Seasonal Scarcity and Sharing Norms

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Abstract

How does scarcity affect individual willingness to altruistically enforce norms of sharing with others and individual willingness to share? Sharing within informal communities offers an important insurance mechanism during adverse shocks. But scarcity may test the stability of the enforcement mechanisms of informal norms. I conducted repeated incentivized economic experiments in a lean and in a relatively plentiful post-harvest season with the same group of Afghan subsistence farmers who experience seasonal scarcities annually annual seasonal scarcities. Enforcement of sharing weakens substantially in times of scarcity, while sharing itself remains temporally stable. Leniency in enforcement may protect individuals who cannot afford to share from social sanctions, yet it may also threaten sharing and result in deterioration of prosociality. The findings can help reconcile mixed evidence in existing literature which has documented both resilience and breakdowns in response to scarcity.

Keywords: Afghanistan, Scarcity, Seasonality, Social norms enforcement, Sharing

JEL: C93, D63, I32, Z13

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1 Introduction

Human willingness to redistribute is shaped by individual preferences and is constrained by a plethora of social norms. Sustaining such norms requires functioning enforcement mechanisms (Henrich and Boyd, 2001; Boyd et al., 2003; Fehr and Fischbacher, 2003; Henrich et al., 2006). While modern societies invest in legally codified formal enforcement mechanisms in addition to informal methods of costly enforcement using third-party monitoring, traditional societies rely predominantly on informal methods (Ostrom, 1990). Third-party enforcement can range from gossip to physical coercion to ostracism of non-cooperators (Maier-Rigaud et al., 2010; Cronk et al., 2000; Fessler and Navarrete, 2004; Greif, 1993). However, the stability of sharing behavior and its enforcement may be challenged when resources are scarce.

Is costly altruistic enforcement of sharing norms and actual sharing behavior stable even in periods of scarcity? Regarding enforcement, observational studies examining extreme threats such as famine (Dirks, 1980; Ravallion, 1997), maritime disasters (Elinder and Erixson, 2012), and extreme weather (Oster, 2004; Miguel, 2005) suggest that such events often result in breakdowns in cooperation and in acceptance of otherwise unethical behavior. During extreme disasters, resources may be so scarce that even fully egalitarian redistribution could arguably push the entire population below subsistence levels, rendering enforcement inefficient. Even milder periods of hardship seem to have the power to adversely affect structures within societies (Wutich, 2009; Prediger et al., 2014) and families (Behrman, 1988). However, the work of Elinor Ostrom (Ostrom, 1990, p. 75) reports several historical examples of increased leniency in monetary punishments for violations of water sharing arrangements during periods of scarcity that did not result in reduced cooperation. These cases align with the optimistic interpretations of her work which argues that scarcity forces societies to organize more efficiently in order to maintain sustainable resource use in collective action problems. Yet it remains unclear whether temporarily reduced monetary enforcement applies more broadly to non-monetary enforcement, and what role the repeated nature of interactions plays. I use methods from experimental economics to clearly isolate the effects of scarcity on a sole enforcement mechanism and on sharing behavior.

Theoretical predictions regarding sharing and enforcement are similarly ambiguous. First, while scarcity depresses sharing by increasing the cost to the donor (Andreoni and Miller, 2002), it increases the neediness of the receiver, resulting in increased willingness to share (Engel,

2011). Second, scarcity has been shown to limit cognitive capacity (Mani et al., 2013), making deliberation more costly. To date, there is no consensus on whether prosociality, including sharing, is stronger when deliberated upon or when it must be acted upon spontaneously (Rand et al., 2012; Tinghög et al., 2013). Few studies have asked a similar question using experimental sharing games administered at different points of time with different samples, either in the lab (Fisman et al., 2015) or in the field (Meier and Boonmanunt, 2019).

I answer the research question studying a sample of Afghan farmers exposed to an annually recurring period of scarcity, before they collect their main harvest. Seasonal scarcity is an aggregate shock accompanied by many idiosyncratic shocks. Sharing within one's own community thus offers a viable coping mechanism. Similar shocks affect a large share of subsistence farmers dependent on volatile harvests. The cyclical nature of agricultural production, together with limited insurance, credit and savings markets, and low quality storage technologies (Basu and Wong, 2015) exposes many to seasonal scarcities (Devereux et al., 2008). Apart from seasonal migration (Bryan et al., 2014), sharing with others remains one of the few available coping strategies (Kaplan et al., 1985).

Several empirical issues arise when examining the roles of enforcement and altruism in sharing behavior under scarcity. First, income effects and reciprocity related issues such as the role of kinship, reputational concerns, and fear of retribution all act as potential confounds. Second, using observational data or narrative evidence, it is virtually impossible to distinguish between reputation-driven third-party punishment driven by selfish motives from that driven by altruistic goals. Third, existing studies (Fisman et al., 2015; Meier and Boonmanunt, 2019) compare different societies or individuals at different points of time, introducing possible issues of selection. An exception is Aksoy and Palma (2019) who exploit the panel nature of their data to study effects of scarcity on cheating and in-group favoritism.

I address these issues using incentivized redistribution experimental games, well-established tools to measure social norms and preferences in isolation from other confounding effects. I conducted a controlled lab-in-the-field experiment using a one-shot dictator game with a third party punishment option (Fehr and Fischbacher, 2004b), and a one-shot dictator game in which there is no option to punish (Kahneman et al., 1986b). The anonymous interactions with randomly selected participants from the same village allow me to study enforcement of norms and sharing behavior unconfounded by kinship ties and possibly changing social network structures. To address the issue of income effects, I fix the cost of enforcement and the endowments that

can be shared within the experimental task. To overcome selection issues, I conduct two rounds of experiments with the same participants: the first during a lean season and the second during a post-harvest season. The panel structure of the data provides an opportunity to inspect within-subject behavioral changes in willingness to engage in enforcement of sharing norms and in altruistic sharing when exposed to a sizeable economic shock over which the farmers have little individual control. This allows me to directly test the hypothesis of temporal stability of sharing norms enforcement and of sharing behavior.

I find that enforcement of sharing norms, measured by the willingness and the intensity of costly punishment of unfair allocations by monetarily uninterested third parties, is significantly weakened during the lean season. I provide evidence that the drop in enforcement is consistent with a change in village-level social norms rather than a shift in state-dependent individual preferences for engaging in enforcement: The change in enforcement behavior correlates with village-level, rather than individual-level, intensity of the shock. Sharing, measured by the amounts passed in the dictator and third party punishment games, remains unchanged at the aggregate level and fairly stable at the individual level, suggesting stability of altruistic sharing even in a period in which enforcement becomes more lenient.

To rule out potential confounds, I show that the study period exhibits stability in terms of the local- and national-level political situation, incidence of natural disasters, and incidents of local violence. I also perform the following robustness checks. First, to rule out any potential effect of the order in which the games were played, I recruited an additional sample of 288 subjects who played the games only once, either in the lean season or in the post-harvest season. The results are quantitatively similar. Second, the results also hold when I experimentally manipulate payoffs to reflect seasonal changes in market prices. Third, the observed results are also reflected in the beliefs of others. Fourth, the results are quantitatively similar for the two different ethnic groups represented in the study—one made up of predominantly Sunni Tajiks and the other of predominantly Shia Hazaras—allowing for more generalizable statements about the findings. Fifth, behavior in the experiments correlates with real-life charitable giving. Lastly, the experimental results are unlikely to be driven by broad bracketing, i.e. individuals making choices considering their total wealth on top of experimental incentives.

This paper is complementary to other work theoretically and empirically studying links between scarcity and the dynamics of social networks, reciprocal exchanges, informal insurance, and the ability of individuals to smooth consumption without relying on others (Wutich, 2009;

Townsend, 1994; Morduch, 1995; Rosenzweig and Wolpin, 1993). During periods of scarcity, reciprocal exchanges weakens, insurance is incomplete, and saving rates are typically low, so sharing and its enforcement are important factors in sustaining consumption. In its focus on expected seasonally recurring shocks, this paper also differs from literature documenting relative stability of social preferences under stable conditions (Volk et al., 2012; Carlsson et al., 2014) on the one hand, and increases in parochial prosociality when exposed to unexpected shocks posing an existential threat to the entire community such as inter-group conflict on the other hand (Bauer et al., 2016). Lastly, scholars have examined effects of scarcity on individual behavior (Mullainathan and Shafir, 2013). I contribute to this literature by documenting that scarcity also affects interpersonal relationships and norms enforcement.

More broadly, the paper contributes to the philosophical debate on links between wealth and ethics. For example, in his *Republic*, Plato called for property expropriation in order to limit greed and unethical behavior, traits supposedly inherent to the wealthy. On the contrary, even Marx and Engels in their *Communist manifesto* refer to the poor as "social scum" (*lumpenproletariat).* Recently, empirical research in social psychology and economics, and related fields has revisited this question. First, to address the link between greed and wealth, literature has examined the relationships between charitable giving and wealth. Charitable giving in cross-sectional data on average exhibits positive income elasticity (List, 2011). A closer examination of the data shows a U-shaped relationship between income and income shares donated to charitable causes for those who give. This potentially puzzling pattern is explained by the fact that 1) fewer lower income individuals donate, and 2) of those who give, the major amount donated is from a small, concentrated group of low-income but very wealthy individuals. Using experimental measures of giving in dictator games, the very rich propose larger aggregate transfers than an average participant in the literature (Smeets et al., 2015). Yet, examining cross-cultural giving rates in dictator games, members of small-scale societies give more to their kin than members of Western societies (Engel, 2011). Second, to address the link between wealth and ethical behavior, earlier psychological literature suggested that higher socio-economic class individuals are less ethical (Piff et al., 2010, 2012). However, focusing on a large representative sample of the Dutch population, Trautmann et al. (2013) document that higher socio-economic status is rather multidimensional and the propensity to behave ethically differs across domains and by classification of socio-economic status. The difference in behavior across class may be partially explained by opportunities and benefits of certain actions that

may differ across groups (Gneezy, 2005). The links are thus not yet clearly understood. With the exception of a few priming experiments, existing studies mainly use cross-sectional data. Here, I study an expected exogenous within-individual economic shock and its effect on sharing enforcement and altruism.

The rest of the paper is organized as follows. Section 2 describes the sample selection, setting, experimental design, and procedures. Section 3 presents the main results, provides a discussion, documents the robustness of the main results, and rules out alternative explanations. Section 4 concludes.

2 Experimental Design

2.1 Sample Selection

The study participants were recruited in 10 randomly selected villages in the Marghzar and Amrakh areas of the Zari district in Balkh province, northern Afghanistan, a remote area at high elevation. With more than 60 percent of the population living below the poverty line, Balkh is one of the poorest provinces in Afghanistan (NRVA, 2008). The vast majority of the local population subsists on agricultural production or agricultural labor. All land-owning farmers were invited, with a maximum of one adult person per household allowed to participate.. The head of the household—the main bread winner—was strongly preferred. Due to cultural constraints, only males were invited.

The study was administered at two points in time, a lean season and a post-harvest season of 2013. I conducted 20 experimental sessions with 291 adult male farmers in the lean season of April 2013 and an additional 20 sessions in the same villages with 207 participants who the mobilization team also managed to contact in the post-harvest season in October 2013.

In the main analysis I focus on the behavior of the 207 individuals who participated in both lean and post-harvest season rounds. In the post-harvest season I also recruited an additional 204 new participants to substitute for the 84 participants who dropped out, and to provide a sample of "single-round" participants who participated only in the second, post-harvest round to control for potential order effects. The selection procedure was the same as in the lean season round. Despite some differences between the respective samples in terms of observable characteristics, I show that their behavior in games does not differ across samples. Each session was conducted with 12 or 15 participants. Participation in each round was voluntary and the

participants could leave at any time. All participants opted to complete all tasks within each round.

The demographic characteristics of the sample of the 207 participants participating in both rounds are presented in Columns 1 and 2 of Table 1. Half of the sample is composed of Sunni Muslims (51 percent) mainly of Tajik ethnic origin, and the other half of Shia Muslims of predominantly Hazara ethnic origin, living in almost perfectly segregated areas.[1]

It is important to note that 84 subjects who participated in the first, lean season round did not participate in the second, post-harvest round. 62 of them (74 percent) migrated either to Iran, to Mazar-e-Sharif, the provincial capital, Kabul, the capital city, or to another village for work. The remaining 22 (26 percent) did not show up either because they were working elsewhere at the time of the experiment, were sick, or were attending a wedding at the time of the assigned experimental session. Reassuringly, no one declined to participate for reasons related to the experiment. Selective attrition would systematically bias the results only if it were correlated with the stability of sharing and with willingness to engage in third-party sharing enforcement.

[1] I do not control for religion in the analysis because individual religious affiliation is almost perfectly correlated with village affiliation (perfectly in the case of the sample used for the main analysis). I use village fixed effects in regressions, which therefore also control for possible effects of religion.

Table 1: Descriptive Statistics Including the "Single-Round" Subjects

	Both seasons		Lean season only		Post-harvest season only		T-test (1)-(3)		T-test (1)-(5)	
	Mean (1)	SD (2)	Mean (3)	SD (4)	Mean (5)	SD (6)	Difference (7)	t-value (8)	Difference (9)	t-value (10)
Age	38.83	(15.49)	37.25	(15.51)	33.50	(16.00)	-1.58	(-0.79)	-5.32***	(-3.43)
Schooling (completed years)	2.97	(3.82)	2.19	(3.16)	3.14	(4.14)	-0.78	(-1.65)	0.18	(0.45)
Can read a letter (d)	0.58	(0.49)	0.54	(0.50)	0.44	(0.50)	-0.04	(-0.66)	-0.14***	(-2.93)
Number of household members	9.66	(4.69)	9.20	(4.20)	8.60	(3.90)	-0.46	(-0.78)	-1.06**	(-2.50)
Household head (d)	0.83	(0.38)	0.77	(0.42)	0.61	(0.49)	-0.06	(-1.13)	-0.22***	(-5.19)
Not married (d)	0.11	(0.32)	0.13	(0.34)	0.33	(0.47)	0.02	(0.48)	0.23***	(5.77)
Married to a single wife (d)	0.71	(0.45)	0.69	(0.47)	0.61	(0.49)	-0.02	(-0.33)	-0.21***	(-4.82)
Married to multiple wives (d)	0.18	(0.38)	0.18	(0.39)	0.05	(0.22)	0.00	(0.00)	-0.02	(-0.99)
Daughters below 15[a]	1.93	(1.66)	1.95	(1.39)	1.54	(1.51)	0.02	(0.07)	-0.2	(-1.04)
Sons below 15[a]	2.13	(1.60)	1.93	(1.21)	1.82	(1.67)	-0.20	(-0.85)	0.03	(0.18)
Years living in village	36.98	(16.59)	34.95	(16.38)	32.01	(16.56)	-2.03	-(0.95)	4.25	(0.90)
Sunni (d)	0.51	(0.50)	0.51	(0.50)	0.49	(0.50)	0.00	(0.07)	-0.02	(-0.34)
Irrigated land (in jiribs)	4.47	(7.36)	3.58	(3.79)	3.74	(5.54)	-0.89	(-1.05)	-0.73	(-1.13)
Rainfed land (in jiribs)	10.81	(18.68)	9.67	(14.36)	9.76	(22.06)	-1.14	(-0.50)	-1.05	(-0.52)
Observations	207		84		204		291		411	

Notes: Means reported in Columns 1, 3, and 5. Standard deviations in parentheses in Columns 2, 4, and 6. Column 7 reports the difference between the means of the respective characteristics for the sample of participants in both seasons and the sample of participants in the lean season only. Column 9 reports the difference between the means of the respective characteristics for the sample of participants in both seasons and for the sample of participants in the post-harvest season only. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. Columns 8 and 10 report t-values of a two-sided t-test. [a]Questions asked of the subsample of N=139 Players A and C in both periods.

