ESSAYS ON THE IMPACT OF ARMED CONFLICT ON REFERENCES: EVIDENCE FROM RURAL NORTHERN UGANDA

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Abstract

ESSAYS ON THE IMPACT OF ARMED CONFLICT ON PREFERENCES: EVIDENCE FROM RURAL NORTHERN UGANDA

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This dissertation examines the impact of exposure to armed conflict on preferences elicited from incentivized lab-in-the-field experiments with real payoffs, and whether the behavior of subjects in the experiments translates into systematic differences in real-life behaviors related to the preferences. Our sample is drawn from rural northern Uganda which experienced an armed conflict for almost twenty years. The dissertation consists of two main chapters. In the first, we examine whether exposure to armed conflict affects risk and time preferences, and whether exposure to armed conflict affects real-life behaviors related to risk and time preferences. We find that exposure to armed conflict induces higher loss aversion and discount rates, but has no effect on risk aversion and present bias. Individuals who were abducted during the conflict and those who resided in counties with higher number of deaths during the conflict (severely affected counties) show higher loss aversion, while households who were displaced to internally displaced people's camps and those who were in severely affected counties are more impatient. We show that the effect of the violent conflict that ended 10 years prior to the experiments is not mediated by recent other negative shocks affecting agricultural income and land conflicts. In terms of real-life behavior related to risk and time preferences, we further demonstrate that those who were in severely affected counties (who show higher loss aversion and impatience) and those displaced to internally

displaced camps tend to avoid behavior requiring patience (investment in health inputs) and loss (hiring labor for agricultural production). In contrast, we do not find any evidence that conflict exposure decreases risk-taking behavior such as the adoption of crops with higher risk (exports and oil crops, and hybrid variety maize) and increases hyperbolic discounting behavior such as alcohol consumption which is a temptation good.

In the second main chapter, we investigate the long-term effects of exposure to armed conflict on trust, trustworthiness, and real-life pro-social behaviors using trust measures elicited from incentivized lab-in-the-field experiments. We do not find that trust is fostered by exposure to armed conflict either at the individual-level (whether one was abducted by a rebel group) or household-level (whether one was displaced to an internally displaced peoples' camp). However, we find a heterogeneous impact among former abductees: those who were abducted when young exhibit less trust and trustworthiness. Furthermore, those who were abducted seem to show greater mistrust when playing with partners from the northern region than with partners from other regions. In terms of real-life behavior related to social capital, our results show that those who were abducted during conflict are more likely to engage in the pro-social behaviors of political participation and collective action. We find that assistance received after the conflict, and the experience of holding a leadership position while with the rebels are the main channels that foster pro-social behaviors of formerly abducted subjects. However, it is worth noting that when we adjust p-values using the false discovery rate estimation for real life behaviors in both main chapters, our results on real-life behavior are not significant. The findings from the studies have important implications for public policy efforts to address post-conflict reconstruction programs.

Dedication

To my wife Margaret Balina Makanga, and our children, Bridget Angelina, Michelle Gabriella, Mark Benjamin and Michael Jordan.

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CHAPTER 1

1.0 Introduction

Violent armed conflicts remain an obstacle to development for developing countries, and the occurrence of such conflicts since the early 1980's has been concentrated in low-income countries (Collier et al. 2003). The literature has hitherto shown that the negative effects of armed conflict are indisputable, and include destruction of physical and human capital, loss of human lives, displacement of civilians, increased poverty levels, institutional decay, capital flight, temporary drops in income, discouragement of investment, changes in behavior and decision-making, among others (Blattman and Miguel 2010; Blattman and Annan 2010; Jakiela & Ozier, 2015; Nunn and Wantchekon, 2011; Rohner, Thoneig, and Zilibotti, 2013). The exposure to armed conflict has indeed exacerbated disparities in global social and economic development.

Recent studies have found that armed conflict affects individual preferences (Voors et al., 2012; Bauer et al. 2016), though the results are mixed and inconclusive. Yet, preferences do influence important economic decisions (Cardenas et al., 2013), and are at the very heart of development economics influencing important economic and social decisions such as savings, investment, trade and participation in collective action activities. For example, the literature has shown that individuals who are risk averse and impatient may not sufficiently save or vigorously engage in risky income generating activities (Cardenas and Carpenter, 2013). Other studies have shown that trust is important in that it aids the underprivileged to manage risks and vulnerability through collective action, cooperation and

participation in public life (Woolcock and Narayan, 2000). However, in most low-income countries, preference data remains limited or unavailable despite its importance (Tanaka and Yamano 2015).

If indeed exposure to armed conflicts affects preferences, post-conflict reconstruction programs need to take individual preferences into consideration so as not to hinder the progress of reconstruction programs or trigger long-term welfare consequences for those exposed to conflict. Therefore, given the significance of preferences, it is of high importance that we accumulate evidence whether exposure to armed conflicts affects preferences.

The northern region of Uganda experienced armed conflict by the Lord's Resistance Army (LRA) for close to twenty years (Nannyonjo 2005), and the rebels were responsible for various atrocities including loss of lives, abductions, displacement of households and destruction of property (International Criminal Court 2005). Many of the affected residents in the northern region were forced to migrate to Internally Displaced People's (IDP) camps during periods of severe conflict. By 2005, approximately 1.8 million people[1] had been displaced and were living in IDP camps (Joireman et al., 2012). Our interactions with the subjects and local leaders showed that whereas many households were displaced to IDP camps, most of the displacement appeared to be temporary as all the subjects returned to their households at the cessation of the conflict, implying that the conflict may have had very little impact on migration. In addition, our survey data shows that all our sampled subjects were

[1] The 1.8 million displaced people only include those who resided in IDP camps and had been officially registered, and excludes those that had moved to other cities and trading centers for safety.

living in their respective villages before the conflict started. Annan et al. (2006) estimated that about 95% of former abductees remained in their respective villages after they returned from abduction, hence suggesting that migration especially for former abductees that returned was rather minimal. By the time the conflict ended, over 38,000 children had been abducted and an estimated 100,000 deaths recorded (Okiror, 2007; as cited by Schmitz, 2011). Although the conflict ended in 2006, there is evidence showing that northern individuals have continued to experience a range of problems, including social and psychological problems (Annan et al. 2011; Rohner, Thoneig, and Zilibotti 2013). Despite the numerous targeted interventions of post-conflict reconstruction programs, poverty and under-development have remained significantly high in the northern region. The poverty incidence in the northern region continues to be the highest in Uganda accounting for 43.7% of the country's poverty levels (World Bank 2016). The current poverty and under development situation in the northern region has continued to pose challenges in reducing regional inequality in Uganda.

Using lab-in-the-field experiments to elicit individual preferences, this dissertation therefore attempts to examine the impact of exposure to armed conflict on preferences ten years after the conflict ended. The lab-in-the-field experiments include the risk and time preference, trust and dictator experiments. Specifically, the study examines the effect of exposure to conflict on risk aversion, loss aversion, time discount rates and trust. In addition, this study uses individual-, household-, and community-level data collected in northern Uganda as part of the Research on Poverty, Environment and Agricultural Technology (RePEAT) project. The study also examines whether the behavior of the subjects in the experiments translates into systematic differences in real-life behaviors related to preferences.

Our main identification strategy is grounded on the randomness of the conflict in terms of subject abduction and household displacement, in addition to addressing endogeneity concerns related to number of deaths as a conflict exposure variable measured at county level.

To the best of our knowledge, this is the second study that examines the effect of conflict on both risk and time preferences and their real-life behavior related with such preferences. Ascertaining the risk and time preferences of individuals who have been exposed to different intensities of conflict is important because this aids policy makers towards formulation of appropriate policies and reconstruction strategies from an informed view point. In addition, our studies combine survey data and incentivized experiments for the analyses. This is important because it enables us to overcome the shortcomings experienced by abstract survey questions (e.g. generalized trust questions or hypothetical risk questions) because lab-in-the-field experiments provide an incentive-compatible channel through which an individual can reliably disclose his or her degree of pro-sociality, risk or patience. Furthermore, unlike previous related studies which used only percentage of deaths in attacks as the indicator for conflict exposure (e.g. Voors et al., 2012), this study adopts conflict exposure variables constructed at individual, household and county levels (i.e. whether a subject was abducted, whether a household was displaced, and the number of deaths in a county). This enables us to provide evidence that the differential nature and severity of exposure to conflict can have different effects on preferences. Also, in the case of pro-social behaviors related to social capital, we intensely examine plausible channels through which

conflict fosters pro-social behaviors. This dissertation also contributes to knowledge on endogenous preference formation.[2]

1.1 Main Findings

The first of two main chapters of this dissertation examines the effect of exposure to armed conflict on risk and time preferences, and real-life behavior related to risk and time preferences. We find that exposure to armed conflict induces higher loss aversion and time discount rate, but has no effect on risk aversion and present bias. Those who were abducted during the war and those who resided in counties with higher number of deaths during the conflict (severely affected counties) show higher loss aversion, while households who were displaced to internally displaced people's camps and those who were in severely affected counties are more impatient. We also find that our results are not mediated by other recent negative shocks affecting agricultural income and land conflict. In regards to real-life behavior, we find that households who were displaced and those who are in severely affected counties are less likely to invest in health inputs as measured by the use of mosquito bed nets, while those in severely affected counties are more likely to avoid loss as measured by non-use of hired labor for farming. These findings are consistent with real-life behavior. In contrast, we do not find any evidence that conflict exposure decreases adoption of crops with higher risk (export crops and oil crops), high-yielding variety maize (hybrid maize), and hyperbolic discounting as measured by alcohol consumption.

[2] Detailed explanations of the contribution is discussed in chapter 3 and 4.

The second main part of this dissertation examines the long-term effects of conflict exposure on trust and real-life behavior related to social capital. We find no evidence of exposure to conflict affecting trust. However, there is a heterogeneous impact among former abductees: those who were abducted when young (below 16 years) exhibit less trust and less trustworthiness. Furthermore, those who had been abducted seem to display higher mistrust when playing with partners from the northern region than with partners from other regions. In terms of real-life behavior, we find that those abducted during conflict are more likely to engage in pro-social behaviors of political participation and collective action. Specifically, we find that those who were abducted are more likely to engage in political participation through voting, take up leadership positions within the community, participate in community groups, and work together with others. We find that assistance received post-conflict and the experience of holding a leadership position while with the rebels are the main channels of fostering pro-social behavior by the abductees.

In both Chapter 3 and Chapter 4, we estimated alternative tests to ascertain if the real-life behaviors results are statistically significant when we adjust P-values using the false discovery rate (FDR) at 0.05 level of significance, and found that none of the real-life behavior results are significant, suggesting that our real-life behavior results should be interpreted with caution.

1.2 Organization of the dissertation

The rest of the dissertation is organized as follows. Chapter two provides a review of the literature on the LRA conflict, the data used in the study, the descriptive statistics of

variables used in the studies and the experimental designs. The first section of chapter two discusses the origin and historical background of the LRA conflict experienced in northern Uganda for close to 20 years, and highlights the various actors and the extent to which the conflict affected individuals in the northern region. The second and third sections of chapter two discuss the data sources and descriptive statistics for the studies, respectively. The last two sections discuss the risk preference, time preference and trust game experimental designs. Chapter three examines whether exposure to armed conflict affects risk and time preferences elicited from incentivized lab-in-the-field experiments with randomly selected subjects who had been exposed to armed conflict over an extended period of time, and whether the behavior of the subjects in the economic experiments translates into systematic differences in real-life behavior related to risk and time preferences. The chapter also reviews and discusses literature related to armed conflict on risk and time preferences, and the experimental design, and presents some policy implications. Chapter four reviews the literature related to armed conflict and trust, experimental design, contribution of the study, and examines the long-term impact of conflict on trust, trustworthiness and pro-social behaviors related to social capital. In addition, chapter four examines plausible channels through which conflict fosters pro-social behaviors and presents some policies based on the findings to guide policy makers. Chapter 5 concludes the dissertation with a summary of the main findings and a review of policy implications for public policy efforts in support of post-conflict reconstruction programs.

CHAPTER 2

Background of the LRA Conflict, Data, Descriptive Statistics and Experimental Design

2.0 Introduction

This chapter reviews literature on the LRA conflict, data used for the studies, summary statistics and the experimental designs for the risk preference, time preference and trust game experiments. First, we discuss the origin and background of the LRA conflict in northern Uganda. The second part of the chapter discuses the data sources used for the studies. The third part of the chapter describes the descriptive statistics in terms of individual (experiment subjects), household, and community characteristics. In terms of conflict exposure characteristics, we describe the descriptive statistics of the household conflict exposures and individual conflict exposure variables. We also discuss descriptive statistics of other shocks related to agricultural income and land conflicts experienced in the 12 months prior to the field experiments. Lastly, the fourth and fifth part of the chapter discusses the experimental designs.

2.1 Background to the Armed Conflict in Uganda

The northern part of Uganda experienced violent armed conflict for close to 20 years, between 1987 and 2006 (Nannyonjo, 2005). The LRA which, led by ruthless leader Joseph Kony, was responsible for widespread human rights violations, child conscription, child sex slavery, murders, lootings, and theft, among others. The historical background of the LRA conflict is complex, but mainly resulted from the unstable political environment in Uganda,

ethnic conflicts, and colonial era marginalization of the northern region (Nannyonjo, 2005; Rohner, Thoneig, and Zilibotti, 2013). According to Rohner, Thoneig, and Zilibotti (2013), the divide-and-rule approach by British colonialists stimulated ethnic fragmentations in Uganda since its independence in 1962. For example, a big ratio of the Acholi occupied positions in the army but were under-represented in administration and white-collar jobs during British colonial rule (Nannyonjo, 2005), a situation seen as discriminatory. The political grievances and wide economic inequalities between the northern ethnic groups mainly dominated by the Acholi and the southern-central ethnic groups mainly dominated by the Bantu prompted the LRA to wage war against the ruling regime (Blattman, 2009). In 1986, President Yoweri Kaguta Museveni toppled President Tito Okello, an ethnic Acholi, from power by a military coup d'état. Consequently, the LRA was formed in northern Uganda with the majority of its members originating from the districts of Gulu, Kitgum, and Pader, dominated by the Acholi ethnic group. Former disgruntled soldiers that had absconded from the army forces were mainly recruited to start this military movement (Nannyonjo, 2005). By the time the conflict ended, over 1.8 million people in northern Uganda had been displaced from their homes, forced to live in IDP camps, and over 100,000 deaths recorded.

The Sudanese government played a significant role in sustaining the LRA conflict by providing the rebels with military equipment, logistical support, intelligence information, and accommodation for their base camps (Finnstrom, 2008). In return for this support, the LRA also fought the South Sudanese rebels, the Sudan People's Liberation Army (SPLA), which were fighting the Sudan government. In retaliation, the SPLA sought assistance from the Ugandan government in terms of logistical support and military equipment (Blattman 2009,

Dolan 2009, Finnstrom 2008, Rohner, Thoneig, and Zilibotti (2013). Most LRA attacks on households and individuals in northern Uganda were arbitrary and being initiated from the LRA bases in South Sudan. In 2002, the governments of Uganda and Sudan signed a protocol, with the main aim of restoring diplomatic relations and fostering reconciliation (Rohner, Thoneig, and Zilibotti, 2013). This protocol gave the Ugandan army the right to penetrate Southern Sudan to oust LRA rebels, a military operation code-named "Operation Iron Fist" (Dolan, 2009). Whereas the Ugandan army attacked LRA bases and hundreds of rebels were killed, the military operation was still considered a failure, as the rebels managed to oust the Ugandan army from South Sudan, which resulted in them penetrating more neighboring districts in northern Uganda, where they brutally carried out more atrocities (Allen, 2005; De Luca and Verpoorten, 2015; Dolan, 2009). According to Rohner, Thoneig, and Zilibotti (2013), the bulk and peak of the LRA conflict was recorded during 2002–2005. Thousands of deaths were witnessed within this period, with children and the youth not being spared by conflict. Abducted children were trained to fight and forced to kill family members, neighbors, and village mates so they would think they had no home to escape to. Because of the intensity of the conflict during this period, the government of Uganda forced northern households, regardless of their social economic status, to leave their villages and move to IDP camps. However, these camps lacked basic essential utilities and instances of disease and death were very common within them. After several failed attempts to restore peace in northern Uganda through peace talks, in 2006, with the assistance of US forces, the Ugandan army forcefully pursued the rebels and entered South Sudan, destroying the LRA bases. This

forced the LRA rebels to retreat to the jungles of the Democratic Republic of Congo and, later, further west, to the Central African Republic, where they currently operate from.

Ten years after the conflict ended, some war effects can still be observed in northern Uganda. It is worth noting that during the data collection process, we vividly observed many instances where individuals were still traumatized and depressed by the conflict. Whereas the northern region has been undergoing post-conflict reconstruction, poverty incidence (43.7%) remains high in the region (World Bank, 2016).

2.2 Data

This study uses individual-, household-, and community-level data collected in 2015 by Japan's National Graduate Institute for Policy Studies and Makerere University. The data collection was part of the Research on Poverty, Environment and Agricultural Technology (RePEAT) project, which has collected panel data in Uganda for five waves (2003, 2005, 2009, 2012, and 2015). It is worth noting that the RePEAT project could not collect data from the northern region for the previous four waves due to insecurity in the region. In 2015, a total of 345 households, from 23 Local Council 1 (LC1 is the lowest administrative unit in Uganda, also known as a village) and 10 districts[3] were randomly sampled from the northern region and interviewed[4]. Additionally, incentivized lab-in-the-field experiments were

[3] Figure 2.5 shows the location and coverage of the sampled households in northern Uganda, highlighted by the stars.

[4] The survey communities (LC1s) in the northern region are selected consistently with the original RePEAT sampling scheme. The RePEAT sample is a subset of the sample used in the study of Policies for Improved Land Management in Uganda by IFPRI (Yamano et al. 2004). Since one of the main research objectives for both studies was to investigate agricultural productivity and welfare, the stratification was based on the following four factors, including those affecting agricultural potential: population density,

conducted in 2015. Due to budget shortages in 2015, only 114 households (couples were invited) out of the 345 sampled households (33%) participated in the experiments. To increase participation rate in the experiments, an additional 198 household heads or main decision makers were invited at the beginning of 2017 to participate to the experiments. Altogether, 312 households participated, which accounts for 90% of our sample. The 10% that did not participate had either migrated, or at the time of the experiments, the household heads or adult household members could not be traced at the time. In addition to the experiments in 2017, we conducted an additional survey on all sampled households, interviewing 339 households. The six households that could not be interviewed in 2017 had either lost a key family member or migrated from the community and their new locations were unknown by community leaders. For our main analysis, we use one subject per household (household head or main decision maker).

Additionally, we also exploit the Uppsala Conflict Data Program (UCDP), a conflict intensity dataset that provides the precise geo-referenced number of deaths from the LRA

elevation (whether 1500 meters or more above sea level, which delineates the southwestern and eastern highlands), market access (travel time to the nearest market location, weighted by the population of each market location) and agricultural potential (Ruecker et al. 2003). First, we classify all the sub-counties of the two sub-regions in the northern region into the development domains that are defined and used in the IFPRI study. The northern region covered by this wave consists of 4 development domains out of 18. Then, strata are constructed based on the development domains and sub-regions. Subsequently, sub-counties are randomly selected at each stratum. The probability of a sub-county being selected is set so that it becomes proportional to the sampling weight of the sub-county, which is set for the number of households in general. In order to increase the sample size of the most seriously affected areas by the war, we double the sampling weight of sub-counties from Acholi sub-region, except sub-counties from Gulu and Nwoya districts, where the influence of the war was relatively weaker. Finally, after selecting the sub-counties, we randomly select one LC1 from each selected sub-county.

conflict. Deaths are aggregated at county level, which is then used as a measure of conflict exposure. The UCDP dataset constitutes one of the most accurate and well-established data sources on global armed conflicts and has been recording ongoing violent conflicts throughout the world since the 1970s.

Furthermore, because our sampled subjects are mainly dependent on rain-fed agriculture for their livelihoods, we obtained a 10-year rainfall and precipitation dataset spanning from 2005 – 2014 from the National Aeronautics and Space Administration. For all our specifications, we control for rainfall and temperature.

2.3 Descriptive Statistics

Table 2.1 presents summary statistics for individual (experiment subjects), household, and community characteristics, categorized by severely affected districts and less severely affected districts.[5] In terms of individual characteristics of the experiment subjects, the mean age is 40.2 years and 66.3% are male. Subjects have on average 5.7 years of schooling, which suggests most of our sample attained only primary-level education. In terms of ethnicity,[6] subjects affiliated to the Acholi ethnic group are more likely to be found in more severely affected districts, as expected. In terms of household characteristics, 77% of the subjects are household heads, the household head's age is 44.8 years, and 74% of subjects are married. The average household size is 6.4 members and households in more severely affected

[5] Based on the share of households displaced during the LRA conflict, we divided the sample districts into two groups: more severely and less severely affected districts. We find that the Acholi districts are more severely affected.

[6] The northern region mainly comprises Acholi and Lango ethnicities.

districts have more household members on average. In terms of wealth characteristics, average land ownership is 7.2 acres, while asset level is 0.5 million Ugandan shillings (UGX), which is approximately 170 US dollars (USD).[7] Households in more severely affected districts own, on average, more land, while households in less severely affected districts have more assets. All households were living in their current communities before the conflict.

In terms of community characteristics, distance from a subject's homestead to the nearest town on average is around 31.9 kilometers and households in less severely affected districts are nearer the district town than those in more severely affected districts. Less affected districts receive more rainfall and register higher temperatures on average than more affected districts. The population density is more in less affected districts and 8.3% of roads to district towns are tarmac. More people were living in severely affected districts before the conflict, and majority displacements were registered from severely affected districts. On average, of those displaced, 97.2% returned back to their communities after the conflict ended.

[Table 2.1 about here]

Table 2.2 shows the descriptive statistics of households' conflict exposure, individuals' conflict exposure, and other shocks experienced in the 12 months prior to the field experiment. For community conflict exposure, the share of households displaced within the LC1 and that of households with abducted members in the LC1 are higher in more severely affected districts, as per our expectations. We measure household-level conflict

[7] The exchange rate used is 3,311.46 UGX to 1 USD (Bank of Uganda) as of July 1, 2015. (https://www.bou.or.ug/bou/home.html)

exposure by the experience of being displaced during the LRA conflict, duration of displacement, damage to residential houses and non-residential buildings (storage and animal houses), theft of livestock, and looting of household items.

As per our expectations, households in more severely affected districts experienced more exposure. Specifically, 87% of households in more affected districts were displaced for an average of about three years. On average, most households were displaced in 2002 and returned in 2007. Around 60% and 46% of households in more severely affected districts experienced residential and non-residential house damages, respectively. More than half of households experienced their livestock being stolen, while two-thirds of them had their household items looted.

In terms of individual conflict exposure, more former abductees are in more severely affected districts, as expected. One in six abductees was below 16 years at the time of abduction. Further, one out of four subjects in more severely affected districts were attacked with a panga or axe while 18% were beaten and tortured. Close to half of the subjects in more severely affected districts were threatened with death, while 7.3% were forced to serve in the rebellion. On average, 5.7% of the subjects were forced to kill a family member, 1.9% forced to kill other people, while 3.2% are depressed due to the conflict.

Since preferences can be influenced by recent negative events other than armed conflict, subjects were asked whether they experienced other non-armed conflict shocks, namely crop diseases, drought, excessive rainfall, or land-related conflicts in the last 12 months. Households in less severely affected districts experienced more crop diseases than

those in more severely affected districts. More than 75% and 20% of households experienced drought and excessive rainfall, respectively. One in three households experienced land related conflicts. There are no significant differences in recent negative experienced shocks besides crop diseases, which may partially suggest that exposure to conflicts and agro-ecological conditions are not correlated.

[Table 2.2 about here]

In Table 2.3, we categorize the individual, household and community characteristics by abduction status in severely affected districts and by household displacement status. In terms of abduction status, we only find significant mean differences in the age of household heads. Those that were abducted are older and tend to be household heads more than non-abducted subjects in severely affected districts. In terms of displacement status, those who were displaced have fewer years of schooling and less wealth. Majority of those displaced are of Acholi ethnicity and live far away from district towns compared to non-displaced households.

[Table 2.3 about here]

2.4 Experimental Design for risk and time preference experiments

The study in Chapter 3 adopts an experimental design framework to elicit risk preference following the pair-wise choice framework of Holt and Laury (2002). Other studies conducted in Uganda by Tanaka and Munro (2014) and Tanaka and Yamano (2015) have adopted the same experimental design framework. The framework is based on the accept/ reject experimental design (Cardenas and Carpenter 2008). Two risk preference experiments

were conducted, one involving payoff gains only (Figure 2.1 - experiment 1) and the other involving both payoff gains and losses (Figure 2.2 - experiment 2). One advantage of the experiments is that they are incentivized and involve real losses, just like real-life investments. The experimental procedure used in this study is comparable to previous experiments on risk-elicitation tasks. The study adapts the procedure used by Tanaka and Munro (2014) for eliciting time preference. Two experiments on time preference were conducted, one involving no front-end delay (Figure 2.3 - experiment 3) and the other involving a front-end delay (Figure 2.4 - experiment 4).

It is worth noting that in all the sampled communities in the northern region, the experimental procedure followed a common procedure with the risk preference experiments conducted first, followed by the time preference experiments, and this order was strictly emphasized and adhered to in all the communities. Tables 2A1 and 2A2 in the appendix indicate the different payoff options in the risk preference experiments, while Tables 2A3 and 2A4 indicate the different payoff options in the time preference experiments. In all four experiments, subjects were presented with two columns of pair-wise lottery choices (A or B) from which they were to select (accept) one payoff per row and reject the other. Each experiment comprised eight rows in total. The first point at which a subject switches from one column to the other is our main interest in the analysis of the experiments. Subjects' risk aversion is elicited from experiment 1, loss aversion elicited from experiments 2 and 1, time discount rate from experiment 3, and present bias from experiments 3 and 4. It is noteworthy that all subjects in both the risk preference and time preference experiments who had multiple

switching were regarded as having irrational answers[8], and therefore, were dropped from the analysis. Below is a detailed explanation of the risk and time preference experiments.

Before the start of the experiments, it was emphasized to the subjects that either one of the risk or time experiments was to be played ex post for actual stakes, and therefore, based on their respective choices in the actual experiments, their monetary payoff would be determined accordingly by the outcome of that lottery. This incentive was in addition to a show-up fee of Ushs 5,000, which was intended to cover the opportunity cost of participating in the experiments and to induce the subjects to participate. Ushs 5,000 is approximately 2 to 3 days' of wages for a typical male farm laborer in the northern region.[9] For both the risk and time preference experiments, subjects were requested to choose column A or column B. All experiments were conducted with all participating subjects duly present to avoid experiencing any cross-talk effects that could potentially bias the experimental outcome.

Given that the level of education attainment of the subjects was low (5.7 years of schooling), it was imperative to make a strong assumption that the subjects would not adequately understand the concept of probabilities used in the experimental design. It is worth mentioning that subjects who had trouble filling out the answer sheets individually during the experiments were carefully helped by the enumerators, who cautiously avoided giving specific instructions to the subjects on how to answer. However, the number of such

[8] Irrational answers (Risk experiment1 – 23 subjects; Risk experiment2 – 39 subjects; Time experiment 3 – 10 subjects).

[9] Cardenas and Carpenter (2008) argued that payment of 1 to 2 days' wages for a half-day session to subjects participating in economic experiments induces salience among them.

subjects was almost negligible. Whereas the enumerators were conversant with the local dialect, they had no formal connections with the respective communities, which minimized any bias in responses to the subjects. In addition, while extensive training was offered to the enumerators to fully acquaint them with the research design and experimental procedures, they were ignorant about the experimental hypothesis.

