Seasonal scarcity and sharing norms*

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Abstract

This paper examines the relationship between a short-term resource scarcity, and preferences for sharing and its enforcement among Afghan subsistence farmers exposed to seasonal food shortages. I conducted repeated within-subject lab-in-the-field experiments both during a lean season and in the post-harvest season of relative plenty six months later. I administered dictator and third party punishment games to separate the effects of individual sharing preferences from enforcement of sharing norms. While sharing preferences exhibit a high degree of temporal stability at both the aggregate level and, to a large extent, at the individual level, the enforcement of sharing norms measured by the willingness of monetarily uninterested third parties to punish non-desirable behavior is found to be substantially weaker during the lean season. The findings suggest that although the farmers are capable of coping with transitory periods of scarcity and sustain mutual sharing, exposure to prolonged periods of scarcity or to unexpected shocks might result in breakdown of mutual cooperation.

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1 Introduction

A large fraction of the one billion people employed in agriculture engages in subsistence farming and relies on highly volatile harvests frequently affected by both aggregate and idiosyncratic shocks (FAO, 2012). The cyclical nature of agricultural production together with a limited insurance, credit and savings markets (Basu & Wong, 2012), and a low quality of storage technologies exposes many to seasonal food shortages (Sahn, 1989). Mutual willingness to share resources with others thus remains one of few coping strategies against such scarcities in areas where access to formal insurance markets is missing.[1] Yet a key to sustaining of social norms such as resource sharing is that people are willing to enforce the socially desirable behavior, often even if the norm breaking behavior does not affect them directly (e.g., Boyd, Gintis, Bowles & Richerson, 2003; Fehr & Fischbacher, 2004a).[2] When they are not, selfish individuals – otherwise disciplined to behave cooperatively – start behaving selfishly, commencing the cycle of social erosion. A question arises whether a period of resource scarcity affects individual willingness to share or to engage in enforcement of sharing.

The present literature discussed in detail below offers conflicting views as to whether the level of sharing increases, remains constant, or decreases with resource scarcity. Moreover, none of the earlier studies differentiates between the changes in individual sharing preferences and the changes in the willingness to engage in enforcement of sharing behavior with exposure to scarcity. In other words, whether the change – if present – is due to instability of preferences or rather due to a coordination problem on a community level. In this paper I examine the possibly narrow link between exposure to scarcity and human cooperation, its enforcement and possible emergence of non-cooperative outcomes. Specifically, I examine the temporal dynamics of sharing preferences and enforcement of sharing norms over

[1] While food sharing is common in hunter-gatherer small-scale societies, sharing of resources in more advanced communities may operate through provision of loans on flexible interest rates with flexible repayment dates. Such behavior is frequently observed poor communities (Collins, Morduch, Rutherford & Ruthven, 2009). More broadly, preferences for sharing are also predictive of cooperative and trusting behavior, important ingredients of functioning markets.

[2] Willingness to engage in costly third-party punishment in which materially uninterested individuals are willing to forego gains in order to punish unfair behavior has been well documented in economic experiments (Fehr & Fischbacher, 2004b; Bernhard, Fischbacher & Fehr, 2006) and was found to be positively correlated with the level of altruistic sharing in a large cross-cultural study (Henrich, McElreath, Barr, Ensminger, Barrett, Bolyanatz, Cardenas, Gurven, Gwako, Henrich, Lesorogol, Marlowe, Tracer & Ziker, 2006). Fehr & Gächter (2000) show that cooperation can be sustained only when subjects have an opportunity to punish free-riders and gradually breaks-down once the opportunity is removed, and, reassuringly, that cooperation can be restored once the enforcement mechanisms are reintroduced. The forms of punishment may range from physical attacks of non-cooperators, through gossip, all the way to ostracism of the non-cooperators from the society. These forms of punishment are well documented in anthropology (Cronk, Chagnon & Irons, 2000), ethnography (Fessler & Navarrete, 2004) or economic history (Greif, 1993).

seasonal swings in consumption in rural Afghanistan.

A major challenge in examining sharing preferences over time is that kinship, reputational concerns, reciprocity, or fear of retribution all confound the observed behavior. It is also virtually impossible to distinguish between reputation-driven third-party punishment motivated by selfish motives from those driven by altruistic goals in the field, not to say that quantifying social norms for cross-temporal comparison is inconceivable using empirical data or narrative evidence. In order to overcome these issues, I conducted a controlled lab-in-the-field experiment using a one-shot dictator game (Kahneman, Knetsch & Thaler, 1986) and a one-shot dictator game with a third party punishment option (Fehr & Fischbacher, 2004b) examining temporal stability of sharing preferences and of sharing norms enforcement among 207 subsistence farmers in northern Afghanistan. This remote rural society is exposed to dramatic aggregate and idiosyncratic seasonal shocks to consumption (NRVA, 2008). I conducted two rounds of experiments with the same participants: one during the lean season and one during the post-harvest season of 2013. This provides me with a unique opportunity to inspect within-subject behavioral changes when exogenously exposed to more or less scarcity.

There is a disagreement as to how exposure to scarcity affects sharing or cooperative behavior in general. On the one hand, scarcity can be conductive to cooperation. Ostrom, Burger, Field, Norgaard & Policansky (1999) argue that scarcity of natural resources provides incentives for more efficient institutional organization and enforcement mechanisms that facilitate sustainable use of scarce resources. This is supported by experimental evidence of Osés-Eraso & Viladrich-Grau (2007) who find that extraction rates in a common pool game drop when resources become scarce. Anthropologists also report narrative evidence of increased cohesion in both small- and large-scale societies facing seasonal food shortages (Evans-Pritchard, 1969; Lévesque, de Juriew, Lussier & Trudeau, 2000).[3]

On the other hand, scarcity is shown to negatively affect cooperation. Scarcity of common pool resources can lead to increased free-riding behavior in cases of ground water usage in India (Varghese, Veettil, Speelman, Buysse & Van Huylenbroeck, 2013) or of fisheries in Colombia (Maldonado, Moreno-Sánchez & del Pilar, 2009). Grossman & Mendoza (2003) show theoretically that common pool resources are be-

[3]Evans-Pritchard (1969, p. 85) describes that among the Nuer of South Sudan during the dry season "a special gourd of sour milk is kept for guests; when an ox is sacrificed or a wild animal is killed the meat is always, in one way or another, widely distributed; people are expected to give part of their catch of fish to those who ask them for it; people assist one another when there is a shortage of milk or grain." Similarly to the study of Nuer, Lévesque et al. (2000, p. 105) document that "in summer, the diversity and proximity of game ensure greater food security and regularity in the harvest, prompting [Inuit] families to produce for themselves and to lay up stocks. In contrast, winter is often experienced as a time of shortage, which induces families to gather together [...] in order to maximize their conditions of subsistence and, hence, their survival." The mutual closeness during winters provides the Inuit with better mechanisms for enforcement of sharing behavior during the times of scarcity.

ing extracted faster when own survival is at stake. This is consistent with increased occurrence of selfish behavior during the periods of extreme food scarcity (Dirks, 1980; Turnbull, 1972). Scarcity further seems to loosen ethical behavior as Oster (2004) and Miguel (2005) document in case of "witch killing", ritual murders of elderly women often by own kin, which soar with rainfall shortages. Miguel explains that the murders become socially acceptable during these harsh periods, suggesting social norms respond to changing environment. Less dramatic but equally important for the present study, Wutich (2009) shows that social networks loosen during a dry season in Bolivian villages.[4]

Groups ranging from small scale societies to large nation states are able to sustain cooperation if the population possesses a trait of strong reciprocity (Boyd & Richerson, 1992), an individual willingness to engage in prosocial acts together with enforcement of such acts from others, even against own direct self-interest (Gintis, 2000; Henrich & Boyd, 2001; Boyd et al., 2003). Strong reciprocity is especially critical in periods of shocks when the probability of the group survival decreases, such as during wars, famines, or periods of increased uncertainty as in the case of this paper, when reputational motives are weak or non-existent. Enforcement reduces the proliferation of selfish types invading the population and thus increases prosociality.

Although the evidence on existence of altruistic third-party enforcement of sharing in economic experiments is plentiful (Fehr & Fischbacher, 2004b; Henrich et al., 2006; Bernhard et al., 2006), the literature examining its dynamics is scarce.[5] Only Gneezy & Fessler (2012) get close by examining the dynamics of second-party enforcement for non-cooperation with the exposure to conflict. They show that the enforcement intensified during the Israeli-Hezbollah war compared to period before or in the immediate aftermath. The authors recognise the need for more research and call for more thorough investigation of dynamics of third-party enforcement. Moreover, in their case the threat to the community came from an identifiable external threat against which the community could stand if united. In the case of resource scarcity the threat comes from within. The predictions as to whether scarcity is conductive or detrimental to sharing and its enforcement remain unclear.