2.2 Seasonal Effects and Other Events During the Study Period

Farmers in many developing countries are exposed to substantial fluctuations in income and consumption across any given year (Devereux et al., 2008). Table 2 presents the seasonal differences in observable characteristics for the sample of participants in both seasons. The data show that seasonality does indeed matter. Farmers in my sample experience substantial drops in their monetary incomes and a larger share reports no monetary income during the lean season. Smoothing consumption with their own income across seasons is unlikely due to near non-existent monetary savings. Reliance on costly loans is one way of coping, as the share of farmers in debt increases from an already high base rate, although the pool of available lenders decreases. Further, storage technologies cannot be relied upon. Over 90 percent store their produce inside their houses or in holes dug in the earth, both of which are very unreliable technologies. In the lean season, the farmers report being much more likely to be unable to work due to injury or illness, they feel generally more stressed, and are affected by shocks including crop pests and diseases, livestock diseases, and human diseases. Interestingly, consistent with earlier research (Bryan et al., 2014), migration does not seem to be used as a coping strategy for the lean season, as the share of migrants does not vary across seasons

Figure A1 shows that the participants are well aware of the seasonal swings across the year. Responding to a question to select the three months in a year that are generally most and least difficult for them, most participants perceive winter and spring (the lean season) as the most difficult and summer and autumn (harvest and post-harvest seasons) as the best months in a given year.

This paper studies the effect of seasonal scarcity by tracking farmers at different points of time. It is important to rule out other external events that affect a farmer's behavior. Because political events, natural disasters, and violent acts have all been shown to affect human behavior and may act as confounds to the scarcity studied here, I examine differences in these domains across the two seasons.

Table 2: Seasonal Effects—Individual Time-Variant Characteristics

	Lean season		Post-harvest season		T-test	
	Mean (1)	SD (2)	Mean (3)	SD (4)	Difference (5)	t-value (6)
Cash earned in past 30 days (ths AFN)[a, b]	0.35	(0.79)	0.51	(0.62)	-0.16*	(-1.93)
Cash earned in past 30 days: selling food (ths AFN)[a, b]	0.15	(0.66)	0.31	(0.54)	-0.16*	(-2.18)
Cash earned in past 30 days: day labor (ths AFN)[a, b]	0.10	(0.26)	0.08	(0.28)	0.01	(0.38)
Perceived income situation[c]	-0.40	(0.67)	-0.03	(0.61)	-0.37***	(-5.89)
Meat eaten in past 7 days (times)[a]	0.73	(1.04)	0.98	(1.00)	-0.25*	(-2.05)
Currently saves money (d)[a]	0.07	(0.26)	0.04	(0.20)	0.03	(1.02)
Currently in debt (d)[a]	0.86	(0.34)	0.70	(0.46)	0.16***	(3.38)
Currently providing loan (d)[a]	0.29	(0.45)	0.39	(0.49)	-0.10*	(-1.79)
Unable to work in past 30 days (days)	7.85	(10.09)	2.25	(6.83)	5.59***	(6.61)
Perceived stress score[d]	5.40	(1.99)	3.97	(1.15)	1.43***	(8.96)
Unusually high level of crop pests & diseases (d)	0.11	(0.32)	0.02	(0.14)	0.09***	(3.84)
Unusually high level of livestock diseases (d)	0.28	(0.45)	0.11	(0.32)	0.17***	(4.43)
Unusually high level of human disease (d)	0.50	(0.50)	0.20	(0.40)	0.30***	(6.70)
Participated in a dispute in past 30 days (d)	0.14	(0.35)	0.08	(0.27)	0.07**	(2.20)
Participated in a voluntary activity in past 30 days (d)	0.51	(0.50)	0.65	(0.48)	-0.14***	(-2.81)
Member of any village association now (d)	0.31	(0.46)	0.17	(0.38)	0.14***	(3.25)
Some household member migrated for work (d)[a]	0.25	(0.44)	0.24	(0.43)	0.01	(0.17)
Observations	207		207		414	

Notes: Means reported in Columns 1 and 3. Standard deviations in parentheses in Columns 2 and 4. Column 5 reports the difference between the means of respective characteristics in the post-harvest season and the lean season. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. Column 6 reports t-values of a two-sided t-test. [a]Questions asked of the subsample of N=139 Players A and C. [b]Cash earned by household head per OECD equivalence scaled household member. [c]Indicating whether the individual perceives his current income to be much worse (-2), worse (-1), the same (0), better (+1), or much better (+2) relative to fellow villagers. [d]A short version of the Cohen et al. (1983) Perceived Stress Scale used: the scale ranges from 0 to 8, 8 indicates the highest level of perceived stress.

First, no elections were held at the national or local levels at or around the time when the experiment was implemented. Second, there was a single incidence of a major natural disaster in the area: OCHA Field Offices and the IOM Afghanistan Humanitarian Assistance Database reports a flash flood that hit the neighboring districts of Kishindih and Sholgara on April 23, 2013, the last day of the lean season experiments. However, it did not cause any material, let alone human losses in the area studied. Third, I use declassified, precisely geolocated and timestamped violence data from the International Security Assistance Forces (ISAF) Combined Information Data Network Exchange (CIDNE) database, the most comprehensive source of data on violent incidents in Afghanistan. I examine incidences of the main categories of violence within a radius of 40 km from the center of either of the villages studied (see map in Appendix Figure A3). There were exactly three instances of direct combat and two instances of improvised explosive device explosions in the six months prior to the end of each experiment round. The closest incident, on March 14, 2013, was reported 7km from the nearest study village, and a second occured on September 29, 2013, 15km from the nearest study village.[2] To overcome possible "calendar effects", I conducted the experiments outside of major Islamic holidays, harvest season, and bazaar days.

2.3 Experimental Tasks

Each experimental session consisted of two tasks: a one-shot dictator game with a third party punishment option, called third-party punishment game (TPPG; Fehr and Fischbacher, 2004b; Bernhard et al., 2006), and a one-shot dictator game (DG; Idea originally used in Kahneman et al., 1986a). To control for order effects I randomly manipulated the order of tasks at the session level. The participants were rematched after each task and across lean and post-harvest season rounds in order to avoid strategic behavior and possible reciprocal concerns.

In each game, participants from the same village were anonymously matched in groups of three and were randomly assigned the roles of Player A, B, and C (PA, PB, and PC), which they maintained across the games and across the season rounds. Appendix Table A1 shows the numbers of participants across rounds in each role in total and by village. The rules of both games were known to all participants before they made their decisions.

[2]Several papers use the same ISAF dataset (e.g., Beath et al., 2012; Callen et al., 2014). All violent events lie outside a 5km radius of the villages, beyond which the correlation between violence and risk preferences reported in Callen et al. (2014) breaks down. The effect of a large-scale development program on reducing violent acts in non-eastern districts in Afghanistan finds strongest long-term effects within a radius of 9km (Beath et al., 2012). All effects disappear beyond a 10km radius.

In order to test the temporal stability of sharing norms enforcement, I administer a TPPG. In TPPG, PA was endowed with 10 Experimental Currency Units (ECUs; 100 Afs or approx. 2 USD).[3, 4] PB was not endowed. PA could choose to transfer nothing or any part of his own endowment to PB in increments of 1 ECU. PC was endowed with 5 ECUs. PC chose whether to punish PA using a strategy method: without knowing the actual behavior of PA, PC stated conditional punishment decision for any potential sharing decision of PA (0–10 ECUs shared).[5] PC had an option not to punish, or to subtract 3 ECUs from PA at a price of 1 ECU, or 6 ECUs at a price of 2 ECUs. PC's choice was incentivized by selecting the choice corresponding to PC's actual behavior. The initial endowment allocation ensures that in the situation when 1) PA behaves as an egalitarian and 2) PC decides not to punish such behavior, all players leave the experiment with 5 ECUs. The variable of interest is the minimum acceptable PA offer to PB that is not punished by PC, which I denote as a minimum acceptable offer (MAO; as in Henrich et al., 2006).

The DG allows me to examine the temporal stability of individual sharing behavior in the absence of confounds of kinship, reciprocity, reputation building or the fear of social sanctioning for non-desirable behavior. The only difference between DG and TPPG is that in the DG, PC is passive, and punishment is unavailable. PA has the same option to share with PB as in TPPG.

I also elicited beliefs, with a correct answer rewarded with an extra 1 ECU: PBs and PCs were asked how much they thought the PA matched with them sent in the DG and in TPPG, and whether they believed that the majority of PAs would be punished for a transfer of 0 ECUs. The PAs were asked about the modal DG and TPPG transfer of all PAs within a particular session, and whether they believed that their actual TPPG transfers would not be punished by a PC they were matched with. After the experiment each participant was surveyed (See the survey instrument in Appendix D).

[3]According to the World Bank, the price level ratio of the PPP conversion factor (GDP) to the market exchange rate was equal to 0.3 in the period when the experiment was run.

[4]The average daily wage of a casual laborer was 150 AFN, but it is not possible to find work every day in the area. During the off-season, work is particularly scarce. Importantly for my study, the size of the initial endowment does not seem to influence the relative transfers in punishment games (Kocher et al., 2008) or dictator games (Engel, 2011) to the extent that might invalidate the results of the present study. In order to validate this claim, I conducted several experimental sessions with the stakes increased by 50 percent in the 2013 lean season, only to find that the main results do not differ from those for games with the original endowment (See Appendix Table A2). The 50 percent increase reflected the reported 50 percent increase in prices of most common consumption goods during the lean season compared to the post-harvest season.

[5]Brandts and Charness (2011) survey 29 studies that directly compare the strategy method to direct-response elicitation. Though in the majority of cases no difference between the two methods is found, the only exception is games with punishment. Out of four studies including a punishment option surveyed, three observed lower levels of punishment when the strategy method was used. Reassuringly, in all cases the treatment effects were detected using both methods and the effects were in the same direction.

2.4 Procedures

The experiments were announced one day in advance. The villagers were informed that a "task" requiring a commitment of four hours of their time would be conducted in their village, for which they would earn at least 100 AFN (approximately 2 USD) as a show-up fee, and possibly more. All interested farmers were gathered in a community center (a guesthouse, mosque, or a village leader's house) in the morning just before the first session. The village locations used were the same across the two seasons. If more farmers showed up for an experimental session than could be accommodated, the mobilizing team either invited them for another session if there was one conducted in the same village or ran a lottery in which the participants were selected by chance. Next, the actual participants randomly picked an ID number, which determined their role in the experiment.

As is common in economic experiments carried out with low-literacy subjects, the instructions were first explained in a group using practical examples and visual aids (See Appendix Figure A4), and only then were the actual experiments carried out with the subjects individually (See Appendix Figure A5).[6] For simplicity, the ECUs in the game are represented by money slips evoking 20 AFN banknotes, not by real money. Before making their actual decisions, all participants were shown several examples, were allowed to practice several scenarios themselves, and finally were asked several control questions. The research assistants explained the task until the participants understood fully and the experiments were carried out only when participants evinced full comprehension. Only one participant failed to pass the comprehension test due to hearing problems, not an inability to comprehend the task.

[6]The instructions and procedures I used were inspired by Bernhard et al. (2006) and by Henrich et al. (2006). Instructions are available in Appendix C. The instructions were presented orally in the local language, Dari, and were back-translated to English.

Table 3: Seasonal Effects—Experimental Outcomes

	Lean season		Post-harvest season		T-test	
	Mean (1)	SD (2)	Mean (3)	SD (4)	Difference (5)	t-value (6)
Player A (Dictator)						
DG transfer (ECU)	3.03	(1.74)	3.22	(1.85)	-0.19	(-0.62)
TPPG transfer (ECU)	2.87	(1.74)	3.10	(1.82)	-0.24	(-0.77)
Belief: DG transfer in session, mode (ECU)	2.94	(1.84)	3.04	(1.60)	-0.11	(-0.35)
Belief: TPPG transfer in session, mode (ECU)	2.93	(1.63)	3.06	(1.67)	-0.13	(-0.44)
Belief: my TPPG transfer will not be punished (d)	0.72	(0.45)	0.71	(0.46)	0.01	(0.13)
Observations	68		68		136	
Player B (Receiver)						
Belief: DG transfer, matched PA (ECU)	3.18	(2.03)	3.63	(1.61)	-0.46	(-1.45)
Belief: TPPG transfer, matched PA (ECU)	3.66	(1.84)	3.68	(1.41)	-0.02	(-0.07)
Belief: most PCs punish zero TPPG transfer (d)	0.68	(0.47)	0.78	(0.42)	-0.10	(-1.35)
Observations	68		68		136	
Player C (Punisher)						
MAO (consistent responses; ECU)[a]	1.35	(1.51)	3.03	(1.87)	-1.68***	(-5.48)
Punish zero TPPG transfer (consistent responses; d)[a]	0.62	(0.49)	0.94	(0.25)	-0.32***	(-4.61)
Belief: TPPG transfer, matched PA (ECU)	3.15	(1.71)	3.41	(1.56)	-0.26	(-0.91)
Belief: most PCs punish zero TPPG transfer (d)	0.65	(0.48)	0.79	(0.41)	-0.14*	(-1.88)
Observations	71		71		142	

Notes: Means reported in Columns 1 and 3. Standard deviations in parentheses in Columns 2 and 4. Column 5 reports the difference between the means of respective characteristics in the post-harvest season and the lean season. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. Column 6 reports t-values of a two-sided t-test. DG stands for the dictator game, TPPG stands for the third party punishment game, MAO stands for the TPPG minimum acceptable offer. [a]Values reported for a subsample of N=123 observations (60 lean season, 63 post-harvest season) with consistent MAO.

Communication was not allowed in any round of the experiment and all tasks were strictly anonymous. Only one task was randomly selected for the payment to avoid strategic play across experiments. This procedure was revealed to the participants in advance in the instructions.

Although the participants received their payments at the end of each experimental session they did not receive any feedback on their actions or the actions of other players. Average earnings were about 190 AFN including the show-up fee (100 AFN). In order to prevent post-play retaliation, all payments were carried out in private and this was communicated to the subjects before the play.

3 Results

In this section I first present the behavioral change in willingness to enforce sharing norms over time. Then I discuss both aggregate and individual-level temporal stability of sharing behavior. The main results discussed in this section use the restricted sample of farmers who participated in both the lean and post-harvest season rounds.

3.1 Temporal Stability of Sharing Enforcement

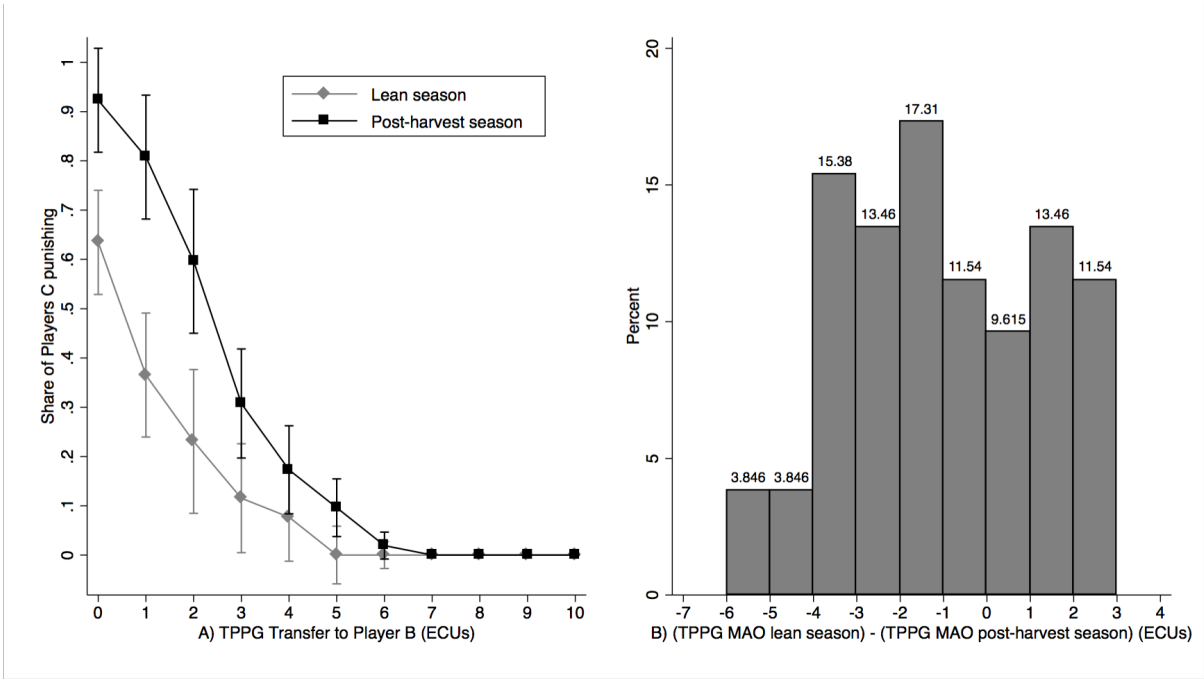
Here I analyse the behavior of PCs in the TPPG in order to understand the dynamics of enforcement of sharing norms with exposure to scarcity. I first discuss the aggregate punishment results and then I examine the within-subject results. Lastly, I discuss the results and rule out alternative explanations and potential confounds.