After completion of the two risk and two time preference experiments, one game was randomly selected to be played for real cash using a bingo machine. The procedure involved the subjects choosing one representative to roll the bingo machine for selecting one experimental result for actual payment. Once they had all agreed on who was to represent them, four balls numbered 1, 2, 3, and 4 were put into the bingo machine to decide which game was to be played for real. Balls 1, 2, 3, and 4 represent risk preference experiment 1, risk preference experiment 2, time preference experiment 3, and time preference experiment 4, respectively. Once the experiment to be played for real cash was decided based on the first ball to come out of the bingo machine, subjects were again asked to choose among themselves who would roll the bingo machine to decide which row was to be played for real cash. Once they had agreed on who was to represent them in this task, eight balls numbered 1, 2, 3, 4, 5, 6, 7, and 8 were put into the bingo machine to decide which row was to be played for real cash.

2.4.1 Measuring Risk Aversion

According to the expected utility theory (EUT), an individual considered rational will maximize his/her expected utility of final wealth. Mathematically, this can be represented by

$\sum_{i=1}^{n} p_i u(W_i)$; $u(W_i)$ as the utility level that is derived from final wealth W_i, which occurs with probability p_i for each of the *n* possible states. An individual is regarded as risk averse in the event that the utility function takes a concave shape. Adopting the Arrow–Pratt measure of risk aversion, $r(W) = -u''(W)/u'(W)$, an individual who is risk averse is represented by $r(W) > 0$, a risk-seeking individual is represented by $r(W) < 0$, while a risk-neutral individual is represented by $r(W) = 0$. For risk experiments, $r(M) = -M \times u''(M)/u'(M)$. According to Holt and Laury (2002), the relative risk aversion parameter is often estimated to represent the risk aversion degree. *M* in this context represents the change in wealth—rather than final wealth—offered in the economic experiment. Therefore, a constant relative risk aversion (CRRA) utility function, $u(M) = \frac{M^{1-\sigma}}{1-\sigma}$ is assumed, where σ indicates the curvature of the utility function, $r(M) = \sigma^2$. To compute the risk aversion parameter, σ, risk experiments are designed in such a way that they take the form of pair-wise choices or choices from a series of lotteries that include varying probabilities p_i and payoffs M_i (Holt and Laury 2002). To compute the degree of risk aversion σ reliably, we equate two lotteries that give the same level of expected utility $\sum_{i=1}^{n} p_i \frac{{M_i}^{1-\sigma}}{1-\sigma}$ to the individual and solve them simultaneously. Excerpt 1 (Figure 2.1) in the appendix is utilized to estimate the subjects' risk aversion parameters.

For risk preference experiment 1, which involved gains only, subjects were asked to choose between column A, which offered a sure payoff of Ushs 4,000 with 100% certainty, or column B, which offered two different payoffs with probabilities of either 25% for payoffs in column 1 and 75% for payoffs in column 2. To ensure that subjects fully understood the

notion of probabilities, four balls were used to demonstrate the probability concept. Figures 2.1 and 2.2 represent an excerpt of the risk preference experiments in which subjects made their respective payoff choices. The balls were numbered 1, 2, 3, and 4; they can be seen circled below A and B in each of the excerpts. Risk preference experiment 1 is utilized to measure the subject's degree of risk aversion, risk neutrality, or risk seeking based on the point at which the subject switches from option A to option B. For example, if a subject chose option A in rows 1-1, 1-2, 1-3, and 1-4, and chose option B in row 1-5, the subject's risk preference can be represented mathematically as follows:

$$\frac{4000^{1-\sigma}}{1-\sigma} \geq 0.25 \times \frac{13000^{1-\sigma}}{1-\sigma} + 0.75 \times \frac{2000^{1-\sigma}}{1-\sigma} \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(1) from row 1-4}$$

$$\frac{4000^{1-\sigma}}{1-\sigma} \geq 0.25 \times \frac{16000^{1-\sigma}}{1-\sigma} + 0.75 \times \frac{2000^{1-\sigma}}{1-\sigma} \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(2) from row 1-5}$$

Solving for inequalities (1) and (2) simultaneously, the interval of the risk aversion parameter is $0.41 < \sigma \leq 0.62$, and taking the mid-point, we obtain the risk aversion parameter as $\sigma = 0.52$.

In terms of real payment to the subjects after the experiments, for illustration purposes, suppose risk preference experiment 1, which involved gains only, was chosen to be played for real cash, implying that out of the four balls that were placed in the bingo machine, ball 1 came out of the bingo machine first. Then, when eight balls were inserted in the bingo machine to determine which row would be played for real and ball 5 came out, row 1-5 would be played for real. Subjects who had chosen option A in row 1-5 would be paid Ushs 4,000 with 100% certainty. For subjects who had chosen option B, four balls would be inserted in

the bingo machine and one of the subjects representing all the other participants would roll the bingo machine again. If ball 1 came out first, the subjects would earn Ushs 16,000, while if balls 2, 3, or 4 came out first, the subjects would earn Ushs 2,000. Table 2A1 shows the payoff matrix for risk preference experiment 1. Subjects who chose all A except for row 1-8 are considered very risk averse and therefore, are assigned $\sigma = 3.04$. Subjects who chose all B except for row 1-1 are considered very risk seeking and therefore, are assigned $\sigma = -1.15$. For each of the two types of irrational subjects (all A or all B), we assigned an arbitrary number for σ but it does not matter as we include dummies for all A and all in explanatory variables for econometric analysis.

2.4.2 Measuring Loss Aversion

Kahneman and Tversky (1979) in their seminal paper developed an alternative model from the EUT, known as prospect theory. They argued that people knowingly underweight outcomes that are merely probable compared to outcomes that are attained with sure certainty. The loss aversion concept originates from this alternative model of prospect theory. The loss aversion concept has been described as the tendency of the prospect of losses to loom much larger than the prospects of gains of the same magnitude. This can be represented as $u(M) < -u(-M)$. In economics experiments, just like risk aversion, loss aversion is elicited utilizing lottery games. However, lottery games in the context of loss aversion involve negative payoffs as part of the choices (see Figure 2.2). To estimate the degree of loss aversion of each subject, we utilize the risk aversion parameter σ of each subject elicited in experiment 1. Taking into consideration the midpoint estimated value of σ for each subject and the value

function $u(M) = -\lambda \times \frac{(-M)^{1-\sigma}}{1-\sigma}$ for losses ($M < 0$), the range of the loss aversion parameter λ for each switching point is estimated by equating the expected utilities in columns A and B.

Risk preference experiment 2 was undertaken to measure the subjects' degree of loss aversion. The experiment involved gains and losses. Subjects were asked to choose between columns A and B; both columns were sub-divided into two, with each column representing a payoff and probability of 50% chance of winning or losing. For the sub-divided columns, column 1 involved gains while column 2 involved losses. In the event that risk preference experiment 2 was chosen to be played for real cash, this scenario implied that out of the four balls inserted in the bingo machine to determine which game was to be played for real cash, ball 2 came out of the machine first. Then, when eight balls were inserted into the bingo machine to determine which row would be played for real, and ball 2, for example, came out first, row 2-2 would be played for real cash. In this case, subjects would again choose between themselves who would roll the bingo machine. For subjects who had chosen option A in game 2, if either balls 1 or 2 came out of the bingo machine first, the subjects would receive Ushs 4,000, while if the first balls out were either balls 3 or 4, the subjects would lose Ushs500. However, for subjects who had chosen option B, if either ball 1 or 2 came out of the bingo machine first, they would receive Ushs 6,000, while if the first balls out were either balls 3 or 4, the subjects would make a loss of Ushs 4,000. Given that all participants were to receive a participation fee of Ushs 5,000, in the event of a loss by the subject, the money would be deducted from the participation fee. The experimental design was structured in such a way that even if a subject made a loss in risk game 2, he/she would still earn an amount

from his/her participation fee. The minimum amount a subject would earn, in the event that he/she made the largest loss in risk preference experiment 2 is Ushs 1,000 (Ushs 5,000–4,000). In fact, the net gain from participating in the risk and time experiments ranged from Ushs 1,000 to Ushs 21,000.

2.4.3 Measuring Discount Rate and Present Bias

We use time preference experiments to estimate the subjects' discount rate and present bias, in order to compare the degree of patience of the subjects. To estimate the subjects' discount rate (r), experiment 3 is utilized which allows us to estimate the discount rate intervals. We utilize the value function $v(M_0) = \frac{1}{(1+r)^t} \times v(M_t)$, where M_0 denotes the present value for the subject who faces payoff M_t, which is offered at time *t* with discount rate *r*. It is assumed that $v(M_t) = M_t$. In order to estimate each subject's discount rate, we equate the switching point between two choices and take the midpoint of the interval. For example, to calculate a subject's discount rate (r) taking into consideration experiment 3, suppose a subject switches from column A to column B in row 1-4; the time preference can then be computed as $\frac{1}{(1+r)^4} \times (6{,}000) \leq \frac{1}{(1+r)^6} \times (10{,}000)$. Solving for r, the discount rate becomes $r \leq 0.2909$.

For time preference experiment 3, subjects were asked to choose between option A with payoff amounts to be earned in 4 months, and option B with payoff amounts to be earned in 6 months. For time preference experiment 4, subjects were asked to choose between option A with payoff amounts to be earned in 2 months, and option B with payoff amounts to be earned that same day (immediate payment). Suppose time preference experiment 3 was to be

played for real cash; eight balls would be put in the bingo machine to determine which row was to be used. If, for example, ball 3 came out of the bingo machine first, then row 1-3 would be played for real cash. Subjects who had chosen option A would be entitled to Ushs 6,000 in 4 months while those that had chosen option B would be entitled to Ushs 9,000 in 6 months.

Experiment 3 involved a front-end delay while experiment 4 did not. In the time preference experiments that involved future payments, credibility bias was very important and had to be addressed before commencement of the experiments, given that researchers and enumerators are usually strangers to subjects (Cardenas and Carpenter 2008). If credibility bias exists, subjects might willingly opt for present payoffs and intentionally avoid future payoffs, a situation that could make it seem as if they were relatively impatient, yet in fact, this may not be the case. Fernandez-Villaverde and Mukherji (2002) claimed that subjects prefer immediate payoffs when they are uncertain of their future rewards. To mitigate any possible credibility bias and gain subjects' trust about delivery of future payoffs, community leaders were fully engaged in the organization of the subjects and assurance was given to all the subjects that any future payments were to be paid in liaison with the community leaders. Firm arrangements for future payments were discussed with village elders, usually the respective LC1 chairpersons, who assured subjects of guaranteed payments. The engagement of respectable community leaders was uniformly undertaken in all the experiment communities, which assures us that the study did not suffer any credibility bias from the subjects.

Present bias is elicited from experiments 3 and 4. The pair-wise choices in both experiments are identical, the only difference being the timing of payment. The timing of experiment 3 is 4 months or 6 months, while that for experiment 4 is today or 2 months. Since experiments 3 and 4 have same structure in terms of time discount, the switching point should be the same in these two experiments if there is no present bias (Tanaka and Munro 2014). The different timeframes allow for the identification of dynamic inconsistency, because subjects deemed dynamically inconsistent demonstrate bias toward future rewards. Following Meier and Sprenger (2010), we compute a present bias dummy and present the bias intensity of each subject. A subject is defined as having present bias when he/she is less patient when a smaller, earlier reward is preferred in the present, where time is today (t=0). According to O'Donoghue and Rabin (1999), the term "present bias" refers to the tendency of individuals to give relatively much more weight to a lesser immediate payoff (e.g., 10,000 Ushs today) than a higher delayed payoff (e.g., 20,000 Ushs in 2 months), yet, in the case that the same payoff option is offered with both payoffs delayed (e.g., 10,000 in 2 months or 20,000 in 4 months), the same individuals are more inclined to wait the extra time to receive the larger payoff. Therefore, we classify a subject as having present bias if the discount rate from experiment 4 (t=0 or t=2) is less than the discount rate from experiment 3 (t=4 or t=6).

As a measure of present bias intensity of each subject, we take the ratio of the discount rate from experiment 3 over the discount rate from experiment 4. Tables 2A3 and 2A4 show the payoff matrix for time preference experiments 3 and 4, respectively. For time preference experiment 3, subjects who chose all A are considered very impatient and therefore, are assigned $\mathrm{r} = 1.039$, while subjects who chose all B are considered very patient and therefore,

are assigned $r = 0.0401$. For time preference experiment 4, subjects who chose all A are considered very patient and therefore, are assigned$r = 0.0401$, while subjects who chose all B are considered very impatient and therefore, are assigned $r = 1.039$.

2.5 Experimental Design for the Trust game experiment

The study in Chapter 4 adopts an experimental design framework to elicit trust and trustworthiness by following the standard protocol of Berg et al. (1995). [10] All subjects were assigned as both first and second movers. As a first mover, subjects were initially endowed with three chips, each equivalent to 1,000 UGX. Each subject *i*, as a sender, was asked to decide how much they would send to five different partner receivers, *j*, where a partner is an anonymous person from the northern, western, eastern, central regions, or a villager in the same community. Subjects were informed the survey team would randomly match them with other participants in the same game as their partner and the final payment would be determined by the matched partner's decisions. The amount sent by the first mover to each of the different five partners is tripled. The amount sent is denoted as $\tau_{ij} \in T$ where T= {0, 3000, 6000, 9000}.

[10] We also conducted the experiment of a dictator game to elicit subject's altruistic behavior and to control for it in the estimation models as per following previous studies (Camerer and Fehr, 2004; Cardenas and Carpenter, 2008; Fehr and Schmidt, 2006; Saito, 2015). Following Bauer et al. (2017), Cox (2004), and Fershtman and Gneezy (2001), the dictator experiment was designed to closely mirror the trust game experiment, by tripling the amount transferred, and only differs in that receivers do not have the option to send any money back to senders. Upon determining the amount to send to each respective partner concludes the task. Given that there is no self-interested motivation for the sender to transfer money, any zero transfers by the sender satisfy the Nash equilibrium and, therefore, the actual positive amount of transfer by the sender is interpreted as the level of altruism.

Next, all the subjects were asked to play receivers (second mover) in the trust game and were asked to return amounts in three different scenarios: (1) when subject receives 3,000; (2) when he/she receives 6,000; and (3) when receiving 9,000. In each scenario, the second mover played the game for each of the five partners and was asked to decide how much (in thousands) to be returned to the partner.[11] Since the set of zero transfers by a receiver and a sender satisfy a sub-game perfect Nash equilibrium, any deviation from zero transfers of either a sender or a receiver can be inferred to as trust and trustworthiness, respectively.[12] Since the amount returned by the second mover cannot be compared directly in this framework, the percentage returned is instead used as trustworthiness measure by following other previous studies.

It is worth noting that our experimental design is modified from canonical trust games in that the subject's partners are five anonymous subjects. Such an experimental design qualifies for some variation in social connection, enabling us to determine how different levels of social connection influence trust behavior. Adopting these five partners with different social distances from the subject enables us to observe whether the trust behavior changes depending on the physical distance between players. For example, the social distance between an experimental subject and a fellow villager should be smaller than for anonymous persons in other regions. The social distance to the other partners, however, can be different

[11] Subjects were asked in three settings where he/she receives 3,000, 6,000, or 9,000. If he/she receives 3,000, then he/she either returns 0, 1,000, 2,000, or 3,000; if 6,000, either returns 0, 1,000, 2,000, 3,000, 4,000, 5,000, or 6,000; if 9,000, returns 0, 1,000, 2,000, 3,000, 4,000, 5,000, 6,000, 7,000, 8,000, or 9,000.

[12] The amount sent by the first movers is considered a measure of trust and the amount returned is a measure of trustworthiness or reciprocity (Levitt and List, 2009).

from physical distance. For example, a subject living in a non-Acholi area may think of "northerner" partner as Acholi or war perpetrator and play more favorably towards one from the other regions.

All participants in the experiments were paid a show-up fee of 5,000 UGX which is approximately equivalent to the wages for 2–3 days for a typical male farm laborer in rural Uganda. The show-up fee was intended to cover the opportunity cost of participating in the experiments, in addition to inducing the subjects to participate in the experiments. Subjects had the opportunity to earn more based on their choices in the experiments. The instructions of the trust game experiment are presented in appendix B.

CHAPTER 3

Effects of Armed Conflict on Risk and Time Preferences: Evidence from Rural Northern Uganda

3.1 Introduction

The occurrence of violent armed conflicts since the early 1980s has been concentrated in low-income countries and remains a primary development challenge for developing countries (Collier et al. 2003). Violent conflicts negatively affect countries' economic development not only because they lead to the loss of human life, destruction of physical capital, capital flight, and institutional decay but also because they discourage investment (Blattman and Miguel 2010), which is critical for the long-term socio-economic advancement. One of the reasons for the discouragement of investment might be psychological because violence can induce affected individuals to be more risk averse or less patient. Since individuals with higher risk aversion and discount rate tend not to save adequately or invest in income-generating activities important for their economic and social wellbeing (Cardenas and Carpenter 2013), conflicts can have a long-term impact on welfare through changes in time and risk preferences. Recent studies have indeed found that armed conflict affects individual preferences, such as risk aversion and impatience. However, evidence is still scarce or mixed and inconclusive (Bauer et al. 2016).[13] For example, some studies have found

[13] Since the conflict disrupted wealth and economic opportunities, the affected individuals' location on the utility function and the shape of the function might have changed. Those who suffer from psychological distress may react to negative shocks to a greater degree, which increases risk aversion. The time discount rate can be increased when uncertainty in the future is high.

that exposure to violent conflict increases risk aversion (Callen et al. 2014; Moya 2018), while another study has found that it induces risk-seeking behavior (Voors et al. 2012). Evidence is still limited for the impact on loss aversion, discount rate, and present bias. Conflict exposure has no effect on loss aversion, though it induces impatience (Voors et al. 2012) and increases present bias (Imas, Kuhn, and Mironova 2015). More importantly, few studies have looked into the impact of conflicts on real-life behavior such as investment and engagement in activities involving risks. The present study provides a new set of evidence on whether exposure to armed conflict affects risk and time preferences measured by risk averseness, loss aversion, discount rate, and present biasness, together with the evidence on the impact on investment behavior using the case of northern Uganda.

The northern region of Uganda experienced a devastating armed incursion by the Lord's Resistance Army (LRA) between 1987 and 2006 (Nannyonjo 2005). The rebels were responsible for numerous atrocities, including brutal murders, abductions, sexual enslavement, burning of houses, and looting of camp settlements (International Criminal Court 2005). Even after the conflict ended and a lot of reconstruction programs were undertaken in the northern region, northern individuals have been suffering from a range of serious difficulties, including social and psychological problems (Annan et al. 2011; Rohner, Thoenig, and Zilibotti, 2013). This is unlikely to help the region to catch up with the rest of the country and it is still the poorest in Uganda. This enduring negative effect could have arisen partially because conflict exposure indeed affected individual preferences, making it difficult for the affected people to take risks and invest in more profitable activities. If so, post-conflict reconstruction programs need to take individual preferences into consideration

in order not to hinder progress of reconstruction and trigger long-term consequences for individuals' welfare.

This study contributes to the literature in a number of ways. First, we estimate the effect of conflict exposure not only on risk and time preferences by undertaking incentivized lab-in-the-field experiments with randomly selected subjects but also on their real-life behavior. To the best of our knowledge, this is the second study that examines the effect of conflict on both risk and time preferences and their real-life behavior related with such preferences. Even in the study that examined both preferences and behavior (Voors et al. 2012), only risk-taking behavior (cultivation of cash crop and expenditure on farm improvement) is analyzed. Rich dataset on farm household collected by ourselves makes it possible to estimate the effect of conflict exposure also on real-life behavior related with loss aversion, patience, and present biasness.

Second, unlike previous related studies which used only percentage of deaths in attacks at each community as the indicator for conflict exposure (e.g. Voors et al., 2012), this study adopts conflict exposure variables constructed at individual, household and county levels (i.e. whether a subject was abducted, whether a household was displaced, and the number of deaths in a county). This enables us to provide evidence that the differential nature and severity of exposure to conflict can have different effects on risk and time preferences. In particular, formerly abducted youth report more symptoms of emotional distress because of exposure to more extreme violence than non-abductees in war zones, who had been attacked and displaced during the war (Blattman and Annan 2010). Since we can identify

abducted individuals, we are able to examine whether they exhibit particularly strong changes in preferences and investment behavior. In addition, many households in war zones were forced to move to camps with inadequate infrastructure and food for an extended period of time (Adelman 2013). By using the displacement status as an exposure variable, we can estimate the impact of forced camp experience.

By undertaking incentivized lab-in-the-field experiments with randomly selected subjects who were exposed to armed conflict over an extended period of time, we examine whether exposure to armed conflict affects risk and time preferences, and whether the behavior of the subjects in the economic experiments translates into systematic differences in real-life behavior. Our identification strategy relies on the assumption that the exposure to the conflict, specifically abduction by LRA and displacement status was not confounded with subjects' preferences before the war after controlling for age and residential location, following Blattman and Annan (2010). Our survey data shows that whereas some households were displaced from their homes, most of the displacement appeared to be temporary as all the subjects returned to their households at the end of the conflict, suggesting that the conflict may have had very little impact on migration

Although our main analyses are based on the non-confoundedness assumption, we also adopt the instrumental variable (IV) estimation approach since a few studies that examine the effect of the northern Uganda conflict on social preference consider exposure to conflict measured by number of fatalities to be endogenous. The number of deaths is considered to be endogenous mainly because of measurement errors. For example, given that

UCDP relied heavily on reported deaths from news agencies, field informants, Reuters, newspapers and army spokespersons among others, it is likely that some deaths were never recorded, a situation that may have led to under estimation of total deaths, leading to attenuation bias. We use distance from home to South Sudan and the interaction term with the distance to the nearest army barracks as IVs for conflict exposure measured by the number of deaths aggregated at county level.[14]

We find that exposure to conflict induces higher loss aversion and time discount rate, but has no effect on risk aversion and present bias. Our results suggest that those who were in counties with a large number of casualties (severely affected counties) show higher loss aversion and time discount rate, but they do not indicate different levels of risk aversion or present bias. Using our individual- and household-level exposure variables, we further reveal that those who were abducted have higher loss aversion, while those who were displaced are more impatient. The effect of the armed conflict is not mediated by other recent negative shocks affecting agricultural income and land conflict.

The estimation results on real-life behavior are consistent with those on risk and time preferences. Households that were displaced and those in severely affected counties are less likely to invest in health inputs (measured by the use of mosquito bed nets). Those who were in severely affected counties are more likely to avoid loss (measured by the non-use of hired labor for farming). On the contrary, we find no significant results on risk-taking behavior measured by engagement in high-value crops (export crops and oil crops) and high-yielding

[14] The validity of these exclusion variables is discussed in Section 3.4

variety (hybrid maize), as well as hyperbolic discounting behavior measured by alcohol consumption.

The rest of chapter 3 is organized as follows. Section 3.2 provides descriptive statistics for real-life behaviors related with risk and time preferences. Section 3.3 discusses the experimental results. Section 3.4 discusses the identification strategy and estimation models while section 3.5 shows the estimation results and robustness checks. Section 3.6 concludes with policy implications.

3.2 Descriptive Statistics for Real-life Behavior measures

As actual practices of real-life behavior that are considered to be explained by risk and time preferences, this study adopts cultivation of high-value crops[15] and high-yielding variety of maize as risk-taking behaviors, non-use of hired labor in farming[16] as behavior associated with loss aversion, investment in health (use of mosquito bed nets[17]) as behavior

[15] During the survey, we interviewed various farmers, community leaders, and agricultural extension officers which crops they believe are risky for production. They consider crops are risky if finding potential buyers is problematic, since a ready market does not exist and buyers purchase only if certain crop standards are fully met. Based on this, export crops (cotton and tobacco), oil crops (sesame, sunflower, and cashew nuts) and hybrid maize are considered to be risky to produce. High value crops are constructed by taking the crop area on which a high-value crop is grown normalized by the total cultivated land by the household in the last 12 months.

[16] Demand for higher labor depends on land size and family labor availability as well as functioning of land rental and agricultural labor market. Since land rental market is not active in the study areas, land-abundant households tend to hire labor for farming activities. Payment for hired labor is made just after their work. Under the rain-fed agriculture, this payment may result in negative income. Thus, those who have strong aversion to loss may decrease cultivation area without hiring labor.

[17] Malaria is the leading cause of morbidity and mortality among children aged less than 5 years in Uganda. Mosquito bed net usage is among the most widely used preventive measures of malaria infection, especially for children and expectant mothers. Therefore the use of mosquito bed nets characterizes malaria prevention-related behavior. According to the Ministry of Health of Uganda, malaria prevalence

requiring patience, and alcohol consumption per month[18] as behavior related with present bias, as shown in Table 3.1.

Those in less severely affected districts grow more of the export crops compared to those in more severely affected districts. On average, 16.7% and 1.3% of the cultivated land is under oil crops and hybrid maize respectively. We find that those in more severely affected districts use less of mosquito bed nets than those in less severely affected districts. On average, subjects consume about 2.5 liters of alcohol per month, and there is no difference between households in severely affected and less severely affected districts.

[Table 3.1 about here]

In Table 3.2, we categorize the real-life behaviors by abduction status in severely affected districts and by household displacement status. In terms of abduction status categorization, we find no significant mean differences in real-life behaviors. In terms of household displacement status, we find mean differences on hiring labor for farming and use

is highly concentrated in the Acholi sub-region; on average, the country records 478 cases per 1000 people per year (New Vision 2016). In fact, use of mosquito bed nets might translate into large reductions in out-of-pocket health spending for the majority of households. This variable is the share of mosquito bed nets per household member constructed as the total number of bed nets owned by the household divided by the household size. This variable can capture the investment in health to reduce the risk of malaria infection or to improve future health.

[18] Since alcohol is considered a temptation good, present-biased individuals are likely to consume more of it. During the survey, subjects were asked how often they consume alcohol with options of never, every day, every week, twice a week, twice a month, every month, four times a year, twice a year, and other (specify). They were also asked how much alcohol in liters they consumed, which enables us to construct a monthly consumption variable for those who indicated they consume alcohol.

of health inputs. The results suggest that those who were displaced are less likely to hire labor for farming and less likely to use mosquito bednets.

[Table 3.2 about here]

3.3 Experimental results

Table 3.3 summarizes the estimated risk aversion, loss aversion, and discount rate parameters of subjects who participated in the experiments. The overall mean risk aversion is 1.125.[19] In Panel A, without accounting for the influence of control variables, there are no differences in preference parameters in severely affected districts versus less severely affected districts on average. Results in panel B show that there are no differences in preference parameters between households displaced and those not displaced. In panel C, abducted subjects have lower risk aversion than non-abductees.

The mean loss aversion parameter (3.622) is comparable to estimates in rural Uganda (3.22) by Tanaka and Yamano (2015). The result suggests that, on average, a decrease in utility from losing 1 USD has an equal magnitude to an increase in utility from gaining 3.662

[19] This is comparable to the estimate of 1.32 found in Tanaka and Munro's (2014) previous study in rural Uganda. Other studies conducted that are comparable include Wik and Holden (1998) in Zambia, who estimated the risk aversion range to be between 0.81 to 2.0, and Jiménez (2003) in Spain, who estimated a risk aversion range from 0.4 to 1.25. Other studies with estimated risk-aversion ranges that are slightly lower than our estimate include Holt and Laury (2002) in the US (0.68 to 0.97); Barr (2003) in Zimbabwe (0.32 to 0.81), and Harrison and Rutström (2008) in India (0.84).

USD. There is no significant mean difference between subjects in severely affected districts and those in less severely affected districts.[20]

The mean monthly discount rate is about 50%, which is substantially higher than that estimated by Voors et al. (2012) (40.16%), but comparable to other studies conducted in rural Uganda: Tanaka and Yamano (2015) (49%) and Tanaka and Munro (2014) (47.5%). In panel B, those who were displaced have higher discount rates than those who were not displaced. However, there is no significant mean difference between subjects in severely affected districts and less severely affected districts, and between subjects abducted and those not abducted. The last rows show the proportion of subjects with present bias. On average, about 62% of the subjects are present biased.