My experimental results show that despite substantial changes in income, consumption, health, and perceptions of stress within individuals across the lean and the post-harvest seasons, their sharing preferences measured by the amount passed in the dictator game as well a in the third party punishment game remain un-

[4] Wutich (2009, p. 188) reports that "as dry season advanced, network activity dropped off as people increasingly tried to protect and conserve their own resources. When the dry season ended, social activity increased again."

[5] Despite the critique of Guala (2012) who calls for yet more evidence from "the wild" so that the literature can claim external validity.

changed at the aggregate level and fairly stable at the individual level. However, the enforcement of sharing norms measured by the willingness and the intensity of costly punishment of unfair allocations by monetarily uninterested third parties are significantly weakened during the lean season. The observed results are also reflected in beliefs of others and are quantitatively similar for two different groups represented in the study – Sunni Tajiks and Shia Hazaras.

Although I do not observe a change in dictators' willingness to share across seasons it is plausible that during a prolonged period of weak enforcement under scarcity sharing behavior would drop. This is an established finding in laboratory experiments where prosocial behavior gradually deteriorates with unavailable enforcement mechanisms (Fehr & Fischbacher, 2004a).[6] It remains to be examined through which exact mechanisms the behavioral change operates. The scarcity faced by the participants during the lean season certainly affects various domains of their lives as I show in the survey evidence, so it is plausible that multiple different factors play a role in explaining the changes in normative behavior; increase in stress levels, increased uncertainty over individual income, actual lack of resources to name a few.[7]

My paper speaks to different streams of literature:

First, recently a literature on endogeneity of social preferences has been emerging. Social preferences have been found to be shaped in early childhood (Fehr, Bernhard & Rockenbach, 2008) through adolescence (Almå s, Cappelen, Sø rensen & Tungodden, 2010) and vary markedly across cultures (Henrich, Ensminger, McElreath, Barr, Barrett, Bolyanatz, Cardenas, Gurven, Gwako, Henrich, Lesorogol, Marlowe, Tracer & Ziker, 2010). All these studies examine long-term processes of preference formation, whereas the current paper analyzes possible dynamics over short-term periods of scarcity.

Second, conflict has been described as an important factor shaping human prosociality (Choi & Bowles, 2007) and experimental studies confirmed the causal link between exposure to warfare and parochial altruism (Voors, Nillesen, Bulte, Lensink, Verwimp & Soest, 2012; Bauer, Cassar, Chytilová & Henrich, 2014). Parochialism induced by exposure to inter-group conflict differs from the scope of the present study in that war is an unexpected event in which the threat comes from outside of the society. The present study speaks to possible short-term effects of resource scarcity on sharing behavior. This also differs from recent studies examining effects

[6]Similarly, Gneezy & Fessler (2012) link the increased willingness to punish in-group non-cooperators during wartime to evolution of human cooperation despite they do not observe any change in the ultimatum game transfers.

[7]A problem would arise if the difference in behavior across seasons were due to factors unrelated to scarcity. To overcome possible "calendar effects", I conducted the experiments outside of major Islamic holidays, harvest time, or bazaar days and no significant events were reported when we conducted the experiments.

of unexpected natural disasters on social preferences (Cassar, Healy & Von Kessler, 2011; Castillo & Carter, 2011).

Third, the paper speaks to the emerging experimental literature examining temporal stability of preferences, the fundamental assumption of economics. Recent studies have shown that time preferences (Meier & Sprenger, 2014), risk preferences (Andersen, Harrison, Lau & Elisabet Rutström, 2008), and cooperative preferences (Volk, Thöni & Ruigrok, 2012) remain stable over time. However, all of the studies mentioned were carried out in stable environments of developed countries. My study is the first of its kind to provide evidence of temporal stability of sharing preferences in an environment exposed to substantial, yet to some extent expected environmental shocks.

Lastly, the paper speaks to the sparse literature examining temporal dynamics of social norms using economic experiments. To my knowledge, only Gneezy & Fessler (2012) examine changes in enforcement of cooperation during wartime.

The paper closest to mine is Prediger, Vollan & Herrmann (2014). They examine the effect of resource scarcity on cooperation and anti-social behavior among Namibian villagers using economic experiments in their natural environment where they are exposed to different levels of resource scarcity. The study shows that anti-social behavior is higher in the area exposed to higher scarcity of resources, but does not find any difference in levels of cooperation across the areas. Their study, however, differs from mine in several aspects. First, it does not differentiate between the role of preferences and enforcement and rather concentrates on behavioral differences across communities in public goods and joy-of-destruction games. Second, their study considers differences in behavior across two locations exposed to different environmental conditions in a long term, while my study examines short-term effects of scarcity on cooperation within a particular community, with villagers participating repeatedly in an experiment when their environmental conditions are exogenously changing.

The method I employ resembles that of Mani, Mullainathan, Shafir & Zhao (2013) who examine the effect of scarcity on cognitive abilities in a population of Indian sugarcane farmers. Mani et al. observe their participants over the pre- and post-harvest seasons and compare the results before and after. Similar approach is used in studies investigating temporal stability of time preferences in repeated study at a tax-filing center in Boston (Meier & Sprenger, 2014), risk preferences using repeatedly a representative sample of Danish population (Andersen et al., 2008), or other-regarding preferences using standard subject pool of European undergraduate students (Volk et al., 2012). It is important to note that the environment in which the experiments took place remained stable over time, with no substantial economic or other shocks to the general population. The present study aims to contribute to this stream of literature by examining stability of sharing preferences and of sharing norms in a highly volatile environment of Afghanistan. Although the stability of preferences is one of the key assumptions in economics, the evidence for it remains surprisingly sparse.

There have only been few experimental studies assessing the effect of scarcity on prosocial behavior. The present experiment is, to my best knowledge, the first to examine temporal stability of sharing preferences outside of the laboratory environment in a setting where dramatic changes to consumption might possibly lead to changes in individual behavior. Second, it is the first paper examining temporal dynamics of sharing norms enforcement using the third-party punishment game.

2 Experimental setting and sampling procedures

We recruited the participants for the experiments in 10 villages in Zari district of Balkh province in northern Afghanistan, a remote and high elevated area. With more than 60 percent of 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.

The experiments were usually announced one day in advance. The villagers were informed that an experiment requiring a commitment of four hours of their time will be conducted in their village for which they will earn at least 100 AFN (approximately 2 USD) as a show-up fee, but possibly more.[8] We invited all landowning farmers, a maximum of one adult person per household was allowed and the head of the household was strongly preferred. Due to cultural constraints we invited males only. All interested farmers were gathered in a community center (a guesthouse, mosque, or a village leader's house) the morning just before the first session. If more villagers showed up for an experimental session than we could accommodate, we either invited them for another session if there was one conducted in the same village or we ran a lottery in which we selected the participants by luck. Consequently, the actual participants were randomly assigned their roles in the experiment (See Figure A1).

To answer the question whether sharing preferences and enforcement of sharing norms vary with exposure to resource scarcity I exploit the fact that farmers in this

[8] An average daily wage is 150 AFN, but it is not possible to find work every day in the area. During the off-season the work is particularly scarce. Importantly for my study, size of initial endowment does not seem to influence the relative transfers in dictator games to the extent that might invalidate the results of the present study (Engel, 2011, p. 592). In order to validate this claim, I conducted several experimental sessions with stakes increased by 50% in the 2013 lean season only to find that the relative transfers do not differ from the transfers in games with the original endowment size. The 50% increase reflected the reported 50% increase in prices of most common consumption goods during the lean season compared to the post-harvest season.

area face annual seasonal food shortages. We conducted 20 experimental sessions in 10 villages with 291 adult male farmers in the lean season of April 2013 and additional 20 sessions in the same villages with 207 participants who we managed to contact also in the post-harvest season in October 2013. The experiments were carried out outside of any major islamic holidays or significant days such as elections or prominent funerals. In the post-harvest season we also recruited additional 82 fresh participants to substitute for the participants who dropped out. I do not use the fresh participants' data in the analysis. Each session was conducted with 12 or 15 participants.

2.1 Sample

Demographic characteristics for the sample of the 207 participants participating in both experimental rounds are presented in Table 1. The average participant is about 39 years old male farmer with 3 years of completed schooling, in 58% able to read a short letter. His household consists of 9 or 10 people on average, 83% of the participants are heads of their household, the remaining 17% are eldest sons in the family who themselves contribute to family budgets. On average, the participants have 4 children with equal number of boys and girls. The participants have been living in the same village for all or most of their lives not including temporary migration for work, about 37 years on average, with only 35 subjects (17%) living outside of the village at some point of time, for about a third of their lives on average. Half of the sample is Sunni Muslims (51%) mainly of Tajik ethnic origin and the other half is Shia Muslims of predominantly Hazara ethnic origin, all living in completely segregated areas.[9] The participants, on average, farm on small plots of land of 4.47 jiribs of irrigated land (five jiribs equals approximately one hectar) and 10.81 jiribs of rainfed land. The median irrigated and rainfed land holdings, however, are skewed towards 3 and 6 jiribs, respectively.

