developments, respectively, experienced within 30 km radius distance from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Conflict and belief about other's cooperation behavior

	(1) Belief about other's cooperation	(2) Belief about other's cooperation	(3) Belief about other's cooperation
Political violence in 20km	0.097*	0.097*	0.094
	(0.058)	(0.058)	(0.057)
Demonstrations and strategic developments in 20km	-0.196	-0.197	-0.210
	(0.208)	(0.208)	(0.211)
Community elder		3.040	1.480
		(2.349)	(2.645)
Religious leader		3.450	2.889
		(2.168)	(2.363)
Teacher		2.653	2.192
		(2.430)	(3.070)
Women representative		-1.444	0.069
		(2.197)	(2.452)
Youth representative		0.651	2.661
		(2.425)	(2.654)
Age (in years)			0.158*
			(0.084)
Primary education			2.270
			(2.477)
Secondary education			0.549
			(2.977)
Above secondary education			4.120
			(3.604)
Urban			0.612
			(3.208)
About average			0.337
			(1.918)
Richer than most households			-2.003
			(3.065)
Preference for redistribution			0.126
			(0.911)
Afar	14.024***	14.025***	15.852***
	(5.063)	(5.074)	(5.651)
Amhara	-1.226	-1.225	-0.321
	(3.634)	(3.643)	(3.636)
Oromia	3.542	3.542	4.139
	(3.894)	(3.903)	(4.024)
Somali	-6.759	-6.737	-5.318
	(5.084)	(5.094)	(5.121)
SNNPR	-1.804	-1.796	-0.994
	(4.149)	(4.155)	(4.132)
Dire Dawa	18.916***	18.918***	20.795***
	(3.900)	(3.909)	(3.938)
Constant	50.432***	49.041***	39.000***
	(3.103)	(3.597)	(7.171)
Observations	1,080	1,080	1,079
R-squared	0.036	0.041	0.047

Notes. The dependent variable in columns (1)-(3) is the average guessed number of tokens shared by other group members to the public good. Political violence in 20k and Demonstrations and strategic developments in 20 km are continuous cumulative number of political violence (battle, violence against civilians, & explosions/remote violence) and demonstrations (riots & protests) and strategic developments, respectively, experienced within 20 km radius from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

Table A11: Fatalities and belief about other's cooperation behavior

	(1) Belief about other's cooperation	(2) Belief about other's cooperation	(3) Belief about other's cooperation
Fatalities - political violence in 20km	0.000	0.000	0.000*
	(0.000)	(0.000)	(0.000)
Fatalities - demonstrations and strategic developments in 20km	-0.002	-0.002	-0.002
	(0.002)	(0.002)	(0.002)
Community elder		3.040	1.438
		(2.349)	(2.638)
Religious leader		3.447	2.870
		(2.167)	(2.364)
Teacher		2.656	2.232
		(2.430)	(3.067)
Women representative		-1.444	0.104
		(2.197)	(2.460)
Youth representative		0.651	2.705
		(2.425)	(2.663)
Age (in years)			0.160*
			(0.085)
Primary education			2.372
			(2.474)
Secondary education			0.526
			(2.973)
Above secondary education			4.145
			(3.600)
Urban			0.538
			(3.220)
About average			0.382
			(1.896)
Richer than most households			-1.962
			(3.074)
Preference for redistribution			0.052
			(0.907)
Afar	12.667**	12.667**	14.643**
	(5.223)	(5.235)	(5.808)
Amhara	-1.903	-1.903	-0.828
	(3.495)	(3.503)	(3.500)
Oromia	2.255	2.255	2.969
	(3.604)	(3.612)	(3.771)
Somali	-8.096*	-8.075	-6.499
	(4.893)	(4.902)	(4.963)
SNNPR	-3.420	-3.413	-2.517
	(3.710)	(3.714)	(3.739)
Dire Dawa	17.111***	17.112***	19.129***
	(3.363)	(3.371)	(3.506)
Constant	51.656***	50.264***	40.218***
	(2.668)	(3.238)	(6.941)
Observations	1,080	1,080	1,079
R-squared	0.036	0.041	0.047

Notes. The dependent variable in columns (1)-(3) is the average guessed number of tokens shared by other group members to the public good. Political violence in 20k and Demonstrations and Strategic developments in 20 km are continuous cumulative number of fatalities caused by political violence (battle, violence against civilians, and explosions/remote violence) and demonstrations (riots and protests) and strategic developments, respectively, experienced within 20 km radius from community. Standard errors, clustered at village (kebele) level, are given in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

B. Public Good Experiment - Experimental Instructions

Good morning!

Thank you very much for coming today to participate in this activity.

Today's activity may take up to one hour. Thus, if you think you will not be able to stay that long let us know now, before the activity begins. Please listen to the instructions carefully. During the entire activity, it is crucial that you do not ask questions or talk about the activity to any of the other participants. If you have any questions, please raise your hand, and the enumerator will come to you and answer your question privately. It is very important that you obey this rule because violation of this rule will lead to exclusion from this activity. Your participation in this activity is entirely voluntary and you can withdraw at any time without giving reasons.