[Table 3.3 about here]

In the risk experiments, some of the subjects chose either all A or all B, which are not rational choices. Although we consider subjects who chose all A (B) as having high (low) risk aversion, it is possible that they might not have understood the risk experiment fully. To differentiate these subjects from those with rational choices in the risk experiments with high (low) risk aversion who switched to B in the last row (second row), we add two dummy variables taking 1 if subjects did not understand the risk experiment fully (selected all A or

[20] The descriptive statistics from Table 3.3, Panel C, marginally suggest existence of loss aversion by those who were abducted. Figure 3.1 shows all the possible combinations of responses in experiment 1 and 2 on the floor surface and the frequency of responses are represented by the height of the columns. We can visually see that subjects chose safer options when the experiment involved losses.

all B). Table 3.4 presents the risk aversion, loss aversion, and discount rate parameters when excluding all A and all B observations. The findings are similar to those found in Table 3.3.

[Table 3.4 about here]

In Table 3.5, we test for the mean difference of the individual, household, and community characteristics for subjects with rational choices in the risk experiments (experiments 1 and 2), and those that chose all A or all B. We find statistical differences in in timing of experiment. In addition, those with less years of schooling and older subjects are more likely to choose all A or all B. We also find significant mean differences in ethnicity, distance to Sudan, temperature and alcohol consumption of those in less affected districts.

[Table 3.5 about here]

3.4 Identification Strategy and Estimation Models

3.4.1 Identification Strategy

To identify the impact of conflict exposure on risk and time preferences in Northern Uganda, we construct different comparison groups for each conflict exposure. First, as the most serious exposure to violent conflict, we use a subject's abduction status. To identify the impact of being abducted on the preferences, the comparison group is selected from non-abductees in the war zone. Abduction by LRA was seemingly random within the Acholi districts (Blattman and Annan 2010). Migration of former abductees in northern Uganda was negligible given that most survivors returned back to their communities. The estimated impact is the effect of the abduction in addition to living in unsafe and stressful war

environments, not the total effect of the conflict compared with ones in non-war zones. Since we did not collect the pre-war data, we cannot correct for selective attrition and survival.[21] If abductees who did not return (most likely because they were dead) have different preferences from those who returned, the estimated impacts can be biased. The direction of the bias, however, is not clear. If non-survival abductees were more risk averse and that is why they did not try to escape, the impact on risk aversion is under-estimated. It is also possible that non-survival abductees were less risk averse and they tried to escape when the success rate was not high. Thus, the estimated effect needs to be interpreted with caution.

Second, we use a household's displacement status during the war as a conflict exposure variable.[22] The LRA's large-scale attack to civilians from 2002 was the principal driver of internal displacement, while both the security forces and other armed groups and bandits took advantage of the LRA attacks to prey on the local population (Bozzoli, Bruck, and Muhumuza 2012). To protect local populations, national security forces deliberately displaced civilians to the IDP camps the government had set up, although they did not have adequate access to basic services (Adelman and Peterman 2014). Unlike other conflicts, the displacement during the northern Uganda conflict applied to all households regardless of socio-economic conditions of the households (Adelman 2013). The majority of the displaced persons were not allowed to move out from the camps by the military despite the lack of

[21] According to Falaris (2003), attrition rate of 50% has little impact on estimated coefficient in panel survey in developing countries.

[22] We interviewed all the LC1 chairpersons in our sample communities and assert that displacement was largely not an individual choice but rather a choice of the government forces and community leaders.

access to sufficient social infrastructure and food. This forced displacement stretched up to non-Acholi districts. By 2006, there were a total of 220 registered IDP camps in the northern region (Bozzoli, Bruck, and Muhumuza 2012). Living in the camps resulted in poor health conditions, with high incidence of diseases and fatalities. Thus, displaced households should have been affected from living in severe conditions even when they were not abducted by LRA. Since displacement was forced by the security forces based on the risk of attacks by LRA, and not a decision of each household, household's displacement status during the war can be assumed conditional unconfoundedness after controlling for LC1 fixed effects.[23] For this analysis, we use sample households in both Acholi and non-Acholi districts in the northern region. Similar caveat on selective attrition and survival as abductees' analyses can be applied to this household-level conflict exposure variable since we do not have pre-war data and cannot construct attrition weights and propensity score to rigorously create a comparison group from those who were not displaced. Nonetheless, interviews to LC1 chairpersons confirms that such attrition is minor in our sample communities: From Table 2.1, we found that communities that were more severely affected had less returnees of displaced people (95.9%) compared to those in less affected communities (99.3%). However, on average over 97% of the people that were displaced returned to their homes after the conflict had ended, suggesting that attrition and migration may have little impact on our

[23] Duration of displacement was based on the decision of household (Adelman and Peterman 2014, Alderman et al. 2012) and can be confounded with pre-war risk and time preferences even after controlling for LC1 fixed effects. Thus, we do not use the duration of displacement as a conflict exposure variable.

estimations.[24] For all the regression specifications, robust standard errors are clustered at the LC1 level to account for sampling scheme and possible correlation among game participants in same community.

3.4.2 Estimation Models

3.4.2.1 Ordinary least squares estimation

To identify the effect of conflict exposure on risk and time preferences and real-life behavior, we estimate the following model by ordinary least squares (OLS) estimation (Community Fixed effects).

$$y_{ijd} = \beta_0 + \beta_1 D_{ijd} + \beta_2 X_{ij} + \mu_d + e_{ijd} \quad \text{.....(3.1)}$$

where y_{ijd} denotes individual risk and time preference parameters elicited from lab-in-the-field experiments, and real-life behavior of individual *i* from household *j* in community *d*. D_{ijd} is the measure of conflict exposure, *X* is a vector of a set of controls, including individual characteristics (age, head, gender, education years, ethnicity), household characteristics (household size, household landholding in acre, household value of assets) and community characteristics (population density, distance to town, state of roads to district towns,

[24] Annan et al. (2006) estimated that about 95% of former abductees remained in their respective villages after they returned from abduction, hence suggesting that migration especially for former abductees that returned was rather minimal.

altitude).[25] Other covariates[26] include 10 year average annual rainfall and temperature, and timing of the experiment. All estimations for risk and loss preferences include all A and all B dummies. μ_d is LC1 fixed effects. e_{ijd} denotes the error term. After controlling for subject's age and location, the effect of abduction on risk and time preferences and the effect of conflict exposure measured by household displaced is measured by β_1.

3.4.2.2 Instrumental Variable estimation

Although our main identification strategy is based on the conditional unconfoundedness assumption between subject's abduction status and household displacement as described above, De Luca and Verpoorten (2015) and Rohner, Thoneig, and Zilibotti (2013) considered that conflict exposure in northern Uganda measured by the number of violent events and fatalities was endogenous and adopted two stage least squares (2SLS) estimation with distance to South Sudan as an instrument to estimate the impact on trust. Their argument was premised on the fact that the Sudanese government assisted the LRA with logistics and bases in the South Sudanese territory from where the LRA initiated attacks in northern Uganda. In both studies, the conflict variable is measured at district or county level and all Uganda data are used without controlling for LC1 fixed effects. Their identifying assumption for the validity of the instrument is that distance to South Sudan

[25] Since we include community fixed effects in the in the OLS/fixed effects specifications, community characteristics are omitted, but are controlled for in the 2SLS specifications.

[26] We also include an additional control variable of 'General Assistance Received' in some specifications. Presumably, the kind and type of assistance received by a subject may have an impact on the preferences of an individual. Index of assistance received is an additive index of the first six variables of Table 4.12.

affects only the distribution of violence, and has no impact on preference. This assumption is contestable, especially with regard to the geographic correlation. However, we also run similar estimation models as theirs by using the measure of number of deaths from the UCDP data aggregated at county level and two instrumental variables, namely distance to South Sudan and the interaction term with distance to the nearest army barracks.[27]

We construct distance variables by computing the minimum distance between the geo-referenced location of a household and the geo-referenced border of South Sudan and nearest army barracks. In all the specifications, we control for county-level covariates such as rainfall and temperature and LC1-level characteristics (distance to town and road condition to town), which absorbs any differences that might vary as agro-climatic conditions change with increased latitude (or distance to South Sudan).

3.5 Estimation Results and Robustness checks

3.5.1 Conflict exposure on risk and loss aversion, discount rate and present bias

Table 3.6 presents results for risk aversion, loss aversion, discount rate and present bias where the conflict exposure variable is abduction status and sample is restricted to

[27] Army barracks in northern Uganda are exogenously determined, since they all existed before the start of the conflict. Before districts in northern Uganda were partitioned, each district had one army barracks, located near the main district town. Anecdotal evidence shows that the LRA rebels did not hesitate to attack communities that were located nearer to the army barracks, and therefore, many households that were living nearer army barracks faced serious threats and attacks from the rebels, as they tried to take over army barracks. In addition, owing to increased rebel activities, the government responded by embarking on a strategy of forcing people into IDP camps to separate them from rebels who were hiding among the community and disguising themselves as fellow villagers. Even households that lived near the army barracks were forced by the Ugandan army to move to IDP camps for guaranteed protection (Global IDP Database 2003).

severely affected districts. For all the estimations, robust standard errors are clustered at the LC1 level and LC1 fixed effects are included to account for LC1 specific time-invariant unobserved heterogeneity. Two specifications with and without index of assistance received are shown as main results.

Columns 1 and 2 report the risk aversion results with the estimated constant relative risk aversion (CRRA) parameter (σ) as the dependent variable while columns 3 and 4 report the estimation results on the loss aversion parameter (λ) as the dependent variable. Columns 5 and 6 report the results where the time discount parameter is the dependent variable while columns 7 and 8 report the results on present bias as the dependent variable. The estimation results show that abduction increases loss aversion, suggesting that those who were abducted are loss averse. We do not find that abduction by rebel group induces risk aversion, impatience and present bias. We find that years of education are positively and significantly associated with risk aversion. Age is negatively associated with discount rate while males are positively associated with discount rate.

[Table 3.6 about here]

In Table 3.7, we estimate the same specifications as in Table 3.6, this time using household displacement status as our conflict exposure variable. The sample constitutes the whole northern region. The estimated results show that displacement to internally displaced camps induces higher discount rates, suggesting that those who were displaced during the conflict are impatient. These results are consistent with findings of Voors et al. (2012). There is no evidence that displacement affected risk aversion, loss aversion, and present bias. We

also find that household heads are less risk averse and less impatient. Those who are more educated tend to be more risk averse while males are less patient.

[Table 3.7 about here]

In Table 3.8, we check the robustness of the results found in Tables 3.6 and 3.7. We present the results estimated by 2SLS using county-level number of deaths as conflict exposure variable. The bottom of the table reports the coefficients of instrumental variables in the first-stage model, which show the validity of the instruments. For all the estimations, robust standard errors are clustered at the LC1 level. Similar to Tables 3.6 and 3.7, we find that exposure to armed conflict measured by number of deaths at the county level induces loss aversion and impatience, but has no effect on risk aversion and present bias. The results are robust when assistance received is controlled for.

[Table 3.8 about here]

We also check the robustness of our results[28] by including other shocks experienced in the last 12 months as additional regressors, and the results are shown in Table 3.9. Preferences can be affected by other negative shocks other than armed conflict, since almost all the sample households depend on rain-fed agriculture. During the survey, we collected data on shocks other than armed conflict that may affect subjects. Even after controlling for other shocks experienced in the last 12 months, in Panel A, the coefficient of abduction status

[28] We also estimated specifications same as in Tables 3.6 and 3.7 but with both exposure variables of subject abducted and household displaced in the same regression (Table 3A1), but the results remained consistent.

remains insignificant on risk aversion, discount rate and present bias but is positively associated with loss aversion. In Panel B, the coefficient of household displaced is positively associated with discount rate while in Panel C, the number of deaths coefficient is positively associated with loss aversion and discount rate.

[Table 3.9 about here]

3.5.2 Conflict exposure on real-life behavior

The results so far show that conflict exposure induces loss aversion and impatience, but has no effect on risk aversion and present bias. Next, we examine whether conflict exposure affects the real-life behavior of those who were exposed to armed conflict by using the same model as equation 3.1.[29]

The results are shown in Tables 3.10, 3.11 and 3.12. As shown in Table 3.10, abduction has no significant effect on real life behaviors. In Table 3.11 where the conflict exposure variable is household displaced, we find that conflict exposure is negatively associated with use of mosquito bed nets, suggesting that those who were exposed to conflict invest less in health. This is consistent with the result on time preference shown in Table 3.7 where those who were displaced to IDP camps are less patient. We also find no significant correlation of conflict exposure with high value crops, hybrid maize variety, hired labor, and alcohol consumption, which are also consistent with results on risk aversion, loss aversion,

[29] We also checked whether risk (loss) aversion measures elicited from experiments is negatively correlated with risky behavior in real life; and whether discount rates (present bias) elicited from experiments are positively correlated with impatient behavior in real life. We found that the correlation was very low or not so strong.

and present bias. When we estimate our model by 2SLS with county-level conflict exposure variable as shown in Table 3.12, we find that those who were more severely affected are less likely to hire labor and to invest in health. We also find that assistance received is positively associated with cultivation of oil crops, mosquito bednet use and alcohol consumption.

3.6 Correcting for Multiple Hypothesis Testing of Real-Life Behaviors

As an additional conservative test and following previous literature on multiple hypothesis testing (e.g. Abdi, 2007; Mason et al., 2017), in Table 3A2, we ascertain if the real life behavior estimates are statistically significant if the P-value thresholds are adjusted using the false discovery rate (FDR) at 0.05 level of significance. This adjustment assumes independence of the hypothesis tests. The FDR is designed to control the proportion of false positives among the set of rejected hypotheses. To control FDR at level δ, first we order the unadjusted P-values $P_1 \leq P_2 \leq \ldots \leq P_6$. We then find the test with the highest rank, j, for which the P value P_j, is less than or equal to (j/m) x δ. We declare the tests of rank 1, 2, …, j as significant if $P(j) \leq \delta \frac{j}{m}$. From Table 3A2, when we compare column 2 and column 3, we find that all results in column 2 are greater than those in column 3, suggesting that we do not find any significant results. This more conservative and stricter test produces insignificant results which are different from those with unadjusted P-values where those who were exposed to conflict are less likely to invest in health inputs through use of mosquito bed nets, and are more likely to avoid loss measured by non-use of hired labor for agricultural production.

3.7 Conclusion and Policy Implication

This study has investigated the effects of exposure to armed conflict on risk and time preferences in rural households that were exposed to the LRA conflict by utilizing an experimental approach with real payoffs in northern Uganda. The estimation results when we use three conflict exposure variables of subject abducted, household displaced and number of deaths indicate that conflict exposure induces higher loss aversion and time discount, but has no effect on risk aversion and present bias. In particular, those who were abducted and those who resided in counties with higher number of deaths during the conflict show higher loss aversion, while those who were displaced to internally displaced people's camps and those who were in severely affected counties are more impatient. We do not find evidence that those who were affected by the conflict have different levels of risk aversion and present bias. While the violent conflict ended 10 years prior to the experiments, we have shown that its effect is not mediated by other, more recent negative shocks affecting agricultural income and land conflict. These findings suggest that the effect on loss aversion may be explained by the underlying psychological channel shown by Moya (2018); exposure to the violence leads to higher levels of psychological trauma and anxiety, which may presumably alter attitudes toward loss. During periods of the conflict, individuals in northern Uganda faced a number of negative setbacks including loss of property and belongings due to the severity of exposure to the conflict, yet, the psychological cost of relinquishing or losing a good is much more greater than the psychological benefit of acquiring that good (Levy, 2000). Subsequently, we can presumably argue that the behavioral attitudes of higher

loss aversion that we find in this study by subjects who were abducted, and those who were living in counties with higher deaths, may be psychological in nature because this category of people may be valuing more what they currently own compared to what they do not currently own, and may be sensitive to any negative shocks or changes that may affect their current asset composition or holdings.

The results on real-life behavior show that those who were exposed to conflict are less likely to invest in health inputs through use of mosquito bed nets. In addition, we find that those who were exposed to conflict are more likely to avoid loss measured by non-use of hired labor for agricultural production. Given that demand for higher labor depends on land size and family labor availability as well as functioning of land rental and agricultural labor market, and since land rental market is not active in the northern region, land-abundant households are likely to hire labor for farming activities. However, payment for hired labor is usually made just after their work. Under the rain-fed agriculture, the probability of this payment resulting in negative income is high. Therefore, those who have strong aversion to loss may decrease their cultivation area without hiring labor to avoid loss. We do not find any evidence that conflict exposure decreases risk-taking behavior such as the adoption of crops with higher risk (export and oil crops) and increases hyperbolic discounting behavior such as alcohol consumption.

As an alternative test to ascertain if the real-life behavior results are statistically significant when we adjust P-values using the false discovery rate (FDR) at 0.05 level of

significance, we find that none of the real-life behavior results are significant, suggesting that our real-life behavior results should be interpreted with caution.

Nonetheless, the results from the analysis have fundamental implications for policy guidance. Exposure to violence might have long-term negative consequences for individuals' attitudes. In both theoretical and policy-related studies on growth and development, a general assumption is that poverty is persistent because poor individuals may be risk/loss averse and/or too impatient to accrue the resources desired to improve and enhance their wellbeing. Such attitudes could deter individuals from making investments they consider uncertain in nature or from engaging in activities they regard could lead to losses. Our results imply that internally displaced households and abducted individuals are particularly likely to suffer from these problems. They in turn suggest that providing these groups with targeted interventions such as consulting and mental health programs are likely to improve not only their psychological well-being but also their investment behavior and long-term economic prosperity. It would be a fruitful future research to investigate the impact of these interventions on long-term economic outcomes.

CHAPTER 4

Long-Term Effects of Armed Conflict on Trust and Behavior: Evidence from Rural Northern Uganda

4.1 Introduction

The literature has hitherto shown the negative effects of armed conflict are indisputable and entails destruction of physical and human capital (Collier et al., 2003).[30] Specifically, armed conflict can erode social capital within the society, which can have negative and enduring effects on a country's development since, without it, the likelihood of renewed violent outbreaks and instability in the society remain high and it is difficult to reconstruct political and economic institutions (Nunn and Wantchekon, 2011; Zak and Knack, 2001). Therefore, whether armed conflicts deteriorate social capital remains a critical development question.

Existing studies have also examined the role of trust on development by using trust and trustworthiness as essential components of social capital. The findings show trust is critical for development through decreasing homicide rates (Elgar and Aitken, 2010) and increasing innovation (Knack and Keefer, 1997). Further, in developing countries with weak institutions, trust is instrumental in helping the disadvantaged poor manage risks and vulnerability by facilitating connection and cooperation among community members,

[30] Other costs of conflict include loss of human lives, displacement of civilians, increased poverty levels, institutional decay, capital flight, temporary drops in income, discouragement of investment, changes in behavior and decision-making, (Blattman and Annan 2010; Jakiela & Ozier, 2015; Nunn and Wantchekon 2011; Rohner, Thoneig, and Zilibotti, 2013).

cooperation in large groups, and influencing participation in public life and politics (Woolcock and Narayan, 2000).[31]

However, the evidence is mixed on the effect of violence on trust and collective action. On one hand, some studies using trust elicited from lab-in-the field experiments have shown that individual exposure to recent armed conflicts (as combatants or victims of violence) can undermine trust and associational membership (Becchetti et al., 2013; Cassar et al., 2014; Deng, 2010). The effects can be long-lasting.[32] On the other hand, recent empirical literature asserts increased prosocial behavior, community participation, and collective action in communities which have experience of being exposed to conflict (Bauer et al., 2017; Bellows and Miguel, 2006, 2009; Blattman, 2009; De Luca and Verpoorten, 2015; Gilligan et al., 2014; Rohner, Thoneig, and Zilibotti, 2013; Voors et al., 2012).

In this study, we examine the effects of an armed conflict 10 years after its end in order to ascertain its long-term impact on trust and trustworthiness, as well as local collective action and political engagement. If armed conflict erodes trust indeed, reconstruction efforts may be undermined (Pham et al., 2007) and, therefore, policy makers need to consider strategies of increasing the trust levels and cooperative behavior of those exposed to conflicts. It is often the case that heavy investments in rebuilding physical capital (e.g., schools, hospitals, roads, clean water access) in affected communities are prioritized. However,

[31] Other studies on the benefits of trust include: Schafft (1998) and Varshney (1999) on trust being important in dispute resolutions, and Moser (1996) and Narayan (1996) on the importance of trust, social networks, and civic associations in addressing poverty and vulnerability.

[32] Besley and Reynal-Querol (2014) also show war prevalence in Africa in the precolonial period is associated with the more recent experiences of civil conflict and lower level of inter-group trust.

rebuilding physical capital alone may not adequately yield the intended outcome of revitalizing the social and economic welfare of the affected individuals.

Our identification strategy builds on the prior evidence of the generally indiscriminate and random nature of the LRA conflict, where displacement of households to camps and abductions by rebel groups were not confounded with subject's preferences before the conflict. This is because the attacks on households were largely arbitrary in nature, regardless of the households' social economic status, and the recruitment of soldiers was not affected by self-selection or screening by rebels (Bauer et al. 2017; Blattman, 2009; Blattman and Annan, 2010; Pham et al., 2008), and displacement of households was indeed not a choice, as they were forced to move to IDP camps by government forces (Adelman and Peterman, 2014). In addition, although our main identification strategy is grounded on the conditional unconfoundedness assumption between subjects' abduction status and household displacement, previous studies on the northern Ugandan conflict, including De Luca and Verpoorten (2015) and Rohner, Thoneig, and Zilibotti (2013), used the number of violent events and fatalities as conflict exposure variables, which are considered endogenous. In the circumstances, when we use number of deaths as our conflict exposure variable from the UCDP dataset, we use an instrumental variable of distance to Sudan and the interaction of distance to Sudan with distance to nearest army barracks.

This study contributes to the literature on the effects of armed conflict on trust in several ways. First, this study uses a trust measure obtained from both survey and incentivized experiments. This enables us to overcome the difficulties experienced by abstract survey questions (e.g. generalized trust questions) as the experiments provide an

incentive-compatible channel through which subjects can reliably disclose their individual degrees of pro-sociality (trust and trustworthiness).[33] For instance, studies by De Luca and Verpoorten (2015), Rohner, Thoneig, and Zilibotti (2013),[34] and Blattman (2009) only utilized self-reported generalized trust questions. More importantly, their measures are designed to capture general trust, and thus they do not allow us to examine whether the effects on trust are different depending on the social distance to the partners which trust game is played against. However, to the extent victims of conflicts are limited to a certain ethnic group, they may foster a greater level of trust within the group, while change the level of trust towards other groups (Bauer et al., 2017). We show evidence that abductees exhibit lower levels of trust and trustworthiness only against fellow northerners. This is important because such biased effects on trust could hamper the efforts to maintain subsequent peace.

Second, among studies using lab-in-the-field experiments, our study uses conflict exposure variables constructed at individual, household, and county levels (i.e., whether a subject was abducted, whether a household was displaced, and the number of deaths in a county). Most studies use only one conflict exposure variable for their analyses.[35] By using

[33] Generalized trust has been defined as "a belief in the benevolence of human nature in general and thus is not limited to particular objects" (Yamagishi and Yamagishi, 1994, p. 139). According to Glaeser et al. (2000), the question "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" is used as source of evidence of trust and is very common in empirical literature on trust. This question originated from the National Opinion Research Center's General Social Survey (GSS) and, usually, the set of questions that follow the GSS differ by survey.

[34] Rohner, Thoneig, and Zilibotti (2013) do not analyze the behaviors of affected individuals in terms of associational membership, community participation, or political participation.

[35] For example, Bauer et al. (2017) and Blattman (2009) focus on former abductees (i.e., abduction status as the conflict exposure variable). De Luca and Verpoorten (2015) and Rohner, Thoneig, and Zilibotti (2013) use fatality war events as exposure variable.

different conflict exposure variables, we provide evidence that abduction exposure negatively affects trust and trustworthiness, while displacement has no effect on those outcomes.

Third, this study provides evidence on the effects of exposure to armed conflict on trust from different timelines and geographical areas. While the existing studies have been conducted during the war and immediately after the end of the war, it has not yet been well-understood how the long-term effects on trust differ from the short-run effects. We collected information 10 years after the war ended. Combined with the very low rate of migration, it allows us to investigate the long term effects of conflict exposure on trust and trustworthiness. In addition, our data cover not only the most severely affected districts but also less severely affected districts in northern Uganda. Conversely, Bauer et al. (2017) covers the most affected two districts, and the samples used by Rohner, Thoneig, and Zilibotti (2013) and De Luca and Verpoorten (2015) include non-conflict affected areas that have different agro-climatic and socio-economic conditions from the conflict affected areas. Our study area is restricted to the northern region but spreads over 10 districts[36] exposed to different degrees of the conflict, which plausibly provides more conflict intensity variation.

Fourth, we examine how exposure to conflict affects not only elicited trust but also real-life pro-social behaviors, unlike Bauer et al. (2017). This is important because actual post-war rehabilitation processes are likely to be directly affected by real pro-social behaviors, which measure how individuals interact with others. The results on these outcomes, coupled

[36] Our sample is drawn from 10 districts, namely Agago, Gulu, Kitgum, Lamwo, Nwoya, Pader, Apac, Kole, Lira, and Oyam.

with those on trust levels, are likely to reliably aid policy makers in their decision-making processes.

Finally, a last but not least important contribution is to examine plausible channels through which conflict fosters pro-social behaviors. Although exposure to armed conflict is found to foster trust, trustworthiness, and cooperative behavior in some previous studies, the mechanisms behind such results have not been fully examined.[37] We collected retrospective data on assistance received from family, neighbors, community members, the government, and non-governmental organizations for assessing the mechanism through which former abductees engage in pro-social behaviors.

In the Ugandan context, 10 years after the war ended, we did not find evidence of mistrust among former abductees and displaced households. We however find that there is a heterogeneous impact among former abductees: those who were abducted when younger (below 16 years) exhibit less trust and trustworthiness. Furthermore, those who were abducted seem to show higher mistrust when playing with partners from the northern region compared to partners from other regions. In terms of real-life behavior, we find that those who were abducted during the conflict were more likely to engage in political participation and collective action. This higher political and community engagement by former abductees is mainly due to the assistance and support provided after the war and having held a leadership position while with the LRA rebels.

[37] The exception is Fearon et al. (2009), who used randomized control trial of assigning post-conflict community-driven reconstruction programs to villages in Northern Liberia and found such programs can increase social cohesion measured by public goods game.

The rest of chapter 4 is organized as follows. Section 4.2 provides descriptive statistics for real-life behaviors related with trust. Section 4.3 discusses the experimental results. Section 4.4 discusses the identification strategy and estimation models while section 4.5 shows the estimation results and robustness checks. Section 4.6 concludes with policy implications.

4.2 Descriptive Statistics for real-life behavior measures

For actual behaviors associated with social capital, the study adopts various measures, as shown in Table 4.1.[38] Behaviors are categorized in political participation, organizational membership, community collective action and trust behavior related to lending money to others. In terms of political participation, 86% of respondents are affiliated to a political party, with those in less severely affected districts more likely to be affiliated to a political party. Nearly 90% voted in the most recent parliamentary and presidential elections held in February 2016, with no difference in voting between those in more and less severely affected districts.

In terms of organizational membership, subjects in less severely affected districts are more likely to belong to a community group compared to those in more severely affected ones. More than half of the subjects belong to a Rotating Savings and Credit Association (ROSCA).[39] Individuals in less severely affected districts are more likely to be members of

[38] Appendix A indicates the description of the trust and behavioral dimensional variables.

[39] ROSCA is a group of individuals who agree to meet for a defined period (usually short periods on monthly basis) to save and borrow together, a form of combined peer-to-peer banking and peer-to-peer lending.

Savings and Credit Cooperative Organizations (SACCOs.)[40] Around 31% of the subjects are leaders in groups, while 49% report that they work together with group members. In terms of community participation, subjects participate in one activity and there is no difference between more and less severely affected districts.

The final pro-social behavior variable determines if a subject was asked to lend money, and of those who lent money, whether they lent part or all of the money asked for in the last 12 months. Financial contracts or transactions between two parties are extremely trust intensive (Guiso et al., 2004) and, therefore, trust is an important component in lending money (especially if no collateral is attached to it). Around 56.5% of the subjects were asked by someone to lend them money and more than 90% of the subjects who were asked lent all or part of money that was requested.