It is important to note that 84 subjects who participated in the first experimental round did not participate in the second experimental round and they are not included in the analysis presented in this paper. Out of them 62 (74%) migrated either to Iran, to Mazar-e-Sharif, Kabul, or to another village for seasonal work. Only the remaining 22 (26%) did not show up either because of working elsewhere at the time of the experiment, being sick, or attending a wedding at the time of the assigned experimental session. Reassuringly, no one rejected to participate due to reasons related to the experiment.

The results presented below should be thought of as estimates for the stud-

[9] I do not control for religion in the analysis because individual religious affiliation is perfectly correlated with village affiliation. I use village fixed effects in regressions that thus control for possible effects of religion too.

ied sample only. However, it should be noted that selective attrition would systematically bias the results only if it were correlated with the stability of sharing preferences and with preferences for altruistic punishment.

2.2 Seasonal effects

There is vast evidence that farmers in developing countries are exposed to substantial fluctuations in incomes and consumption over the year. Table 2 presents the differences in observable characteristics across seasons among the sample of subjects participating in both seasons and shows that seasonality matters indeed. The participants' average monetary income in the previous month in the lean season is only 71% of the post-harvest season income (2078 AFN vs. 2929 AFN). Also, 59% of participants reported having no monetary income in the lean season compared to 38% of participants in the post-harvest season.

Majority of participants (73%) report that the main source of food for their household in the post-harvest season comes from their own production, while only 35% rely on own food resources in the lean season, suggesting that stocks are depleting over the year. Meat is also consumed less frequently during the lean season. The reliance on purchased food in the lean season (60% of the sample) is one of the factors explaining higher indebtedness in the population.[10] The share of people in debt increases from 70% in the post-harvest season, already high, to 86% in the lean season. The participants also seem to be having more money available for lending out during the post-harvest season as the share of subjects lending money to others increases from 29% in the lean season to 39% in the post-harvest season.[11] Further aggravating the severity of the lean season, the participants 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 such as crop pests and diseases, livestock diseases, as well as human diseases. Irrespective of the season, 25% of the participants report that someone from their household has been out of the village, migrating for work.[12]

Figure 1 shows that the participants are well aware of the seasonal swings over the year. Responding to a question to select three months of a year that are

[10]Seven participants (5%) report that in the lean season they mainly relied on borrowed or donated food. This number might actually be higher, but the subjects were reportedly hesitant to reply that they rely on external help. Admitting inability of securing basic needs of the household is perceived as shameful.

[11] As other studies from developing countries have found, many people are lenders and borrowers at the same time (Collins et al., 2009).

[12]Although statistically insignificant, the sample of participants in the lean season who did not participate in the post-harvest season were more likely to report that someone from their household has currently been out of the village migrating for work (32% vs. 25%). This suggests that these subjects' households are more dependent on income from seasonal work outside of the village.

generally most difficult for them to cope with and three months of a year that are generally least difficult for them to cope with, most participants perceive the winter and the spring months (the lean season) as the most difficult to live through and the summer and the autumn months (the harvest and the post-harvest season) as the best months of a year.

3 Experimental design and procedures

Each experimental session consisted of two parts. A one-shot dictator game (DG) and a one-shot dictator game with a third party punishment option, the third-party punishment game (TPPG).[13] After the experiment each participant was surveyed.

3.1 Dictator game

I conduct a DG 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. In this quasi-game a dictator, Person A (PA), divides a given endowment (10 experimental currency units, ECUs) between himself and a passive receiver, Person B (PB). PB is also one of the participants in the same experimental session as the PA, but he receives no endowment and only learns the final allocation of money. The game allows for 11 strategies, as only whole units can be passed. The allocation depends entirely on PA's own willingness for unconditional sharing under the veil of anonymity, as his identity is never revealed to the PB. Thus, the individual is motivated to reveal his true sharing preferences. The ECUs in the game are represented by money slips evoking 20 AFN banknotes, not by real money. The conversion rate is 1 ECU = 20 AFN.

3.2 Third party punishment game

In order to test the temporal stability of sharing norms enforcement, I conduct a TPPG. The game lets a monetarily uninterested third party – Person C (PC) – observe the sharing behavior of a dictator – PA – in a DG where even the PA and the PB are aware of the PC's presence. First, the PA decides about how much of the 10 ECUs of his endowment to pass to a PB who has no endowment as in the DG described earlier. PB only learns the PA's final decision and has no control over it. Second, the PC may decide to punish the dictator for his behavior but only at a cost to himself. Each PC is endowed with 5 ECUs and he can either

[13] To control for possible order effects I randomly manipulate the order of games for the dictators, players A, within each session. Half of the dictators played the DG first, while the other half played TPPG first.

refrain from punishment or pay 1 or 2 ECUs to subtract 3 or 6 ECUs of PAs payoff, respectively. This distribution ensures that in a situation when the PA behaves as an egalitarian and the PC decides not to punish such behavior, all players leave the experiment with 5 ECUs. However, PCs do not observe the actual PAs' behavior. Rather, I elicit their reaction to all possible behaviors of the PA using a strategy method. The PC's willingness to pay to punish provides me with a direct measure of willingness to engage in altruistic enforcement of specific sharing norms. The variable of interest is the minimum acceptable PA offer to PB that is not punished by the PC. Further in the text, I denote the minimum acceptable offer as MAO (originally used in Henrich et al., 2006). In this text I do not differentiate between the intensity of punishment, but the results presented would only be strengthened by accounting for it.

3.3 Experimental procedures

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 Figure A2), and only then the actual experiments were carried out with the subjects individually (See Figure A3).[14] Before making their actual decisions, all participants were shown several examples, were allowed to practice several scenarios themselves, and then were asked to answer several control questions. The research assistants explained the task until the participants fully understood the task and the experiments were carried out only after participants' full comprehension. The instructions were presented orally in Dari and were back-translated to English.

Communication in all rounds of experiments was not allowed and all games were strictly anonymous. Only one game was randomly selected for the payment to avoid strategic play across experiments. This procedure was revealed to the participants 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 and the actions of other players. Average earnings were about 190 AFN including the show-up fee (100 AFN), which is slightly above the average daily wage of a casual laborer.

[14]The instructions and procedures I used are to a large extent inspired by Bernhard et al. (2006) and by Henrich et al. (2006). Instructions are available in the Appendix C.

4 Results

4.1 Temporal stability of sharing behavior

4.1.1 Aggregate temporal stability of sharing behavior

Does the aggregate sharing behavior differ 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, the difference being statistically insignificant (Mann-Whitney U-test, MWT: p=0.48, n=136). Similarly for the TPPG, I find that the average transfer of 2.87 ECUs in the lean season and of 3.10 ECUs in the post-harvest season, the difference being again statistically insignificant (MWT: p=0.41, n=136).

I further test the temporal stability of sharing behavior using the following regression model:

$$T_{it} = \alpha + \beta S_i + \gamma X_{it} + \varepsilon_{it} \quad (1)$$

where T_{it} is the amount passed by the individual i in the experimental game in the period t, which is either the lean season or the post-harvest season. S_i is the treatment variable equal to 1 in the lean season, X_{it} is a set of individual characteristics[15], and ε_{it} is the error term.

Table 4 shows that the behavior across seasons remains stable both in the DG and the TPPG when using the regression framework. The first model (Columns 1 and 4 in Table 4) does not include any controls. The second model (Columns 2 and 5) controls for village-specific effects, as the village fixed effects explain about 16% or 13% of the variance in the DG or the TPPG transfers, respectively.[16] Finally, the third model (Columns 3 and 6) further controls for additional individual level controls. In neither case the sharing behavior changes across seasons for either the DG or the TPPG.[17]

Figure 2 examines the cumulative distributions of respective amounts transferred in the DG (Panel A) and the TPPG (Panel B) across the two seasons. Apart from the difference in the frequency of PAs sending 3 ECUs both in the DG (difference in frequencies across rounds borderline significantly different from

[15]In the main estimations I either omit the control variables, add only a set of (time-invariant) village dummy variables, or add both village dummy variables and individual level characteristics such as age, number of years in school, number of individuals living in the individual's household, individual's income in the previous month, and the wealth index proxy. The individual wealth at a given point of time is estimated using the principal component analysis. The 1^{st} principal component is constructed from animals owned, assets owned, and variability of food consumed. Note that the results presented in this paper are robust to use of different sets of controls (additional analysis available upon request).

[16]See Table A1.