Panel A in Figure 1 shows the distributions of PCs' minimum acceptable offers in the TPPG (MAO) in both the lean and the post-harvest seasons. MAO is the lowest transfer from PA to PB that a PC would accept.[7] For example, if a PC decided to engage in either type of punishment of the PA for sending anything less than or equal to 2 ECUs to PB, then the MAO for this PC equals 3 ECUs. The lowest value for MAO is 0 ECU if PC decides not to punish any of PA's behavior. I was able to elicit a MAO for 60 of 71 PCs in the lean season (85 percent) and for 63 of 71 PCs in the post-harvest season (87 percent).[8] The subjects for whom I am unable to construct MAO behaved inconsistently, punishing transfers largely at random without

[7] Panel A of Appendix Figure A2 shows that the results are even stronger when accounting for punishment intensity.

[8] In terms of task comprehension, this makes my sample comparable to that of Henrich et al. (2006), who were able to assign a MAO to 92 percent of their sample. The seasonal differences in sanctioning rates survives even when inconsistent choices are included.

Figure 1: Distributions of TPPG MAO Across Seasons



Notes: Panel A shows the distribution of Player C's (punisher; PC) minimum acceptable offers sent by Player A to Player B in the third party punishment game (TPPG MAO). I use data for the 52 PCs for whom TPPG MAO could be recovered in both rounds. The distribution of lean season TPPG MAO is depicted in grey, and the distribution of post-harvest season TPPG MAO is depicted in black. The error bars represent 95 percent confidence intervals. Panel B shows the distribution of within-individual changes in Player C (punisher; PC) minimum acceptable offers sent by Player A to Player B in the third party punishment game (TPPG MAO) between the lean and the post-harvest season. I use data for the 52 PCs for whom TPPG MAO could be recovered in both rounds. Positive numbers represent higher TPPG MAO in the post-harvest season than in the lean season.

Table 4: Effect of Seasonality on TPPG MAO, and on DG and TPPG Transfers

Dependent variable	TPPG MAO	DG transfer	TPPG transfer
	(1)	(2)	(3)
Lean season	-1.70***	-0.19	-0.24
	(0.32)	(0.23)	(0.28)
Observations	123	136	136
R-squared	0.71	0.82	0.79
Bonferroni-adjusted *Lean season* p-value	0.00	1.00	1.00

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Column 1 the dependent variable is the third party punishment game (TPPG) minimum acceptable offer (MAO). This column shows results for a subsample of N=123 observations (60 lean season, 63 post-harvest season) with consistent MAO. In Column 2 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Column 3 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). All regressions include controls for age, schooling, number of household members, and village fixed effects. Constant is dropped to avoid perfect multicollinearity.

applying any systematic pattern. In the analysis below I use the 123 valid observations.

Panel A in Figure 1 shows that the participants in the role of PCs engaged in costly punishment of PAs who did not share enough. Regardless of season, the probability of punishing PAs increases as PA transfers approach zero.[9]

There is a significant decrease in the willingness to punish low transfers from the post-harvest to the lean season. In the post-harvest season, on average, PCs did not punish transfers equal to 3.03 ECUs and higher, reaching the levels of average transfers in the DG and TPPG, while in the lean season the average MAO dropped significantly, to 1.35 ECUs (Columns 1 and 3 in Table 3). The difference in MAO across rounds is highly statistically significant (WSRT: $p<0.01$, n=52). I can also reject the equality of MAO distributions over time (Epps-Singleton, $p<0.01$).

I test the temporal stability of sharing norms enforcement using the following regression model:

$$MAO_{it}^{TPPG} = \beta LS_t + \gamma X_{it} + \sum_{v=1}^{10} \delta_v D_{iv} + \varepsilon_{it} \quad (1)$$

where MAO_{it}^{g} is the MAO selected by individual i in TPPG in the period t, which is either the lean season or the post-harvest season. LS_t is the treatment variable equal to 1 in the lean

[9]The same pattern emerges even if I include the inconsistent punishers (See Panel B of Appendix Figure A2).

season, X_{it} is a set of individual characteristics. Village level fixed effects[10] are controlled for using a full set of village dummies D_{vi}, and ε_{it} is the error term. The constant is excluded to avoid perfect multicollinearity. Standard errors are clustered at the individual level.

Column 1 in Table 4 shows that the decrease in willingness to punish remains highly significant and of a similar magnitude even in a regression framework. In the next section I study the effects of the lean season on two further outcomes: PA transfers in DG and TPPG. Testing three hypotheses might increase the chances of false discovery of statistical significance. I report adjusted p-values using a Bonferroni correction at the bottom of Table 4 for all models. Though this is the most conservative correction, the effect on punishment remains highly significant.[11]

The behavior of PCs is also reflected in the beliefs of others. I asked the participants whether they believed that most PCs in the current experimental session would punish a PA who decides to transfer zero ECUs. The results are presented in Table 3. Although insignificant, the change in beliefs of PBs across seasons (lean season 68 percent vs. post-harvest season 78 percent; WSRT: p=0.16, n=68) matches the direction of the change in actual punishment behavior of PCs, and are of a similar magnitude as the beliefs of PCs about other PCs' willingness to punish zero transfers in their experimental session (lean season 65 percent vs. post-harvest season 79 percent; WSRT: p=0.08, n=71). This suggests that the behavioral change across seasons is more general in the population and is not an artefact of the experiment among the group of PCs. I did not ask PAs this question, but instead, asked whether they expected to be unpunished for their transfer to PB. Regardless of season, slightly more than 70 percent of PAs expected not to be punished (WSRT: p=0.85, n=67).[12]

To examine the actual incidence of punishment, I conducted a re-matching simulation. I randomly re-matched PAs with PCs who participated in both rounds within a village in a given season 1000 times. On average, I find that, while in the lean season about 18 percent of PAs received punishments for their TPPG transfers, in the post-harvest season 40 percent PAs were punished. The results are similar if I restrict the re-matching on a session level, and if I keep the data from the single-round subjects.

The experimental design also allows me to examine punishing behavior across seasons within an individual. I was able to construct MAO in both rounds for 52 PCs. The remaining 19 PCs

[10] See Appendix Table A3 for village level differences in the main outcome variables.

[11] The results are robust to using ordered probit, which takes into account the discrete nature of the dependent variables (See Appendix Tables A4 and A5), and to controlling for different composition of participants in sessions across rounds due to attrition (See Appendix Table A6).

[12] One PA did not respond to the belief question in the lean season.

behaved inconsistently in one of the seasons, but never in both. In the lean season 11 PCs behaved inconsistently, as did 8 PCs in the post-harvest season. 65.4 percent of PCs decreased the level of punishment in terms of MAO between the post-harvest and the lean seasons, 9.6 percent of PCs punished exactly the same across both seasons, and 25 percent increased the level of punishment in the lean season. Panel B in Figure 1 presents a histogram of individual changes in MAO across seasons.

Finding 1: *Afghan farmers substantially decrease the intensity at which they enforce sharing norms during the lean season.*

What characteristics explain the behavioral change? Appendix Table A7 shows that regressing the difference in MAO between the post-harvest and the lean season on a set of regressors that include participant's age, years of schooling, number of household members, individual income in either of the seasons, and a composite poverty index in either season[13] does not explain the behavioral change.

Can confounds such as income effects, beliefs about PAs sharing outside of a lab to improve targeting, or order effects explain the drop in norms enforcement? First, experimentally elicited costly punishment might be perceived as a normal good, demand for which increases with increasing income or wealth. The panel nature of the data allows me to examine changes in income and in the composite poverty index within a participant across seasons. The enforcement behavior does not differ across those whose wealth was actually higher in the lean season than in the post-harvest season, or for the majority whose wealth was lower in the lean season (Appendix Table A8). The income effect explanation is thus unlikely. Second, PCs might expect PAs to overcome uncertainty about the neediness of PBs by keeping the money from the experiment and sharing it afterwards with some needy person in their village. However, while money is fungible, it is reassuring that none of the participants reported willingness to share the money with anyone outside of his family in an open-ended question in the post-experiment survey. This is consistent with participants "bracketing narrowly", i.e. not considering their total wealth outside of the laboratory when making their incentivized choices in the experiment. Third, the experiment was conducted with the lean season round first, and the post-harvest round second.

[13]The poverty index at a given point in time is estimated using the principal component analysis. The 1^{st} principal component of each poverty measure for a given season is constructed including animals owned, assets owned, variability of food consumed, meat eaten in a given week, days unable to work due to illness or injury in the previous month, a short version of the perceived stress score (Cohen et al., 1983), and dummy variables representing unusual health shocks to humans, animals, and plants.

The repeated play might influence behavior. However, the behavior of those who participated in only one round does not differ from that of participants of both rounds (Appendix Table A9). Ruling the potential confounds out, I conclude that underlying willingness to engage in altruistic third-party sharing norms enforcement drops during the lean season.

Earlier studies link evidence of the existence of altruistic third-party enforcement to enforcement of social norms (Henrich and Boyd, 2001; Boyd et al., 2003; Fehr and Fischbacher, 2003; Henrich et al., 2006). I show suggestive evidence against alternative explanations such as individual-level state-dependent preferences producing the same outcomes. While individual level changes in income and wealth are uncorrelated to the changes in punishment behavior, village level wealth reduction actually shows significant correlation with the degree to which punishments are reduced (Appendix Table A10). In other words, the more a village is affected by scarcity, the more pronounced the drop in enforcement from the post-harvest to the lean season. These two pieces of evidence suggest that rather than individual circumstances driving the results, it is the general situation in a particular village that produces the observed drop in enforcement.

To complete the discussion, I show that the results correlate with real life behavior, are similar for distinct groups, and discuss the use of a strategy method. First, while previous literature has already provided evidence that experimentally elicited altruistic punishment behavior correlates with individual prosocial behavior outside of the lab (Benz and Meier, 2008; Ligon and Schechter, 2012; Kosfeld and Rustagi, 2015), it is reassuring to see the positive correlation with self-reported sharing behavior in the present study (Appendix Table A11). Second, the behavioral change in punishment across seasons is of quantitatively similar magnitude for two distinct ethnic groups studied here, Tajiks and Hazaras. Appendix Table A12 presents the evidence and the table note discusses the differences between the groups. Third, the strategy method used to elicit conditional punishment behavior may alter the behavior and possibly invalidate the results. This is because eliciting behavior conditional on hypothetical realizations of behavior may result in outcomes that are not comparable to those elicited through direct responses to actual behavior. However, the issue would arise only if the strategy method effect differs across seasons.

Of four studies testing the strategy method, including a punishment option surveyed in Brandts and Charness (2011), three observed lower levels of punishment when the strategy method was used. Therefore, possibly there would be more actual punishment decisions than

those presented here, due to increases in impulsive behavior when *hot*, directly elicited decisions are made. Yet, reassuringly, the treatment differences in earlier studies have been directionally the same, regardless of the method used. Further, there is a concern that the differences between the strategy and direct elicitation procedures may be different across seasons. Cognitive ability decreases with exposure to scarcity during a lean season (Mani et al., 2013). It is plausible that lower cognitive ability is linked to more impulsive behavior (Kahneman, 2011). Hence, more impulsive behavior leading to increased punishment might be expected in the lean season, even in the strategy method decisions. However, I observe the opposite.

Overall, I find that Afghan farmers are willing to engage in costly altruistic norms enforcement for which they have to give up 20 to 40 percent of their endowment to punish undesirable behavior, but they are much less willing to punish during a period of scarcity. The amounts farmers pay for punishment are equal to giving up 13 to 26 percent of their average daily incomes to discipline others, a substantial amount, given the tight budgets of the population studied.

3.2 Temporal Stability of Sharing Behavior

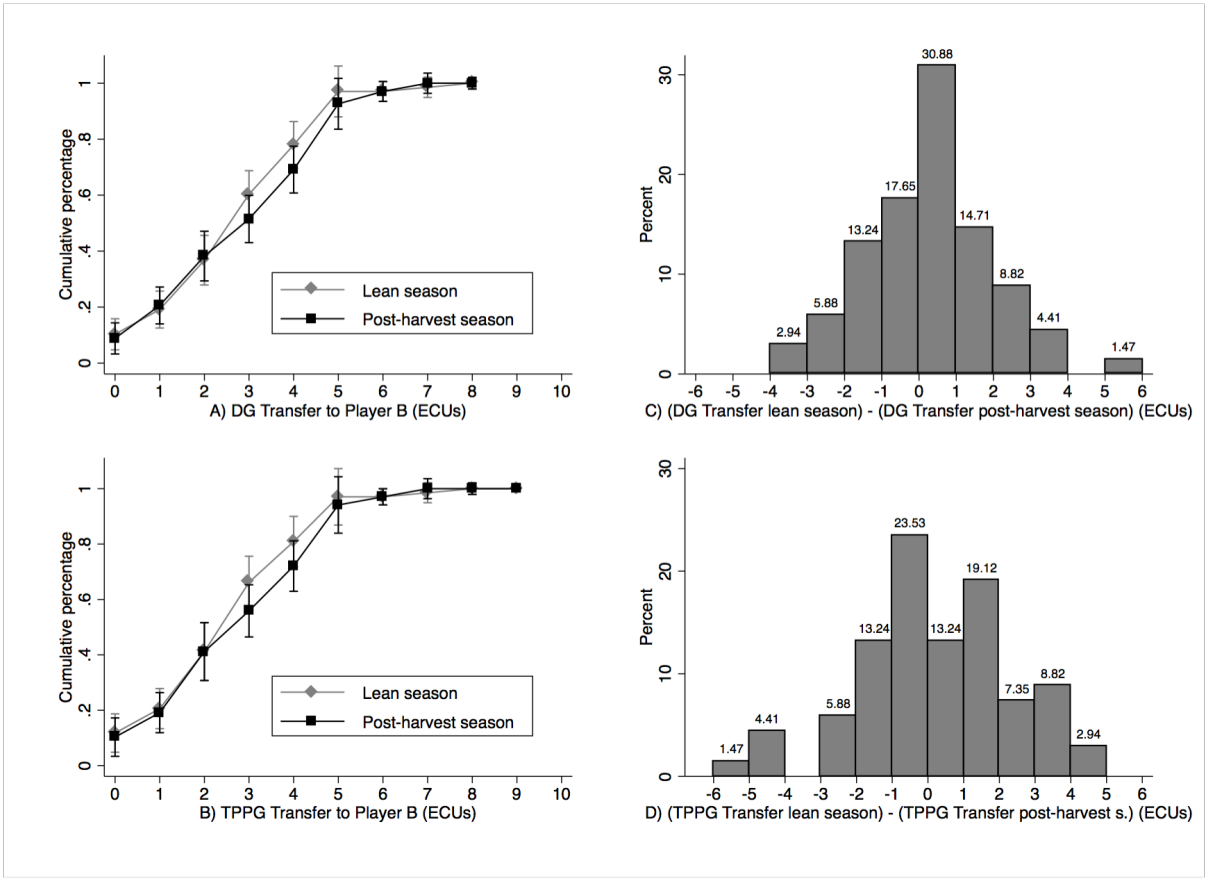
In this section, I examine the stability of actual altruistic sharing behavior during exposure to seasonal scarcity. First, I present the aggregate results. Second, I present the results on the within-subject stability of sharing. Third, I argue against alternative explanations for the results.