Subjects were also asked additional questions on generalized trust.[41] On average, 7% of them answered that most people can be trusted, with no mean difference between less and more severely affected districts.

[Table 4.1 about here]

[40] A SACCO is owned, managed, and run by its members, who have a common bond, regardless of race, tribe, gender, political affiliation, religion, or job status. A SACCO member is a person registered in accordance with the SACCO's by-laws.

[41] We restrict our analysis on what concerns the subject's level of generalized trust, formulated as: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" The answer categories are "Most people can be trusted" (coded 1), "Can't be too careful" (coded 2), "Depends" (coded 3), "Do not know" (coded 4) and "Refuse to answer" (coded 5). We construct a dummy variable on the individual level and taking a value of 1 if "Most people can be trusted" is answered.

In Table 4.2, we categorize the actual real-life practices of the subjects by abduction and household displacement status. For abduction status, we find abducted subjects participate more in community groups, leadership positions, and volunteering, while those that were displaced are more likely to be members of ROSCA or SACCO, or participate in local infrastructure maintenance.

[Table 4.2 about here]

4.3 Experimental Results

Table 4.3 summarizes the estimated trust and trustworthiness of subjects that participated in the trust game experiment. Panel A shows the mean difference of the experimental trust measures, while Panel B and Panel C show the mean differences of the experimental trustworthiness measures categorized by severely affected and less severely affected districts, displacement status and abduction status. In Panel A, without accounting for the influence of control variables, there exists substantial heterogeneity in the trust behaviors of subjects in more severely and less severely affected districts, and displaced and not displaced. The subjects in less severely affected districts and those not displaced tend to send more money than those in more severely affected districts and displaced, respectively. The average amount sent by the first mover in the trust game experiment, which is a measure of trust, is 1,709 UGX out of 9,000, which represents 18.9% of the total endowment. As expected, higher amounts are sent to those in the same village and northern region than anonymous persons in other regions.

Panel B shows the average percentage returned by the second mover (reciprocity) in the trust game experiment, which is a measure of trustworthiness, at about 23.6%. Similar to trust, in Panel B, subjects in less severely affected districts return more money than those in more severely affected districts. The average amount returned in our study is slightly lower than that found by Bauer et al. (2017) (34.89%).

In Panel C, we show the percentage amount returned by the second mover if allocated 3,000, 6,000, or 9,000 UGX. The percentage returned by the second movers is, on average, similar in all three cases: 23.4%, 21.2%, and 23.1%, respectively. We find a significant mean difference if allocated 6,000 UGX, where subjects in less severely affected districts return more money compared to those in more severely affected districts. In sum, simple mean differences between affected and less affected people in northern Uganda suggest small differences in trust and trustworthiness elicited from the experiments. The trust levels vary depending on the social distance between subjects and partners. In the following sections, we estimate the effect of the conflict on trust more rigorously.

[Table 4.3 about here]

4.4 Identification Strategy and Estimation Models

4.4.1 Identification Strategy

For our identification strategy, we construct different comparison groups for the exposure to conflict, which enables us to plausibly identify the impact of conflict exposure on trust and trustworthiness in northern Uganda. We begin by considering the subject's abduction status,

which is the most severe form of exposure to the violent conflict. To ascertain the effects of a subject being abducted by the LRA on trust and trustworthiness, we compare a group selected from the non-abductee subjects, given that abduction in northern Uganda by the LRA was generally indiscriminate, unplanned, arbitrary, and random in nature, especially within the Acholi districts, and recruitment of individuals into the LRA was not affected by self-selection or screening by the rebels (Blattman and Annan, 2010; Pham et al., 2008), hence creating an exogenous variation in conscription. Using abduction status as our exogenous conflict exposure variable, the estimate indicates the effect of abduction, not the total effect of the conflict when compared with those in non-conflict zones. One data limitation is that we did not collect pre-war data and, therefore, this renders it difficult to control for selective attrition and survival.[42] For example, if abductees who did not return after the war (probably because they died during the conflict) have different preferences compared to those who returned, it is plausible our estimated impacts can be biased. However, the direction of the bias is unclear. On one hand, if non-returned abductees were more trusting to the rebel group and therefore decided to endure and become combatants, the impact on trust and trustworthiness may be under-estimated. On the other hand, it is also possible non-returned abductees were non-cooperative, even with the rebels, and were accorded severe punishments or assigned to perform very dangerous tasks, hence resulting in more deaths and underrepresentation in our data (Bauer et al., 2017). It is also possible those less cooperative or trustworthy within the community, even before the conflict started, and those known to

[42] According to Falaris (2003), an attrition rate of 50% has little impact on the estimated coefficient in the panel survey for developing countries.

have been involved in the forceful killing of their family or community members are less likely to have been accepted back into their communities. Such experiences may have forced some abductees to migrate to geographical areas outside of our study region (Bauer et al., 2017).

For our second conflict exposure variable, we use the household-level displacement status during the conflict. Different from other conflicts, the LRA attacks on households were largely arbitrary in nature, regardless of the household's social economic status (Adelman, 2013). The major cause for the internal displacement of households were the large-scale attacks on civilians around 2002 (De Luca and Verpoorten, 2015; Nannyonjo, 2005; Rohner, Thoneig, and Zilibotti, 2013). During this period of mass displacement, not only security forces but other armed groups within the northern region took advantage of the prevailing LRA attacks to further victimize the local population (Bozzoli, Bruck, and Muhumuza 2012). The government forces, in a bid to protect the local northern residents, intentionally displaced the local civilians to IDP camps set up by the government, although most of these camps lacked access to basic services (Adelman and Peterman, 2014). Despite the lack of sufficient access to social infrastructure and food, most of those displaced and living in IDP camps were restricted from moving out of the camps, and this forced displacement extended to non-Acholi districts as well. According to Bozzoli, Bruck, and Muhumuza (2012), around 220 registered IDP camps existed in northern Uganda, where high incidences of disease and fatalities were common because of the poor health conditions. Even if the displaced subjects were living in IDP camps and were not abducted by the rebels, they still faced severe unconducive conditions in these camps.

Since displacement was enforced by the security forces based on the risk of attacks by LRA,[43] and not a decision of the household, household displacement status during the war can be assumed conditional unconfoundedness after controlling for LC1 fixed effects.[44] A similar caveat on selective attrition and survival as abductees' analyses can be applied to household-level conflict exposure variable, since we do not have pre-war data and cannot construct attrition weights and propensity scores to rigorously create a comparison group from those not displaced. Nonetheless, interviews with LC1 chairpersons confirm such attrition is minor in our sample communities: From Table 2.1, we found that communities that were more severely affected had less returnees of displaced people (95.9%) compared to those in less affected communities (99.3%). However, on average over 97% of those displaced returned to their homes after the conflict had ended, suggesting attrition and migration may have little impact on our estimations.[45]

4.4.2 Estimation Models

4.4.2.1 Ordinary least squares estimation

To identify the effect of conflict exposure on trust and trustworthiness, we estimate the following model by ordinary least squares regression (Community Fixed effects).

[43] We interviewed all the LC1 chairpersons in our sample communities and assert that displacement was largely not an individual choice but rather a choice of the government forces and community leaders.

[44] Duration of displacement can be endogenous because the timing of returning home was based on the decision of household (Adelman and Peterman, 2014; Alderman et al., 2013). Thus, we do not use the duration of displacement as a conflict exposure variable.

[45] Annan et al. (2006) estimated that about 95% of former abductees remained in their respective villages after they returned from abduction, hence suggesting that migration especially for former abductees that returned was rather minimal.

$$\tau_{sijd} = \beta_0 + \beta_1 D_{ijd} + \beta_2 X_{ij} + \beta_3 Z_s + \mu_d + e_{ijd} \quad \text{.....(4.1)}$$

where τ_{sijd} denotes the individual trust and trustworthiness preference parameters of individual *i* from household *j* in community *d* when played with partner *s*. D_{ijd} is the measure of conflict exposure and *X* a vector of a set of controls, including individual, household, and community characteristics[46], as shown in Table 2.1. We also include a game order covariate in all the trust and trustworthiness specifications. Following previous studies (Andreoni and Miller, 2002; Schechter, 2007), we include altruism in some specification because altruism has been found to be a determinant of trust. The argument is that unconditional kindness by an individual may be a result of social preferences such as altruism, or because of preference for fairness by people to others. Presumably by controlling for altruism, we are able to cater for unobserved heterogeneities. Z_s is a set of player dummies (i.e., villager, northerner, central, easterner, or westerner)[47] and μ_d is community fixed effects. e_{ijd} denotes the error term. The effect of abduction and displacement status on trust and trustworthiness is measured by β_1. For all regression specifications of trust and trustworthiness, robust standard errors are clustered at individual level to account for the sampling scheme and possible correlation among experiment participants in the same community.

[46] Since we include community fixed effects in the in the OLS/fixed effects specifications, community characteristics are omitted, but are controlled for in the 2SLS specifications.

[47] When survey-based, generalized trust measures are used instead of experimental data, the player dummies are people in other regions, villagers, and family members.

Since conflict exposure can have differential effects on trust for in- and out-group members (Cassar et al., 2014; Rohner, Thoneig, and Zilibotti, 2013), we estimate the following model as well by OLS (Community Fixed effects):

$$\tau_{sijd} = \beta_0 + \beta_1 D_{ijd} + \beta_2 X_{ij} + \beta_3 Z_s + \beta_4 I_s \times D_{ijd} + \mu_d + e_{ijd} \quad \text{.....(4.2)}$$

where *I* is an indicator variable taking the value 1 if partner *s* is categorized as in-group of subject *i*, and 0 otherwise.

The impact of conflict exposure on a subject's behavior is estimated by OLS (Community Fixed effects):

$$y_{ijd} = \beta_0 + \beta_1 D_{ijd} + \beta_2 X_{ij} + \mu_d + e_{ijd}, \quad \text{.....(4.3)}$$

where y_{ijd} denotes political engagement, associational membership indicators, community participation indicators, and lending of money of individual *i* from household *j* in community *d*, as listed in Table 4.1. The other control variables are the same as those in equation (4.1).

4.4.2.2 Instrumental Variable estimation

Although our main identification strategy is grounded on the conditional unconfoundedness assumption between subjects' abduction status and household displacement, previous studies on the northern Ugandan conflict, including De Luca and Verpoorten (2015) and Rohner, Thoneig, and Zilibotti (2013), used the number of violent events and fatalities as conflict exposure variables, which are considered endogenous. These studies adopted two-stage least squares (2SLS) estimations with distance to South Sudan as an instrument to estimate the impact on trust, because the Sudanese government assisted the

LRA with logistics and bases in the South Sudanese territory, from where the LRA initiated attacks on northern Uganda. In both studies, the conflict variable is measured at district or county level and observations from the entire Uganda dataset are used without controlling for LC1 fixed effects. Their identifying assumption for the validity of the instrument is that the distance to South Sudan affects only the distribution of violence and has no impact on preference. However, this assumption is contestable, specifically with regard to correlations with agro-ecological conditions such as rainfall, temperature, and soil fertility (Tanaka and Munro, 2014). Nonetheless, for comparison, we also estimate a similar estimation model as theirs by using the number of deaths from the UCDP dataset, aggregated at county level, and use two instrumental variables, namely distance to South Sudan and the interaction term with distance to the nearest army barrack.[48] We construct distance variables by computing the minimum distance between the geo-referenced location of a household and the geo-referenced border with South Sudan and nearest army barracks. In all specifications, we control for county-level covariates, such as rainfall and temperature and LC1-level characteristics (distance and road condition to town), which presumably cancel any

[48] Army barracks in northern Uganda are exogenously determined, since they all existed before the start of the conflict. Before districts in northern Uganda were partitioned, each district had one army barracks, located near the main district town. Anecdotal evidence shows that the LRA rebels did not hesitate to attack communities that were located nearer to the army barracks, and therefore, many households that were living nearer army barracks faced serious threats and attacks from the rebels, as they tried to take over army barracks. In addition, owing to increased rebel activities, the government responded by embarking on a strategy of forcing people into IDP camps to separate them from rebels who were hiding among the community and disguising themselves as fellow villagers. Even households that lived near the army barracks were forced by the Ugandan army to move to IDP camps for guaranteed protection (Global IDP Database 2003).

differences in agro-climatic conditions due to the increased latitude (or distance to South Sudan).

4.5 Estimation Results and Robustness checks

Table 4.4 presents the results for trust and trustworthiness. Columns 1–4 show the results on trust with the dependent variable as the amount sent by the first mover in the trust game experiment, while columns 5–8 show the results on trustworthiness with the dependent variable the percentage returned by the second mover in the trust game experiment. Our main results of trust and trustworthiness are shown in columns 1 and 5, respectively. We do not find that abduction by the rebel group induced mistrust, and the results are consistent throughout the specifications.

As alternative specifications for robustness checks, in columns 2 and 6, we control for altruism, as elicited from the dictator experiment. Andreoni and Miller (2002) argued that altruism is a determinant of trust and unconditional kindness by an individual may be a result of social preferences, such as altruism. Schechter (2007) argued that a subject may send money to an anonymous partner because he/she trusts that their partner may return a high share of what they receive, or he/she is altruistic and has a preference for fairness. Presumably, by including altruism as an additional regressor, we can control for potential unobserved heterogeneities. In Table 4A1, we show altruism is not correlated with our main conflict exposure variables of the subject being abducted and household displaced, making it a plausible regressor. In addition, in Table 4A3, we show subsets of subjects whose altruism was not affected by conflict exposure. Specifically, in Table 4A3, column 1 and 2 show no

effect on those who were abducted when young (abducted when less than 16 years). In column 3 and 4, there is no effect on those who were abducted for more than 1 year, while in column 5, there is no effect of abduction on a subject's in-group, where in-group dummy takes value 1 if subject's partner is northerner, and 0 if partner is from other region.

Even after controlling for altruism, there is no evidence abduction induces mistrust and/or fosters trust. However, we find the degree of altruism is positive and significantly associated with trust and trustworthiness. These results suggest trust and trustworthiness can be attributed to altruistic behavior. Similar results have been found by Cox (2004), Schechter (2007), and Aoyagi et al. (2014).

In columns 3 and 7, we include general assistance received[49] as an additional regressor because the type and level of assistance received may have an impact on the preferences of an individual. In columns 4 and 8, we control for other shocks experienced over the past 12 months. Trust and trustworthiness can be affected by negative shocks other than armed conflict, since almost all sample households depend on rain-fed agriculture. During the survey, we collected data on shocks other than armed conflict that may have affected the subjects. Even after controlling for assistance received and other shocks in the last 12 months, the coefficient of abduction status remains insignificant.

[Table 4.4 about here]

[49] See Table 4.12 for the variables used to construct general assistance received.

In Table 4.5, we estimate the same specifications as in Table 4.4, using household displacement status as our conflict exposure variable. The sample is the entire northern region. The estimated impacts of displacement to a camp on trust and trustworthiness are qualitatively and quantitatively similar to the ones in Table 4.4.

[Table 4.5 about here]

In Table 4.6, the dependent variable is the self-reported generalized trust. Consistent with the findings in Table 4.4 and 4.5, we do not find any significant effects of exposure to armed conflict on self-reported generalized trust.[50]

[Table 4.6 about here]

In Table 4.7, we present the results of county-level conflict exposure as the number of deaths estimated by 2SLS. The lower part of the table reports the coefficients of instrumental variables in the first-stage model, which show a statistically significant correlation of the instruments. Similar to Tables 4.4 and 4.5, we do not find that exposure to armed conflict measured by the number of deaths at county level induces mistrust or fosters trust.[51]

[Table 4.7 about here]

[50] We also estimated specifications same as in Tables 4.4, 4.5 and 4.6 but with both exposure variables of subject abducted and household displaced in the same regression (Table 4A2), but the results remained consistent.

[51] In Table 4A5 of the appendix, we estimate the effect of conflict exposure on trustworthiness by amount received by the 2nd mover. Our main conclusion on the impact on trustworthiness does not change.

Conflict exposure can have differential effects on trust and trustworthiness to in- and out-group members, age at abduction, and length of abduction. For in-/out-group members, we construct a dummy variable that can enable us to observe trust and trustworthiness depending on the social distance between partners and estimate equation (4.2). In Table 4.8, we define the in-group as partners from the northern region, and out-group as partners from other regions (western, eastern, or central). We construct a dummy variable taking 1 if the partner is northerner, and 0 otherwise, and interact the dummy with the conflict exposure variables.[52] For example, in Table 4.3 under panel A, we found a statistical mean difference of in abduction categorization when partner is northerner, suggesting that there could be an effect on subject's in-group. In columns 1 and 2, where the conflict exposure variable is subject abducted and the dependent variable is trust, we find a negative and significant association between the interaction term and trust, suggesting those who were abducted during the conflict have less trust towards their in-group. This finding is worrisome, since abductees tend to mistrust people within the northern region, which may deter reconstruction efforts and increase the probability of future conflicts.

[Table 4.8 about here]

Next, we estimate the differential effects of abduction in terms of age and length of abduction. It is possible that those abducted when younger are more likely to be severely

[52] Table 4A4 shows the descriptive statistics. In panel A, non-abducted subjects send higher amounts to northerner partners, while northerners receive higher amounts on average by the 2nd mover. In panel B, on average, both displaced and non-displaced households sent more money to northerners. There is no difference between amounts by those who were displaced and those not displaced. For the results on trustworthiness, we do not find any significant effect of conflict exposure towards one's in-group.

traumatized. We define young abductees as those below 16 years when abducted. We construct a young dummy variable and interact it with subject abducted. As previously explained, some abductees were released after a short period of time while others were captured for a longer time. Although length of capture is likely to be endogenous, we attempt to measure this differential impact by including an interaction term of abduction with those who were abducted for more than one year. The results are reported in table 4.9. We find no indication that the length of abduction induces higher mistrust, but find more pronounced evidence that those abducted at an early age (below 16) have lower levels of trust and trustworthiness.

[Table 4.9 about here]

Next, we examine whether conflict exposure affects the real-life behaviors reflecting social capital. The estimation results are shown in Tables 4.10 and 4.11. All specifications are clustered at LC1 level and LC1 fixed effects are included.[53]

Table 4.10 presents the results when abduction status is used as conflict exposure.[54] The results show that those who were abducted engage more in political participation through voting. These results are consistent with previous findings by Bellows and Miguel (2006, 2009), Blattman (2009), and Gilligan et al. (2014). We find no significant effect of conflict exposure on the membership to a political party. The results in column 3 show abducted

[53] We also checked whether the trust (trustworthiness) measures elicited from experiments is positively correlated with pro-social behavior in real life, but the correlation was very low or not so strong.

[54] In Table 4A6, we estimate the same regression as in Table 4.10 but include the additional regressors of altruism and assistance received, and the results are consistent with Table 4.10.

subjects are more likely to participate in community organizations. Similar results have been found by Bauer et al. (2016) and Blattman (2009). As per column 4, the subjects that were abducted are more likely to be leaders of community groups. Our results thus complement the findings by Blattman (2009), who claimed abductees may have acquired leadership skills during abduction.

Although the coefficient of abduction status on the community collective action index is not significant (column 5), we find that subjects who were abducted are more likely to work with others (column 6). In the last two columns, we estimate the effect of conflict exposure on the trust-based interaction of lending money. We do not find that exposure to conflict increases the probability of being asked to lend money and lending money, maybe because these subjects do not have money to lend out to others.

[Table 4.10 about here]

When we use household displacement as conflict exposure in Table 4.11,[55] we do not find the positive effect on pro-social behaviors found when examining the effects of abduction (Table 4.10). The contrasting results between abduction and displacement are further examined in the next section.[56]

[Table 4.11 about here]

[55] In Table 4A7, we estimate the same regression as in Table 4.11 but include additional regressors of altruism and assistance received, and the results are consistent with Table 4.11.

[56] In Table 4A8, as an alternative test to ascertain if the real-life behavior results are statistically significant when we adjust P-values using the false discovery rate (FDR) at 0.05 level of significance, we find that none of the real-life behavior results are significant.

4.6 Why does Conflict Exposure Foster Pro-social Behavior for Abductees?

Here, we examine the possible underlying mechanisms through which those abducted engage more in pro-social behaviors. Due to the paucity of data in conflict studies, the channel through which exposure to violence may induce cooperative behavior is not conclusive (Bauer et al., 2017). As such, we explore the mechanisms through which violence may have affected pro-social behaviors through the following arguments.

A first argument is that some survivors (former abductees) of the conflict in northern Uganda passed through reception centers and reintegration programs that were tasked to smoothly reintegrate them by providing basic health services, locating their surviving family members, and reinsertion into the community, in addition to a warm welcome by family and communities (Blattman, 2009). The reintegration into society involved not only forgiveness, reconciliation, and public awareness, but community acceptance from the various stakeholders, including NGOs, religious leaders, and community clan leaders (Baines, 2005). Such a conducive reintegration treatment for the inclusion of former abductees back into society may have plausibly fostered their cooperative behavior.

The second channel relies on the cultural aspect of the perceived benefits of passing through a welcoming ceremony and spiritual cleansing ceremony. According to Baines (2005), cleansing ceremonies are performed by elders to cleanse the abductees, to mitigate them from spiritual pollution. For example, the ceremonies involve stepping on eggs and "pobo" (the trunk of a tree) and using a goat (Annan et al., 2006). These cultural ceremonies are thought to empower the abductees to be responsible citizens of the community and instill

them with positive behavioral and leadership traits. Our informal interactions with some northern Ugandans revealed cleansing is thought to instill attributes of responsibility and integrity to formerly abducted community members.

The third aspect is that those severely exposed to conflict may have received substantial assistance and support from family, neighbors, community members, the government, and non-governmental organizations,[57] a situation that may have induced their trust and cooperative behavior because of the instantaneous response accorded to improve their social and economic wellbeing. Abduction in northern Uganda was largely against the will of former abductees, making it plausible to assume that the receiving communities viewed them as victims who needed more assistance than others (Bauer et al., 2017), hence receiving the various benefits.

The fourth argument is that abductees may have held leadership positions while with the LRA, which experience presumably developed their leadership skills, which were employed even after the war ended. Such leadership traits may have induced abductees to take on leadership roles within their communities (Blattman, 2009), possibly because of prior leadership experiences and the ability to lead others.

[57] Donor agencies usually inject substantial amounts of aid to support countries or communities that have been exposed to armed conflict, and the presence of NGO's in such areas is usually high. Literature has in fact shown that community interventions through NGO's and aid flows may have a measurable significant impact on pro-social orientation. For example, Fearon et al. (2009) showed that individuals in communities in Liberia where post-reconstruction programs were implemented were more likely to exhibit higher levels of trust, social cooperation and cohesion compared to individuals in communities where post-construction programs were not implemented.

Finally, another channel from psychology literature is that shared pain increases bonding and cooperation (Bastian et al. 2014), especially between those who share comparable painful experiences. However, due to data limitations, we are unable to test this mechanism, which remains an avenue for future research.

We collected data from former abductees on their experiences of passing through reception centers or reintegration programs, whether they held leadership positions while with the LRA, whether they passed through welcoming and cleansing ceremonies, and whether they received services from various stakeholders. Following Blattman (2009), we restrict our sample to only abducted subjects and those in more severely affected districts. Taking this approach, however, reduces our sample size to 35. To identify what kind of assistance received by former abductees increases their engagement in pro-social behavior, we estimate the following model;

$$y_{ijd} = \beta_0 + \beta_1 M_{ijd}^k + \beta_2 X_{ij} + \mu_d + e_{ijd}, \quad (4.4)$$

where M_{ijd}^k is the measure of our mechanism parameter of individual *i* from household *j* in community *d*. For testing the first channel, we use M^1 which is a dummy taking the value 1 if a subject passed through a reception center and/or reintegration program. For the second channel, M^2 is a dummy taking the value 1 if subject attended welcoming and/or cleansing ceremony. For the third channel, we use two indicators: M^3 is an additive index of 6 indicator variables related with general assistances provided during the post-conflict reconstruction

programs[58] and M^4 is the number of non-governmental organizations the subject received assistance from. For the fourth channel, we use a dummy taking the value 1 if subject held a leadership position while with the LRA as M^5. The other variables are the same as those in equation 4.3.

Table 4.12 shows the summary statistics. On average, subjects received assistance from around two non-governmental organizations. Abducted subjects received more general assistance. Of those who were abducted, 11.4% passed through a reception center and/or a reintegration program, while 14.3% held a leadership position while with the LRA. Two in five abductees passed through welcoming and/or cleansing ceremonies.

[Table 4.12 about here]

The estimation results are shown in Table 4.13 where each panel has a different dependent variable. Within a panel, each row indicates the result from a different regression model. Only the estimated coefficient on *M* in equation (4.4) is shown in the table. We look at the correlation between these variables and the pro-social behaviors that were enhanced

[58] Assistance is shown by the first six variables of Table 4.12, where 58.4% of subjects reported that someone gave them some information about a program or told them a leader or organization where they could go to for assistance after the war ended. The majority of those who received assistance being abductees. On average, 30.8% were loaned or given something that they needed, other than money, such as a bicycle, a household item, agricultural equipment or inputs, animals, or something else that helped them to settle when the conflict ended. Abducted subjects had more people or organizations that assisted them in finding direction and making plans or given advice for the future after the conflict ended. Further, 56.4% of subjects reported to have been physically helped by people during the stressful situations during and after the conflict and 46.9% to have done some activities together with other people who had the experience of the conflict to help them get their minds off of conflict memories (e.g. sports activities, attending clan, community, or religious functions). The additive index of the six dummy variables on assistance received suggests that abducted subjects received more information from people and organizations to help them understand the situation they went through during the conflict period and settle in after the conflict.

by the past experience of abduction. The results prove that holding a leadership position while with the LRA is positively associated with voting, leadership in a community group, and working together. The number of NGOs a subject received assistance from is positively associated with holding a leadership position currently and with group membership. We also find that receiving general assistance is positively associated with being a leader in the community group. These findings could plausibly explain the channels through which we observe pro-social behavior by those abducted.[59]

[Table 4.13 about here]

4.7 Conclusion and Policy Implication

We examined the long-term impact of exposure to armed conflict on trust, trustworthiness, and real-life pro-social behavior in northern Uganda, which experienced a 20-year conflict between 1986 and 2006 using trust and trustworthiness measures elicited from incentivized lab-in-the-field experiments. The generalized trust obtained from survey questionnaires is also used to compare the experimentally elicited trust measures and we obtained consistent results. We found that those abducted by the rebel group show higher mistrust when playing with partners from the northern region compared with other regions. We also find that those who were abducted when young (below 16) have lower levels of trust and less trustworthiness. Altogether, our findings may suggest that, even 10 years after the war, support to those seriously affected by the war is still needed.

[59] Even when we use all abducted subjects (n=50), the results are consistent with Table 4.13.

These heterogeneous effects suggest that surveys or even incentivized lab-in-the-field experiments that do not distinguish experimental partners by the social distance to them are unable to unmask the possible mistrust developed among those who were exposed to severe forms of conflict or violence against specific groups that might be related to the cause of their painful experience. In contrast, we did not find any effect of internal displacement to camps on trust and trustworthiness.

While these former abductees developed lower levels of trust and trustworthiness toward northerners, they are found to be more likely to engage in more pro-social behavior such as political participation through voting, taking up leadership positions within the community, participating in community groups and working together with others. These behaviors are more likely to be observed among former abductees. We explored and found that abductees who held leadership positions while with the LRA, those who received assistance from non-governmental organizations, and those who received general services for resettlement when they returned as the main channels through which former abductees engage more in those pro-social behaviors. These results complement recent evidence on the positive impacts of exposure to armed conflict for former abductees (Bauer et al., 2017; Bellows and Miguel, 2009; Blattman, 2009). The similarity of our results with those of previous studies provides some degree of external validity to the positive impacts of exposure to armed conflict on the behaviors of former abductees.

However, when we use an alternative test to ascertain if the real-life behavior results remain statistically significant when we adjust P-values using the false discovery rate (FDR)

at 0.05 level of significance, we find that none of the real-life behavior results are significant, suggesting that our real-life behavior results should be interpreted with caution.