[17]In the main regressions I use OLS. The results are robust to using alternative regression methods, such as ordered probit, which takes into account the discrete nature of the dependent variables. See Tables A6 and A4 for the replication of main results (other analysis available upon request).

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 neither the DG (p=0.22), nor the TPPG (p=0.34).

Finding 1: *On the aggregate level I find that the sharing behavior in the DG and the TPPG does not vary with short term exposure to scarcity of resources.*

4.1.2 Individual-level temporal stability of sharing behavior

The design of the experiment allows me to observe the sharing behavior within the same individual across seasons, hence it allows me to study the within-subject stability of sharing preferences. In total, we successfully tracked 68 PAs. These participants were exposed to the same experimental procedure in both the lean season and in the post-harvest season, six months later.

In this section I examine the correlations in sharing behavior across seasons, individual changes in sharing behavior and compare the actual changes in sharing behavior to a reference situation in which I treat the distribution of transfer choices as randomly allocated across individuals. First, I describe the stability of sharing behavior in the DG and later I comment on the stability of behavior in the TPPG.

Panel A of Figure 3 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 reveals that more than 30% of individual decisions in the DG remained constant across both seasons. Moreover, almost 65% of decisions remained within a change of one ECU or 10% of the PAs endowment. The correlation between DG transfers in the lean season and in the post-harvest season is 0.52 ($p<0.01$). Such stability is relatively high compared to other studies examining temporal stability of preferences.[18]

Two issues arise when interpreting the results:

First, it might be argued that the stability of behavior I observe can be attributed to anchoring on one's own behavior in the first, lean season experimental round. For this to be the case, the PAs would have to remember their behavior in the previous experimental round. When asked during the post-harvest round post-experimental survey – in an unincentivised question – about how much they transferred in the DG in the previous, lean season round, the PAs guesses were correlated more with the actual transfers in the post-harvest round (0.61, $p<0.01$),

[18]Literature in psychology examines the stability of preferences in much more detail than economics does. Surveys examining stability of single cross-situational measures usually report temporal stability in range between 0.2 to 0.3 (see e.g., Block, 1983; Jessor, 1983) and perceives such correlations as indicating relatively stable preferences, while within this interval. Similarly to my findings, Meier & Sprenger (2014) report a correlation of 0.5 in individual time preference choices in an experiment repeated twice over a year with the same set of subjects and label such correlation as high.

than with the transfers in the lean season round (0.48, $p < 0.01$). Moreover, only about 32% of the participants (22 out of 68) guessed correctly their own transfer in the lean season round. Twelve of these 22 subjects decided to choose the same amounts in both rounds. When conducting the same analysis as in Table 4 on a subsample of 46 PAs who did not remember their DG transfers from the previous round correctly, we obtain results that are qualitatively very similar to the results obtained for the full sample of 68 PAs, with no statistically significant differences in DG or TPPG transfers across seasons (see Table A3).

Second, it is possible that the result presented here as a proof of temporally stable sharing behavior could arise as a confound, and would arise even if the DG choices were drawn randomly. We 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 well plausible that due to the limited choice space observed in the cumulative distribution of choices in Figure 2 with the majority of PAs transferring between 2 and 5 units, it could be that the temporal stability of the sharing behavior is 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 10000 times, the average number of equal choices across both seasons is around 15.6%, and 42.5% of decisions remain within a change of one unit, much lower than the actually observed values.

Next, I discuss the stability of TPPG results. Although statistically significant ($p=0.07$), the correlation of individual behavior in the TPPG across seasons is 0.22, much lower than the correlation discussed in case of the DG. Yet even such correlation would be generally accepted as fairly stable over time in the psychological literature (see footnote 18). Panel B in Figure 3 shows that only 13% of individuals sent equal amounts in both seasons, even though the numbers of changes within a margin of one unit reach more than 55%.

In a similar exercise as 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-harvest season to see how many individuals would have sent equal split in such hypothetical case. The average share of participants sending equal amounts in both seasons after random reshuffling in 10000 repetitions is over 16%. This implies that the results I obtain in my experimental data are no better than due to random chance. More reassuringly, conducting the same exercise for the variable indicating a transfer difference within a margin of one ECU, the share is about 43%, indicating some degree of individual stability within this extended margin.

Finding 2: *Transfers in the DG are temporally stable within individuals, suggesting stability of sharing preferences. To a lesser extent I also observe within individual temporal stability in TPPG. .*

4.2 Aggregate temporal stability of punishment behavior

Now I analyse the behavior of PCs in the TPPG in order to understand the dynamics of sharing norms enforcement with exposure to scarcity of resources. Figure 4 shows the distributions of PCs minimum acceptable offers in the TPPG (MAO; as in Henrich et al., 2006) in both the lean and the post-harvest seasons. MAO is the lowest PAs transfer to PB that a PC would accept. 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 the PB, then the MAO for this PC is equal to 3 ECUs. The lowest value for MAO is 0 ECU if PC decides not to punish any kind of PA's behavior. I was able to elicit MAO for 60 out of 71 PCs in the lean season (85%) and for 63 out of 71 PCs in the post-harvest season (87%).[19] The subjects for whom I am unable to construct MAO behaved in an inconsistent way, punishing transfers largely at random without any systematic pattern. In the analysis below I will use the 123 valid observations.

Figure 4 shows that, as in other cultures (Bernhard et al., 2006; Henrich et al., 2006), the Afghan participants in the role of PCs were willing to engage in costly punishment of PAs who were not willing to share enough. Regardless of season, the probability of punishing PAs is increasing with PAs' transfers approaching zero.[20]

Unlike in the case of PAs transfers, the punishing behavior of PCs is not temporally stable. Figure 4 shows that there is a significant decrease in the willingness to punish low offers from the post-harvest to the lean season. PCs in the post-harvest season were on averege not punishing offers equal to 3.03 ECUs and higher, while in the lean season the average MAO dropped significantly to 1.35 ECUs (Columns 1 and 3 in Table 3), reaching the levels of average transfers in the DG and TPPG. The difference in MAO across rounds is statistically significant (MWT: $p<0.01$, $n=123$). I can also reject the equality of MAO distributions over time (Epps-Singleton, $p<0.01$).

Table 5 shows that the increase in willingness to punish remains significant and of a similar magnitude even in a regression framework. Again, I use the model specified in the Equation 1 where the T_{it} now stands for the MAO by individual

[19]This is comparable to Henrich et al. (2006), who were able to assign MAO to 92% of their sample. Reassuringly, this implies that the participants in my sample comprehended the TPPG task comparably to the sample of Henrich et al..

[20]Such pattern emerges even if we include the inconsistent punishers (analysis available upon request).

i in time t. In the first model I do not control for any additional characteristics (Column 1 in Table 5), in the second model I control for the village level fixed effects (Column 2), and in the third model I control for both the village level fixed effects and the individual level characteristics together (Column 3). In all specifications MAO remains statistically significantly lower in the lean season round.

Importantly, the behavior of PCs is also reflected in beliefs of others. Apart from the main experimental task, I also measured beliefs using several incentivised questions. Regarding the punishment, I asked both PBs and PCs whether they believe that most PCs in the current experimental session would punish a PA who decides to transfer zero ECUs. Although insignificantly, the beliefs of PBs (lean season 68% vs. post-harvest season 78%; MWT: p=0.18, n=136) match the actual behavior of PCs and is of similar magnitude as beliefs of PCs about other PCs' willingness to punish zero transfers in their experimental session (lean season 65% vs. post-harvest season 79%; MWT: p=0.06, n=142).[21] This suggests that the behavioral change across seasons is generally considered in the population and is not just an artefact of the experiment among the group of PCs.

As in previous studies, the Afghan farmers are willing to engage in costly altruistic punishment for which they have to give up 20% or 40% of their endowment to punish non-desirable behavior. In terms of daily incomes, the amounts equal to giving up 13% to 26% of average daily incomes to discipline others, a substantial amount given the tight budgets of the studied population. Overall, 93% of the PCs for whom I am able to construct the MAO are willing to punish a PA who decides to keep everything in the post-harvest season, a number comparable to the most punishing societies in the study of Henrich et al. (2006), the Kenyan Gusii and Maragoli tribes. This share drops to 62% in the post-harvest season, similar to the average punishment choice frequency for zero transfers in Henrich et al. (2006) (MWT: p<0.01, n=123) (Columns 1 and 3 in Table 3).

What factor is driving the difference in punishment behavior across seasons? Several possible explanations can be put forward:

First, punishment might be perceived as a normal good, demand for which increases with increasing income. My data suggest that income effects are not a plausible explanation for the observed drop in enforcement during the lean season. Looking at a simple correlation between MAO and individual income (Column 3, Table 5) using OLS, I actually find an opposite: a small and statistically insignificant negative correlation ($\beta = -0.03$, p=0.40). This effect may be driven by the fact that the wealthier individuals are less likely to engage in altruistic punishment. When I examine the correlation between the *change* in income within an individual across seasons and compare the MAO for those PCs whose reported income

[21]See Table 3.

was higher in the post-harvest season compared to the lean season (n=21) and those whose income did not increase in the post-harvest season (n=31), I find that MAO is not statistically significantly different across these groups (MWT: p=0.42, n=52).[22] Specifically, the *change* in MAO for those whose income did not increase between the post-harvest and the lean season is equal to -1.74, while the change in MAO for those whose income increased is -1.14.