Average sharing remains remarkably constant across seasons. Columns 1 and 3 in Table 3 show that in the DG the PAs transferred on average 3.03 ECUs to PBs in the lean season compared to 3.22 ECUs in the post-harvest season, a statistically insignificant difference (Wilcoxon matched-pairs signed-ranks test, WSRT: p=0.28, n=68). Similarly for the TPPG, I find an average transfer of 2.87 ECUs in the lean season and 3.10 ECUs in the post-harvest season, the difference being again statistically insignificant (WSRT: p=0.40, n=68).

Columns 2 and 3 in Table 4 show that the behavior across seasons remains stable both in the DG and the TPPG when using a regression framework. I use the model specified in Equation 1 where I change MAO_{it}^{TPPG} for T_{it}^{g}, transfer by individual i in time t in game $g = \{DG; TPPG\}$. The variable *lean season* is not statistically significantly different from zero, implying that sharing behavior does not change across seasons for either the DG or the TPPG.

Figure 2 examines the cumulative distributions of respective amounts transferred in the DG (Panel A) and the TPPG (Panel B) in both the lean and the post-harvest season rounds. Apart

Figure 2: Distributions of DG and TPPG Transfers Across Seasons



Notes: In Panels A and B, the figure shows the cumulative distribution of transfers from Player A (dictator) to Player B (passive receiver) in ECUs (allowed between 0 and 10) in A) the dictator game (DG) and B) the third party punishment game (TPPG) across the PAs participating in both rounds (n=68). The cumulative distribution of lean season transfers is depicted in grey, and the cumulative distribution of post-harvest season transfers is depicted in black. The error bars represent 95 percent confidence intervals. In Panels C and D, the figure shows the distributions of differences between the transfers in the lean season and the post-harvest season in C) the DG and D) the TPPG within a participant. Transfer differences are in ECUs (the possible range is from -10 to 10).

from the difference in the frequency of PAs sending 3 ECUs in the DG (where the difference in frequency between rounds is borderline significantly different from zero, p=0.09) and the TPPG (marginally insignificant, p=0.13), the distributions are identical, a necessary condition for stability of preferences. The Epps-Singleton Two-Sample Empirical Characteristic Function (ESCF) test cannot reject the equality of distributions for the DG (p=0.22) or the TPPG (p=0.34).[14]

Finding 2: *At the aggregate level, sharing behavior in the DG and the TPPG does not vary with short term exposure to scarcity.*

The panel structure of the data allows me to inspect the within-subject stability of sharing. The main advantage is that this substantially improves precision of results through increased statistical power. In total, 68 PAs were successfully tracked. These participants were exposed to the same experimental procedure in both the lean season and in the post-harvest season, six months later. I examine the correlations in sharing behavior across seasons and individual changes in sharing behavior. First, I describe the stability of sharing behavior in the DG and then I comment on the stability of behavior in the TPPG.

Panel C of Figure 2 presents the histogram of *changes* in individual behavior in the DG, specified as a difference between the lean and the post-harvest season transfers. It shows that more than 30 percent of individual decisions in the DG remained constant across both seasons. Moreover, almost 65 percent of decisions remained within a change of one ECU, or 10 percent of the PA endowment. The correlation between DG transfers in the lean season and in the post-harvest season is ρ=0.52 (p<0.01). Such stability is relatively high compared to the results of other studies examining the temporal stability of preferences.[15] The data allow me to detect a minimum detectable effect of 0.37 ECUs (or an effect equivalent to 12 percent of an average

[14]The distribution of DG transfers fits between the classifications of the developing country and an indigenous society subject pool classification used in the DG meta study by Engel (2011). The Afghan PAs are much more likely to pass positive amounts to PBs than the Western subjects (91 percent versus 67 percent in Western societies, 81 percent in developing countries and 95 percent in primitive societies), slightly less likely to pass an equal share (21 percent versus 20 percent Western, 27 percent developing and 28 percent primitive societies), but no one in this sample passes the entire pie, as do 5 percent of the Western subjects and 1 percent both in developing countries and in primitive societies. A similar comparison for TPPG transfers is not possible, since the game has not been used so extensively and no effort has been made to conduct a meta-analysis.

[15]Literature in psychology examines the stability of preferences in much more detail than economics does. Surveys examining the stability of single cross-situational measures usually report temporal stability in a range between 0.2 to 0.3 (see e.g. Block, 1983; Jessor, 1983) and perceives correlations within this interval as indicating relatively stable preferences, while within this interval. In economics, Chuang and Schechter (2015) summarizes studies on preference stability. In studies with more than 100 participants, they show correlations ranging between 0.13 to 0.55 for risk preferences, 0.09 to 0.68 for time preferences, and 0.12 to 0.28 for social preferences.

lean season DG transfer).[16]

The correlation of individual behavior in the TPPG across seasons is much lower than the correlation in the DG, at ρ=0.22 (p=0.07). However, even this correlation would be generally accepted as being fairly stable over time in the psychological literature (see footnote 15). Panel D in Figure 2 shows that only 13 percent of individuals sent equal amounts in both seasons, though over 55 percent of individuals have changed their transfers within a margin of one ECU. Given the weaker correlation, the data only allow me to detect a minimum detectable effect of 0.48 ECUs (or an effect equivalent to 17 percent of an average lean season TPPG transfer).

Sharing behavior in the experiment also correlates with real life self-reported sharing (Appendix Table A11). The results also hold for the two ethnic groups (Appendix Table A12).

Finding 3: *Transfers in the DG are temporally stable within individuals, suggesting stability of sharing. To a lesser extent I also observe within-individual temporal stability in TPPG.*

Next, I rule out several confounds that may be consistent with the observed behavior. First, I benchmark the data to simulated random choices to show that the results do not arise due to participants making random decisions. It is possible that the result presented here as proof of temporally stable sharing behavior could arise as a confound, and would arise even if the DG choices were drawn randomly. I can rule out this possibility, as each choice from the entire set of possible transfers would have to be represented uniformly, which is clearly not the case without any need for statistical testing. On the other hand, it is plausible that due to the limited choice space observed in the cumulative distribution of choices in Figure 2, with the majority (75 percent) of PAs transferring between 2 and 5 units, the temporal stability of the sharing behavior could be an artefact of the experiment. In order to rule out this possibility, I conduct an exercise in which I randomly assign choices from the set of all realized transfers in the post-harvest season to PAs. After reshuffling the PA choices 10,000 times, the average number of equal choices across both seasons is around 15.6 percent, and 42.5 percent of decisions remain within a change of one unit, much lower than the values actually observed. In a similar exercise as that presented for the DG, I simulate what would have happened had the distribution of TPPG transfer choices been randomly drawn from the distribution of choices in the post-

[16] I assume a two sample two-sided mean comparison test with equal proportions of subjects across the two periods, $\alpha = 0.1$, $1 - \beta = 0.8$. To account for the within-subject nature of the design, I adjust the population size by dividing the number of participants required in a between subject design by $2/(1 - \rho)$. This reduces the required sample size substantially. Maxwell and Delaney (2004, p.561)

harvest season, to see how many individuals would have sent an equal split in such hypothetical case. The average share of participants sending equal amounts in both seasons after random reshuffling in 10,000 repetitions is over 16 percent. This implies that the results I obtain in my experimental data could have arisen due to random chance. However, conducting the same exercise for the variable indicating a transfer difference within a margin of one ECU, the share is about 43 percent, indicating some degree of individual stability.

Second, preference for consistency in choices is unlikely to drive the results, as only 22 of 68 participants actually remembered their lean season choices six months later, according to an unincentivized question asked during the post-harvest season round, and only 12 of these participants chose the same amounts in both rounds. The results on stability also hold for the subsample of participants who did not correctly remember their lean season behavior in the post-harvest season round (Appendix Table A13).

Third, when making their sharing choices, participants may "bracket widely" in the sharing games by considering the experimental incentives together with their total wealth outside of the experiment. This could produce the observed lack of differences in sharing across seasons, as the incentives are a relatively small fraction of the participants' total wealth. If this were the case, it is very unlikely that participants would prefer to send amounts in the interior of the choice set. However, only about 10 percent of choices are in the corner, i.e. sending 0 ECU or 10 ECUs. Moreover, participants would also be better off sharing outside of the experiment, suggesting that we would observe no sharing in the experiment at all. Yet PAs send positive amounts and, as discussed, they do not plan to share their incentives outside of the experiment. The participants in the experiment thus seem to bracket narrowly, consistent with earlier work (Rabin and Weizsäcker, 2009).

Fourth, changing marginal utility of wealth across seasons is unlikely to produce the results I observe. If it were the case, it would have to explain both the stability of sharing and the change in norms enforcement at the same time.

Taken together, I find that the altruistic sharing is not sensitive to seasonal scarcity. Moreover, sharing rates in the DG and TPPG are similar.

4 Concluding Remarks

I document a mechanism through which redistribution becomes fragile when societies face resource scarcity: a decrease in altruistic enforcement of sharing norms. On the one hand, there is an upside of the reduction in enforcement that it offers leniency to those who cannot afford to share during a period of scarcity. This leniency helps farmers who fall close to or below a subsistence threshold during the period of scarcity, and when their individual resource stocks are not perfectly verifiable. Both of my main findings are consistent with the descriptive examples of increased leniency in punishment that does not come at a cost of reduced cooperation documented in Elinor Ostrom's work (Ostrom, 1990). On the other hand, laboratory experiments have shown that when norms enforcement is made unavailable by experimental design, cooperation unravels over time (Fehr and Fischbacher, 2004a; Fehr and Gächter, 2000). Free riders, who are usually deterred by the threat of punishment for not conforming with social norms, may start behaving selfishly in the absence of enforcement.

Taken together, the reduced enforcement I observe might be one explanatory factor for the increased prevalence and even acceptance of behavior that would typically not be tolerated following adverse shocks observed in some studies (Oster, 2004; Miguel, 2005). Boonmanunt et al. (2020) further show that under scarcity, individual behavior becomes less responsive to reminders of injunctive norms. At the same time, together with finding of stable sharing preferences, my results also show that leniency in enforcement may help sustain prosociality during shorter periods of scarcity.

This study raises several questions for future research. First, the most pressing question is how to detect the point at which unraveling of prosocial behavior trumps the benefits of leniency in enforcement of sharing norms. Second, my experimental design allows me to clearly separate altruistic enforcement of sharing norms and altruistic sharing during exposure to seasonal scarcity from other factors. Yet understanding the dynamics of the changing nature of social networks, reciprocal exchange, non-altruistic enforcement behavior aimed at enhancing ones' social status, and fear of retribution for engaging in enforcement actions would help us better understand the behavioral effects of scarcity on social interactions. Third, observed punishment behavior indirectly measures descriptive norms. Future research may document discrepancies between descriptive and injunctive norms using methods developed to measure norms directly (Krupka and Weber, 2013), and may also measure the extent of uncertainty over norm dynamics.

While the belief measures suggest some understanding among the population in the study, how precise they are is not clear. Either norms are generally known and the population is irresponsive as in Boonmanunt et al. (2020), or policies aimed at providing information about norms may be considered (Bicchieri and Dimant, 2019), though only if carefully designed (Bicchieri et al., 2020). Learning about changes in norms may be one channel through which prosociality can unravel during periods of scarcity (Bursztyn et al., 2020). Fourth, by experimental design, I study only exogenously induced inequalities. It is not clear whether real-life idiosyncratic adverse shocks are generally perceived as bad luck or whether individuals are blamed for their poor choices or lack of effort as a cause of their misfortune. Sources of inequalities may determine the willingness of others to redistribute (Hoffman et al., 1994; Cappelen et al., 2013). Fifth, this study was conducted in Afghanistan on a sample of male farmers. Although the results are very similar for the two distinct ethnic groups and males are main decision-makers in the area, scholars may want to test broader generalizability across different settings. Reassuringly, stability of sharing preferences under scarcity has also been documented in Guatemala (Aksoy and Palma, 2019) and Thailand (Meier and Boonmanunt, 2019). Answers to the questions above could further inform policy makers designing social safety nets in communities where individual coping strategies and social networks substitute for a lack of formal insurance. Better understanding of the dynamics of social support networks in targeted communities may further increase the effectiveness and reduce the costs of such programs.

Solutions to mitigate adverse effects of seasonal scarcities and scarcities in general exist: safety net programs, provision of or assistance with finding off-season employment, formal insurance, microcredit, and savings products. While providers of these solutions usually promote the impact of these policies on individuals, they often fall short of stressing their possible effect on preventing negative outcomes at a wider community level. For example, an interesting unintended side-effect of a large-scale public employment program is that it reduces the risk of communal conflicts (Fetzer, 2020). Moreover, since scarcity is shown here to be associated with looser enforcement of prosociality, concerns that the introduction of such policies would crowd out existing informal institutions and moral intentions (Dupas and Robinson, 2013) seem less plausible. My findings also provide support for countercyclical community resilience planning, an effort typically targeted at rapid societal recovery following a natural or manmade disaster.

References

Aksoy, B. and Palma, M. A. (2019). The effects of scarcity on cheating and in-group favoritism. *Journal of Economic Behavior & Organization*, 165:100–117.

Andreoni, J. and Miller, J. (2002). Giving according to GARP: An experimental test of the consistency of preferences for altruism. *Econometrica*, 70(2):737–753.

Basu, K. and Wong, M. (2015). Evaluating seasonal food storage and credit programs in east Indonesia. *Journal of Development Economics*, 115:200–216.

Bauer, M., Blattman, C., Chytilová, J., Henrich, J., Miguel, E., and Mitts, T. (2016). Can War Foster Cooperation? *Journal of Economic Perspectives*, 30(3):249–274.

Beath, A., Christia, F., and Enikolopov, R. (2012). Winning Hearts and Minds through Development Aid: Evidence from a Field Experiment in Afghanistan. *Working Paper*, pages 1–35.

Behrman, J. R. (1988). Intrahousehold Allocation of Nutrients in Rural India: Are Boys Favored? Do Parents Exhibit Inequality Aversion? *Oxford Economic Papers*, 40(1):32–54.

Benz, M. and Meier, S. (2008). Do people behave in experiments as in the field?—evidence from donations. *Experimental Economics*, 11(3):268–281.

Bernhard, H., Fischbacher, U., and Fehr, E. (2006). Parochial altruism in humans. *Nature*, 442(7105):912–915.

Bicchieri, C. and Dimant, E. (2019). Nudging with care: the risks and benefits of social information. *Public Choice*.

Bicchieri, C., Dimant, E., and Xiao, E. (2020). Deviant or Wrong? The Effects of Norm Information on the Efficacy of Punishment.

Block, J. (1983). *Lives Through Time*. Bancroft Books, Berkeley, CA.

Boonmanunt, S., Kajackaite, A., and Meier, S. (2020). Does poverty negate the impact of social norms on cheating? *Games and Economic Behavior*, 124:569–578.

Boyd, R., Gintis, H., Bowles, S., and Richerson, P. J. (2003). The evolution of altruistic punishment. *Proceedings of the National Academy of Sciences of the United States of America*, 100(6):3531–3535.