Overall, the results suggest the impact of exposure to armed conflict on behavior is not necessarily detrimental in the long term, defying pessimistic opinions about the negative costs and destructive nature of conflicts over the long term. Specifically, the positive findings for those who were abducted could plausibly explain a sequence of partial recovery observed in post-conflict areas after conflict cessation. These findings are thus valuable for policy makers and may have fundamental inference for policy guidance, especially regarding the efforts of addressing post-conflict reconstruction. For example, these results strongly suggest that survivor abductees can become responsible, productive, and useful members of their communities after the cessation of conflicts (Blattman, 2009). These findings are also in line with the psychology literature on traumatic shock experiences, which analyzes personal growth experiences after individuals have experienced violent traumas (Tedeschi and Calhoun, 2004).

To the extent that the analyses on the mechanisms of higher engagement in pro-social behavior by those who were abducted indicate causal relationships, policies directed at community participation may be essential for post-conflict reconstruction programs to be effective. Indeed, heavy investments in rebuilding physical capital in communities are typically prioritized, ignoring the enhancement of collective action by individuals. However, rebuilding physical capital alone may not yield the intended results of revitalizing the social and economic welfare of the affected individuals.

It would be a fruitful future research to investigate the effects of various resettlement and community participation programs on the pro-social behavior and general welfare of former abductees.

CHAPTER 5

Conclusions and Policy Implications

5.1 Introduction

Armed conflicts continue to be a major development challenge, and the prevalence of such conflicts in the last three decades has been heavily concentrated in low-income countries. Recent studies have shown that exposure to armed conflict affects individual preferences, yet preferences are important in influencing important economic and social decisions. Despite the importance of preferences, for most low-income countries preference data is limited or unavailable. The northern region of Uganda experienced a devastating armed conflict for almost twenty years, one of Africa's longest running conflicts. Poverty and under-development have remained significantly high in the northern region of the country despite the numerous targeted interventions of post-conflict reconstruction programs. Only a few studies have examined the effects of exposure to conflict on preferences. This dissertation examines the effects of exposure to armed conflict on preferences elicited from incentivized lab-in-the-field experiments with real payoffs in rural northern Uganda. In addition, combining the results of a series of field experiments with household survey information, the dissertation also examines whether exposure to armed conflict affects real-life behaviors related to the preferences. The dissertation uses individual-, household-, and community-level data collected in northern Uganda as part of the Research on Poverty, Environment and Agricultural Technology project. Our main identification strategy is grounded on the randomness of the conflict in terms of subject abduction and household displacement.

Abduction in northern Uganda was largely indiscriminate, unplanned, arbitrary, and random in nature, and recruitment of individuals into the LRA was not affected by self-selection or screening by the rebels. In addition, attacks on households were largely random in nature, regardless of households' social economic status, and therefore displacement of households was indeed not a matter of their choice. In addition, we address endogeneity concerns when we use number of deaths as a conflict exposure variable measured at county level. The two sections that follow summarize the main findings, and identify policy implications.

5.2 Summary of Main Findings

In Chapter 3, we examined the effects of exposure to armed conflict on risk and time preferences and real-life behavior related to risk and time preferences. Using three different conflict exposure variables and controlling for a rich set of determinants of risk and time preferences, the estimation results generally indicate that conflict exposure induces higher loss aversion and time discount, but has no effect on risk aversion and present bias. We found that those who were abducted during the war and those who resided in counties with higher number of deaths during the conflict (severely affected counties) show higher loss aversion, while households who were displaced to internally displaced people's camps and those who were in severely affected counties are more impatient. We also find that the effect of the armed conflict that ended 10 years prior to the lab-in-the-field experiments is not mediated by more recent other negative shocks affecting agricultural income and land conflict. There is no evidence that those who were affected by the conflict have different levels of risk aversion and present bias.

The results on real-life behavior show that those who were in severely affected counties (who show higher loss aversion and impatience) tend to avoid behavior requiring patience (investment in health inputs measured by use of mosquito bed nets) and loss (hiring labor for agricultural production). On the contrary, we do not find any evidence that conflict exposure decreases risk-taking behavior such as the adoption of crops with higher risk (export and oil crops) and high-yielding variety maize (hybrid maize), or that it increases hyperbolic discounting behavior such as alcohol consumption which is a temptation good.

In Chapter 4, we examined the long-term effects of exposure to armed conflict on trust elicited from lab-in-the-field experiments, and real-life behavior. The results showed no evidence of conflict exposure fostering trust or inducing mistrust. Similarly, we found no significant impact of conflict exposure affecting generalized trust obtained from survey questionnaires. We did however find a heterogeneous effect: those who were abducted when young (below 16 years) were found to have lower levels of trust and less trustworthiness. We also tested whether the effect on trust differs when playing the trust game experiment with partners who have different social distance and found that those abducted seem to show higher mistrust when playing with partners from the northern region compared with partners from other regions. In terms of real-life behavior, we find that subjects who were abducted during the conflict by the rebel group are more likely to engage in political participation through voting, take up leadership positions within the community, participate in community groups, and work together with others. The study provides quantitative evidence of abductees having held leadership positions while with the LRA, the number of non-governmental organizations abductees received assistance from, and having received general services when

they returned as main channels through which former abductees engage more in pro-social behaviors.

Overall, the study findings indicate that some preferences, and some real-life behaviors, are affected by exposure to conflict, while others are not affected. Voors et al., (2012) argues that behavior and preferences are not identical, and it is practically impossible to observe individual preferences, but rather we can observe behavior in an experiment, and can only try to make inferences about the underlying preferences. For example Blattman (2009) attributes pro-social behaviors of former abductees to be due to changes in perspectives, personal goals or self-regard. It could also presumably be that abductees for example actively participate in community groups because of their abduction status, or actively participate in voting merely because they want a change of government. It is worth noting that vigorous work by economists on shocks, such as exposure to conflict on preferences elicited from lab-in-the-field experiments is still limited, and therefore, contradictory results like those we find suggest that it could be a worthwhile area for future research.

In both Chapter 3 and Chapter 4, we estimated alternative tests to ascertain if the real-life behaviors results are statistically significant when we adjust P-values using the false discovery rate (FDR) at 0.05 level of significance, and found that none of the real-life behavior results are significant, suggesting that our real-life behavior results should be interpreted with caution.

5.3 Policy recommendations

Based on our main findings, on the one hand, exposure to violence might have long-term negative consequences on individuals' attitudes and therefore making it inevitable for policy makers to take preferences into consideration when formulating post-conflict reconstruction programs. This is important because preferences plausibly support the identification of mechanisms that may affect real-life behavior, which may help policymakers design effective policies from an informed viewpoint.

Evidence from our results imply that internally displaced households, abducted individuals and those who were residing in counties with high number of deaths are particularly likely to suffer from the effects of conflict. Policy makers should ensure that these groups are provided with targeted interventions such as consulting, counselling and mental health programs which presumably are likely to improve not only their psychological well-being but also trigger investment and saving behaviors, and long-term economic prosperity. In terms of future research, it would be interesting to investigate the impact of these interventions on the long-term economic outcomes. In addition, policies that are directed at promoting community participation may be essential for post-conflict reconstruction programs to be effective. For example, appropriate interventions that are aimed at increasing trust levels (e.g. counselling services), especially for those who were abducted, should be implemented. This is important for mitigation of the risk of former abductees being exploited and recruited into bandit gangs, given that abducted individuals have mistrust of fellow northerners, and those abducted when young are also less trusting.

On the other hand, the results showed that those who were abducted exhibit pro-social behavior, suggesting that survivor abductees can transform into responsible, productive, and useful members of their communities. Continuous provision of different forms of assistance to exposed individuals, even ten years after the conflict, may therefore be essential in uplifting their social economic welfare and promoting collective action within the society.

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Table 2.1: Descriptive Statistics

	Combined Mean	Severely Affected Districts	Less Severely Affected Districts	t-stats
Number of observations	312	150	162	
Timing (=1 if experiment was conducted in 2017)	0.635	0.553	0.709	2.898
	(0.482)	(0.499)	(0.455)	
No rational (=1 if chose all A in risk game)	0.071	0.067	0.074	0.255
	(0.256)	(0.250)	(0.263)	
No rational (=1 if chose all B in risk game)	0.067	0.067	0.068	0.043
	(0.251)	(0.250)	(0.252)	
Individual Characteristics				
Age	40.160	39.420	40.846	0.853
	(14.753)	(14.263)	(15.204)	
Schooling	5.721	5.660	5.778	0.300
	(3.457)	(3.498)	(3.428)	
Gender (male=1)	0.663	0.633	0.691	1.082
	(0.481)	(0.484)	(0.463)	
Ethnicity (Acholi=1)	0.468	0.907	0.062	-27.943
	(0.499)	(0.292)	(0.241)	
Household head (=1)	0.772	0.727	0.815	1.859
	(0.419)	(0.447)	(0.389)	
Household Characteristics				
Head age	44.885	45.140	44.648	-0.289
	(14.965)	(14.497)	(15.427)	
Head schooling	5.692	5.807	5.586	-0.529
	(3.667)	(3.887)	(3.459)	
Marital status (married=1)	0.740	0.747	0.735	-0.243
	(0.439)	(0.436)	(0.443)	
Household size	6.413	6.753	6.099	-2.225
	(2.613)	(2.717)	(2.480)	
Own land size (acre)	7.215	10.000	4.636	-3.169
	(15.152)	(19.507)	(8.798)	
Assets value (Ushs)	566,038	380,188	738,122	1.841
	(1,722,207)	(696,938)	(2,284,261)	
Distance from home to district town (km)	31.929	35.620	28.511	-3.086
	(20.609)	(26.649)	(11.779)	
Distance from home to South Sudan(km)	152.379	132.645	170.651	10.179
	(37.998)	(26.381)	(38.030)	
Distance to nearest army barracks	42.999	42.031	43.895	0.689
	(23.853)	(22.988)	(24.664)	
Altitude	1055.699	1053.020	1058.179	0.597
	(76.183)	(90.572)	(60.054)	
Household resident in LC1 before conflict	1.000	1.000	1.000	-
	(0.000)	(0.000)	(0.000)	

Table 2.1: Descriptive Statistics (*Contn*)

	Combined Mean	Severely Affected Districts	Less Severely Affected Districts	t-stats
Community Characteristics				
Average annual rainfall in mm	1123.957	1075.808	1168.54	4.425
(10 years)	(190.387)	(236.856)	(118.063)	
Temperature	26.138	25.963	26.300	3.107
	(0.970)	(1.274)	(0.512)	
Population density (km^2)	219.889	199.389	238.871	1.696
	(206.059)	(228.676)	(181.301)	
Tarmac road to district town (=1)	0.083	0.080	0.086	0.204
(base group is dirt or marram road)	(0.277)	(0.272)	(0.282)	
People in LC1 before conflict	629.343	885.487	392.173	-4.554
	(985.947)	(1342.620)	(302.935)	
People displaced in LC1	529.580	862.153	221.642	-5.787
	(1026.494)	(1355.658)	(368.917)	
Percent returned from those displaced	0.972	0.959	0.993	6.926
	(0.038)	(0.042)	(0.011)	

Note: In parenthesis are standard deviations. T-statistics for testing means between more and less severely affected districts.

Table 2.2: Descriptive statistics of conflict exposure and other shocks

	Combined Mean	Severely Affected districts	Less Severely Affected districts	t-stats
Community level Conflict Exposure				
Share of HH displaced within LC1	0.591	0.869	0.333	-38.558
	(0.402)	(0.205)	(0.366)	
Share of HH with abducted member in LC1	0.236	0.374	0.109	-35.431
	(0.209)	(0.160)	(0.162)	
Household Level Conflict Exposure	0.593	0.873	0.333	-11.570
Household was displaced	(0.492)	(0.334)	(0.473)	
Duration of displacement (years)	2.910	4.433	1.500	-9.003
	(3.224)	(3.153)	(2.593)	
Year Household Displaced by conflict	2002	2001	2002	2.085
	(2.299)	(2.342)	(2.207)	
Year Household Returned	2007	2007	2006	3.305
	(1.837)	(2.078)	(1.006)	
Residential house was damaged	0.446	0.607	0.296	-5.782
	(0.498)	(0.490)	(0.458)	
Non-Residential building damaged	0.362	0.460	0.272	-3.516
	(0.481)	(0.500)	(0.446)	
Household livestock stolen	0.426	0.567	0.296	-4.999
	(0.495)	(0.497)	(0.458)	
Household items looted by rebels	0.506	0.673	0.352	-5.973
	(0.501)	(0.471)	(0.479)	
Individual Level Conflict Exposure				
Subject abducted	0.160	0.233	0.093	-3.439
	(0.367)	(0.424)	(0.291)	
Subject abducted (age<16 years)	0.026	0.031	0.020	0.604
	(0.141)	(0.174)	(0.141)	
Subject attacked by Axe or Panga	0.192	0.260	0.129	-2.951
	(0.395)	(0.440)	(0.337)	
Subject severely beaten or tortured	0.115	0.180	0.056	-3.493
	(0.319)	(0.385)	(0.229)	
Subject threatened to be killed by rebels	0.388	0.467	0.315	-2.775
	(0.488)	(0.501)	(0.466)	
Subject forced to serve in rebellion	0.051	0.073	0.031	-1.702
	(0.221)	(0.262)	(0.173)	
Subject forced to kill family member	0.003	0.000	0.006	0.962
	(0.057)	(0.000)	(0.079)	
Subject forced to kill other people	0.019	0.027	0.012	-0.919
	(0.138)	(0.162)	(0.111)	
Subject depressed by conflict	0.032	0.040	0.025	-0.765
	(0.176)	(0.197)	(0.156)	
Other Shocks in last 12 months	0.436	0.360	0.506	2.622
Crop Diseases	(0.482)	(0.482)	(0.502)	
Drought	0.769	0.733	0.802	1.448
	(0.442)	(0.444)	(0.399)	
Excessive Rainfall	0.202	0.207	0.198	-0.200
	(0.402)	(0.406)	(0.399)	
Land Conflict	0.324	0.347	0.302	-0.832
	(0.468)	(0.478)	(0.461)	

Note: In parenthesis are standard deviations. T-statistics for testing means between more and less severely affected districts.

Table 2.3: Descriptive statistics categorized by conflict exposure

	Severely affected districts only			All North		
	Subject Abducted	Not abducted	t-stats	HH displaced	Not displaced	t-stats
Number of observations	35	115		185	127	
Timing (=1 if experiment was conducted in 2017)	0.629	0.530	-1.019	0.578	0.717	2.507
	(0.490)	(0.501)		(0.495)	(0.452)	
No rational (=1 if chose all A in risk game)	0.029	0.078	1.029	0.086	0.047	-1.329
	(0.169)	(0.269)		(0.282)	(0.213)	
No rational (=1 if chose all B in risk game)	0.029	0.078	1.029	0.059	0.079	0.666
Individual Characteristics	(0.169)	(0.269)		(0.237)	(0.278)	
Age	43.171	38.278	-1.790	40.578	39.551	-0.604
	(12.917)	(14.509)		(14.272)	(15.464)	
Schooling	6.343	5.452	-1.322	5.405	6.181	1.956
	(3.514)	(3.482)		(3.385)	(3.522)	
Gender (male=1)	0.686	0.617	-0.731	0.676	0.646	-0.549
	(0.471)	(0.488)		(0.469)	(0.480)	
Ethnicity (Acholi=1)	0.971	0.887	-1.506	0.670	0.173	-9.881
	(0.169)	(0.318)		(0.471)	(0.379)	
Household head (=1)	0.914	0.669	-2.905	0.773	0.772	-0.027
Household Characteristics	(0.284)	(0.472)		(0.420)	(0.421)	
Head age	43.629	45.600	0.703	46.054	43.181	-1.671
	(12.979)	(14.951)		(14.225)	(15.885)	
Head schooling	6.257	5.669	-0.782	5.384	6.142	1.800
	(3.484)	(4.006)		(3.708)	(3.574)	
Marital status (married=1)	0.829	0.722	-1.271	0.746	0.732	-0.269
	(0.382)	(0.450)		(0.437)	(0.445)	
Household size	6.514	6.826	0.593	6.551	6.213	-1.125
	(2.049)	(2.894)		(2.474)	(2.802)	
Own land size (acre)	10.442	9.866	-0.153	7.963	6.124	-1.053
	(20.723)	(19.214)		(16.437)	(13.043)	
Assets value (Ushs)	270214.3	413658.3	1.067	410795.7	792179.5	1.930
	(225867.8)	(784085.4)		(674917.6)	(2562949)	
Distance from home to district town (km)	41.889	33.712	-1.598	35.023	27.422	-3.249
	(32.904)	(24.281)		(23.098)	(15.319)	
Distance from home to South Sudan(km)	126.608	134.483	1.554	137.340	174.286	9.593
	(22.585)	(27.257)		(30.898)	(36.797)	
Distance to nearest army barracks	43.782	41.498	-0.513	38.851	49.041	3.786
	(25.176)	(22.370)		(20.323)	(27.186)	

Note: In parenthesis are standard deviations. T-statistics for testing means between more and less severely affected districts.

Table 3.1: Real-life Behavior related to Risk and Time Preferences

	Combined Mean	Severely Affected Districts (1)	Less Severely Affected Districts (2)	t-stats
Real Life Behavior				
Export crops *(cotton and tobacco)*	0.018	0.012	0.024	1.718
	(0.062)	(0.055)	(0.067)	
Oil crops *(Sunflower, Sesame and Cashewnuts)*	0.167	0.172	0.163	-0.492
	(0.159)	(0.158)	(0.162)	
Hybrid Maize	0.013	0.007	0.018	1.476
	(0.063)	(0.036)	(0.080)	
Hire labor for farming	0.538	0.460	0.611	2.698
	(0.499)	(0.500)	(0.489)	
Share of Bednets	0.385	0.288	0.479	5.148
[Number owned/Number of HH members]	(0.322)	(0.287)	(0.347)	
Alcohol consumption per month (liters)	2.555	2.588	2.525	-0.089
	(6.186)	(6.261)	(6.135)	

Note: Standard deviations are in parentheses. T-statistics for testing means between more and less severely affected districts.

Table 3.2: Real-life Behavior related to Risk and Time Preferences

	Severely affected districts only			All North		
	Subject Abducted	Not abducted	t-stats	HH displaced	Not displaced	t-stats
Number of observations	35	115		185	127	
Real Life Behavior						
Export crops *(cotton and tobacco)*	0.009	0.013	0.449	0.018	0.019	0.034
	(0.036)	(0.059)		(0.059)	(0.066)	
Oil crops *(Sunflower, Sesame and Cashewnuts)*	0.159	0.175	0.511	0.167	0.168	0.078
	(0.147)	(0.161)		(0.152)	(0.171)	
Hybrid Maize	0.008	0.007	-0.085	0.009	0.018	1.270
	(0.046)	(0.033)		(0.038)	(0.088)	
Hire labor	0.571	0.426	-1.512	0.486	0.614	2.233
	(0.502)	(0.497)		(0.489)	(0.489)	
Share of Bednets	0.345	0.271	-1.343	0.336	0.456	3.178
[Number owned/Number of HH members]	(0.266)	(0.292)		(0.314)	(0.347)	
Alcohol consumption per month (liters)	2.718	2.548	-0.140	2.201	3.071	1.222
	(6.495)	(6.217)		(5.517)	(7.039)	

Note: In parenthesis are standard deviations. T-statistics for testing means between more and less severely affected districts.

Table 3.3: Risk Aversion, Loss Aversion, Discount Rate, and Present Bias Estimates

	Mean	Severely Affected	Less Severely Affected	t-stat	Number of Observations
Panel A					
Risk aversion (σ)	1.125 (1.685)	1.113 (1.704)	1.137 (1.673)	0.117	289
Loss aversion (λ)	3.622 (3.119)	3.362 (2.800)	3.866 (3.383)	1.366	273
Discount rate (r)	0.503 (0.391)	0.496 (0.386)	0.509 (0.395)	0.318	302
Present bias dummy	0.617 (0.487)	0.609 (0.489)	0.623 (0.486)	0.237	295
Panel B					
All North		HH displaced	Not displaced		
Risk aversion (σ)	1.125 (1.685)	1.225 (1.686)	0.987 (1.681)	-1.186	289
Loss aversion (λ)	3.622 (3.119)	3.533 (2.850)	3.754 (3.489)	0.574	273
Discount rate (r)	0.503 (0.391)	0.535 (0.402)	0.457 (0.371)	-1.718	302
Present bias dummy	0.617 (0.487)	0.622 (0.486)	0.609 (0.489)	-0.214	295
Panel C					
Severely affected districts		Subject abducted	Not abducted		
Risk aversion (σ)	1.113 (1.704)	0.478 (1.559)	1.288 (1.707)	2.343	139
Loss aversion (λ)	3.362 (2.800)	4.012 (3.145)	3.179 (2.684)	-1.422	132
Discount rate (r)	0.496 (0.386)	0.436 (0.379)	0.512 (0.388)	0.974	145
Present bias dummy	0.609 (0.489)	0.533 (0.507)	0.631 (0.485)	0.966	141

Notes: Standard deviations are in parenthesis. T-statistics for the test of mean difference between two groups.

Table 3.4: Risk Aversion, Loss Aversion, Discount Rate, and Present Bias Estimates

	Mean	Severely Affected	Less Severely Affected	t-stat	Number of Observations
Panel A					
Risk aversion (σ)	1.148 (1.602)	1.142 (1.626)	1.155 (1.584)	0.065	246
Loss aversion (λ)	3.056 (2.284)	2.991 (2.353)	3.119 (2.223)	0.405	208
Discount rate (r)	0.504 (0.370)	0.501 (0.371)	0.506 (0.371)	0.103	235
Present bias dummy	0.671 (0.471)	0.655 (0.478)	0.686 (0.466)	0.509	231
Panel B					
All North		HH displaced	Not displaced		
Risk aversion (σ)	1.148 (1.602)	1.204 (1.603)	1.073 (1.604)	-0.636	246
Loss aversion (λ)	3.056 (2.284)	2.979 (2.234)	3.174 (2.368)	0.599	208
Discount rate (r)	0.504 (0.370)	0.506 (0.384)	0.500 (0.351)	-0.121	235
Present bias dummy	0.671 (0.471)	0.662 (0.475)	0.684 (0.467)	0.356	231
Panel C					
Severely affected districts		Subject abducted	Not abducted		
Risk aversion (σ)	1.142 (1.626)	0.445 (1.506)	1.356 (1.609)	2.658	119
Loss aversion (λ)	2.991 (2.353)	3.399 (2.534)	2.859 (2.294)	-0.995	103
Discount rate (r)	0.501 (0.371)	0.449 (0.372)	0.517 (0.372)	0.828	115
Present bias dummy	0.655 (0.478)	0.577 (0.504)	0.678 (0.469)	0.948	113

Notes: Standard deviations are in parenthesis. T-statistics for the test of mean difference between two groups. Subjects that chose all A and all B are excluded.

Table 3.5: Comparison between Subjects with and without correct understanding of the Experiments

				Severely Affected districts			Less Severely Affected districts		
	Subjects who switched during the game	Subjects who chose either all A or all B	p-value on diff. between (1)&(2)	Subjects who switched during the game	Subjects who chose either all A or all B	p-value on diff. between (4)& (5)	Subjects who switched during the game	Subjects who chose either all A or all B	p-value on diff. between (7) & (8)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Number of observations	208	65		103	29		105	36	
Timing (=1 if experiment conducted in 2017)	0.654 (0.477)	0.856 (0.045)	0.003	0.553 (0.499)	0.759 (0.435)	0.047	0.752 (0.434)	0.917 (0.280)	0.036
Individual Characteristics									
Age	39.505 (14.765)	43.662 (16.016)	0.053	38.631 (14.428)	40.862 (16.095)	0.475	40.362 (15.108)	45.917 (15.814)	0.062
Schooling	6.106 (3.571)	4.277 (3.439)	0.0003	5.893 (3.475)	4.655 (3.930)	0.046	6.314 (3.667)	3.972 (3.009)	0.0007
Gender (Male=1)	0.663 (0.474)	0.585 (0.497)	0.248	0.621 (0.487)	0.552 (0.506)	0.502	0.705 (0.458)	0.611 (0.494)	0.302
Ethnicity (Acholi=1)	0.471 (0.500)	0.508 (0.504)	0.608	0.913 (0.284)	0.931 (0.258)	0.754	0.038 (0.192)	0.167 (0.378)	0.009
Head	0.759 (0.428)	0.738 (0.443)	0.731	0.679 (0.469)	0.655 (0.484)	0.806	0.838 (0.370)	0.806 (0.401)	0.657
Household Characteristics	43.678 (14.247)	48.800 (15.859)	0.015	43.699 (13.109)	50.517 (17.363)	0.023	43.657 (15.345)	47.417 (14.639)	0.202
Head Age	6.063 (3.712)	4.769 (3.745)	0.015	6.049 (3.838)	4.897 (4.362)	0.169	6.076 (3.602)	4.667 (3.225)	0.039
Head Schooling	0.769 (0.422)	0.692 (0.465)	0.212	0.786 (0.412)	0.621 (0.494)	0.069	0.752 (0.434)	0.750 (0.439)	0.977
Marital Status (Married=1)	6.490 (2.761)	6.338 (2.224)	0.686	6.913 (2.832)	6.621 (2.211)	0.609	6.076 (2.637)	6.111 (2.239)	0.943
Household Size	7.683 (17.006)	7.540 (13.019)	0.951	10.738 (21.362)	10.605 (18.352)	0.976	4.685 (10.477)	5.072 (5.142)	0.832
Own Land Size (Acre)									

Assets Value (Uganda Shillings)	713,585	7.540	0.103	458,568	194,169	0.086	963,745	363,666	0.204
	(2,084,069)	(337,891)		(813,563)	(191,964)		(2,805,027)	(407,560)	
Distance from home to	32.164	30.677	0.617	36.421	34.407	0.724	27.987	27.672	0.888
district town (km)	(20.938)	(20.846)		(26.727)	(28.477)		(11.679)	(11.182)	
Distance from home to Southern	152.137	142.502	0.078	130.715	127.458	0.553	173.150	154.621	0.013
Sudan(km)	(36.223)	(44.361)		(23.122)	(34.676)		(34.452)	(47.937)	
Distance to nearest army barracks	42.408	41.738	0.843	39.146	44.779	0.242	45.608	39.288	0.182
	(23.438)	(24.595)		(21.787)	(26.079)		(24.723)	(23.412)	
Community Characteristics									
Average Annual Rainfall in mm	1106.827	1141.690	0.198	1054.815	1106.928	0.295	1157.848	1169.692	0.604
(10 years)	(196.513)	(167.049)		(244.675)	(200.596)		(24.723)	(130.492)	
Temperature	26.144	26.125	0.894	25.894	26.029	0.634	26.389	26.202	0.047
	(1.102)	(0.680)		(1.441)	(0.915)		(0.507)	(0.403)	
Population Density (square km)	216.222	246.712	0.298	189.156	220.590	0.507	242.773	267.755	0.483
	(202.437)	(215.674)		(223.615)	(228.987)		(176.319)	(205.152)	
Road to district town is tarmac=1	0.091	0.077	0.721	0.097	0.000	0.082	0.086	0.139	0.361
(0=dirt or marram road)	(0.289)	(0.269)		(0.298)	(0.000)		(0.281)	(0.351)	
Real Life Behavior									
Export crop	0.016	0.033	0.098	0.009	0.033	0.062	0.023	0.033	0.664
	(0.059)	(0.076)		(0.050)	(0.076)		(0.066)	(0.078)	
Oil crop	0.169	0.150	0.459	0.169	0.192	0.539	0.171	0.109	0.101
	(0.164)	(0.133)		(0.159)	(0.148)		(0.168)	(0.103)	
Hybrid Maize	0.011	0.024	0.223	0.009	0.001	0.318	0.013	0.048	0.066
	(0.057)	(0.092)		(0.039)	(0.001)		(0.070)	(0.127)	
Hire labor for farming	0.567	0.462	0.136	0.476	0.414	0.558	0.657	0.500	0.096
	(0.497)	(0.502)		(0.502)	(0.501)		(0.477)	(0.507)	
Share of Bed nets	0.389	0.389	0.992	0.295	0.236	0.310	0.482	0.514	0.629
[No. owned/No. of HH members]	(0.335)	(0.310)		(0.283)	(0.249)		(0.356)	(0.301)	
Monthly alcohol consumption	1.977	4.385	0.008	2.339	3.869	0.265	1.621	4.800	0.008
(liters)	(4.667)	(9.859)		(5.471)	(9.311)		(3.707)	(10.391)	

Note: Standard deviations are in parenthesis. T-statistics for the test of mean difference between two groups.