Second, Grechenig, Nicklisch & Thöni. (2010), Xiao & Kunreuther (2012), and Bornstein & Weisel (2010) find that punishment level drops with rising uncertainty about PA's intentions. It is well plausible that increasing uncertainty about the PA's financial situation might cause the observed lower punishment levels in the lean season. In other words, the PC in the lean season cannot differentiate between a selfish and a needy PA, which is the reason why he rather abstains from getting involved in the judgment and possible later regret if he decided to punish a needy individual. This uncertainty is generally higher in the lean season. Not only that income level is generally lower, leaving more people below the subsistence threshold, income is also much more variable.[23] Table 2 (Columns 2 and 4) shows that the standard deviation for individual income is significantly higher in the lean season (Variance ratio test: $p<0.01$, n=277). The GINI coefficient for the entire sample reaches 0.47 in the lean season and drops down to 0.33 in the post-harvest season.[24]

Third, increased inequality during periods of scarcity has also been attributed to the rise of grievances, which is one of explanations for the rise in conflicts during scarcity (Hidalgo, Naidu, Nichter & Richardson, 2010; Hsiang, Burke & Miguel, 2013). In my sample I observe an increased number of individuals who were engaged in disputes during the lean season when compared to the post-harvest season (14.5% versus 7.7%; MWT, p=0.02, n=414).[25] Although this link has not been established, it is possible that increased acceptance of violence in solving problems can be associated with the observed decrease in willingness to punish non-cooperative behavior during the period of scarcity.

In my experimental setting I am unable to separate the second and third factors. One way or the other, Fehr & Fischbacher (2004a) have provided strong evidence

[22]The number of observations in this analysis is 52. This is the number of subjects who punished consistently in both seasons, i.e. for whom I was able to construct the MAO in both rounds.

[23]NRVA (2008) reports that food consumption of 48% of rural Afghans is below a poverty line during the lean season, compared to 21% in the post-harvest season.

[24]It cannot be argued that the PCs might expect the PAs to overcome the uncertainty about the neediness of PBs by keeping the money from the experiment and sharing it afterwards in person. None of the participants reported willingness to share the money with anyone outside of his family in a post-experimental survey. Almost 90% (125 out of 139) and over 96% (133 out of 138) of the participants reported that they plan to spend the money from the experiments on food or other household expenses in the lean and the post-harvest season, respectively.

[25]Although statistically insignificant, the difference is of a similar magnitude also for the subsample of 123 observations for PCs across two seasons used for the analysis.

repeated in many consecutive experiments that without norm enforcement mechanisms groups gradually dwindle to a non-cooperative equilibrium. Boyd et al. (2003) provide a theoretical model showing that third party punishment helps societies to maintain cooperative equilibria even in larger groups and its absence leads to a collapse of cooperation, as selfish individuals invade the population and their behavior provides them with higher payoffs compared to the payoffs of cooperators. Thus, regardless of PCs' motivations, the drop in enforcement of cooperation in the lean season increases the likelihood of non-cooperative behavior.

On the other hand, it can be argued that I do not observe a change in behavior of PAs in the TPPG, which speaks against the claim that cooperation deteriorates with the lack of norm enforcement. But cooperation both in Boyd et al.'s theoretical model as well as in Fehr & Fischbacher's experimental study deteriorates only gradually, as the selfish types start invading the population. My result is consistent with such gradual deterioration of cooperative behavior in case of prolonged scarcity of resources of which – by playing a one-shot game – I only observe the initial stage and of which Hsiang et al. (2013) (emergence of conflict due to climatic change) or Dirks (1980) (breakdown of cooperation during famines) observe the final stage. Similarly, Gneezy & Fessler (2012) do not observe a change in behavior of PAs in the ultimatum game from peacetime to wartime played only once in each period, despite the observed increase in punishment behavior during the wartime period experiment.

Similarly to Wutich (2009) who documents that the weakening of social networks is only temporary for the duration of a dry season and returns to original levels with the end of the dry season, Afghan farmers maintain some stabilizing mechanisms that prevent them from plunging into non-cooperative equilibria. However, it seems that they lack mechanisms that would prevent the collapse of cooperation in the times of prolonged scarcity or of unexpected shocks. This might explain the dynamics of collapse of cooperation during famines described in Turnbull (1972), Dirks (1980), or in Ravallion (1997). As my results suggest, the drop in cooperation does not necessarily stem from changes in preferences, but rather from weaker social norms enforcement that help sustain the sharing behavior.

Finding 3: *Afghan farmers substantially decrease intensity of norm enforcement mechanisms during the lean season.*

4.3 Individual-level temporal stability of punishment behavior

As in the case of the sharing behavior, the experimental design also allows me to examine punishing behavior across seasons within an individual. There were

52 PCs for whom I could construct the MAO in both rounds. The remaining 19 PCs behaved inconsistently in either of the seasons, but never in both. In the lean season 11 PCs behaved inconsistently compared to 8 PCs in the post-harvest season. Overall, 34 PCs decreased the level of punishment in terms of MAO between the post-harvest and the lean seasons, 5 PCs punished exactly the same across both seasons, and 13 increased the level of punishment. Figure 5 presents a histogram of individual changes in MAO across seasons.

It would be interesting to understand what characteristics explain the behavioral change. Table 6 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 season, or the wealth index in either of the season does not provide us with any explanation for the observed change in behavior, apart from the statistically significant effect for the post-harvest season's wealth index. This effect, however, is driven by two outliers only and a regression excluding these two observations does not yield the significant effect anymore. No other coefficient in either of the models shows a statistically significant effect. The results suggest that the participants accept the weakening in punishment during the lean season as a social norm which everyone adheres to by decreasing his effort in enforcement of appropriate cooperative behavior, but a definite conclusion would require a larger sample size allowing for more thorough subsample analysis.

4.4 Generalizability of observed behavior

Although more research needs to be done in understanding whether the results presented above can be generalized to other populations, it is important to note that the results are valid for two very different groups. As shown in Table 1, half of the sample in my experiment are ethnic Tajiks and the other half is ethnic Hazaras, second and third largest ethnic groups in Afghanistan respectively. While the former are Sunni muslims, the latter are Shia muslims, a minority in mostly Sunni Afghanistan. As stated earlier, although the two groups live in close proximity and they share the same language, dari, their villages are fully ethnically segregated and there are very few economic interactions between the two areas.

Tajiks, the Persian people, are after Pashtuns the second largest ethnic group in Afghanistan with around 32% of the population. In the Balkh province where the experiments have been conducted Tajiks are the predominant ethnic group with around 44% of the population (DHS, 2010). The governor of the province is a Tajik himself.

Hazaras, people probably of Mongolian descent, constitute to around 8% of the population of Afghanistan and around 9% of the population of Balkh province

(DHS, 2010)[26]. Hazaras have historically been a marginalized group in Afghanistan. They faced social, economic and political discrimination, ofter resulting in atrocities against members of the group. The massacres of Hazaras in 1880s during the reign of Abdur Rahman Khan, and later in 1994 in Kabul and in 1997 in Mazar-e-Sharif during the reign of Taliban effectively "irreparably damaged the fabric of the countrys national and religious soul" (Rashid, 2001, p. 83). Hazaras were practically sidelined from mainstream Afghan politics. For example, the 1964 constitution explicitly stated 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.

Table A5 shows that all the main results are valid for both the Tajiks (Columns 1 to 3) as well as for the Hazaras (Columns 4 to 6) in my sample. That is that that the transfers in both the DG and TPPG remain stable over time, and that the enforcement of sharing norms weakens substantially during the lean season. The results are similar not only qualitatively, but also quantitatively.

5 Conclusions

A large fraction of the world population is repeatedly exposed to periods of resource scarcity and due to climatic changes it is likely that ever more people will be exposed to such times of hardship more frequently. Although there a is common understanding of social responses to extreme scarcities such as famines when cooperation breaks down, we have much less of understanding of social responses to temporary periods of scarcity, very common in many rural societies. In this paper I ask whether a society exposed to such seasonal swings in consumption is able to sustain its informal sharing mechanisms. Namely, I experimentally examine the dynamics of individual sharing preferences using a dictator game, and of willingness of third parties to engage in enforcement of sharing norms using a third party punishment game among Afghan subsistence farmers. I visited the area two times in a year – during the lean season and six months later during a post-harvest season, the period of relative plenty – and conducted the same experiment with the same participants repeatedly.