Brandts, J. and Charness, G. (2011). The strategy versus the direct-response method: a first survey of experimental comparisons. *Experimental Economics*, 14:375–398.

Bryan, G., Chowdhury, S., and Mobarak, A. M. (2014). Under-investment in a Profitable Technology: The Case of Seasonal Migration in Bangladesh. *Econometrica*, 82(5):1671–1748.

Bursztyn, L., Egorov, G., and Fiorin, S. (2020). From Extreme to Mainstream: The Erosion of Social Norms. *American Economic Review*, 110(11):3522–3548.

Callen, M., Isaqzadeh, M., Long, J. D., and Sprenger, C. (2014). Violence and Risk Preference: Experimental Evidence from Afghanistan. *American Economic Review*, 104(1):123–148.

Cappelen, A. W., Sørensen, E. Ø., Konow, J., and Tungodden, B. (2013). Just Luck: An Experimental Study of Risk-Taking and Fairness. *American Economic Review*, 103(4):1398–1413.

Carlsson, F., Johansson-Stenman, O., and Nam, P. K. (2014). Social preferences are stable over long periods of time. *Journal of Public Economics*, 117:104–114.

Chuang, Y. and Schechter, L. (2015). Stability of experimental and survey measures of risk, time, and social preferences: A review and some new results. *Journal of Development Economics*, 117:151–170.

Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, 24(4):385–396.

Cronk, L., Chagnon, N. A., and Irons, W., editors (2000). *Adaptation and human behavior: an anthropological perspective*. Aldine de Gruyter, Hawthorne, NY.

Devereux, S., Swan, S. H., and Vaitla, B. (2008). *Seasons of Hunger: Fighting Cycles of Starvations Among the World's Rural Poor*. Pluto Press, London, UK.

Dirks, R. (1980). Social Responses During Severe Food Shortages and Famine. *Current Anthropology*, 21(1):21–32.

Dupas, P. and Robinson, J. (2013). Why don't the poor save more? Evidence from health savings experiments. *American Economic Review*, 103(4):1138–1171.

Elinder, M. and Erixson, O. (2012). Gender, social norms, and survival in maritime disasters. *Proceedings of the National Academy of Sciences of the United States of America*, 109(33):13220–13224.

Engel, C. (2011). Dictator games: A meta study. *Experimental Economics*, 14(4):583–610.

Fehr, E. and Fischbacher, U. (2003). The nature of human altruism. *Nature*, 425(6960):785–791.

Fehr, E. and Fischbacher, U. (2004a). Social norms and human cooperation. *Trends in Cognitive Sciences*, 8(4):185–190.

Fehr, E. and Fischbacher, U. (2004b). Third-party punishment and social norms. *Evolution and Human Behavior*, 25(2):63–87.

Fehr, E. and Gächter, S. (2000). Cooperation and Punishment in Public Goods Experiments. *American Economic Review*, 90(4):980–994.

Fessler, D. M. T. and Navarrete, C. D. (2004). Third-party attitudes toward sibling incest: Evidence for Westermarck's hypotheses. *Evolution and Human Behavior*, 25(5):277–294.

Fetzer, T. (2020). Can Workfare Programs Moderate Conflict? Evidence from India. *Journal of the European Economic Association*, 18(6):3337–3375.

Fisman, R., Jakiela, P., and Kariv, S. (2015). How did distributional preferences change during the Great Recession? *Journal of Public Economics*, 128:84–95.

Gneezy, U. (2005). Deception: The Role of Consequences. *American Economic Review*, 95(1):384–394.

Greif, A. (1993). Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition. *American Economic Review*, 83(3):525–548.

Henrich, J. and Boyd, R. (2001). Why people punish defectors. Weak conformist transmission can stabilize costly enforcement of norms in cooperative dilemmas. *Journal of Theoretical Biology*, 208:79–89.

Henrich, J., McElreath, R., Barr, A., Ensminger, J., Barrett, C., Bolyanatz, A., Cardenas, J. C., Gurven, M., Gwako, E., Henrich, N., Lesorogol, C., Marlowe, F., Tracer, D., and Ziker, J. (2006). Costly Punishment Across Human Societies. *Science*, 312(5781):1767–70.

Hoffman, E., McCabe, K., Shachat, K., and Smith, V. (1994). Preferences, Property Rights, and Anonymity in Bargaining Games. *Games and Economic Behavior*, 7(3):346–380.

Jessor, R. (1983). The Stability of Change: Psychosocial Development From Adolescence to Young Adulthood. In Magnusson, D. and Allen, V. L., editors, *Human Development: An Interactional Perspective*. Academic Press, New York, NY.

Kahneman, D. (2011). *Thinking, Fast and Slow*. Farar, Straus and Giroux, New York.

Kahneman, D., Knetsch, J. L., and Thaler, R. H. (1986a). Fairness and the Assumptions of Economics. *The Journal of Business*, 59(S4):S285.

Kahneman, D., Knetsch, J. L., and Thaler, R. H. (1986b). Fairness as a constraint on profit seeking: Entitlements in the market. *American Economic Review*, 76(4):728–741.

Kaplan, H., Hill, K., Cadelina, R. V., Hayden, B., Hyndman, D. C., Preston, R. J., Smith, E. A., Stuart, D. E., and Yesner, D. R. (1985). Food sharing among ache foragers: Tests of explanatory hypotheses [and comments and reply]. *Current Anthropology*, 26(2):223–246.

Kocher, M. G., Martinsson, P., and Visser, M. (2008). Does stake size matter for cooperation and punishment? *Economics Letters*, 99(3):508–511.

Kosfeld, M. and Rustagi, D. (2015). Leader Punishment and Cooperation in Groups: Experimental Field Evidence from Commons Management in Ethiopia. *American Economic Review*, 105(2):747–783.

Krupka, E. L. and Weber, R. A. (2013). Identifying social norms using coordination games: Why does dictator game sharing vary? *Journal of the European Economic Association*, 11(3):495–524.

Ligon, E. and Schechter, L. (2012). Motives for sharing in social networks. *Journal of Development Economics*, 99(1):13–26.

List, J. A. (2011). The market for charitable giving. *Journal of Economic Perspectives*, 25(2):157–180.

Maier-Rigaud, F. P., Martinsson, P., and Staffiero, G. (2010). Ostracism and the provision of a public good: experimental evidence. *Journal of Economic Behavior & Organization*, 73(3):387–395.

Mani, A., Mullainathan, S., Shafir, E., and Zhao, J. (2013). Poverty Impedes Cognitive Function. *Science*, 341(6149):976–980.

Maxwell, S. E. and Delaney, H. D. (2004). *Designing Experiments and Analyzing Data: A Model Comparison Perspective, Second Edition*. Lawrence Erlbaum Associates Publishers, Mahwah, NJ, US.

Meier, S. and Boonmanunt, S. (2019). The Effect of Financial Constraints on In-Group Bias: Evidence from Rice Farmers in Thailand. *Mimeo*.

Miguel, E. (2005). Poverty and Witch Killing. *Review of Economic Studies*, 72(4):1153–1172.

Morduch, J. (1995). Income Smoothing and Consumption Smoothing. *Journal of Economic Perspectives*, 9(3):103–114.

Mullainathan, S. and Shafir, E. (2013). *Scarcity: Why Having Too Little Means So Much*. Time Books, Henry Holt & Company LLC, New York, NY.

NRVA (2008). National Risk and Vulnerability Assessment 2007/8. Technical report, Ministry of Rehabilitation and Rural Development and the Central Statistics Organisation (CSO), Kabul, Afghanistan.

Oster, E. (2004). Witchcraft, Weather and Economic Growth in Renaissance Europe. *Journal of Economic Perspectives*, 18(1):215–228.

Ostrom, E. (1990). *Governing the commons*. Cambridge University Press, Cambridge, UK.

Piff, P. K., Kraus, M. W., Côté, S., Cheng, B. H., and Keltner, D. (2010). Having less, giving more: the influence of social class on prosocial behavior. *Journal of Personality and Social Psychology*, 99(5):771–784.

Piff, P. K., Stancato, D. M., Côté, S., Mendoza-Denton, R., and Keltner, D. (2012). Higher social class predicts increased unethical behavior. *Proceedings of the National Academy of Sciences of the United States of America*, 109(11):4086–4091.

Prediger, S., Vollan, B., and Herrmann, B. (2014). Scarcity and Antisocial Behavior. *Journal of Public Economics*, 119:1–9.

Rabin, M. and Weizsäcker, G. (2009). Narrow Bracketing and Dominated Choices. *American Economic Review*, 99(4):1508–1543.

Rand, D. G., Greene, J. D., and Nowak, M. A. (2012). Spontaneous giving and calculated greed. *Nature*, 489(7416):427–430.

Ravallion, M. (1997). Famines and economics. *Journal of Economic Literature*, 35(3):1205–1242.

Rosenzweig, M. R. and Wolpin, K. I. (1993). Credit Market Constraints, Consumption Smoothing, and the Accumulation of Durable Production Assets in Low-Income Countries: Investments in Bullocks in India. *Journal of Political Economy*, 101(2):223–244.

Smeets, P., Bauer, R., and Gneezy, U. (2015). Giving behavior of millionaires. *Proceedings of the National Academy of Sciences of the United States of America*, 112(34):10641–10644.

Tinghög, G., Andersson, D., Bonn, C., Böttiger, H., Josephson, C., Lundgren, G., Västfjäll, D., Kirchler, M., and Johannesson, M. (2013). Intuition and cooperation reconsidered. *Nature*, 498(7452):8–10.

Townsend, R. M. (1994). Risk and insurance in village India. *Econometrica*, 62(3):539–591.

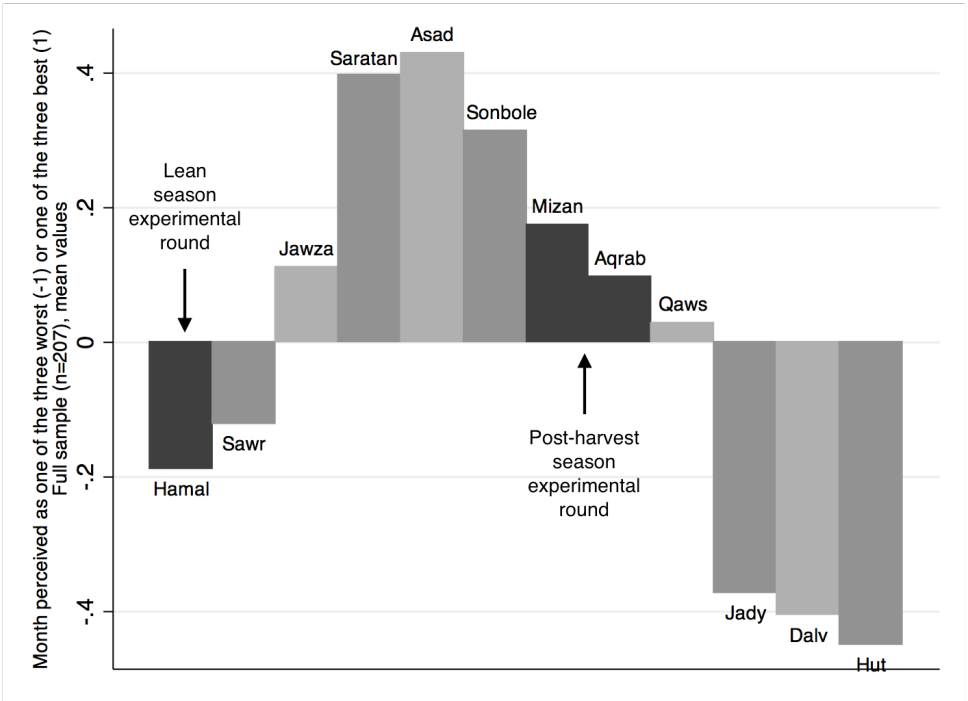
Trautmann, S. T., van de Kuilen, G., and Zeckhauser, R. J. (2013). Social Class and (Un)Ethical Behavior: A Framework, With Evidence From a Large Population Sample. *Perspectives on Psychological Science*, 8(5):487–497.

Volk, S., Thöni, C., and Ruigrok, W. (2012). Temporal stability and psychological foundations of cooperation preferences. *Journal of Economic Behavior & Organization*, 81(2):664–676.

Wutich, A. (2009). Water Scarcity and the Sustainability of a Common Pool Resource Institution in the Urban Andes. *Human Ecology*, 37(2):179–192.

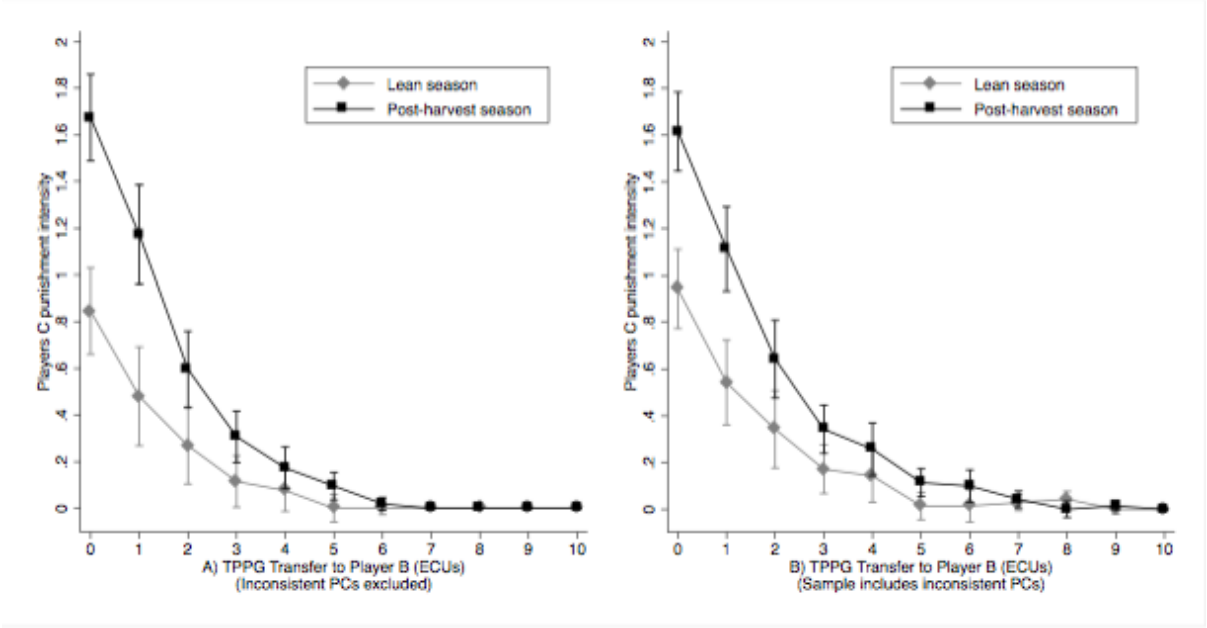
A Supplementary online materials—For online publication