Table 3.6: Effects of Abduction on Risk Aversion, Loss Aversion, Discount Rate and Present Bias (Community Fixed Effects)

	Risk aversion		Loss aversion		Discount rate		Present bias	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Subject Abducted	-0.840	-0.852	1.207***	1.253***	-0.002	0.009	-0.011	0.001
	(0.464)	(0.450)	(0.423)	(0.419)	(0.070)	(0.067)	(0.097)	(0.090)
Received assistance		0.021		-0.072		-0.013		-0.016
		(0.074)		(0.054)		(0.020)		(0.025)
Age	-0.017	-0.018	-0.043	-0.042	-0.003**	-0.003**	-0.002	-0.002
	(0.013)	(0.013)	(0.030)	(0.030)	(0.001)	(0.001)	(0.003)	(0.003)
Household head	-0.159	-0.175	0.380	0.422	-0.122	-0.114	-0.084	-0.074
	(0.300)	(0.318)	(0.487)	(0.489)	(0.076)	(0.073)	(0.118)	(0.123)
Male	0.191	0.199	-0.155	-0.181	0.208**	0.203**	0.008	0.002
	(0.241)	(0.247)	(0.554)	(0.562)	(0.079)	(0.076)	(0.088)	(0.090)
Years of schooling	0.129***	0.128***	-0.094	-0.091	-0.017	-0.017	0.004	0.005
	(0.037)	(0.038)	(0.069)	(0.072)	(0.011)	(0.011)	(0.010)	(0.010)
Household size (log)	0.165	0.168	-0.532	-0.539	0.049	0.047	0.069	0.067
	(0.281)	(0.284)	(0.365)	(0.377)	(0.057)	(0.053)	(0.093)	(0.088)
Landholding in acre	0.008	0.009	0.328	0.321	0.013	0.014	-0.007	-0.007
Log(land + 0.01)	(0.142)	(0.142)	(0.314)	(0.322)	(0.029)	(0.030)	(0.039)	(0.040)
Value of assets (log)	-0.118	-0.120	-0.083	-0.074	-0.029	-0.028	-0.020	-0.020
	(0.144)	(0.145)	(0.220)	(0.222)	(0.021)	(0.022)	(0.030)	(0.030)
Altitude	-0.4993	-0.461	0.748	0.624	0.667**	0.649**	0.689**	0.667**
	(0.773)	(0.817)	(0.981)	(1.070)	(0.316)	(0.314)	(0.224)	(0.228)
Experiment timing	-0.232	-0.231	1.491	1.495	-0.029	-0.028	-0.042	-0.041
	(0.256)	(0.256)	(0.902)	(0.920)	(0.059)	(0.061)	(0.056)	(0.056)
Observations	139	139	132	132	145	145	141	141
R-squared	0.336	0.336	0.101	0.102	0.115	0.118	0.037	0.039

Notes: LC1 fixed effects included. Community robust clustered standard errors are in parenthesis.
Significance levels are ***p<0.01, **p<0.05, and *p<0.1.
Sample coverage is severely affected districts. All A and all B dummies included as regressors in risk and loss aversion specifications.

Table 3.7: Effects of Displacement on Risk Aversion, Loss Aversion, Discount Rate and Present Bias (Community Fixed Effects)

	Risk aversion		Loss aversion		Discount rate		Present bias	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household Displaced	0.487	0.494	-1.324	-1.323	0.200*	0.175*	0.075	0.088
	(0.342)	(0.346)	(0.929)	(0.930)	(0.100)	(0.099)	(0.093)	(0.091)
Received assistance		-0.045		-0.010		-0.018		-0.031
		(0.042)		(0.079)		(0.014)		(0.020)
Age	-0.007	-0.007	-0.025	-0.025	0.000	0.000	-0.001	-0.000
	(0.006)	(0.006)	(0.017)	(0.018)	(0.002)	(0.002)	(0.002)	(0.002)
Household head	-0.435**	-0.413*	-0.064	-0.061	-0.117*	-0.108*	-0.103	-0.087
	(0.207)	(0.212)	(0.636)	(0.623)	(0.060)	(0.060)	(0.069)	(0.071)
Male	0.023	0.007	0.160	0.158	0.127*	0.121*	0.061	0.050
	(0.183)	(0.185)	(0.622)	(0.614)	(0.070)	(0.068)	(0.068)	(0.067)
Years of schooling	0.125***	0.128***	-0.046	-0.046	-0.001	0.000	0.017*	0.019*
	(0.028)	(0.029)	(0.068)	(0.069)	(0.011)	(0.011)	(0.010)	(0.009)
Household size (log)	0.059	0.062	-0.236	-0.234	0.005	0.007	-0.092	-0.088
	(0.222)	(0.219)	(0.247)	(0.247)	(0.055)	(0.055)	(0.069)	(0.067)
Landholding in acre (log)	-0.009	-0.014	0.170	0.169	0.011	0.010	-0.022	-0.023
Log(land + 0.01)	(0.072)	(0.073)	(0.148)	(0.151)	(0.016)	(0.017)	(0.020)	(0.021)
Value of assets (log)	-0.027	-0.023	-0.107	-0.106	-0.013	-0.012	-0.026	-0.025
	(0.080)	(0.080)	(0.187)	(0.184)	(0.031)	(0.031)	(0.030)	(0.030)
Altitude	-0.625	-0.660	5.692*	5.684*	0.539*	0.527*	0.573**	0.553***
	(0.442)	(0.445)	(2.768)	(2.762)	(0.272)	(0.266)	(0.204)	(0.193)
Experiment timing	-0.800**	-0.785**	0.915	0.919	0.081	0.084	0.207	0.209
	(0.289)	(0.284)	(1.372)	(1.374)	(0.141)	(0.143)	(0.226)	(0.231)
Observations	289	289	273	273	302	302	295	295
R-squared	0.309	0.310	0.096	0.096	0.044	0.048	0.056	0.064

Notes: LC1 fixed effects included. Community robust clustered standard errors are in parenthesis.
Significance levels are ***p<0.01, **p<0.05, and *p<0.1.
Sample coverage is whole north. All A and all B dummies included as regressors in risk and loss aversion specifications.

Table 3.8: Effects of Conflict Exposure on Risk Aversion, Loss Aversion, Discount Rate and Present Bias (Number of death as Exposure Variable, Two-stage Least Squares)

	Risk aversion		Loss aversion		Discount rate		Present bias	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of deaths (log)	0.083	0.104	0.542***	0.576**	0.061*	0.081***	0.041	0.062
	(0.067)	(0.061)	(0.196)	(0.223)	(0.033)	(0.026)	(0.048)	(0.039)
Received assistance		-0.064*		-0.119		-0.051***		-0.054
		(0.034)		(0.095)		(0.016)		(0.016)
Observations	289	289	273	273	302	302	295	295
R-squared	0.350	0.353	0.149	0.152	0.038	0.059	0.075	0.094
log(dist. to S. Sudan) ×log(dist. to barracks)	-0.114**	-0.115**	-0.117**	-0.115**	-0.117**	-0.114**	-0.116**	-0.113**
Dist. Sudan (log)	-2.16***	-1.96***	-2.116***	-1.972***	-2.00***	-1.86***	-2.01***	-1.87***
Stock–Yogo	19.93	19.93	19.93	19.93	19.93	19.93	19.93	19.93
F-Statistics	97.787	92.677	96.939	92.508	95.175	87.891	93.826	86.325
Hansen J	0.102	0.647	0.091	0.086	0.528	0.539	0.761	0.776

Notes: Community robust clustered standard errors are in parenthesis.
Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Sample coverage is whole north.
All A and all B dummies included as regressors in risk and loss aversion specifications. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town, altitude, experiment timing, and whether road to town is tarmac.

Table 3.9: Effect of Conflict Exposure on Risk Aversion, Loss Aversion, Discount Rate and Present Bias

	Risk aversion	Loss aversion	Discount rate	Present bias
	(1)	(2)	(3)	(4)
Panel A [Community Fixed effects]				
Subject Abducted	-0.762	1.180**	0.007	-0.002
	(0.481)	(0.484)	(0.076)	(0.094)
Crop diseases	-0.162	-0.162	-0.024	-0.027
	(0.266)	(0.434)	(0.072)	(0.120)
Drought	-0.143	0.127	0.102	0.148
	(0.324)	(0.860)	(0.085)	(0.157)
Excessive rainfall	0.045	0.981	0.122	0.146
	(0.376)	(1.044)	(0.142)	(0.165)
Land Conflict	-0.395	0.132	-0.172**	-0.122**
	(0.265)	(0.767)	(0.064)	(0.049)
Observations	139	132	145	141
R-squared	0.352	0.116	0.174	0.066
Panel B [Community Fixed effects]				
Household Displaced	0.540	-1.321	0.179*	0.093
	(0.350)	(0.926)	(0.099)	(0.089)
Crop diseases	0.044	-0.041	-0.025	0.016
	(0.158)	(0.385)	(0.049)	(0.055)
Drought	0.178	0.358	0.061	0.080
	(0.242)	(0.546)	(0.066)	(0.083)
Excessive rainfall	0.144	0.861	0.025	0.052
	(0.225)	(0.576)	(0.093)	(0.085)
Land Conflict	-0.328	0.059	-0.038	-0.056
	(0.190)	(0.428)	(0.058)	(0.056)
Observations	289	273	302	295
R-squared	0.319	0.105	0.049	0.064
Panel C [2SLS]				
Number of deaths (log)	0.084	0.567**	0.064**	0.047
	(0.082)	(0.217)	(0.031)	(0.049)
Crop diseases	0.049	0.056	0.001	0.009
	(0.157)	(0.367)	(0.046)	(0.054)
Drought	0.132	0.560	0.078	0.087
	(0.185)	(0.505)	(0.061)	(0.076)
Excessive rainfall	0.176	0.672	0.082	0.133**
	(0.191)	(0.510)	(0.069)	(0.066)
Land Conflict	-0.251	-0.332	-0.037	-0.042
	(0.188)	(0.354)	(0.052)	(0.052)
Observations	289	273	302	295
R-squared	0.356	0.158	0.045	0.084
log(dist. to S. Sudan) ×log(dist. to barracks)	-0.112**	-0.115**	-0.114**	-0.113**
Dist. Sudan (log)	-2.13***	-2.071***	-1.95***	-1.99***
Stock–Yogo	19.93	19.93	19.93	19.93
F-Statistics	91.150	89.338	86.994	86.991
Hansen J	0.812	0.099	0.467	0.728

Notes: LC1 fixed effects included in Panels A and B. Community robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. All A and All B dummies included as regressors in risk and loss aversion specifications Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town, altitude, experiment timing, and whether road to town is tarmac.

Table 3.10: Effect of Abduction on Real-life Behavior (Community Fixed Effects)

	Export Crops	Oil Crops	Hybrid Maize	Hire labor	Share of Mosquito Bed net	Monthly Alcohol Consumption
	(1)	(2)	(3)	(4)	(5)	(6)
Subject abducted	-0.011	0.009	-0.004	0.097	0.005	-0.416
	(0.009)	(0.026)	(0.010)	(0.097)	(0.047)	(0.608)
Received general assistance	0.001	0.005	0.001	-0.014	0.015	0.315**
	(0.001)	(0.005)	(0.002)	(0.026)	(0.011)	(0.115)
Age	0.001	-0.000	-0.000	-0.005	0.002	-0.011
	(0.001)	(0.001)	(0.000)	(0.004)	(0.002)	(0.013)
Household head	-0.002	-0.008	0.015*	0.311*	0.098	1.117**
	(0.019)	(0.027)	(0.007)	(0.146)	(0.057)	(0.482)
Male	0.021	0.067*	0.002	-0.235*	-0.054	1.967***
	(0.022)	(0.034)	(0.007)	(0.121)	(0.069)	(0.479)
Years of schooling	-0.001	-0.004	0.000	0.016	0.005	-0.038
	(0.001)	(0.004)	(0.001)	(0.019)	(0.005)	(0.069)
Household size (log)	-0.028	0.013	0.009*	-0.022	-0.208**	0.594
	(0.022)	(0.028)	(0.005)	(0.078)	(0.071)	(0.403)
Landholding in acre (log)	-0.003	0.011	0.004*	0.086***	0.017	0.246
Log(land + 0.01)	(0.008)	(0.007)	(0.002)	(0.020)	(0.012)	(0.231)
Value of assets (log)	0.002	0.009	0.002*	0.138***	0.053***	0.160
	(0.003)	(0.007)	(0.001)	(0.029)	(0.010)	(0.106)
Altitude	-0.094**	0.101	0.152***	-0.366	0.295**	-0.409**
	(0.035)	(0.059)	(0.034)	(0.304)	(0.121)	(0.082)
Observations	150	150	150	150	150	145
R-squared	0.110	0.079	0.164	0.238	0.219	0.157

Notes: LC1 fixed effects included. Community robust clustered standard errors are in parenthesis.
Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Sample coverage is severely affected districts

Table 3.11: Effect of Household Displacement on Real-life Behavior (Community Fixed Effects)

	Export Crops	Oil Crops	Hybrid Maize	Hire labor	Share of Mosquito Bednet	Monthly Alcohol Consumption
	(1)	(2)	(3)	(4)	(5)	(6)
Household Displaced	0.007	-0.029	-0.001	0.018	-0.060*	-0.156
	(0.019)	(0.026)	(0.011)	(0.083)	(0.036)	(0.618)
Received general assistance	-0.002	0.011*	-0.004	0.020	0.018*	0.249**
	(0.002)	(0.006)	(0.003)	(0.020)	(0.010)	(0.103)
Age	0.001	-0.001*	0.000	-0.000	0.001	-0.017
	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)	(0.014)
Household head	-0.013	-0.005	0.015	0.208**	0.109*	1.599***
	(0.010)	(0.022)	(0.010)	(0.093)	(0.054)	(0.467)
Male	0.016	0.070**	-0.005	-0.181**	-0.010	1.498***
	(0.013)	(0.027)	(0.007)	(0.081)	(0.047)	(0.460)
Years of schooling	-0.002**	-0.003	0.002	0.019*	-0.002	0.006
	(0.001)	(0.002)	(0.001)	(0.010)	(0.005)	(0.086)
Household size (log)	-0.009	-0.002	0.010*	-0.108*	-0.250***	0.471
	(0.015)	(0.023)	(0.006)	(0.053)	(0.043)	(0.310)
Landholding in acre (log)	0.000	0.017***	0.003	0.055**	0.008	0.139
Log(land + 0.01)	(0.004)	(0.005)	(0.002)	(0.021)	(0.008)	(0.135)
Value of assets (log)	0.003	0.009	0.005	0.139***	0.061***	0.106
	(0.002)	(0.007)	(0.004)	(0.018)	(0.009)	(0.144)
Altitude	-0.046	0.077	0.067	-0.233	0.407***	-0.711
	(0.056)	(0.057)	(0.072)	(0.267)	(0.104)	(0.813)
Observations	312	312	312	312	312	303
R-squared	0.048	0.092	0.053	0.207	0.200	0.122

Notes: LC1 fixed effects included. Community robust clustered standard errors are in parenthesis.
Significance levels are ***p<0.01, **p<0.05, and *p<0.1.

Table 3.12: Effect of Conflict Exposure on Real-life Behavior (Number of death as Exposure Variable, Two-stage Least Squares)

	Export Crops	Oil Crops	Hybrid Maize	Hire labor	Share of Mosquito Bednet	Monthly Alcohol Consumption
	(1)	(2)	(3)	(4)	(5)	(6)
Number of deaths (log)	0.004	0.005	0.001	-0.107*	-0.040**	-0.128
	(0.005)	(0.016)	(0.006)	(0.063)	(0.020)	(0.225)
Received general assistance	0.000	-0.001	-0.003	0.027	0.017	0.142
	(0.002)	(0.006)	(0.003)	(0.022)	(0.090)	(0.097)
Observations	312	312	312	312	312	303
R-squared	0.069	0.164	0.062	0.169	0.307	0.163
log(dist. to S. Sudan) ×log(dist. to barracks)	-0.107*	-0.107*	-0.107*	-0.107*	-0.107*	-0.102*
Dist. Sudan (log)	-2.103***	-2.103***	-2.103***	-2.103***	-2.103***	-2.164***
Stock–Yogo	19.93	19.93	19.93	19.93	19.93	19.93
F-Statistics	97.187	97.187	97.187	97.187	97.187	97.112
Hansen J	0.043	0.111	0.446	0.362	0.084	0.675

Notes: Community robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town, altitude, experiment timing, and whether road to town is tarmac.

Table 4.1: Social Behavior measures

	Combined Mean	Severely Affected districts (1)	Less Severely Affected districts (2)	t-stats
Political Participation				
Political Party Member	0.868	0.832	0.900	1.779
	(0.339)	(0.375)	(0.300)	
Voted in February 2016 Presidential and Parliamentary elections	0.916	0.913	0.919	0.206
	(0.278)	(0.283)	(0.273)	
Organizational Membership				
ROSCA	0.565	0.611	0.522	-1.580
	(0.497)	(0.489)	(0.501)	
SACCO	0.023	0.007	0.037	1.813
	(0.149)	(0.082)	(0.190)	
Religious group (e.g. Christian, Moslem groups)	0.035	0.027	0.043	0.789
	(0.185)	(0.162)	(0.205)	
Village Clan group	0.035	0.020	0.049	1.405
	(0.185)	(0.141)	(0.218)	
Farmers group	0.155	0.114	0.193	1.913
	(0.362)	(0.319)	(0.396)	
Mutual funeral group	0.077	0.027	0.124	3.249
	(0.268)	(0.162)	(0.331)	
Work together	0.490	0.483	0.497	0.239
	(0.501)	(0.501)	(0.502)	
Leader in group	0.313	0.309	0.317	0.152
	(0.464)	(0.464)	(0.467)	
Group Membership Index	0.890	0.805	0.969	1.785
	(0.809)	(0.685)	(0.904)	
Community Collective Action				
Volunteer work in past one year	0.600	0.631	0.571	-1.066
	(0.491)	(0.484)	(0.496)	
Road maintenance	0.216	0.195	0.236	0.883
	(0.412)	(0.397)	(0.426)	
Water source maintenance (e.g. borehole, well)	0.316	0.369	0.267	-1.936
	(0.466)	(0.484)	(0.444)	
Community Participation Index	1.132	1.195	1.075	-0.996
	(1.061)	(1.051)	(1.069)	
Trust Behavior				
Asked to lend money	0.565	0.597	0.534	-1.110
	(0.497)	(0.492)	(0.500)	
Lent money (=1 if lent all or part of money asked for) out of those who were asked	0.926	0.944	0.907	-0.926
	(0.263)	(0.232)	(0.292)	
Generalized Trust				
Generalized Trust *(Self-reported)*	0.074	0.094	0.056	-1.277
	(0.263)	(0.293)	(0.230)	

Notes: In parenthesis are standard deviations. ***, **, and * indicate significant mean difference between two groups at the 1, 5, and 10 percent levels, respectively.

Table 4.2: Descriptive Statistics of real life behavior by Abduction and Household Displacement Status

	Abducted	Not abducted	t-stats	Displaced	Not Displaced	t-stats
Number of observations	50	260		184	126	
Political Participation						
Political Party Member	0.880	0.865	-0.279	0.842	0.905	1.594
	(0.328)	(0.342)		(0.365)	(0.295)	
Voted in Feb. 2016 Presidential/	0.960	0.908	-1.221	0.913	0.921	0.236
Parliamentary elections	(0.198)	(0.290)		(0.283)	(0.271)	
Organizational Membership						
ROSCA	0.660	0.546	-1.487	0.614	0.492	-2.138
	(0.479)	(0.499)		(0.488)	(0.502)	
SACCO	0.000	0.027	1.172	0.005	0.048	2.472
	(0.000)	(0.162)		(0.074)	(0.214)	
Religious group	0.020	0.038	0.645	0.033	0.039	0.329
	(0.141)	(0.193)		(0.178)	(0.196)	
Village Clan group	0.080	0.027	-1.862	0.027	0.048	0.954
	(0.274)	(0.162)		(0.163)	(0.214)	
Farmers group	0.180	0.150	-0.536	0.141	0.175	0.794
	(0.388)	(0.358)		(0.349)	(0.381)	
Mutual funeral group	0.080	0.077	-0.074	0.054	0.111	1.841
	(0.274)	(0.267)		(0.227)	(0.316)	
Work together	0.520	0.485	-0.457	0.505	0.468	-0.642
	(0.505)	(0.501)		(0.501)	(0.501)	
Leader in group	0.460	0.285	-2.466	0.315	0.309	-0.106
	(0.503)	(0.452)		(0.466)	(0.464)	
Group Membership Index	1.020	0.865	-1.239	0.875	0.913	0.402
	(0.845)	(0.801)		(0.747)	(0.895)	
Community Collective Action						
Volunteer work in past one year	0.760	0.569	-2.539	0.641	0.539	-1.797
	(0.431)	(0.496)		(0.481)	(0.500)	
Road maintenance	0.300	0.200	-1.575	0.228	0.198	-0.626
	(0.463)	(0.401)		(0.421)	(0.400)	
Water source maintenance	0.380	0.304	-1.059	0.359	0.254	-1.954
(e.g. borehole, well)	(0.490)	(0.461)		(0.481)	(0.437)	
Community Participation Index	1.440	1.073	-2.255	1.228	0.992	-1.935
	(1.013)	(1.061)		(1.062)	(1.047)	
Trust Behavior						
Asked to lend money	0.600	0.558	-0.551	0.592	0.524	-1.195
	(0.495)	(0.498)		(0.493)	(0.501)	
Lent money (=1 if lent all or part of	0.900	0.931	0.587			
money				0.908	0.955	1.129
asked for) out of those who were asked	(0.305)	(0.254)		(0.289)	(0.209)	

Notes: In parenthesis are standard deviations. ***, **, and * indicate significant mean difference between two groups at the 1, 5, and 10 percent levels, respectively.

Table 4.3: Trust and Trustworthiness categorization by displacement and abduction status

	All North						Severely affected districts only		
	Severely affected districts	Less severely affected	t-stats	Displaced households	Not displaced	t-stats	Abducted	Not abducted	t-stats
Panel A									
Trust									
All players	1.526 (2.023)	1.878 (2.241)	3.238	1.604 (2.325)	1.862 (2.271)	2.325	1.572 (2.220)	1.735 (2.130)	1.103
Villager	1.732 (2.098)	2.143 (2.236)	1.667	1.826 (2.125)	2.119 (2.247)	1.165	1.560 (2.120)	2.019 (2.184)	1.368
Northerner	1.671 (2.074)	2.031 (2.363)	1.421	1.728 (2.068)	2.048 (2.449)	1.238	1.380 (2.029)	1.950 (2.261)	1.658
Westerner	1.389 (2.019)	1.752 (2.136)	1.532	1.353 (1.953)	1.905 (2.232)	2.303	1.680 (2.583)	1.558 (2.049)	-0.379
Easterner	1.489 (2.082)	1.826 (2.229)	1.369	1.647 (2.145)	1.690 (2.196)	0.175	1.680 (2.583)	1.662 (2.078)	-0.055
Central	1.349 (1.827)	1.639 (2.224)	1.252	1.467 (1.933)	1.548 (2.204)	0.339	1.560 (2.120)	1.488 (2.033)	-0.226
Panel B									
Trustworthiness									
All players	22.578 (22.562)	24.592 (24.209)	1.691	23.567 (22.644)	23.707 (24.589)	0.115	22.556 (22.220)	23.829 (23.677)	0.786
Villager	23.055 (22.563)	24.891 (24.331)	0.687	23.611 (21.889)	24.588 (25.688)	0.359	22.296 (20.978)	24.338 (23.952)	0.562
Northerner	25.603 (20.618)	27.122 (20.203)	0.655	25.876 (20.139)	27.146 (20.795)	0.538	25.593 (18.817)	26.546 (20.703)	0.302
Westerner	21.638 (23.474)	25.132 (26.009)	1.238	23.108 (23.864)	23.957 (26.301)	0.295	22.333 (23.811)	23.668 (25.078)	0.347
Easterner	21.849 (23.335)	22.544 (24.878)	0.253	22.655 (23.458)	21.561 (25.118)	-0.392	20.778 (23.837)	22.486 (24.201)	0.458
Central	20.743 (22.696)	23.269 (25.231)	0.924	22.585 (23.718)	21.282 (24.578)	-0.468	21.778 (23.796)	22.108 (24.132)	0.089
Panel C									
Observations	745	805		920	630		250	1300	
If Received 3000	23.445 (25.792)	24.762 (29.124)	0.939	24.529 (26.545)	23.545 (29.018)	-0.690	22.000 (26.393)	24.538 (27.784)	1.334
If Received 6000	21.230 (24.135)	23.892 (26.533)	2.061	22.174 (24.238)	23.254 (27.097)	0.821	21.000 (23.143)	22.923 (25.849)	1.095
If Received 9000	23.057 (25.406)	25.121 (27.823)	1.521	23.998 (25.889)	24.321 (27.859)	0.234	24.667 (26.033)	24.026 (26.835)	-0.348

Notes: Trust is amount sent by first mover in trust game per 1,000 Uganda shillings. Trustworthiness is percentage returned by second mover in trust game. Standard deviations in parenthesis. T-statistics for the test of mean difference between two groups.

Table 4.4: Effects of Abduction on Trust and Trustworthiness (Community Fixed Effects)

	Trust				Trustworthiness			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Subject Abducted	-0.007	0.148	0.129	-0.042	-0.036	-0.023	-0.025	-0.042
	(0.391)	(0.229)	(0.222)	(0.043)	(0.044)	(0.032)	(0.030)	(0.043)
Altruism		0.477***	0.478***			0.039***	0.039***	
		(0.082)	(0.082)			(0.008)	(0.008)	
Received assistance			0.034				0.002	
			(0.052)				(0.012)	
Crop diseases				-0.038				-0.038
				(0.053)				(0.053)
Drought				0.052				0.052
				(0.064)				(0.064)
Destructive rainfall				-0.017				-0.017
				(0.064)				(0.064)
Land conflict				0.054				0.054
				(0.039)				(0.039)
Age	-0.006	-0.004	-0.005	-0.001	-0.000	-0.000	-0.000	-0.001
	(0.018)	(0.013)	(0.013)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Household head	0.472	0.540	0.525	0.073	0.073	0.079	0.078	0.073
	(0.457)	(0.451)	(0.454)	(0.059)	(0.061)	(0.062)	(0.063)	(0.059)
Male	0.140	-0.138	-0.130	0.068	0.070	0.047	0.048	0.068
	(0.430)	(0.348)	(0.348)	(0.050)	(0.048)	(0.045)	(0.045)	(0.050)
Years of schooling	-0.002	-0.012	-0.013	0.000	0.000	-0.000	-0.001	0.000
	(0.038)	(0.033)	(0.034)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Household size (log)	0.427	0.311	0.315	-0.014	-0.015	-0.024	-0.024	-0.014
	(0.327)	(0.211)	(0.216)	(0.021)	(0.022)	(0.023)	(0.023)	(0.021)
Landholding in acre (log)	-0.133	-0.117	-0.117*	-0.010	-0.008	-0.006	-0.006	-0.010
Log(land + 0.01)	(0.099)	(0.068)	(0.064)	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)
Value of assets (log)	0.023	-0.022	-0.024	-0.011	-0.007	-0.011	-0.011	-0.011
	(0.141)	(0.096)	(0.095)	(0.012)	(0.014)	(0.010)	(0.010)	(0.012)
Altitude	-2.572***	-1.974***	-1.929***	-2.618	-0.104	-0.055	-0.052	-0.125
	(0.490)	(0.551)	(0.597)	(1.597)	(0.161)	(0.126)	(0.122)	(0.164)
Experiment timing 2017	-2.047***	-0.429	-0.425	-0.163***	-0.122***	0.010	0.010	-0.163***
	(0.147)	(0.343)	(0.345)	(0.036)	(0.017)	(0.033)	(0.032)	(0.036)
Partner dummies:								
Western	-0.282	-0.109	-0.026	-0.040**	-0.040**	-0.026*	-0.026*	-0.040**
	(0.156)	(0.161)	(0.136)	(0.013)	(0.013)	(0.014)	(0.014)	(0.013)
Eastern	-0.181	0.078	0.051	-0.038**	-0.038**	-0.016	-0.016	-0.038**
	(0.225)	(0.253)	(0.146)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Central	-0.322	-0.140	-0.156	-0.049***	-0.049***	-0.034**	-0.034**	-0.049***
	(0.180)	(0.185)	(0.133)	(0.014)	(0.014)	(0.013)	(0.013)	(0.014)
Villager	0.060	0.089	0.140	-0.025	-0.025	-0.023	-0.023	-0.025
	(0.169)	(0.184)	(0.100)	(0.014)	(0.015)	(0.013)	(0.013)	(0.014)
Observations	745	745	745	745	745	745	745	745
R-squared	0.060	0.307	0.308	0.106	0.080	0.218	0.218	0.106

Notes: LC1 fixed effects and partner fixed effects included. Sample restricted to severely affected districts. Individual robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1.