This activity aims to study individual and group economic decision-making. In this activity, you will earn money. The amount you will earn depends on the decision you make and the decision of other participants with whom you will be grouped. This money will be paid to you in cash at the end of the activity. Any decision you make in this activity will be strictly confidential. Since your decision is private, we ask that you do not reveal your decision to any other participants either during or after the activity.

In this activity, you will be assigned to a group of three people, that is, there will be two other people in the group with you. At the beginning of the activity, each of you will be given an envelope with 100 tokens inside. All transactions throughout this activity will be calculated in tokens. At the end of the activity, the total number of tokens you have earned will be converted to Birr. In this activity, each token is equivalent to 1 Ethiopian Birr. After receiving an endowment of 100 tokens, you will be asked to decide privately how many of these 100 tokens to contribute to a group project and how many tokens to keep for yourself. You are free to choose how many tokens to contribute to the group project and keep the rest for yourself. In each group, everyone will benefit equally from the group project but only you benefit from the amount that you kept for yourself. After all three members of the group have decided how many tokens to contribute to the group project, the enumerator will then collect and add up all the contributions. The total number of tokens contributed to the group project will then

be doubled by the enumerator and shared equally by all three members of the group. Put the tokens you want to keep for yourself in a white envelope and the ones you contributed to a group project in a blue envelope.

To have a better understanding of the activity, let us do the following examples.

Example 1: Suppose that each participant in the group contributes all their 100 tokens to the group project.

Total number of tokens in the group project will be: 100+100+100=300 tokens. The enumerator will then double this amount: 2x300=600 tokens. Each member of the group will receive an equal share of 200 tokens. Since no one keeps for his/herself, the total earnings of each group member will be 200 tokens from the group project.

Example 2: Let's say that one person contributes nothing to the group project but the other two participants in the group contribute all their 100 tokens to the group project.

The total number of tokens contributed to the group project will be: 0+100+100=200 tokens. The enumerator will then double this amount: 2x200=400 tokens. Each member of the group will receive an equal share of 133 tokens. Since one person keeps his/her 100 tokens and receives 133 tokens from the group project, his/her total earning will be 233 tokens. While the total earnings of the other two members of the group will be 133 tokens.

Example 3: Let's say that everyone in the group contributes 0 tokens to the group project.

The total number of tokens in the group project will be: 0+0+0=0 tokens. The enumerator will then double this amount: 2x0=0 tokens. Since everyone contributes nothing to the group project, everybody in the group will receive nothing from the group project. Since everyone in the group keeps all his/her 100 tokens, each group member's total earning will be 100 tokens.

To have a better understanding of the enumerator let's do the following exercises. If you have any questions, please raise your hand, and the enumerator will come to you and answer your question privately.

Exercise 1: Suppose that each group member contributes 50 tokens to the group project.

The total number of tokens in the group project will be: [ ] tokens. The enumerator will then double this amount: [ ] tokens. Each member of the group will receive an equal share of [ ] tokens from the group project. The total earnings of each group member will be [ ] tokens.

Exercise 2: Let's say that two persons contribute nothing to the group project but the other person in the group contributes all of his/her 100 tokens to the group project.

The total number of tokens contributed to the group project will be: [ ] tokens. The enumerator will then double this amount: [ ] tokens. Each member of the group will receive an equal share of [ ] tokens from the group project. Thus, the total earnings of the two persons who contribute nothing will be [ ] tokens and the total earnings of the other person who contributes all of his/her 100 tokens will be [ ] tokens.

Exercise 3: Suppose that the three persons contribute 25 tokens to the group project.

The total number of tokens in the group project will be: [ ] tokens. The enumerator will then double this amount: [ ] tokens. Each member of the group will receive an equal share of [ ] tokens from the group project. Thus, the total earnings of the three persons who contribute 25 tokens will be [ ] tokens.

Now, we will start the activity.
Enumerator: please ask participants the following two questions and record their responses on the record sheet."

1. Indicate how much of your endowment of 100 tokens you want to keep for yourself and contribute to the group project. Please remind the respondent that he/she can contribute from 0 to 100 to the group project. Keep the amount you would like to put into your private account in the white envelope and your group project contributions in the blue envelope.

2. On average, how many tokens do you think other participants in your group will contribute to the group project?"

All information regarding your contributions and earnings will be kept confidential and will not

be revealed to anyone.

	Full name of respondents (Copy name and ID list from the roster).	Tokens kept for oneself. A	Tokens shared to the group project. B	Returns from the group project. 2(B1+B2+B3)/3=C	Total earning A+C	Guessed average contribution of the other two members.
Total tokens contributed						

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INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
www.ifpri.org

IFPRI HEADQUARTERS
1201 Eye Street, NW
Washington, DC 20005 USA
Tel.: +1-202-862-5600
Fax: +1-202-862-5606
Email: ifpri@cgiar.org