Figure A1: Subjective Perceptions of Living Quality Throughout the Year



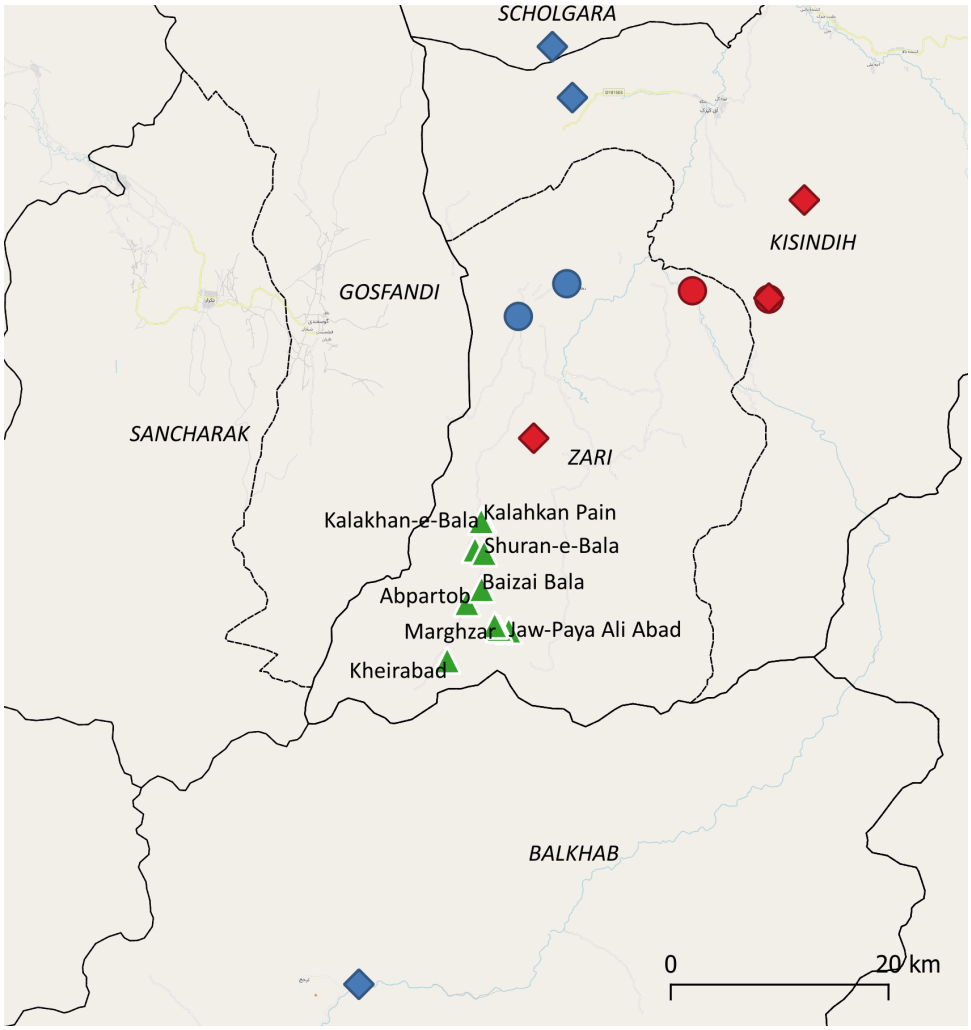
Notes: The figure depicts the average participants' rating of quality of life during each month in the year. The participants rated the month as one of the best three months (+1) or as one of the worst three months by answering the question: "Which three months are usually the [best /most difficult] in terms of food for you?". Months not mentioned are treated as 0. The question was asked during the lean season round. Afghanistan uses the Persian version of the Solar Hijri calendar. Persian month names are presented here, because the conversion to Gregorian calendar would be confusing. The experiments were carried out in the months of Hamal 1392 (March to April 2013, lean season) and Mizan and Aqrab 1392 (October 2013, post-harvest season) represented in the darkest color.

Figure A2: Distributions of TPPG MAO Across Seasons: Punishment Intensity



Notes: Panel A shows the distribution of Player C (punisher; PC) punishment points (0 / 1 / 2) conditional on amounts sent by Player A to Player B in the third party punishment game. I use data for the 52 PCs for whom TPPG MAO could be recovered in both rounds. The distribution of lean season punishment points is depicted in grey, the distribution of post-harvest season punishment points is depicted in black. The error bars represent 95 percent confidence intervals. Panel B shows the same distribution as in Panel A but it also includes the observations from individuals for whom TPPG MAO could not be recovered in either of the rounds.

Figure A3: Map Indicating Violent Incidents in the Surrounding Area



Notes: All incidents of direct fighting (diamonds) and improvised explosive device explosions (circles) within a radius of 40km from the center of either study village (green triangles) in a period of six months prior to the lean season round (red) and a period of six months prior to the post harvest round (blue). Data on violent events are from the International Security Assistance Forces (ISAF) Combined Information Data Network Exchange (CIDNE) database.

Table A1: Number of Observations by Village, Role, Including "Single-Round" Subjects

Participating in...	Both seasons			Lean season only			Post-harvest season only		
	Player A (1)	Player B (2)	Player C (3)	Player A (4)	Player B (5)	Player C (6)	Player A (7)	Player B (8)	Player C (9)
Abpartob	3	4	4	2	1	1	7	6	6
Baizai Bala	8	4	8	1	5	1	6	10	6
Jaw-Paya Ali Abad	4	7	6	6	3	4	10	7	8
Kalahkan Pain	8	8	6	2	2	4	7	7	9
Kalakhan-e-Bala	7	7	8	3	3	2	8	8	7
Kheirabad	3	2	2	2	3	3	7	8	8
Koche Aghaz	14	13	14	1	2	1	6	7	6
Marghzar	8	9	10	5	4	3	8	8	7
Quala-e-Noorak	8	7	8	2	3	2	7	8	7
Shuran-e-Bala	5	7	5	5	3	5	5	3	5
Total	68	68	71	29	29	26	71	72	69

Table A2: Effect of Payoff Size on DG and TPPG Transfers and on TPPG MAO in the Lean Season

Dependent variable	DG transfer	TPPG transfer	TPPG MAO
	(1)	(2)	(3)
Payoff high	-0.70	-0.20	0.51
	(0.54)	(0.50)	(0.64)
Observations	68	68	60
R-squared	0.82	0.80	0.53

Notes: OLS coefficients. Robust standard errors in parentheses. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Column 1 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Column 2 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). In Column 3 the dependent variable is the third party punishment game (TPPG) minimum acceptable offer (MAO). This column shows results for a subsample of N=60 with consistent MAO. Lean season observations only. *Payoff high* is equal to one if 1 ECU equals to 30 AFN instead of 20 AFN used in all other sessions. All regressions include controls for age, schooling, number of household members, and village fixed effects. Constant is dropped to avoid perfect multicollinearity.

Table A3: Village Level Effects

Dependent variable	DG transfer (1)	TPPG transfer (2)	TPPG MAO (3)
Marghzar	0.40	0.59	-0.29
	(0.78)	(0.76)	(0.86)
Koche Aghaz	-1.32*	-0.64	-1.05
	(0.71)	(0.71)	(0.65)
Jaw-Paya Ali Abad	-0.29	0.34	-1.09
	(0.77)	(0.86)	(0.74)
Baizai Bala	0.40	0.90	-0.36
	(0.77)	(0.73)	(0.80)
Abpartob	1.21	1.55*	-0.14
	(0.81)	(0.85)	(0.79)
Kheirabad	1.05	1.38	0.54
	(0.94)	(0.98)	(1.15)
Quala-e-Noorak	0.09	0.34	-1.21*
	(0.76)	(0.70)	(0.65)
Shuran-e-Bala	-0.39	0.21	-0.31
	(0.82)	(0.76)	(0.75)
Kalahkan Pain	-0.41	-0.41	0.29
	(0.81)	(0.75)	(0.90)
Constant	3.29***	2.79***	2.71***
	(0.65)	(0.62)	(0.56)
Observations	136	136	123
R-squared	0.16	0.13	0.08
	F-test H_0: joint significance of village dummies		
F-test p-values	0.90	0.46	0.50

Notes: OLS coefficients. The constant represents the omitted village, Kalakhan-e-Bala. Robust standard errors in parentheses. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Column 1 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Column 2 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). In Column 3 the dependent variable is the third party punishment game (TPPG) minimum acceptable offer (MAO). This column shows results for a subsample of N=123 observations (60 lean season, 63 post-harvest season) with consistent TPPG MAO.

Table A4: Effect of Seasonality on TPPG MAO (Ordered Probit)

Dependent variable	TPPG Minimum Acceptable Offer of...					
	... 0	... 1	... 2	... 3	... 4	... 5
	(1)	(2)	(3)	(4)	(5)	(6)
Lean season	0.29***	0.14***	-0.01	-0.13***	-0.11***	-0.11***
	(0.06)	(0.03)	(0.02)	(0.04)	(0.03)	(0.03)
Observations	123	123	123	123	123	123

Notes: Ordered probit. Average marginal effects on the probability of respective TPPG MAO reported. Excluding marginal effects for infrequent TPPG MAO over 5. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. The dependent variable in all models is the third party punishment game (TPPG) minimum acceptable offer (MAO). Subsample of N=123 observations (60 lean season, 63 post-harvest season) with consistent MAO. All regressions include controls for age, schooling, number of household members, and village fixed effects.

Table A5: Effect of Seasonality on DG and TPPG Transfers (Ordered Probit)

Dependent variable	DG transfer of...						TPPG transfer...					
	... 0	... 1	... 2	... 3	... 4	... 5	... 0	... 1	... 2	... 3	... 4	... 5
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lean season	0.02	0.02	0.02	0.00	-0.01	-0.03	0.02	0.02	0.02	-0.00	-0.01	-0.03
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.04)	(0.03)	(0.02)	(0.02)	(0.00)	(0.02)	(0.04)
Observations	136	136	136	136	136	136	136	136	136	136	136	136

Notes: Ordered probit. Average marginal effects on the probability of respective DG (columns 1-6) and TPPG (columns 7-12) transfers reported. Excluding marginal effects for infrequent transfers over 5 ECU. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Columns 1 to 6 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Columns 7 to 12 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). All regressions include controls for age, schooling, number of household members, and village fixed effects.

Table A6: Effect of Seasonality on DG and TPPG Transfers, and on TPPG MAO (Session-Specific Controls)

Dependent variable	DG transfer	TPPG transfer	TPPG MAO
	(1)	(2)	(3)
Lean season	-0.27	-036	-1.67***
	(0.22)	(0.28)	(0.31)
Average age of session participants	0.11	0.78	0.21
	(0.61)	(0.60)	(0.61)
Average schooling (completed years) of session participants	-0.18	-0.15	0.13
	(0.27)	(0.27)	(0.27)
Average number of household members of session participants	0.39	0.50**	0.26
	(0.24)	(0.21)	(0.20)
Share of participants found in post-harvest season	2.71	4.69**	-2.47
	(2.11)	(1.98)	(1.97)
Observations	136	136	123
R-squared	0.82	0.81	0.73

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Column 1 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Column 2 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). In Column 3 the dependent variable is the third party punishment game (TPPG) minimum acceptable offer (MAO). This column shows results for a subsample of N=123 observations (60 lean season, 63 post-harvest season) with consistent MAO. All regressions include controls for age, schooling, number of household members, and village fixed effects. Constant is dropped to avoid perfect multicollinearity.

Table A7: Explaining Within-Individual Changes in TPPG MAO Across Seasons

Dependent variable	TPPG MAO Difference			
	(1)	(2)	(3)	(4)
Age (in years / 10)	-0.04	-0.04	-0.02	-0.05
	(0.28)	(0.28)	(0.28)	(0.28)
Schooling (completed year)	0.10	0.08	0.08	0.09
	(0.10)	(0.09)	(0.11)	(0.09)
Number of household members	0.02	0.00	-0.01	0.02
	(0.09)	(0.10)	(0.09)	(0.09)
Cash earned in past 30 days per equivalence scaled HH member by HH head's (ths AFA) - Lean season[a]	-0.24	-0.21		
	(0.55)	(0.45)		
Cash earned in past 30 days per equivalence scaled HH member by HH head's (ths AFA) - Post-harvest season[a]	0.38		0.26	
	(1.04)		(0.88)	
Cash earned in past 30 days per equivalence scaled HH member by HH head's (ths AFA) - Difference (Post-Lean)[a]				0.26
				(0.56)
Poverty index (z-score) - Lean season	-0.20	-0.11		
	(0.43)	(0.39)		
Poverty index (z-score) - Post-harvest season	0.30		0.21	
	(0.55)		(0.49)	
Poverty index (z-score) - Difference (Post-Lean)				0.23
				(0.39)
Village fixed effects	Yes	Yes	Yes	Yes
Constant	-2.43	-2.12	-2.23	-2.35
	(1.83)	(1.53)	(1.87)	(1.56)
Observations	52	52	52	52
R-squared	0.22	0.21	0.21	0.22

Notes: OLS coefficients. Robust standard errors in parentheses. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. The dependent variable in all models is the within-subject third party punishment game (TPPG) minimum acceptable offer (MAO) difference between MAO in the lean season and MAO in the post-harvest season. I control for village fixed effects in all models. Subsample of N=52 observations in each season with MAO consistent in both seasons. [a]Cash earned by household head per OECD equivalence scaled household member.

Table A8: Changes in TPPG MAO by individual changes in poverty index and income across seasons

	TPPG MAO_{lean} - TPPG $MAO_{post-harvest}$	
Panel A: *Poorer in lean season, relative to post-harvest season in terms of...*		
	...Poverty index	*...Income*
Mean	-1.60	-1.05
(SD)	(2.31)	(2.19)
Observations	42	20
Panel B: *NOT poorer in lean season, relative to post-harvest season in terms of...*		
	...Poverty index	*...Income*
Mean	-1.10	-1.78
(SD)	(2.56)	(2.42)
Observations	10	32
Panel C: *T-test: Panel A = Panel B*		
Difference	0.50	-0.73
t-value	0.60	-1.10
p-value	0.55	0.28

Notes: Means and standard deviations reported in Panels A and B. Panel C reports a two-sided t-test of equality of means presented in Panels A and B. The poverty index combined for both points of time is estimated using the principal component analysis. The 1*st* principal component of each poverty measure for a given season is constructed using animals owned, assets owned, variability of food consumed, meat eaten in a given week, days unable to work due to illness or injury in the previous month, a short version of the perceived stress score (10), and dummy variables representing unusual health shocks to humans, animals, and plants.

Table A9: Differences Between Subjects Participating in Both Rounds and in One Round Only

Dependent variable	DG transfer (1)	TPPG transfer (2)	TPPG MAO (3)
Lean season ("single-round")	4.67***	3.59***	2.24***
	(0.59)	(0.55)	(0.77)
Lean season (both seasons)	4.30***	3.18***	1.93***
	(0.57)	(0.59)	(0.65)
Post-harvest season (both seasons)	4.49***	3.42***	3.60***
	(0.54)	(0.53)	(0.69)
Post-harvest season ("single-round")	5.18***	3.87***	3.86***
	(0.51)	(0.53)	(0.62)
Observations	235	235	200
R-squared	0.84	0.82	0.72
	F-test H_0: "both seasons" equals "single-round"		
Lean season p-value	0.33	0.24	0.48
Post-harvest season p-value	0.02	0.13	0.47

Notes: OLS coefficients. Regression without a constant. Robust standard errors in parentheses. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Column 1 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Column 2 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). In Column 3 the dependent variable is the third party punishment game (TPPG) minimum acceptable offer (MAO). Subsample of N=200 observations in Column 3 (23 lean season "single-round", 60 lean season participating in both seasons, 63 post-harvest season participating in both seasons, and 57 post-harvest season "single-round") with consistent MAO. All regressions include controls for age, schooling, number of household members, and village fixed effects. Constant is dropped to avoid perfect multicollinearity. The F-test compares the "both season" and "single-round" participant coefficients.