Although the sharing behavior measured by the dictators' transfers in a standard dictator game remains stable over time both on the aggregate level as well as, to a large extent, on the individual level, the enforcement mechanisms that help to sustain the cooperative outcomes – as measured by the intensity of third parties'

[26]Demographic and Health Survey Afghanistan (2010). Indian Institute for Health Management Research (IIHMR), available online at https://dhsprogram.com/data/dataset/Afghanistan_Special_2010.cfm.

willingness to punish non-desirable behavior – are significantly weakened during the period of scarcity. Although the studied population seems to have developed some mechanisms to sustain prosociality over the period of temporary resource scarcities during the lean season, it is not implausible that cooperation might deteriorate if the population experiences a larger shock or if it is exposed to scarcity over a longer period of time than expected. This would be consistent with the observed decline in cooperation over time when enforcement mechanisms are not available in laboratory experiments (Boyd et al., 2003; Fehr & Fischbacher, 2004a).

It is still not clear how narrow this gap between cooperation and its breakdown is and more research should be done in this direction, but the present study offers some evidence that even temporary periods of resource scarcity weaken the enforcement of sharing norms substantially. Policy makers should take this finding seriously in addressing the issue of transitory scarcity not only as a problem at the individual level, but also at the societal level. More importantly, as mounting evidence on causal links between resource scarcity and emergence of conflicts on a community level shows (Hsiang et al., 2013) it is possible that many societies exposed to temporary periods of resource scarcity might be closer to a spark of violence than was previously thought. The herein observed erosion of social norms enforcement might be one of the explanatory factors.[27]

Policymakers already offer solutions to mitigate the seasonal scarcities and scarcities in general by introduction of safety net programs (Alderman & Yemtsov, 2014), provision of formal insurance (Morduch, 2006), or provision of microcredit (Banerjee, 2013). While the policymakers usually promote the impact of these policies on individuals, they often fall short of stressing out their possible effect on preventing the negative outcomes on the community level.

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[27]See for example Sekhri & Storeygard (2013) or Blakeslee & Fishman (2013) who document an increase in violence and property crime as a response to rainfall failure in India or Oster, 2004 and Miguel, 2005 who document increased incidence of ritual murders after rainfall failures in renaissance Europe and in current rural Tanzania.

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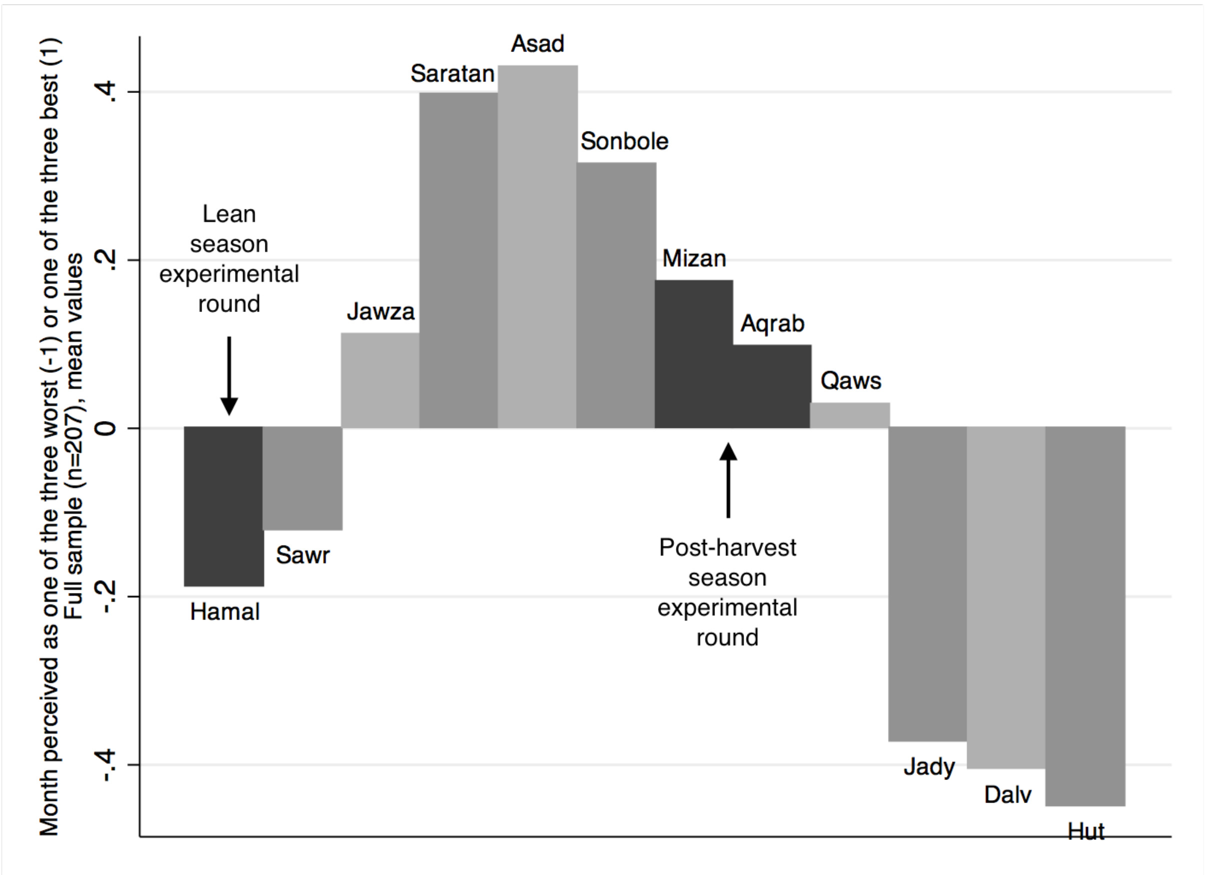
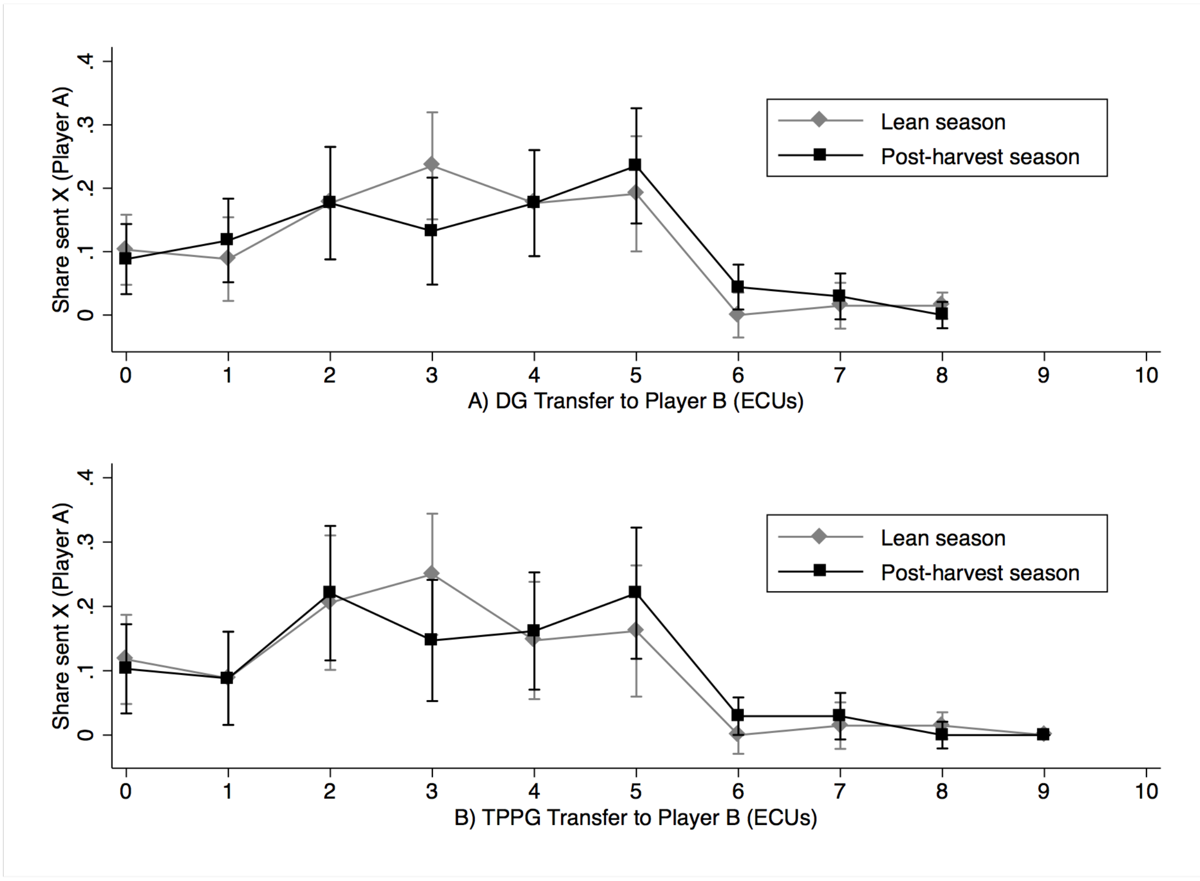
Figure 1: Subjective perceptions of living quality throughout the year