Table 4.5: Effects of Household Displacement on Trust and Trustworthiness (Community Fixed Effects)

	Trust				Trustworthiness			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household Displaced	-0.193	0.109	0.104	-0.184	-0.034	-0.014	-0.017	-0.033
	(0.419)	(0.283)	(0.285)	(0.428)	(0.042)	(0.040)	(0.040)	(0.043)
Altruism		0.549***	0.549***			0.036***	0.036***	
		(0.047)	(0.047)			(0.005)	(0.005)	
Received assistance			0.016				0.008	
			(0.040)				(0.009)	
Crop diseases				-0.047				-0.027
				(0.200)				(0.026)
Drought				0.178				0.060
				(0.242)				(0.035)
Destructive rainfall				0.055				0.064
				(0.198)				(0.049)
Land conflict				0.381**				0.046*
				(0.158)				(0.024)
Age	-0.012	-0.011	-0.011	-0.012	-0.001	-0.001*	-0.001**	-0.002*
	(0.010)	(0.007)	(0.007)	(0.010)	(0.001)	(0.001)	(0.001)	(0.001)
Household head	0.384	0.610**	0.602**	0.329	0.077**	0.091**	0.088**	0.073**
	(0.309)	(0.265)	(0.267)	(0.326)	(0.036)	(0.033)	(0.035)	(0.035)
Male	0.273	-0.270	-0.266	0.315	0.033	-0.003	-0.001	0.038
	(0.258)	(0.217)	(0.218)	(0.279)	(0.033)	(0.031)	(0.032)	(0.034)
Years of schooling	-0.023	0.009	0.008	-0.026	-0.004	-0.002	-0.002	-0.004
	(0.027)	(0.018)	(0.018)	(0.027)	(0.003)	(0.002)	(0.002)	(0.003)
Household size (log)	0.284	0.226	0.225	0.288	0.003	-0.001	-0.001	0.004
	(0.215)	(0.140)	(0.139)	(0.214)	(0.018)	(0.017)	(0.017)	(0.018)
Landholding in acre (log)	-0.041	-0.049	-0.048	-0.056	-0.007	-0.008	-0.007	-0.008
Log(land + 0.01)	(0.070)	(0.047)	(0.046)	(0.073)	(0.009)	(0.008)	(0.008)	(0.009)
Value of assets (log)	-0.005	-0.024	-0.025	-0.027	0.010	0.009	0.008	0.008
	(0.094)	(0.059)	(0.059)	(0.095)	(0.011)	(0.010)	(0.009)	(0.011)
Altitude	-2.071***	-1.203*	-1.194*	-1.859**	-0.102	-0.045	-0.041	-0.039
	(0.719)	(0.694)	(0.687)	(0.766)	(0.079)	(0.072)	(0.069)	(0.075)
Experiment timing 2017	-0.439	-0.233	-0.238	-0.569	-0.014	-0.000	-0.003	-0.038
	(1.079)	(0.137)	(0.139)	(1.157)	(0.061)	(0.019)	(0.021)	(0.083)
Partner dummies:								
Western	-0.281*	-0.026	-0.026	-0.281*	-0.029***	-0.013	-0.013	-0.029***
	(0.146)	(0.136)	(0.136)	(0.146)	(0.008)	(0.010)	(0.010)	(0.008)
Eastern	-0.194	0.051	0.051	-0.194	-0.042***	-0.026**	-0.026**	-0.042***
	(0.156)	(0.146)	(0.146)	(0.156)	(0.009)	(0.009)	(0.009)	(0.009)
Central	-0.358**	-0.156	-0.156	-0.358**	-0.043***	-0.030***	-0.030***	-0.043***
	(0.150)	(0.133)	(0.133)	(0.150)	(0.010)	(0.010)	(0.010)	(0.010)
Villager	0.087	0.140	0.140	0.087	-0.024**	-0.020*	-0.020*	-0.024**
	(0.100)	(0.100)	(0.100)	(0.100)	(0.009)	(0.011)	(0.011)	(0.009)
Observations	1,550	1,550	1,550	1,550	1,550	1,550	1,550	1,550
R-squared	0.031	0.344	0.344	0.038	0.040	0.159	0.161	0.064

Notes: LC1 fixed effects and partner fixed effects included. Sample is all north. Individual robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1.

Table 4.6: Effect of Conflict Exposure on Generalized Trust (Community Fixed Effects)

Conflict exposure	Subject abducted		Household displaced	
	(1)	(2)	(3)	(4)
Conflict exposure	-0.064	-0.067	-0.109	-0.112
	(0.065)	(0.062)	(0.051)	(0.052)
Altruism		0.004		0.008
		(0.010)		(0.007)
Received assistance		0.008		0.010
		(0.011)		(0.011)
Age	0.001	0.001	-0.000	-0.000
	(0.002)	(0.002)	(0.001)	(0.001)
Household head	-0.019	-0.025	0.022	0.019
	(0.076)	(0.075)	(0.039)	(0.041)
Male	0.081	0.083	0.021	0.017
	(0.045)	(0.049)	(0.034)	(0.036)
Years of schooling	-0.003	-0.004	0.001	0.000
	(0.004)	(0.004)	(0.004)	(0.004)
Household size (log)	0.040	0.040	0.029	0.028
	(0.044)	(0.044)	(0.024)	(0.024)
Landholding in acre (log)	0.001	0.001	-0.002	-0.000
Log(land + 0.01)	(0.009)	(0.009)	(0.006)	(0.007)
Value of assets (log)	-0.029	-0.030	-0.006	-0.006
	(0.016)	(0.017)	(0.012)	(0.012)
Altitude	0.103	0.120	0.109	0.127
	(0.189)	(0.178)	(0.103)	(0.096)
Observations	149	149	310	310
R-squared	0.035	0.038	0.019	0.026
Sample coverage: restricted	Yes	Yes	No	No

Notes: LC1 fixed effects included. Community robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1.

Table 4.7: Effects of Number of Deaths on Trust and Trustworthiness (Two-stage Least Squares)

	Trust	Trustworthiness	Generalized trust
	(1)	(2)	(3)
Number of deaths (log)	-0.054	-0.001	-0.022
	(0.102)	(0.015)	(0.013)
Altruism	0.561***	0.036***	0.008
	(0.046)	(0.005)	(0.007)
Assistance received	0.001	0.001	0.010
	(0.030)	(0.007)	(0.007)
Age	-0.012*	-0.001*	-0.000
	(0.007)	(0.001)	(0.001)
Household head	0.653**	0.089***	0.007
	(0.269)	(0.034)	(0.042)
Male	-0.276	0.007	0.012
	(0.192)	(0.027)	(0.033)
Years of schooling	-0.001	0.000	0.004
	(0.020)	(0.003)	(0.004)
Household size (log)	0.122	-0.014	0.016
	(0.131)	(0.020)	(0.026)
Landholding in acre (log)	-0.031	-0.004	0.012***
Log(land + 0.01)	(0.042)	(0.005)	(0.004)
Value of assets (log)	0.043	0.006	-0.021
	(0.059)	(0.009)	(0.012)
Altitude	-0.903*	0.139	0.067
	(0.546)	(0.140)	(0.069)
Experiment timing 2017	-0.059	-0.044	
	(0.199)	(0.035)	
Game order	0.150	0.020	
	(0.121)	(0.026)	
Distance to town(log)	-0.080	0.003	0.049
	(0.185)	(0.020)	(0.045)
Observations	1,550	1,550	310
R-squared	0.375	0.198	0.035
Sample restricted	No	No	No
LC1 fixed effects	No	No	No
LC1 controls	Yes	Yes	Yes
Partner FE	Yes	Yes	No
log(dist. to S. Sudan) ×log(dist. to barracks)	-0.137***	-0.114**	-0.109*
Dist. Sudan (log)	-2.223***	-2.045***	-2.059***
Stock–Yogo	19.93	19.93	19.93
F-Statistic	650.813	510.583	93.322

Notes: Individual and community robust clustered standard errors are in parenthesis for columns 1 & 2 and column 3 respectively. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional regressors include; Rainfall, temperature, population density, and whether road to town is tarmac.

Table 4.8: Effect of Conflict Exposure on Trust and Trustworthiness by In- or Out Group (Northerner as In-group)

Conflict Exposure	Subject Abducted				Household Displaced			
Dependent variable	Trust		Trustworthiness		Trust		Trustworthiness	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Conflict Exposure	0.214	0.324	-0.041	-0.034	-0.177	0.102	-0.031	-0.016
	(0.402)	(0.229)	(0.045)	(0.030)	(0.048)	(0.332)	(0.042)	(0.040)
Conflict Exposure x	-0.716***	-0.678***	0.034	0.037	-0.094	-0.114	-0.018	-0.019
In-group	(0.214)	(0.205)	(0.024)	(0.020)	(0.255)	(0.201)	(0.017)	(0.018)
In-group dummy	0.490***	0.292	0.041**	0.025	0.414	0.222	0.054***	0.042***
	(0.177)	(0.179)	(0.015)	(0.015)	(0.239)	(0.172)	(0.008)	(0.009)
Altruism		0.494***		0.039***		0.554***		0.035***
		(0.093)		(0.009)		(0.049)		(0.005)
Received assistance		0.008		0.002		-0.011		0.008
		(0.050)		(0.011)		(0.041)		(0.009)
Observations	596	596	596	596	1240	1240	1240	1240
R-squared	0.070	0.329	0.084	0.220	0.029	0.341	0.044	0.157
Sample coverage: restrict	Yes	Yes	Yes	Yes	No	No	No	No

Notes: LC1 fixed effects and partner fixed effects included. Individual robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town, altitude, experiment timing, game order, and whether road to town is tarmac.

Table 4.9: Effects of Abduction on Trust and Trustworthiness by Age and Length of Abduction

	Trust				Trustworthiness			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Abducted	0.165	0.211	0.130	0.127	-0.016	0.003	-0.032	-0.006
	(0.241)	(0.172)	(0.257)	(0.169)	(0.032)	(0.027)	(0.028)	(0.032)
Abducted x Young (<16 Years)	-0.427	-0.590*			-0.101**	-0.042		
	(0.602)	(0.295)			(0.041)	(0.084)		
Abducted x Length (>1Year)			-0.009	-0.105			0.047	0.017
			(0.347)	(0.260)			(0.062)	(0.064)
Observations	745	1,550	745	1,550	745	1,550	745	1,550
R-squared	0.309	0.346	0.308	0.344	0.222	0.161	0.219	0.161
Sample restricted	Yes	No	Yes	No	Yes	No	Yes	No

Notes: LC1 fixed effects and partner fixed effects included. Individual robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), altitude, experiment timing, game order.

Table 4.10: Effects of Abduction on Real-Life Behavior (Community Fixed Effects)

Dependent variable:	Voted in elections	Political party member	Group membership index	Leadership position in group	Community collective action index	Working together with group member	Asked to lend money	Lent money (among those who were asked)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Subject Abducted	0.081***	0.064	0.376**	0.184*	0.137	0.111*	-0.053	0.001
	(0.026)	(0.105)	(0.156)	(0.098)	(0.207)	(0.062)	(0.097)	(0.062)
Age	0.004**	0.004	0.005	0.003*	0.008	0.002	-0.003	0.002
	(0.001)	(0.003)	(0.005)	(0.002)	(0.009)	(0.002)	(0.006)	(0.004)
Household head	0.023	-0.222*	-0.094	0.139	0.046	0.177*	-0.030	0.012
	(0.072)	(0.102)	(0.171)	(0.128)	(0.360)	(0.083)	(0.147)	(0.083)
Male	0.010	0.124	-0.170	-0.066	0.332	-0.204**	0.103	0.062
	(0.081)	(0.071)	(0.144)	(0.129)	(0.315)	(0.087)	(0.104)	(0.077)
Years of schooling	0.001	-0.002	0.011	0.019	0.013	0.014	-0.001	0.016
	(0.010)	(0.012)	(0.024)	(0.015)	(0.032)	(0.008)	(0.009)	(0.011)
Household size (log)	-0.039	0.001	0.196	0.123	0.072	0.262***	-0.045	0.071
	(0.043)	(0.062)	(0.121)	(0.106)	(0.280)	(0.080)	(0.083)	(0.067)
Landholding in acre*)*	0.001	-0.003	0.040	0.022	-0.065	0.014	-0.004	0.023
(log) *Log(land + 0.01*	(0.010)	(0.032)	(0.044)	(0.023)	(0.088)	(0.036)	(0.025)	(0.020)
Value of assets (log)	-0.011	-0.008	0.024	0.059*	0.121	0.022	0.059	-0.011
	(0.029)	(0.027)	(0.046)	(0.032)	(0.070)	(0.029)	(0.036)	(0.025)
Altitude	0.017	-0.114	-0.051	0.972***	1.480*	0.857***	0.151	0.025
	(0.101)	(0.105)	(0.319)	(0.296)	(0.809)	(0.244)	(0.239)	(0.113)
Observations	149	149	149	149	149	149	149	89
R-squared	0.073	0.041	0.119	0.160	0.090	0.159	0.056	0.121

Notes: LC1 fixed effects included. Sample restricted to severely affected districts. Community robust clustered standard errors are in parenthesis.
Significance levels are ***p<0.01, **p<0.05, and *p<0.1.

Table 4.11: Effects of Household Displacement on Real-Life Behavior (Community Fixed Effects)

Dependent variable:	Voted in elections	Political party member	Group membership index	Leadership position in group	Community collective action index	Working together with group member	Asked to lend money	Lent money (among those who were asked)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household Displaced	-0.089	-0.066	0.094	-0.105	0.086	-0.028	0.054	-0.093
	(0.060)	(0.069)	(0.127)	(0.104)	(0.218)	(0.076)	(0.098)	(0.074)
Age	0.003***	0.004*	-0.001	0.004**	-0.004	0.002	-0.006**	-0.000
	(0.001)	(0.002)	(0.004)	(0.002)	(0.007)	(0.002)	(0.002)	(0.002)
Household head	0.052	-0.064	0.179	0.212**	0.206	0.199***	0.216**	0.040
	(0.045)	(0.086)	(0.128)	(0.095)	(0.219)	(0.057)	(0.100)	(0.062)
Male	-0.010	0.104	-0.151	-0.059	0.252	-0.126*	-0.093	0.025
	(0.058)	(0.067)	(0.134)	(0.096)	(0.178)	(0.065)	(0.073)	(0.058)
Years of schooling	0.004	0.001	0.024	0.033***	0.022	0.016**	0.017	0.002
	(0.006)	(0.008)	(0.020)	(0.011)	(0.020)	(0.006)	(0.012)	(0.008)
Household size (log)	0.024	0.027	0.238**	0.090	0.035	0.123*	-0.001	0.018
	(0.033)	(0.055)	(0.105)	(0.060)	(0.154)	(0.065)	(0.053)	(0.056)
Landholding in acre*)*	0.001	0.019	0.064**	0.025	0.007	-0.003	0.011	0.041**
(log) *Log(land + 0.01*	(0.007)	(0.017)	(0.029)	(0.018)	(0.065)	(0.026)	(0.014)	(0.017)
Value of assets (log)	-0.012	-0.015	-0.032	0.029	-0.000	0.009	0.064**	0.013
	(0.018)	(0.016)	(0.048)	(0.022)	(0.065)	(0.021)	(0.031)	(0.025)
Altitude	-0.591	0.087	-0.441	0.577	0.579	0.454	0.323	0.154
	(0.446)	(0.158)	(0.368)	(0.341)	(0.386)	(0.376)	(0.249)	(0.145)
Observations	310	310	310	310	310	310	310	175
R-squared	0.069	0.037	0.041	0.135	0.043	0.059	0.085	0.080

Notes: LC1 fixed effects included. Sample is all north. Community robust clustered standard errors are in parenthesis.
Significance levels are ***p<0.01, **p<0.05, and *p<0.1.

Table 4.12: Social services received between abducted and non-abducted subjects

	Combined Mean	Abducted (1)	Not Abducted (2)	t-stats
Number of observations		35	115	
Received Program Information	0.584	0.771	0.526	-2.615
	(0.495)	(0.426)	(0.502)	
Loaned something but not money	0.308	0.400	0.281	-1.335
	(0.464)	(0.497)	(0.451)	
Assisted in making future plans	0.383	0.543	0.333	-2.254
	(0.488)	(0.505)	(0.473)	
Physical help from people	0.564	0.657	0.535	-1.272
	(0.497)	(0.482)	(0.501)	
Collective activities with other people	0.469	0.543	0.447	-0.987
	(0.501)	(0.505)	(0.499)	
Received information to settle in	0.449	0.629	0.395	-2.466
	(0.499)	(0.490)	(0.491)	
Received general assistance (index)	2.758	3.543	2.518	-2.218
	(2.424)	(2.356)	(2.403)	
NGO assistance (number)	2.383	2.657	2.298	-1.371
	(1.359)	(0.906)	(1.463)	
Passed through reception center and reintegration program		0.114		
		(0.323)		
Attended welcoming and cleansing ceremony		0.400		
		(0.497)		
Held Leadership position while with LRA		0.143		
		(0.355)		
Received assistances (additive index of 3 above)		0.543		
		(0.780)		

Notes: In parenthesis are standard deviations. ***, **, and * indicate significant mean difference between two groups at the 1, 5, and 10 percent levels, respectively. Received general assistance is an additive index of the first 6 variables.

Table 4.13: Mechanism of Pro-Social Behavior among Abductees

	coefficient	s.e.	R-sq
Voted in election			
Reception/ Reintegration ceremony	0.107	(0.061)	0.072
Traditional Cleansing ceremony	-0.242***	(0.087)	0.204
Received general assistance	-0.016	(0.021)	0.061
No. of NGO's assistance	0.061	(0.058)	0.081
Leadership with LRA	0.243**	(0.105)	0.181
Group membership index			
Reception/ Reintegration ceremony	-1.747***	(0.225)	0.508
Traditional Cleansing ceremony	-1.119***	(0.232)	0.432
Received general assistance	-0.071	(0.159)	0.293
No. of NGO's assistance	0.719***	(0.236)	0.463
Leadership with LRA	0.509	(0.975)	0.311
Leadership position in group			
Reception/ Reintegration ceremony	-0.337	(0.349)	0.295
Traditional Cleansing ceremony	-0.644	(0.476)	0.424
Received general assistance	0.200***	(0.053)	0.454
No. of NGO's assistance	0.245**	(0.126)	0.358
Leadership with LRA	0.832***	(0.257)	0.487
Working together with group member			
Reception/ Reintegration ceremony	-0.487	(0.374)	0.366
Traditional Cleansing ceremony	-0.475	(0.279)	0.405
Received general assistance	0.054	(0.113)	0.310
No. of NGO's assistance	-0.069	(0.148)	0.299
Leadership with LRA	0.663***	(0.194)	0.476

Notes: LC1 fixed effects included. Dependent variables are Voted in elections, Leadership position in group, Working together with members, and Group membership index. Community robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town, altitude, and whether road to town is tarmac. Number of observations is 35.

Figure 2.1: Risk Preference Experiment 1 Answer Sheet

RISK GAME 1

	A	B		Do you prefer A or B?
	① ②③④	①	② ③④	
1–1	4,000	4,000	2,000	
1–2	4,000	7,000	2,000	
1–3	4,000	10,000	2,000	
1–4	4,000	13,000	2,000	
1–5	4,000	16,000	2,000	
1–6	4,000	16,000	3,000	
1–7	4,000	16,000	3,500	
1–8	4,000	16,000	4,000	

Figure 2.2: Risk Preference Experiment 2 Answer Sheet

RISK GAME2

	A		B		Do you prefer A or B?
	① ②	② ④	①②	③ ④	
2–1	6,000	-500	6,000	-4,000	
2–2	4,000	-500	6,000	-4,000	
2–3	1,000	-500	6,000	-4,000	
2–4	500	-500	6,000	-4,000	
2–5	500	-500	6,000	-3,000	
2–6	500	-1,000	6,000	-3,000	
2–7	500	-1,000	6,000	-2,000	
2–8	500	-1,000	6,000	-1,000	

Figure 2.3: Time Preference Experiment 3 Answer Sheet

TIME GAME 1

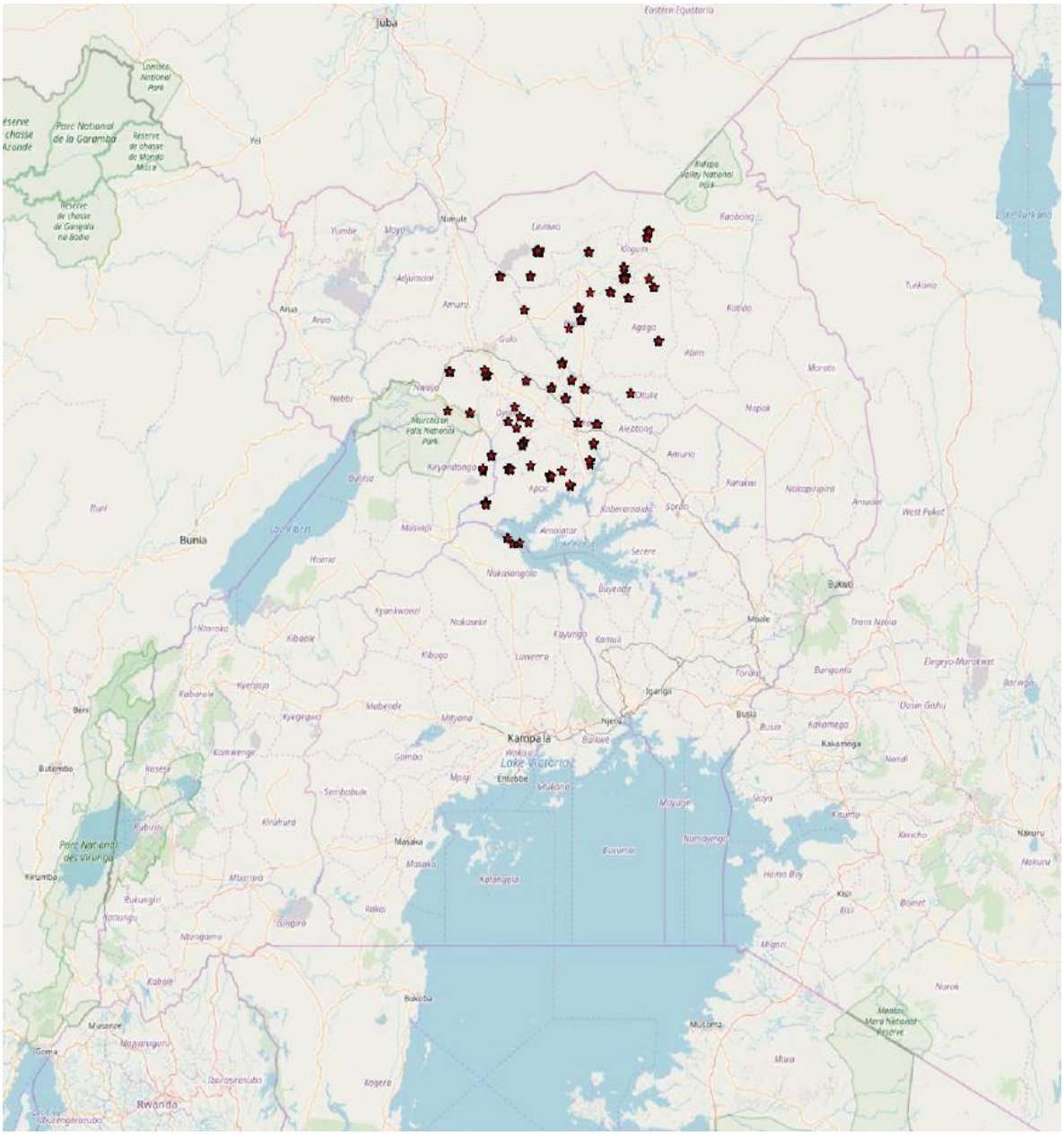
	A	B	Do you prefer A or B?
1–1	6,000 in 4 months	7,000 in 6 months	
1–2	6,000 in 4 months	8,000 in 6 months	
1–3	6,000 in 4 months	9,000 in 6 months	
1–4	6,000 in 4 months	10,000 in 6 months	
1–5	5,000 in 4 months	10,000 in 6 months	
1–6	4,000 in 4 months	10,000 in 6 months	
1–7	3,000 in 4 months	10,000 in 6 months	
1–8	2,000 in 4 months	10,000 in 6 months	

Figure 2.4: Time Preference Experiment 4 Answer Sheet

TIME GAME 2

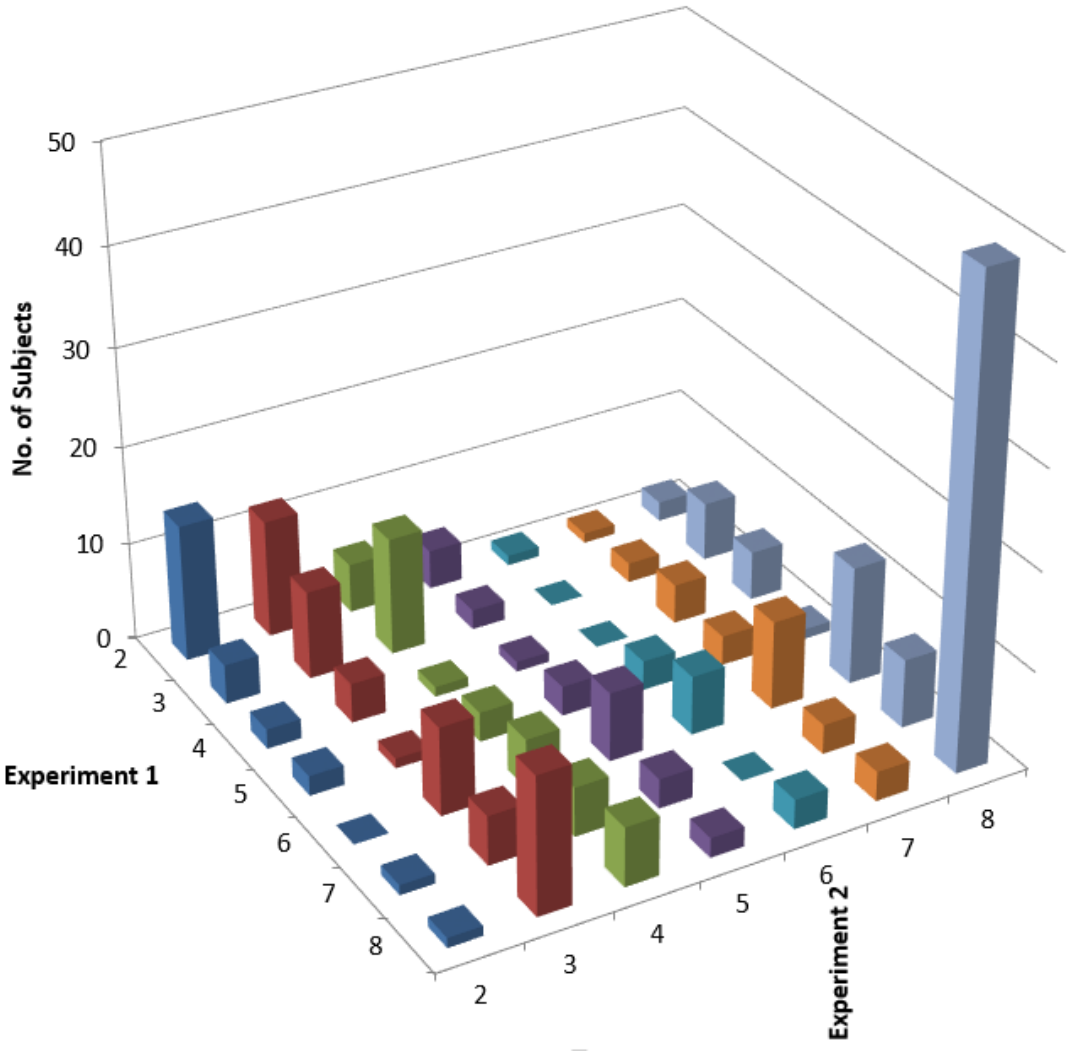
	A	B	Do you prefer A or B?
2–1	7,000 in 2 months	6,000 today	
2–2	8,000 in 2 months	6,000 today	
2–3	9,000 in 2 months	6,000 today	
2–4	10,000 in 2 months	6,000 today	
2–5	10,000 in 2 months	5,000 today	
2–6	10,000 in 2 months	4,000 today	
2–7	10,000 in 2 months	3,000 today	
2–8	10,000 in 2 months	2,000 today	

Figure 2.5: Map indicating location of sampled households in northern Uganda



Source: Constructed by the author using ArcGis

Figure 3. 1: Responses from Experiment 1 and 2



Appendix

Table 2A1: Payoff Matrix for Risk Preference Experiment 1 (Gains)

Row	Column A				Column B				EV^A-EV^B	CRRA Interval if Switches to B under EUT	Midpoint
	Pr (p)	Prize (M)	Pr (1-p)	Prize (M)	Pr (p)	Prize (M)	Pr (1-p)	Prize (M)			
1-1	1.0	4,000			0.25	4,000	0.75	2,000	1,500	n/a	n/a
1-2	1.0	4,000			0.25	7,000	0.75	2,000	750	$-\infty < \sigma \leq -1.15$	-1.15
1-3	1.0	4,000			0.25	10,000	0.75	2,000	0	$-1.15 < \sigma \leq 0.00$	-0.58
1-4	1.0	4,000			0.25	13,000	0.75	2,000	-750	$0.00 < \sigma \leq 0.41$	0.21
1-5	1.0	4,000			0.25	16,000	0.75	2,000	-1,500	$0.41 < \sigma \leq 0.62$	0.52
1-6	1.0	4,000			0.25	16,000	0.75	3,000	-2,250	$0.62 < \sigma \leq 1.60$	1.11
1-7	1.0	4,000			0.25	16,000	0.75	3,500	-2,625	$1.60 < \sigma \leq 3.04$	2.32
1-8	1.0	4,000			0.25	16,000	0.75	4,000	-3,000	$3.04 < \sigma \leq \infty$	3.04

Notes: The table shows all the payoffs (M) and attached probabilities (p, 1-p) for choices A and B in the risk preference experiment 1. EV^A - EV^B is the difference in the expected value between lottery A and lottery B. The range of sigma σ is calculated by equating the expected utilities from lottery A and lottery B assuming a constant relative risk aversion (CRRA) utility function.