Table A10: Average Changes in TPPG MAO and Village-Level Intensity of Scarcity

Dependent variable	Village average of TPPG MAO_{lean}-TPPG $MAO_{post-harvest}$			Individual TPPG MAO_{lean}-TPPG $MAO_{post-harvest}$		
	(1)	(2)	(3)	(4)	(5)	(6)
Δ Poverty z-score[a]	-1.09***	-1.16***	-1.13***	-1.03**	-1.11**	-1.10**
	(0.22)	(0.31)	(0.29)	(0.41)	(0.52)	(0.52)
Constant	-1.42***	-1.36***	-1.48**	-1.50***	-1.45***	-1.55***
	(0.37)	(0.37)	(0.45)	(0.32)	(0.33)	(0.34)
Observations	10	10	10	52	52	52
R-squared	0.33	0.27	0.28	0.04	0.03	0.04
Weight used	No weight	Sample population	Village population	No weight	Sample population	Village population

Notes: OLS coefficients. Columns 2, 3, 5, and 6 report weighted data using analytic weights. Weights used are the sample population and the reported population of the entire village based on interviews with community leaders for Columns 2 and 5, and 3 and 6 respectively. Robust standard errors in parentheses. *** denotes significance at 1 percent level, ** at 5 percent level and * at 10 percent level. The dependent variable in models 1 to 3 is the difference in village-level average Third Party Punishment Game (TPPG) Minimum Acceptable Offer (MAO) in the lean season minus the post-harvest season TPPG MAO. The dependent variable in models 4 to 6 is the difference in individual Third Party Punishment Game (TPPG) Minimum Acceptable Offer (MAO) in the lean season minus the post-harvest season TPPG MAO. Observations in models 1 to 3 represent villages. [a]The lean season minus post-harvest season change in average village level normalized poverty index, in other words the intensity of a seasonal shock on a village level. See footnote 13 in the main text for description of how poverty index is constructed.

Table A11: Giving Money as Charity and DG Transfers, TPPG Transfers, and TPPG MAO

Dependent variable	DG transfer		TPPG transfer		TPPG MAO	
	(1)	(2)	(3)	(4)	(5)	(6)
Lean season		0.02		-0.18		-1.31***
		(0.26)		(0.31)		(0.32)
Given money as charity[a]	0.55*	1.01**	0.10	0.23	1.39**	1.53**
	(0.30)	(0.43)	(0.35)	(0.59)	(0.57)	(0.60)
Lean season * Given money as charity		-0.87		-0.23		-1.34
		(0.78)		(0.87)		(0.85)
Observations	136	136	136	136	123	123
R-squared	0.82	0.82	0.79	0.79	0.66	0.74

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Columns 1 and 2 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Columns 3 and 4 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). In Columns 5 and 6 the dependent variable is the third party punishment game (TPPG) minimum acceptable offer (MAO). These columns show results for a subsample of N=123 observations (60 lean season, 63 post-harvest season) with consistent MAO. All regressions include controls for age, schooling, number of household members, and village fixed effects. Constant is dropped to avoid perfect multicollinearity.

Table A12: Effect of Seasonality on DG Transfers, TPPG Transfers, and TPPG MAO (by Ethnic Group)

Sample	Tajik			Hazara		
Dependent variable	DG transfer	TPPG transfer	TPPG MAO	DG transfer	TPPG transfer	TPPG MAO
	(1)	(2)	(3)	(4)	(5)	(6)
Lean season	-0.17	0.06	-1.89***	-0.22	-0.56	-1.51***
	(0.40)	(0.38)	(0.41)	(0.36)	(0.43)	(0.45)
Observations	72	72	63	64	64	60
R-squared	0.82	0.81	0.76	0.85	0.79	0.67
	F-test H_0: $\beta_{Lean,\ Tajik} = \beta_{Lean,\ Hazara}$					
$\beta_{Lean,\ Tajik} - \beta_{Lean,\ Hazara}$	-0.05	0.62	-0.38			
F-test p-values	(0.91)	(0.26)	(0.54)			

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Columns 1 and 4 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Columns 2 and 5 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). In Columns 3 and 6 the dependent variable is the third party punishment game (TPPG) minimum acceptable offer (MAO). All regressions include controls for age, schooling, number of household members, and village fixed effects. Constant is dropped to avoid perfect multicollinearity. The last two rows compare the coefficients on *Lean season* from both *Tajik* and *Hazara* regressions, using an F-test.

Note on ethnic groups in the study: Tajiks and Hazaras are the second and third largest ethnic groups in Afghanistan, respectively. While the former are Sunni muslims, the latter are Shia muslims, a minority in Afghanistan. Tajiks are of Persian origin. They are, after Pashtuns, the second largest ethnic group in Afghanistan with around 32 percent of the population. In the Balkh province where the experiments have been conducted Tajiks are the predominant ethnic group, with around 44 percent of the population (DHS, 2010). The governor of the province at the time of running the experiment was a Tajik himself. Hazaras, people probably of Mongolian descent, constitute around 9 percent of the population of Afghanistan and around 10 percent of the population of Balkh province (DHS, 2010). Hazaras have historically been a marginalized group in Afghanistan with very different origins from the other ethnic groups in Afghanistan. Hazaras faced social, economic and political discrimination, often resulting in atrocities against members of the group such as the massacres of Hazaras in 1880s during the reign of Abdur Rahman Khan, later in 1994 in Kabul, and in 1997 in Mazar-e-Sharif during the reign of the Taliban. Hazaras were sidelined from mainstream Afghan politics when the 1964 constitution ruled that all state officials have to be Sunni (Hanafi) Muslims. Although the new constitution does not continue to discriminate against Hazaras and there are many high ranking Hazara officials in the government, the ethnic division is still present. The terrorist attack on a Hazara demonstration in Kabul on July 23, 2016 that killed 80 and was claimed by a group called Islamic State is the latest reminder of the vulnerability of this group. Although the two groups live in close proximity and they share the same language, their villages are almost perfectly ethnically segregated and there are very few economic interactions between the two areas.

For statistics, I rely on DHS data, since the last census was conducted in 1979. Source: Demographic and Health Survey Afghanistan (2010). Indian Institute for Health Management Research (IIHMR), available online at `https://www.dhsprogram.com/data/dataset/Afghanistan_Special_2010.cfm`.

Table A13: Effect of Seasonality on DG and TPPG Transfers (Subsample of PAs Who Do Not Recall Their Own Previous Round DG Transfer)

Dependent variable	DG transfer (1)	TPPG transfer (2)
Lean season	-0.13	-0.15
	(0.31)	(0.38)
Observations	92	92
R-squared	0.82	0.79

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at a 1 percent level, ** at a 5 percent level and * at a 10 percent level. In Column 1 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Column 2 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). Subsample of 46 PAs who did not recall their DG transfers from the previous, lean season round. All regressions include controls for age, schooling, number of household members, and village fixed effects. Constant is dropped to avoid perfect multicollinearity.

B Image Documentation

Figure A4: Explaining Instructions in a Group

(a) Experimental Subjects

(b) Explaining Instructions in a Group

Figure A5: Individual Player Experimental Sessions

C Experiment Instructions

C.1 Group General Instructions

Before we begin I want to tell you about what we are doing here today and explain the rules that we must follow. We will be making a task in which you can get some money. Whatever money you will get in the task will be yours to keep and take home.

Maybe you won't get any money from the task, but if you decide to stay with us today, I will pass out 100 AFN to each of you to thank you for coming today. This money is not part of the task, it will be yours to keep. You will also get some snack and tea when you finish the task.

You should understand that this is not our own money. A University gave this money to us for research. This payment will not be regularly repeated in the future. It is not assistance, you will get the money for the task you will do here for us. It is not even a survey that you may have experienced before.

Please, also understand that there is no relation between our University and the organization People in Need delivering assistance in this area for a long period. I will not tell the organization about what you did here. Also, nothing you do here today will affect how the organization treats you or your community.

You should understand that there are no "right" or "wrong" answers in this task. Also, let me stress something that is very important. You were invited here without understanding what we are planning to do today. If you find that this is something that you do not wish to participate in, you can leave anytime.

Now, I will explain the task to you in the group. Later one after the other will come with me to carry out the task. It is important that you listen as carefully as possible, because only people who understand the task will actually be invited to participate. We will run through some examples here while we are all together.

You cannot ask questions or talk while we are here in the group. This is very important. Please be sure that you obey this rule, because it is possible for one person to spoil the task for everyone. If one person talks about the task while sitting in the group, we will not be able to carry out the task today. But do not worry if you do not completely understand the task as I show you the examples here in the group. Each of you will have time to ask questions when we sit alone together to be sure that you understand what you have to do. Now I will explain you what we are going to do during the task.

C.2 Group Games Instructions: Dictator Game

In one part of the task there will be two persons - Person A, and Person B. Both persons come from this village. None of you will know exactly with whom you are interacting. Only I know who will interact with whom and I will never tell anyone else.

Here are 200 AFN in 20 AFN bills that I will give to a Person A. Person A must decide how much of these 200 AFN he wants to give to Person B and how much he wants to keep for himself. I will not give any money to Person B. Person B takes home whatever Person A gives to him.

Here are some examples:

1. Suppose Person A gives 100 AFN to Person B, and keeps 100 AFN for himself. Person A goes home with 100 AFN (From the 200 AFN he had given 100 AFN to Person B and had kept 100 AFN for himself). Person B goes home with the 100 AFN from Person A.

2. Here is another example. Suppose Person A gives 0 AFN to Person B and keeps 200 AFN for himself. In this case, Person A goes home with 200 AFN. Person B doesn't have anything.
3. Here is another example. Suppose Person A gives 200 AFN to Person B and keeps 0 AFN for himself. In this case, Person A goes home with 0 AFN. Person B goes home with the 200 AFN from Person A.
4. Here is another example. This time suppose Person A gives 60 AFN to Person B and keeps 140 AFN for himself. In this case, Person A goes home with 140 AFN. Person B goes home with the 60 AFN from Person A.

Note again, there are no "right" or "wrong" answers in this task.

C.3 Group Games Instructions: Third Party Punishment Game

In another part of the task, there will be three persons - Person A, Person B, and Person C. All three persons come from this village. None of you will know exactly with whom you are interacting, but it will definitely not be the person with which you interacted in the previous part of the task. Only I know who will interact with whom and I will never tell anyone else.

Here is another 200 AFN. Person A must decide how much of these 200 AFN he wants to give to Person B and how much he wants to keep for himself. Person B takes home whatever Person A gives to him, but Person A has to wait until Person C has made a decision before finding out what he is going to take home. Person C is given 100 AFN. Person C can make three things with his 100 AFN.

1. He can pay 20 AFN to subtract 60 AFN of Person A's money, which Person A wanted to keep for himself. This money will be taken away; none of the Persons will get it. Person C will keep the remaining 80 AFN.
2. He can pay 40 AFN to subtract 120 AFN of Person A's money, which Person A wanted to keep for himself. This money will be taken away; none of the Persons will get it. Person C will keep the remaining 60 AFN.
3. He can pay nothing, keep all of the 100 AFN for himself and leave the money Person A wanted to keep for himself untouched.

Before hearing how much Person A has given to Person B, Person C has to decide what he wants to do for each of the possible amounts that Person A can give to Person B. This is 0 AFN, 20 AFN, 40 AFN, 60 AFN, 80 AFN, 100 AFN, 120 AFN, 140 AFN, 160 AFN, 180 AFN, or 200 AFN.

Here are some examples (All examples are shown with 20 AFN banknotes):

1. Suppose Person A gives 200 AFN to Person B and keeps 0 AFN for himself. Person C states that he would "do nothing" if Person A does this. In this case, Person A goes home with 0 AFN. Person B goes home with the 200 AFN from Person A, and Person C goes home with 100 AFN.
2. Here is another example. Suppose Person A gives 60 AFN to Person B and keeps 140 AFN for himself. Person C states that he would "do nothing" if Person A does this. In this case, Person A goes home with 140 AFN (He had kept 140 AFN for himself and Person C didn't decide to subtract money from him). Person B goes home with the 60 AFN from Person A. And Person C goes home with 100 AFN.
3. Here is another example. As before, Person A gives 60 AFN to Person B and keeps 140 AFN for himself. But now, Person C states that he would pay 20 AFN to subtract 60 AFN from Person A's money. In this

case, Person A goes home with 80 AFN (He had kept 140 AFN for himself minus the 60 AFN equals 80 AFN). Person B goes home with the 60 AFN from Person A. And Person C goes home with 80 AFN.

4. And a last example: Suppose Person A gives 120 AFN to Person B and keeps 80 AFN for himself. Person C states that he would pay 20 AFN to subtract 60 AFN from Person A's money. In this case, Person A goes home with 20 AFN (He had kept 80 AFN for himself minus the 60 AFN equals 20 AFN). Person B goes home with the 120 AFN from Person A. And Person C goes home with 80 AFN (100 AFN minus 20 AFN equals 80 AFN).

Again, there are no "right" or "wrong" answers in this task.

We will then call each of you in turn to make the task, starting with the person who picked number 1. In case you cannot read numbers, we will assist you.

When you finish the task, you have to wait until everybody has finished. Then I will call you in one by one again and I will tell you whether you have gained something. If yes, I will pay you that amount plus you will get the 100 AFN I promised you at the beginning.

We will not pay you for both tasks. At the end of the session you will have to pick a ball from a pouch to decide for which of the tasks you will get the payment. We will then give you the payment according to what color of the ball you picked. Please, take both tasks as if there was no other task before or after. Do you understand this?

Remember that you are not allowed to talk to the people still waiting to carry out the task. If you do talk to other people, the Assistant 3 will tell you to leave and not come back even if you may have earned some money.

D Survey instruments

D.1 Individual survey

Notes:

- *The script was back translated by two professional translators from English to Dari and back. The translated version is available upon request.*
- *I used a shorter version for Players B (PB). Questions asked to PBs marked with [PB].*
- *Questions marked with [PHS] were asked repeatedly in the post-harvest season round to those who answered the questions in the lean season round.*
- *In the post-harvest season, Player As (PA) who participated in the previous round are also asked the following question: "Can you tell me how many cards did you send to Person B when we talked to you the last time we conducted this research in the (first/second) game? If you cannot remember exactly, try to guess."*
- *The newly recruited participants in the post-harvest season completed the full survey, according to their role in the experiment.*
- *The post-harvest season round survey also included several additional questions that were tested for different research ideas: unincentivized time preference elicitation questions, agricultural land acquisition and price,*

animals slaughtered for a previous Eid holiday, cost of wedding parties, forced migration, animal sale, asset sale, perception of security situation.

- *The lean season round also included a risk preference elicitation task. Due to cultural issues with risk elicitation, the task had to be dropped.*

D.1.1 Assets

Now I will ask you few questions regarding your land, your animals and things your household owns.

How many jiribs of land do you own or rent and cultivate yourself?

A01. Irrigated _____ [PB] [PHS]

A02. Rainfed _____ [PB] [PHS]

A03. How many of your own jiribs of land do you rent out to someone else for money or for a portion of their harvest? [PB] [PHS]

A04. How many jiribs of land do you sharecrop on? _____ [PB] [PHS]

A05. During the last agricultural season, did you use any fertilizer on your field?

- Yes
- No

A06. How many fruit trees or walnut trees or almond trees do you own? _____ [PHS]

A071. How many of the following animals do you own now?

A072. Chickens _____ [PHS]

A073. Turkey _____ [PHS]

A074. Goats _____ [PHS]

A075. Sheep _____ [PHS]

A076. Cows _____ [PHS]

A077. Donkeys _____ [PHS]

How many of the following animals did you sell in the previous three months?

A081. Chickens _____ [PHS]

A082. Turkey _____ [PHS]

A083. Goats _____ [PHS]

A084. Sheep _____ [PHS]

A085. Cows _____ [PHS]

A086. Donkeys _____ [PHS]

How many of the following animals did you slaughter for food in the previous month?

A091. Chickens _____ [PHS]

A092. Turkey _____ [PHS]

A093. Goats _____ [PHS]

A094. Sheep _____ [PHS]

A095. Cows _____ [PHS]

How many of the following things do you own now in your household?

A101. Motorcycle _____ [PHS]

A102. Television _____ [PHS]

A103. Cell phone _____ [PHS]

A104. Battery _____ [PHS]

A105. Inverter _____ [PHS]

A106. Sowing machine _____ [PHS]

A107. Solar panel _____ [PHS]

A11. Did you or anyone from your household sell any of the items (television, cell phone, battery, or a solar panel) in a previous three months? [PHS]

- Yes
- No

A12. Did you or anyone from your household purchase any of the items (television, cell phone, battery, or a solar panel) in a previous three months? [PHS]

- Yes
- No

A13. What type of house do you live in? [PB]

- Tent
- Mud house
- Tile house (Bricks)
- Concrete house (at least floor)
- Other _____
- (Refused to answer)

D.1.2 Food

Now I will ask you few questions regarding the food you eat.