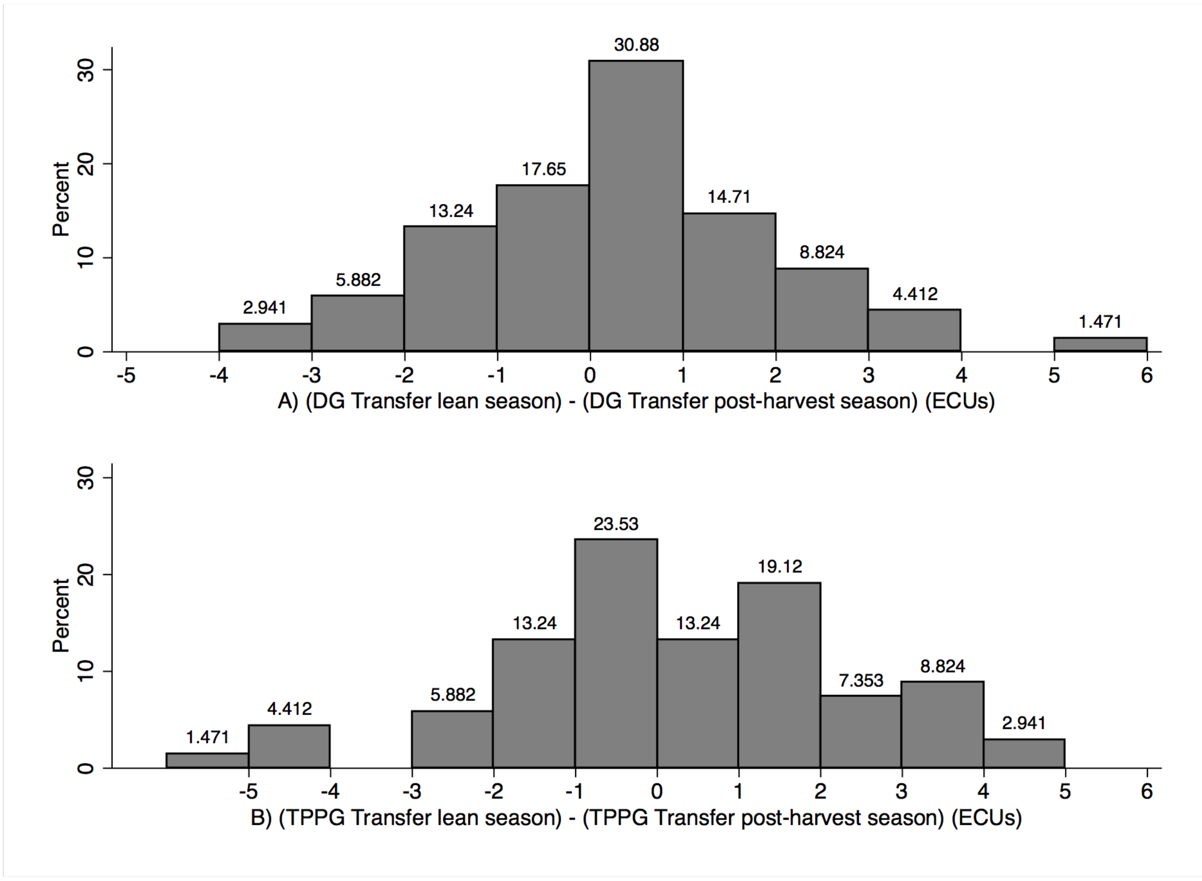
Notes: The figure depicts the average participants' rating of quality of life during the particular month. The participants rated the month as one of the best thee months (+1) or as one of the worst three months in a question "Which three months are usually the [best /most difficult] in terms of food 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. The experiments were carried out in months of Hamal 1392 (March to April 2013, lean season) and Mizan and Aqrab 1392 (October 2013, post-harvest season) represented in darkest color.

Figure 2: Cumulative distributions of DG and TPPG transfers across seasons



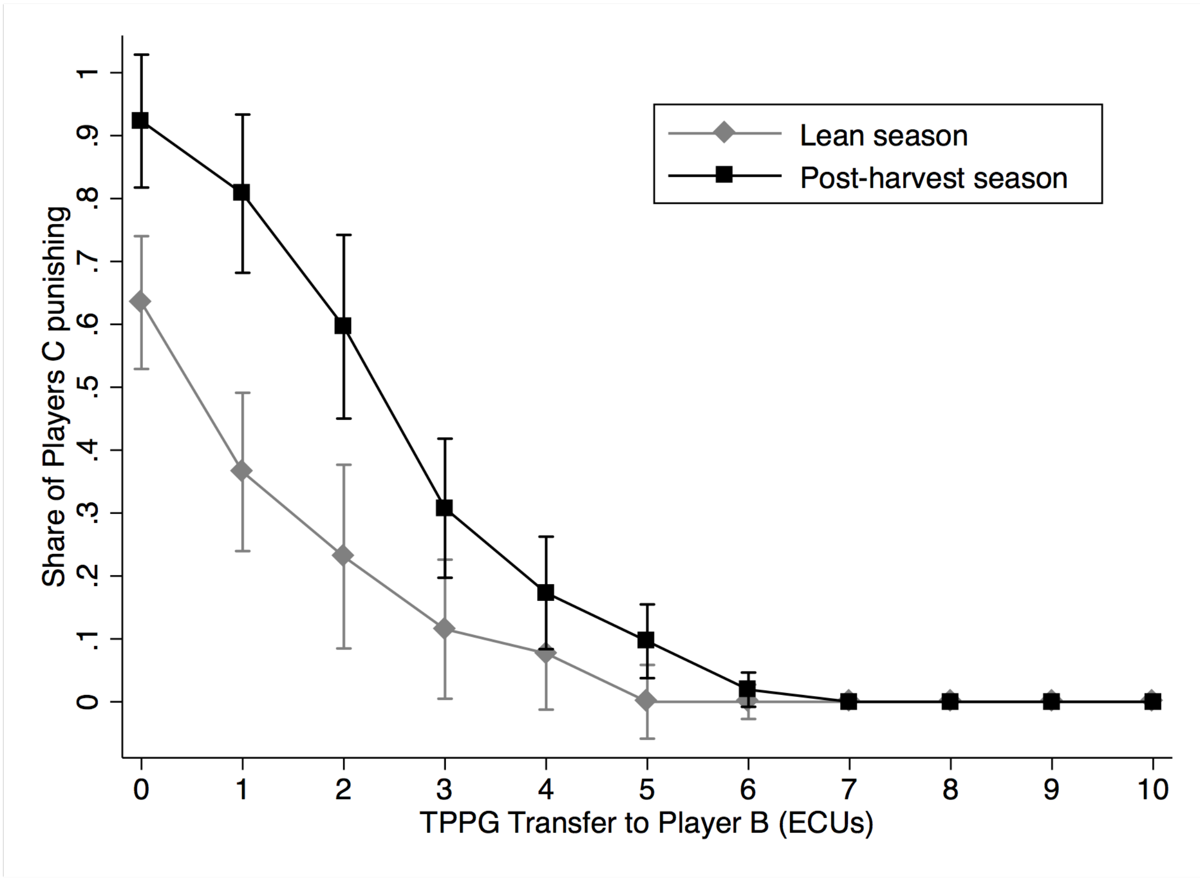
Notes: The figure shows the cumulative distribution of transfers from Player A (dictator) to Player B (passive receiver) in ECUs (allowed between 0 and 10) in A) the dictator game (DG) and B) the third party punishment game (TPPG) across the PAs participating in both rounds (n=68). The cumulative distribution of lean season transfers is depicted in grey, the cumulative distribution of post-harvest season transfers is depicted in black. The error bars represent 95% confidence intervals.