Table 2A2: Payoff Matrix for Risk Preference Experiment 2 (Losses)

Row	Column A				Column B				EV^A-EV^B
	Pr (p)	Prize (M)	Pr (1-p)	Prize (M)	Pr (p)	Prize (M)	Pr (1-p)	Prize (M)	
1-1	0.5	6,000	0.5	-500	0.5	6,000	0.5	-4,000	1,750
1-2	0.5	4,000	0.5	-500	0.5	6,000	0.5	-4,000	750
1-3	0.5	1,000	0.5	-500	0.5	6,000	0.5	-4,000	-750
1-4	0.5	500	0.5	-500	0.5	6,000	0.5	-4,000	-1,000
1-5	0.5	500	0.5	-500	0.5	6,000	0.5	-3,000	-1,500
1-6	0.5	500	0.5	-1,000	0.5	6,000	0.5	-3,000	-1,750
1-7	0.5	500	0.5	-1,000	0.5	6,000	0.5	-2,000	-2,250
1-8	0.5	500	0.5	-1,000	0.5	6,000	0.5	-1,000	-2,750

Notes: The table shows all the payoffs (M) and attached probabilities (p, 1-p) for choices A and B in risk experiment 1. EV^A - EV^B is the difference in the expected value between lottery A and lottery B.

Table 2A3: Payoff Matrix for Time Preference Experiment 3

Row	Column A		Column B		Front-end Delay	Discount Rate Interval if Switches to B	Mid-point
	Months (t)	Prize (M)	Months (t)	Prize (M)			
1-1	4	6,000	6	7,000	Yes	$0 < r \leq 0.0801$	0.0401
1-2	4	6,000	6	8,000	Yes	$0.0801 < r \leq 0.1547$	0.1174
1-3	4	6,000	6	9,000	Yes	$0.1547 < r \leq 0.2247$	0.1897
1-4	4	6,000	6	10,000	Yes	$0.2247 < r \leq 0.2909$	0.2578
1-5	4	5,000	6	10,000	Yes	$0.2909 < r \leq 0.4142$	0.3526
1-6	4	4,000	6	10,000	Yes	$0.4142 < r \leq 0.5811$	0.4976
1-7	4	3,000	6	10,000	Yes	$0.5811 < r \leq 0.8257$	0.7034
1-8	4	2,000	6	10,000	Yes	$0.8257 < r \leq 1.2361$	1.0309

Notes: The table shows all the payoffs (M) and timing (t) in months of payment for choices A and B in experiment 3. The range of discount r is calculated by equating the discounted value from lottery A and lottery B.

Table 2A4: Payoff Matrix for Time Preference Experiment 4

Row	Column A		Column B		Front-end Delay	Discount Rate Interval if Switches to A	Mid-point
	Months (t)	Prize (M)	Months (t)	Prize (M)			
1-1	2	7,000	0	6,000	No	$0 < r \leq 0.0801$	0.0401
1-2	2	8,000	0	6,000	No	$0.0801 < r \leq 0.1547$	0.1174
1-3	2	9,000	0	6,000	No	$0.1547 < r \leq 0.2247$	0.1897
1-4	2	10,000	0	6,000	No	$0.2247 < r \leq 0.2909$	0.2578
1-5	2	10,000	0	5,000	No	$0.2909 < r \leq 0.4142$	0.3526
1-6	2	10,000	0	4,000	No	$0.4142 < r \leq 0.5811$	0.4976
1-7	2	10,000	0	3,000	No	$0.5811 < r \leq 0.8257$	0.7034
1-8	2	10,000	0	2,000	No	$0.8257 < r \leq 1.2361$	1.0309

Notes: The table shows all the payoffs (M) and timing (t) in months of payment for choices A and B in experiment 4. The range of discount r is calculated by equating the discounted value from lottery A and lottery B.

Table 3A1: Effect of conflict exposure on Risk Aversion, Loss Aversion, Discount Rate and Present Bias (Simultaneous estimation)

	Risk Aversion	Loss Aversion	Discount Rate	Present Bias
	(1)	(2)	(3)	(4)
Subject Abducted	-0.460	0.891*	-0.120	-0.068
	(0.304)	(0.486)		
		-1.391	(0.068)	(0.072)
Household Displaced	0.521	(0.926)	0.184*	0.083
	(0.344)		(0.097)	(0.092)
Observations	289	273	302	295
R-squared	0.318	0.106	0.055	0.059

Notes: LC1 fixed effects included. Community robust clustered standard errors are in parenthesis.
Significance levels are ***p<0.01, **p<0.05, and *p<0.1.
All A and all B dummies included as regressors in risk and loss aversion specifications. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), altitude and experiment timing.

Table 3A2: Multiple Hypothesis Test for Real Life Analyses

No. (j)	Variable (m=6)	Observed P-Value (Unadjusted)	(j/m)×σ	Reject H_o
	(1)	(2)	(3)	(4)
1	Monthly Alcohol Consumption	0.055	0.008	0
2	Share of Mosquito Bednet	0.112	0.017	0
3	Oil Crops	0.265	0.025	0
4	Export Crops	0.698	0.033	0
5	Hire Labor	0.826	0.042	0
6	Hybrid Maize	0.912	0.050	0

Table 4A1: Effects of Conflict Exposure on Altruism

Conflict exposure:	Subject abducted	Household displaced	Subject abducted	Household displaced
	(1)	(2)	(3)	(4)
Conflict exposure	-0.268	-0.059	-0.344	-0.555
	(0.450)	(0.522)	(0.365)	(0.467)
Assistance received	-0.100	-0.110	0.021	0.019
	(0.101)	(0.101)	(0.082)	(0.081)
Age	-0.003	-0.004	-0.003	-0.002
	(0.018)	(0.018)	(0.010)	(0.010)
Household head	-0.096	-0.144	-0.374	-0.421
	(0.401)	(0.429)	(0.277)	(0.281)
Male	0.555	0.571	0.956***	0.996***
	(0.341)	(0.385)	(0.196)	(0.216)
Years of schooling	0.024	0.018	-0.045	-0.058*
	(0.027)	(0.032)	(0.028)	(0.029)
Household size (log)	0.229	0.234	0.042	0.103
	(0.344)	(0.311)	(0.237)	(0.210)
Landholding in acre (log)	-0.035	-0.036	0.035	0.017
Log(land + 0.01)	(0.112)	(0.110)	(0.072)	(0.071)
Value of assets (log)	0.101	0.105	0.020	0.034
	(0.210)	(0.216)	(0.126)	(0.131)
Altitude	-0.001	-0.001	-0.002**	-0.002*
	(0.002)	(0.002)	(0.001)	(0.001)
Experiment timing 2017	-3.391***	-3.332***	-0.469	-0.381
	(0.252)	(0.342)	(2.104)	(1.986)
Partner dummies:				
Western	-0.362*	-0.362*	-0.465***	-0.465***
	(0.163)	(0.163)	(0.129)	(0.129)
Eastern	-0.544***	-0.544***	-0.445***	-0.445***
	(0.120)	(0.120)	(0.115)	(0.115)
Central	-0.383**	-0.383**	-0.368***	-0.368***
	(0.156)	(0.156)	(0.106)	(0.106)
Villager	-0.060	-0.060	-0.097	-0.097
	(0.154)	(0.154)	(0.132)	(0.132)
Observations	745	745	1,550	1,550
R-squared	0.103	0.101	0.043	0.045
Sample restricted	Yes	Yes	No	No

Notes: LC1 fixed effects and partner fixed effects included. Individual robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1.

Table 4A2: Effect of conflict exposure on Trust, Trustworthiness and Generalized Trust (Simultaneous estimation)

	Trust		Trustworthiness		Generalized Trust	
	(1)	(2)	(3)	(4)	(5)	(6)
Subject Abducted	-0.039	-0.049	-0.034	-0.010	-0.057	-0.049
	(0.384)	(0.269)	(0.049)	(0.038)	(0.067)	(0.042)
Household Displaced	0.420	-0.186	-0.030	-0.032	-0.096	-0.104
	(0.627)	(0.416)	(0.072)	(0.045)	(0.071)	(0.049)
Observations	745	1,550	745	1,550	149	310
R-squared	0.063	0.031	0.0.081	0.045	0.043	0.024
Partner FE	Yes	Yes	Yes	Yes	No	No
Restricted sample	Yes	No	Yes	No	Yes	No

Notes: LC1 fixed effects included. Individual robust clustered standard errors are in parenthesis for columns 1 - 4. Community robust clustered standard errors are in parenthesis for columns 5 - 6. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log) and altitude.

Table 4A3: Effects of Abduction on Altruism by Age, Length of Abduction and In-group

	Altruism				
	(1)	(2)	(3)	(4)	(5)
Abducted	-0.243	-0.374	-0.491	-0.481	-0.162
	(0.462)	(0.419)	(0.391)	(0.352)	(0.449)
Abducted x Young (<16 Years)	-0.304	0.184			
	(1.037)	(0.514)			
Abducted x Length (>1Year)			1.399	1.015	
			(1.163)	(1.019)	
Abducted x In-group					-0.076
					(0.316)
In-group dummy					0.400**
					(0.170)
Received assistance	-0.100	0.021	-0.073	0.029	-0.119
	(0.101)	(0.082)	(0.095)	(0.078)	(0.101)
Observations	745	1,550	745	1,550	596
R-squared	0.104	0.043	0.114	0.046	0.113
Sample restricted	Yes	No	Yes	No	Yes

Notes: LC1 fixed effects and partner fixed effects included. Individual robust clustered standard errors are in parenthesis. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town, altitude, experiment timing, game order, and whether road to town is tarmac. In-group dummy takes value 1 if partner is northerner, and 0 if partner is from another region. Significance levels are ***p<0.01, **p<0.05, and *p<0.1.

Table 4A4: Trust and Trustworthiness categorized by in-group/out-group

Panel A: Severely affected districts only	Northerner	Other region	Difference
Trust	1.671	1.409	-
	(2.074)	(1.975)	
Abducted	1.371	1.657	-
	(1.972)	(2.353)	
Not abducted	1.763	1.333	**
	(2.105)	(1.841)	
Trustworthiness	25.603	21.410	*
	(20.618)	(23.124)	
Abducted	26.349	19.541	-
	(19.485)	(20.658)	
Not abducted	25.374	21.984	-
	(21.031)	(23.828)	
Panel B: All North			
Trust	1.858	1.581	*
	(2.232)	(2.097)	
Displaced	1.728	1.489	-
	(2.068)	(2.013)	
Not displaced	2.048	1.714	-
	(2.449)	(2.209)	
Trustworthiness	26.392	22.573	**
	(20.384)	(24.317)	
Displaced	25.876	22.782	-
	(20.139)	(23.639)	
Not displaced	27.146	22.266	-
	(20.795)	(25.304)	

Notes: In-group is partner from the north and out-group is partner from other region (western, eastern and central). Trust is amount sent by first mover in trust game per 1,000 Uganda shillings. Trustworthiness is percentage returned by second mover in trust game. Standard deviations in parenthesis.
* indicates that mean difference between northerner and other region is significant at 10% level while ** indicates that mean difference between northerner and other regions is significant at 5% level.

Table 4A5: Effect of Conflict Exposure on Trustworthiness by Amount Received (Community Fixed Effects)

Conflict exposure:	Abducted			HH Displaced		
When:	Receive 3000	Receive 6000	Receive 9000	Receive 3000	Receive 6000	Receive 9000
	(1)	(3)	(5)	(2)	(4)	(6)
Conflict Exposure	-0.046	-0.032	0.004	-0.002	-0.029	-0.018
	(0.033)	(0.036)	(0.033)	(0.042)	(0.047)	(0.041)
Altruism	0.041***	0.041***	0.034***	0.039***	0.037***	0.031***
	(0.008)	(0.009)	(0.009)	(0.005)	(0.006)	(0.005)
Received assistance	0.005	0.002	0.001	0.007	0.007	0.009
	(0.011)	(0.013)	(0.012)	(0.009)	(0.010)	(0.009)
Observations	745	745	745	1550	1550	1550
R-squared	0.179	0.215	0.159	0.138	0.145	0.107
Sample restricted	Yes	Yes	Yes	No	No	No

Notes: LC1 fixed effects and partner fixed effects included. Individual robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town, altitude, experiment timing, game order and whether road to town is tarmac.

Table 4A6: Effects of Abduction on Pro-Social Behaviors (Community Fixed Effects)

Dependent variable:	Voted in elections	Political party member	Group membership index	Leadership position in group	Community collective action index	Working together with group member	Asked to lend money	Lent money (among those who were asked)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Subject Abducted	0.068***	0.051	0.339**	0.177*	0.079	0.115*	-0.075	-0.007
	(0.021)	(0.095)	(0.154)	(0.095)	(0.213)	(0.060)	(0.091)	(0.071)
Altruism	-0.014	-0.034***	-0.025	-0.026	-0.026	-0.086	0.005	-0.008
	(0.009)	(0.011)	(0.032)	(0.021)	(0.026)	(0.019)	(0.013)	(0.011)
Received assistance	0.016	0.007	0.052**	-0.001	0.012	0.012	0.040**	0.006
	(0.016)	(0.024)	(0.022)	(0.020)	(0.041)	(0.016)	(0.019)	(0.011)
Observations	149	149	149	149	149	149	149	89
R-squared	0.094	0.082	0.141	0.177	0.046	0.170	0.074	0.129
Sample restricted	Yes	Yes	Yes	Yes	No	No	No	No

Notes: LC1 fixed effects included. Community robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town, altitude, and whether road to town is tarmac.

Table 4A7: Effects of Household displacement on Pro-Social Behaviors (Community Fixed Effects)

Dependent variable:	Voted in elections	Political party member	Group membership index	Leadership position in group	Community collective action index	Working together with group member	Asked to lend money	Lent money (among those who were asked)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Household Displaced	-0.098	0.051	0.067	-0.112	0.079	-0.039	0.039	-0.008
	(0.059)	(0.095)	(0.122)	(0.104)	(0.213)	(0.077)	(0.099)	(0.008)
Altruism	-0.001	-0.034***	-0.025	-0.014	-0.026	-0.009	-0.014	-0.104
	(0.007)	(0.011)	(0.019)	(0.014)	(0.026)	(0.013)	(0.016)	(0.079)
Received assistance	0.027**	0.007	0.076***	0.019	0.012	0.032	0.040**	0.004
	(0.012)	(0.024)	(0.025)	(0.015)	(0.041)	(0.018)	(0.015)	(0.009)
Observations	310	310	310	310	310	310	310	175
R-squared	0.088	0.082	0.064	0.143	0.046	0.072	0.104	0.085
Sample restricted	No	No	No	No	No	No	No	No
LC1 fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LC1 controls	No	No	No	No	No	No	No	No

Notes: LC1 fixed effects included. Community robust clustered standard errors are in parenthesis. Significance levels are ***p<0.01, **p<0.05, and *p<0.1. Additional controls are age, head, male, schooling, household size (log), land and asset holding (log), 10-year average annual rainfall, and temperature, population density, distance to town,

Table 4A8: Multiple Hypothesis Test for Real Life Analyses

No. (j)	Variable (m=8)	Observed P-Value (Unadjusted)	(j/m)×σ	Reject H_o
	(1)	(2)	(3)	(4)
1	Voted in Elections	0.010	0.006	0
2	Group membership index	0.036	0.013	0
3	Leadership position in group	0.092	0.019	0
4	Working together with group member	0.105	0.025	0
5	Community collective action index	0.523	0.031	0
6	Political Party Member	0.554	0.038	0
7	Asked to lend money	0.596	0.044	0
8	Lent money (among those who were asked)	0.982	0.050	0

Appendix A: Dimensions of Real-life Behavior

Political Participation

- Political party member: This is a dummy variable varying on the individual level and taking a value of 1 if "Yes" is answered to the question “Are you a member or do you belong to any political party or support any political party?”
- Voted in elections: This is a dummy variable varying on the individual level and taking a value of 1 if "Yes" is answered to the question “Did you cast your vote in the February 2016 Parliamentary and Presidential elections?”

Organizational membership

- Member of organization or group: This is a dummy variable varying on the individual level or household level and taking a value of 1 if "Yes" is answered to the question “Are you (and your family members) a member of any community organization or group in the last 12 months?” [Farmers group, ROSCA, SACCO, Clan group, Religious group and Mutual funeral group]
- Group membership index following Cassar et al., (2014), we construct a group membership index that sums the number of associations or groups a subject belongs to. This index takes values from 0 to 6.

Leadership

- Leader: This is a dummy variable varying on the individual level or household level and taking a value of 1 if "Yes" is answered to the question “Are you a leader (Chair, vice Chair, other positions) of this group or organization in the last 12 months?”

Working together

- Work together: This is a dummy variable taking a value of 1 if "Yes" is answered to the question “Do members work together (e.g. working together in the gardens, cleaning of water sources like boreholes, wells, maintaining of village roads, slashing bushes, helping during funerals etc.), in the last 12 months?”

Community Participation

- Volunteer or Charity work: This is a dummy variable varying on the individual level or household level and taking a value of 1 if "Yes" is answered to the question “Have you (and/or your family members) done any volunteer work or charity work in the last 12 months?”
- We construct a community participation index that sums the number of volunteer participations a subject has participated in the last 12 months. This index takes values from 0 to 3.

- Kind/type of volunteer or charity work: This is a dummy variable varying on the individual level or household level and taking a value of 1 if "Yes" is answered to the question “What kind of charity/volunteer work (and your family members) have done in the last 12 months?” [Maintenance of community road and water source (e.g. borehole, well)

Trust based behavior question

- Asked to lend money: This is a dummy variable varying on the individual level and taking a value of 1 if “Yes” is answered to the question “Were you asked by someone to lend them some money in the last 12 months?

- Lent money: This is a dummy variable varying on the individual level and taking a value of 1 if "Yes, provided all they requested or Yes, provided some of what they requested” is answered to the question “If Yes was answered to above question; Did you accept the requests and give or lend all or part of the money, in the last 12 months?”

Appendix B: Trust Game Experiment Instructions

STEP 1: All subjects together.

General Introduction: <u>To be read at the beginning of ALL sessions</u>

- Welcome. Thank you for taking the time to come today. [Introduce Experimenters and Assistants] You can ask any of us questions during today's programme.
- We have invited you here, today, because we want to learn about how people work and make decisions in this area. You are going to be asked to take decisions about money. The money that results from your decisions will be yours to keep.
- What you need to do will be explained fully in a few minutes. But first we want to make a couple of things clear.
- First of all, this is not our money. This money comes from Japan. It has been given to us for research.
- We also have to make it clear that this is research about your decisions. Therefore you cannot talk with others. This is very important. I'm afraid that if we find you talking with others, we will have to send you home, and you will not be able to earn any money here today. Of course, if you have questions, you can ask one of us. We also ask you to switch off your mobile phones.
- Make sure that you listen carefully to us. You will be able to make a good amount of money here today, and it is important that you follow our instructions.
- Now, before we explain what you need to do, it is really important to bear one more thing in mind. You will be asked to take decisions that are not a matter of getting it

right or wrong; they are about what you prefer. However, it is important to think seriously about your choices because they will affect how much money you can take home.

- During today's programme, you will be making decisions in the games. Only one of the games will be selected to determine the money you will be paid. At the end of the exercise, we will put balls into this bingo cage **[show]** and turn the handle until a ball falls out. The number of that ball will determine which game we will pay for. Any money you earn will be paid out to you privately and confidentially after all parts of the experiment are complete.
- In these games you will be playing with other people. These are people from this village, region and across the region and the country who are also taking part in REPEAT. They will also be doing the games.

Let's Play the Actual Game.

[**STEP1:** Select the first set of participants and take each one to a private area with 1 enumerator per subject]

[STEP 2: The Trust game rules are then read to each subject privately.]

I will begin by explaining the game to you. Then I will ask a few questions to check your understanding.

You will be playing this game with different people (partners). All around the country other people taking part in REPEAT will be playing the same game. Some of them may be playing with you.

Northerner Game

Let's play the first game. We call this Northerner game.

Game Rules

1. In this game, you have a partner who is a stranger from the northern region. I won't tell you who the stranger is and I will never tell the stranger who you are.
2. In this game I will give you chips that represent real money.
3. You can keep all these chips and money they represent for yourself or you can give some of them or all of them to the stranger. Your decision will be private. I will not tell the stranger how you have played. I will also not tell anyone else in your village how you have played.
4. If the person receives some money from you, they will receive it in a plain envelope. The envelope won't have your name on it and we won't tell them it's from you. If they ask we will simply tell them that they won the money in the experiments run by the REPEAT team. In fact everyone involved with this game is from the REPEAT survey and that's how we can ensure the money will get to them.
5. The chips you keep are worth 1000 shillings to yourself. But if you give them to the stranger they will be worth 3000 shillings to the stranger. For example, if you

keep 2 chips, they are worth 2000 shillings to you. And if you give 3 chips to the stranger they are worth 9000 shillings to the stranger. To help you here's a sheet [show sheet]. This sheet shows you how much the chips are worth if you keep them [point to "self" column] and how much the chips are worth to the stranger [show "receiver" column]

6. Now the person who receives the money can also pass some of the money back to you. This makes this game different from the previous round of games. The second player can give back nothing or all the money received or somewhere in between. REPEAT will ensure that any money passed back will be received by you.
7. Remember that this game is secret: the person from the northern region won't know if you give them money, and they will not know if you do not give them money.
8. After you've decided about what you want to pass on to the person from the northern region we will also ask you to think about this game from the point of view of player 2. In other words we will ask you to decide how much money you will give back if you receive some money from a person from the northern region.
9. So let me give you some examples and check your understanding.
    - If you pass 1 chip to the person from the north, leaving you with 2 chips how much money do you have? [ans: Ush2000]
    - If you pass 1 chip to the person from the north, how much money does the person from the north receive? [ans: Ush3000]

- Suppose the person from the north passes Ush1000 back to you. How much money do you end up with? [ans: Ush3000]
- And how much money does the person from the north end up with? [ans: Ush2000]
- Will we tell the second player who you are? [ans: no]

When you play this game you are going to play first as the first player, who decides how much to keep to oneself and how much to give to the stranger from the North, and then as the second player, who decides how much to return given the amount of money given by the first player. When you play the game as the first player the second player is a northerner. When you play the game as the second player the first player is a northerner.

First player

Let's play the role of the first player first: You are the first player now. Here are 3 chips. Please make your choices according to your wish. Remember the more you pass on, the greater the amount of money at the second player's disposal. Although the second player is under no obligation to give anything back, we will pass onto you whatever he decides to return.

[Now the player places the chips in the cups.]

[Summarize decision back to subject] Ok. You have chosen to keep X chips worth X to you and give chips worth X to the stranger. Is that correct?

Possible choice for a sender and associated payments to a receiver

Number of chips to keep for self	Payment for self	Number of chips for game partner	Payment for game partner
0	0	3	9000
1	1000	2	6000
2	2000	1	3000
3	3000	0	0

[Record answer]

Second player

Now let's play the role of the second player. Now the first player is from the northern region.

Show card:

Amount received	Amount to be returned
3,000	0,1000, 2000, or 3000
6,000	0,1000, 2000, 3000, 4000, 5000, or 6000
9,000	0,1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, or 9000

Look at this card. Suppose you have received Ush3000 from the northern region person. This means he has chosen to keep 2 chips and 1 chip to you. The northern region person is left with Ush2000. It is now up to you to decide what to give back to the first player. **You can choose to give 3,000, 2000, 1000, or nothing**. Do what you wish. **How much do you wish to give back in this case?**

[Record the answer]

Suppose you received Ush6000 from the first player. This means the northern region person passed two chips to you and he is left with 1 chip worth Ush1000. It is now up to you to decide what to give back to the first player. **You can choose to give something from zero to 6000 in amounts of 1,000. [point to card].** How much would you give back in this case?

[Record the answer]

Suppose you received Ush9000 from the first player. This means that the northern region person passed three chips to you and he is left with nothing. It is now up to you to decide what to give back to the first player. **You can choose to give something from zero to 9000 in amounts of 1,000 [point to card].** How much would you give back in this case?

[Record the answer]

The same procedure above is repeated with all the other partners from Western, Eastern, Central regions, and Villager. It is worth noting that during all the experiments, we ensured that we alternate our enumerators in each session to control for any possible experimenter bias.