N01. What was the primary source of obtaining food in the last four weeks? [PHS]

- Own production (harvest or animals)
- Purchased at the bazaar
- Loan (borrowed from someone)
- Gift from friends or relatives
- Charity

- Other _____
- (Refused to answer)

N02. What did you eat yesterday [Select multiple] [PB] [PHS]

- Bread
- Rice
- Potatoes
- Beans
- eggs
- milk
- Yoghurt / cream
- Meat
- Vegetables
- Fruit
- Nut
- Other _____

N03. How many meals do you typically eat in a day this week? _____ [PHS]

N04. How many times did you eat meat in the previous week? _____ [PHS]

N05. How many liters of oil did you buy in the previous four weeks? _____ [PHS]

N06. How much money did you spend in the previous four weeks to buy chocolate or other treats for children? _____ [PHS]

D.1.3 Agriculture

N07. What type of crops did you cultivate during the previous agricultural season? [Select multiple] [PHS]

- Wheat
- Corn
- Beans
- Chickpeas
- Sesame
- Vegetables
- Carrot
- Watermelon
- Barley
- Potatoes

N08. Did some of your plants die due to drought, plant disease or landslide in the previous agricultural season? [PHS]

- No
- Yes, some
- Yes, about a quarter
- Yes, about half
- Yes, most of it

N09. Where do you mainly store your crops? [PHS]

- Cold storage
- Village warehouse
- Inside your house
- Outside your house
- In earth

N10. Did you lose some of the stored harvest because it has rotten, or it has been eaten by a mouse? [PHS]

- No
- Yes, some
- Yes, about a quarter
- Yes, about half
- Yes, most of it

N11. How would you rate the harvest in 1391 (previous year)? Was it _____ than a harvest for most people in 1389? [PB]

- Much better
- Better
- The same
- Worse
- Much worse

N12. How would you rate the harvest in 1390 (two years back)? Was it _____ than a harvest for most people in 1389? [PB]

- Much better
- Better
- The same
- Worse
- Much worse

D.1.4 Income

Now I will ask you few questions regarding your income.

I01. Would you say that compared to other people from this village, your income situation is _____ than the situation of others? [PB] [PHS]

- Much better
- Better
- The same
- Worse
- Much worse

I02. How many days in the previous four weeks have you been unable to work due to illness or injury? _____ [PB] [PHS]

I03. What types of jobs have you done for money in the previous four weeks? [Select multiple] [PHS]

- Selling on the bazaar
- Work in someone else's field
- Selling charcoal
- Collecting/selling firewood
- Working in other people's homes for money
- Doing physical labor
- State employee (teacher, police, military, hospital)
- Other _____
- (Refused to answer)

I031. How much money have your earned in the previous four weeks from selling things in the bazaar? _____ [Conditional on selected in I03] [PHS]

I032. How much money have your earned in the previous four weeks from working on someone else's field? _____ [Conditional on selected in I03] [PHS]

I033. How much money have your earned in the previous four weeks from selling charcoal? _____ [Conditional on selected in I03] [PHS]

I034. How much money have your earned in the previous four weeks from collecting/selling firewood? _____ [Conditional on selected in I03] [PHS]

I035. How much money have your earned in the previous four weeks from working in other people's homes for money? _____ [Conditional on selected in I03] [PHS]

I036. How much money have your earned in the previous four weeks from doing physical labor? _____ [Conditional on selected in I03] [PHS]

I037. How much money have your earned in the previous four weeks from working as a state employee (teacher, police, military, hospital)? _____ [Conditional on selected in I03] [PHS]

I04. Do some members of your household currently work outside of this village for a wage? (i.e. migrate for work) [PHS]

- Yes
- No

I05. Where did the members of the household go to find work? [Conditional on I04 "Yes"] [PHS]

- Other village nearby
- Mazar
- Other big city
- Kabul
- Iran
- Pakistan
- Other _____
- (Refused to answer)
- (Doesn't know)

I06. For how many days would you be willing to work for 1000 AFA in somebody else's field? _____ [PHS]

I07. What do you plan to do with the main part of the money you will get from this experiment? [PHS]

- Buy food
- Education
- Health
- Household expenses
- Save
- Give to someone from my family
- Buy a gift for myself
- Repay debt
- Charity
- Other _____

D.1.5 Charitable giving

Now I will ask you some questions regarding charity.

C01. What did you give as voluntary charity, sadaqua, in the previous four weeks? [Select multiple] [PHS]

- Money
- Food
- Wheat
- Cloth
- Other _____

- (Refused to answer)

C02. To whom have you given any voluntary charity in the previous four weeks? [Select multiple; Conditional on C01 something selected] [PB] [PHS]

- Family outside household
- Wife's family
- Neighbor
- Friends (who are not neighbors)
- Beggar from village
- Widow from this village
- Other _____
- (Refused to answer)

C03. What did you receive as voluntary charity, sadaqua, in the previous four weeks? [Select multiple] [PHS]

- Money
- Food
- Wheat
- Cloth
- Other _____
- (Refused to answer)

C04. From whom have you received any voluntary charity in the previous four weeks? [Select multiple; Conditional on C03 something selected] [PB] [PHS]

- Family outside household
- Wife's family
- Neighbor
- Friends (who are not neighbors)
- Shopkeeper
- Local wealthy man
- Foundation (Kamal Nabizada, Baiat)
- Other _____
- (Refused to answer)

C05. Did you pay zakat al-fitr last year? [PHS]

- Yes
- No
- (Refused to answer)

C06. Did you borrow food or edible things from someone in the previous four weeks? [PHS]

- Yes
- No
- (Refused to answer)

C07. Did you participate in any voluntary activity in the previous four weeks with people out of your household? [PB] [PHS]

- Work in the field
- House Building
- Herding
- Well Digging
- Irrigation Repairs/building
- Construction of Communal Building or Road
- Tree Planting
- Dispute Resolution
- Other _____
- (Refused to answer)

C08. Are you a member of the following village associations? [PB] [PHS]

- Shura
- CDC
- Agricultural cooperative
- Health council
- School council
- Natural resource management committee
- Saving group
- Burrial society

D.1.6 Debts and loans

Now I will ask you few questions regarding the debts and loans you have now.

D01. Did you repay any loan in the previous 3 months? [PHS]

- Yes
- No
- No loan
- (Refused to answer)

D02. Do you currently owe any money to someone at this moment? [Conditional on D01 NOT "No loan"] [PHS]

- Yes
- No
- (Refused to answer)

D03. To whom do you owe money? [Select multiple; Conditional on D02 "Yes"] [PHS]

- Family from this village
- Neighbor
- Jalaab from this village
- Shopkeeper from this village
- Family from another village
- Jalaab from another village
- Shopkeeper from another village
- Microfinance organization
- Other _____
- (Refused to answer)

D031. How much do you currently owe to your family? (in AFA) _____ [Conditional on selected in D03] [PHS]

D032. How much do you currently owe to your neighbor? (in AFA) _____ [Conditional on selected in D03] [PHS]

D033. How much do you currently owe to the jalaab from this village? (in AFA) _____ [Conditional on selected in D03] [PHS]

D034. How much do you currently owe to the shopkeeper from this village? (in AFA) _____ [Conditional on selected in D03] [PHS]

D035. How much do you currently owe to your family from other village (in AFA) _____ [Conditional on selected in D03] [PHS]

D036. How much do you currently owe to the jalaab from other village? (in AFA) _____ [Conditional on selected in D03] [PHS]

D037. How much do you currently owe to the shopkeeper from other village? (in AFA) _____ [Conditional on selected in D03] [PHS]

D038. How much do you currently owe to a microfinance organization? (in AFA) _____ [Conditional on selected in D03] [PHS]

D04. If you needed a loan of 1000 AFA for a month now, would some of the following lend you the money? [PB] [PHS]

- Family from this village
- Neighbor
- Jalaab from this village
- Shopkeeper from this village

- Family from another village
- Jalaab from another village
- Shopkeeper from another village
- Microfinance organization
- Other _____
- (Refused to answer)

D05. Does someone currently owe money to you at this moment? [PHS]

- Yes
- No
- (Refused to answer)

D06. Who owes you the money? [Select multiple; Conditional on D05 "Yes"] [PHS]

- Family from this village
- Neighbor from this village
- Family from another village
- Someone from another village
- Other _____
- (Refused to answer)

D061. How much does your family from this village currently owe you? (in AFA) _____ [Conditional on selected in D06] [PHS]

D062. How much do your neighbors currently owe you? (in AFA) _____ [Conditional on selected in D06] [PHS]

D063. How much does your family from other village currently owe you? (in AFA) _____ [Conditional on selected in D06] [PHS]

D064. How much do other people from other village currently owe you? (in AFA) _____ [Conditional on selected in D06] [PHS]

D07. Do you currently have some money at home as savings? [PHS]

- Yes
- No
- (Refused to answer)

D.1.7 Personal

Now I will ask you about some of your personal information.

P01. What is your age? _____ [PB]

P02. Ethnic group? [PB]

- Pashto
- Uzbeki

- Tajik
- Hazara
- Turkmen
- Baluch
- Sadat
- Other _____
- (Refused to answer)

P03. What was the highest grade you completed in school? _____ [PB]

P04. Can you read a text that is written on a pack of medicaments or a short poster? [PB]

- Yes
- No
- (Refused to answer)

P05. How many people typically live in your household? _____ [PB]

P06. Are you in a position of a household head? [PB]

- Yes
- No
- (Refused to answer)

P07. Marital status? [PB] [PHS]

- Single
- Married to one wife
- Married to multiple wives
- Widowed
- Divorced
- (Refused to answer)

P08. Does your wife originally come from a different village than you?

- Yes
- No
- (Refused to answer)

P09. How many children - girls younger than 15 years - live currently in your household? _____ [PHS]

P10. How many children - boys younger than 15 years - live currently in your household? _____ [PHS]

P11. How many of these children live outside of this village with someone else taking care of them? _____ [PHS]

P12. For how many years have you been living in this village? (If whole life, write [P01 answer] years) _____ [PB]

D.1.8 Contacts

I will need your contact details to be able to find you also in the future, because we might repeat a similar task in the upcoming harvest or planting season.

P13. If you have a cell phone, what is your cell phone number? _____

P14. Would you mind me taking a picture of you to recognize you when we come in the future? [Take a picture]

P15. What is a name and father's name of a person from this village who will be able to tell me where you are in case you are not in the village? _____ [PB]

P16. If he or she has a phone, can you tell me the phone number of that person? _____

D.1.9 Shocks

Now I will ask you only few last questions about some good and bad events that affected your life here.

S01. In the last 3 months has the household been negatively affected by any of the following? [Select multiple] [PB] [PHS]

- Unusually high level of crop pests & diseases
- Unusually high level of livestock diseases
- Earthquakes
- Landslides/avalanches
- Flooding
- Late damaging frost
- Unusually high level of human disease
- (Refused to answer)

S02. Which three months are usually most difficult in terms of food for you? [Pick three]

- Hamal
- Sawr
- Jawzā
- Saratān
- Asad
- Sonbole
- Mizān
- Aqrab
- Qaws
- Jady
- Dalv
- Hut

S03. Which three months are usually the best in terms of food for you? [Pick three]

- Hamal
- Sawr
- Jawzā
- Saratān
- Asad
- Sonbole
- Mizān
- Aqrab
- Qaws
- Jady
- Dalv
- Hut

S04. Suppose you encounter an unavoidable emergency and you needed 1,000 AFA right away. How would you get the 1,000 AFA? [PB] [PHS]

- Use savings
- Sell land
- Mortgage land
- Sell livestock
- Sell some asset from the household
- Get help from the mosque
- Get help from the jalaab
- Get help from the shopkeeper
- Get help from a relative
- Get help from a non-relative
- Borrow from the jalaab
- Borrow from the shopkeeper
- Borrow from a relative
- Borrow from a non-relative
- Borrow from an agricultural cooperative
- Sell crop in storage
- Other _____

S05. If that source wasn't available what would you do? [Pick other option than in S04] [PB] [PHS]

- Use savings
- Sell land
- Mortgage land
- Sell livestock
- Sell some asset from the household
- Get help from the mosque
- Get help from the jalaab
- Get help from the shopkeeper
- Get help from a relative
- Get help from a non-relative
- Borrow from the jalaab
- Borrow from the shopkeeper
- Borrow from a relative
- Borrow from a non-relative
- Borrow from an agricultural cooperative
- Sell crop in storage
- Other _____

D.1.10 Perceived stress (shortened)

PSS01. In the last three months, how often have you felt that you were unable to control the personal necessities? [PB] [PHS]

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

PSS02. In the last three months, how often have you felt that things were going your way, you are lucky? [PB] [PHS]

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

D.1.11 Generalized trust and fairness

We are almost at the end. I will now ask you how you trust other people.

T01. Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people? [PB]

- Most people can be trusted.
- Need to be very careful.

I'd like to ask you how much you trust people from various groups. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all?

T02. Your family [PB]

- Completely
- Somewhat
- Not at all

T03. Your neighborhood [PB]

- Completely
- Somewhat
- Not at all

T04. People you know personally [PB]

- Completely
- Somewhat
- Not at all

T05. People you meet for the first time [PB]

- Completely
- Somewhat
- Not at all

Do you think most people would try to take advantage of you if they got a chance, or would they try to be fair? [PB]

- They would take advantage
- They would try to be fair

Would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves? [PB]

- They try to be helpful
- They are just looking out for themselves

This is the end of the questionnaire. Thank you very much for your patience. Please, now you can wait, get some tea and snacks and we will tell you when you will get your money. Thank you.

ENUMERATOR ONLY: any comments? Problems with the interview? _____

D.2 Community survey

Notes:

- *In each community, we asked the community leader, among other things, about his (always men) estimate of average costs of goods in his community at the time of each round. The goods were selected to be representative of typical goods purchased by the farmers in a focus group discussion. The price increase in the lean season motivated the use of higher incentive in a subset of experimental sessions (See Appendix Table A2).*
- *Questions marked with [PHS] were asked repeatedly in the post-harvest season round.*

Village name _____

H01. What is your name? _____

H02. What is your father's name? _____

H03. If you have a cell phone, what is your cell phone number? _____

H04. How many households live in this village? _____

H05. How many households own some irrigated land in this village (approximately)? _____

H06. How many households own some rainfed, but no irrigated land in this village (approximately)? _____

H07. How many households do not own any land in this village? _____

Can you tell me how much do the following items cost in the closest bazaar where most of the villagers go? (in AFA)

H061. Bread _____ [PHS]

H062. Rice (1 kg of lowest quality) _____ [PHS]

H063. Wheat (one seer Kabuli) _____ [PHS]

H064. Oil (cheapest, 10l jerrycan) _____ [PHS]

H065. Live chicken (1 month old) _____ [PHS]

H066. Live goat (3 months old) _____ [PHS]

H067. Live sheep (3 months old) _____ [PHS]

H068. Aspirin (one package) _____ [PHS]

H069. Thermos (cheapest) _____ [PHS]

H09. What is a usual current daily wage for a day laborer in this village? (in AFA) _____ [PHS]

H10. In the last 3 months has the village been negatively affected by any of the following problems? [PHS]

- Unusually high level of crop pests & diseases
- Unusually high level of livestock diseases
- Earthquakes
- Landslides/avalanches
- Flooding
- Late damaging frost

- Unusually high level of human disease
- (Refused to answer)
- (Doesn't know)

H11. Is there a doctor or a health post operating in this village? _____

H12. How far do the people from your village have to travel to a hospital or a clinique? (in minutes) _____

This is the end of the questionnaire. Thank you for your time.

Enumerator: Record your location [GPS location recorded; exact location used for the spatial analysis in Appendix Figure A3]