Figure 3: Distributions of individual changes in DG and TPPG transfers across seasons



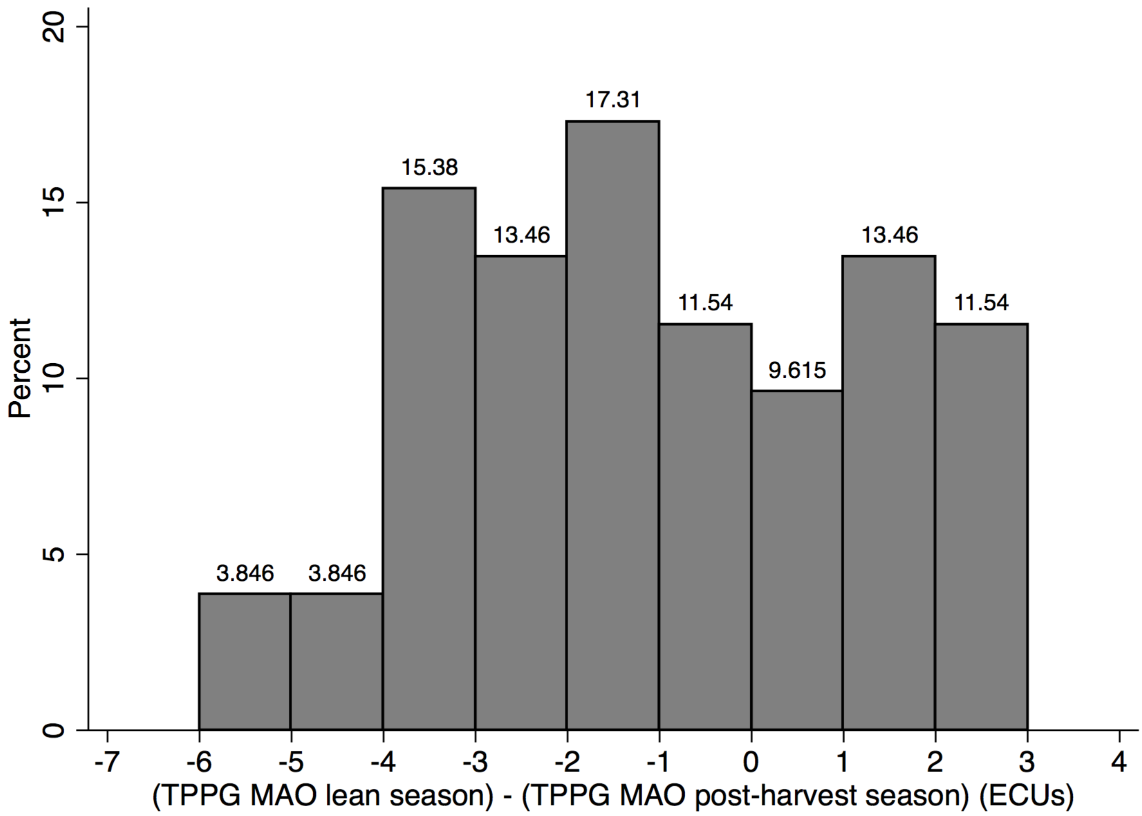
Notes: The figure shows the distributions of differences between the transfers in the lean season and the post-harvest season in A) the DG and B) the TPPG within a participant. Transfer differences are in ECUs (the possible range is from -10 to 10).

Figure 4: Distributions of TPPG MAO across seasons



Notes: The figure shows the distribution of Player Cs' (punishers) minimum acceptable Player As' offers to Player B in the third party punishment game (TPPG MAO). I use data for the 52 PCs for whom MAO could be recovered in both rounds. The distribution of lean season MAO is depicted in grey, the distribution of post-harvest season MAO is depicted in black. The error bars represent 95% confidence intervals.

Figure 5: Distributions of individual changes in TPPG MAO across seasons



Notes: The figure shows the distribution of within-individual changes in Player Cs' (punishers) minimum acceptable Player As' offers 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 MAO could be recovered in both rounds. Positive numbers represent higher MAO in the post-harvest season compared to the lean season.

Table 1: Descriptive statistics

	Mean (1)	SD (2)
Age	38.83	(15.49)
Schooling (completed years)	2.97	(3.82)
Can read letter (d)	0.58	(0.49)
Number of household members	9.66	(4.69)
Household head (d)	0.83	(0.38)
Not married (d)	0.11	(0.32)
Married to a single wife (d)	0.71	(0.45)
Married to multiple wives (d)	0.18	(0.38)
Daughters below 15[a]	1.93	(1.66)
Sons below 15[a]	2.13	(1.60)
Years living in village	36.98	(16.59)
Sunni (d)	0.51	(0.50)
Irrigated land (in jiribs)	4.47	(7.36)
Rainfed land (in jiribs)	10.81	(18.68)
Observations	207	

Notes: Means of the sample participating in both seasons are reported. Standard deviations in parentheses. [a] These questions were only asked to a subsample of players A and C (N=194).

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]	2.08	(5.11)	2.93	(2.98)	-0.85	(-1.70)
Cash earned in past 30 days: selling food (ths AFN)[a]	0.93	(4.60)	1.78	(2.58)	-0.85	(-1.89)
Cash earned in past 30 days: day labor (ths AFN)[a]	0.60	(1.65)	0.46	(1.57)	0.13	(0.68)
Perceived income situation[b]	-0.40	(0.67)	-0.03	(0.61)	-0.37***	(-5.89)
Food from own source (d)	0.35	0.48	0.73	0.45	-0.37***	(-6.73)
Food purchased in the market (d)	0.60	0.49	0.27	0.44	0.33***	(5.89)
Meat eaten in past 7 days (times)[a]	0.73	(1.04)	0.98	(1.00)	-0.25*	(-2.05)
Now in debt (d)[a]	0.86	(0.34)	0.70	(0.46)	0.16***	(3.38)
Now providing loan (d)[a]	0.29	(0.45)	0.39	(0.49)	-0.10	(-1.79)
Now saves money (d)[a]	0.07	(0.26)	0.04	(0.20)	0.03	(1.02)
Unable to work in past 30 days (days)	7.85	(10.09)	2.25	(6.83)	5.59***	(6.61)
Perceived stress score[c]	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 HH 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 1% level, ** at 5% level and * at 10% level. Column 6 reports t-values of a two-sided t-test. [a] Questions asked to the subsample of N=139 Players A and C. [b] Indicating whether the individual perceives his current income to be much worse (-2), worse (-1), same (0), better (+1), or much better (+2) relative to other fellow villagers. [c] A short version of the Cohen, Kamarck & Mermelstein (1983) Perceived Stress Scale used: scale ranges from 0 to 8, 8 indicated highest level of perceived stress.

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: others' DG transfer (ECU)	2.94	(1.84)	3.04	(1.60)	-0.11	(-0.35)
Belief: others' TPPG transfer (ECU)	2.93	(1.63)	3.06	(1.67)	-0.13	(-0.44)
Belief: most PCs punish zero TPPG transfer (d)	0.72	(0.45)	0.71	(0.46)	0.01	(0.13)
Observations	68		68		136	
Player B (Receiver)						
Belief: others' DG transfer (ECU)	3.18	(2.03)	3.63	(1.61)	-0.46	(-1.45)
Belief: others' TPPG transfer (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 question about TP transfer (ECUs)	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 1% level, ** at 5% level and * at 10% 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 TPPG minimum acceptable offer. [a] Values reported for a subsample of N=123 observations (60 lean season, 63 post-harvest season) with consistent MAO.

Table 4: Effect of seasonality on DG and TPPG transfers

Dep. Variable	DG transfer			TPPG transfer		
	(1)	(2)	(3)	(4)	(5)	(6)
Lean season	-0.19	-0.19	-0.12	-0.24	-0.24	-0.12
	(0.22)	(0.22)	(0.26)	(0.27)	(0.28)	(0.29)
Age			-0.03*			-0.02
			(0.01)			(0.01)
Schooling (completed years)			-0.07			-0.06
			(0.06)			(0.05)
Number of household members			-0.07			-0.05
			(0.05)			(0.05)
Cash earned in past 30 days (ths AFN)			-0.01			0.06
			(0.04)			(0.05)
Wealth Index			-0.97			-0.20
			(1.45)			(1.09)
Village fixed effects	No	Yes	Yes	No	Yes	Yes
Constant	3.22***	3.38***	5.33***	3.10***	2.90***	4.11***
	(0.23)	(0.88)	(0.98)	(0.22)	(0.74)	(0.84)
Observations	136	136	136	136	136	136
R-squared	0.00	0.17	0.26	0.00	0.14	0.20

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at 1% level, ** at 5% level and * at 10% level. In Columns 1 to 3 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Columns 4 to 6 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). For one observation (id=5109) the wealth index measure was missing due to the fact that the participant did not respond to one of the survey questions. The missing observation was replaced by an average wealth index for the given round. The results are robust to replacing by a minimum as well as by a maximum wealth index amount (analysis available upon request).

Table 5: Effect of seasonality on TPPG MAO

Dependent variable	TPPG Minimum Acceptable Offer		
	(1)	(2)	(3)
Lean season	-1.68***	-1.68***	-1.48***
	(0.31)	(0.32)	(0.33)
Age			-0.03**
			(0.01)
Schooling (completed years)			0.01
			(0.05)
Number of household members			-0.03
			(0.04)
Cash earned in past 30 days (ths AFN)			-0.04
			(0.03)
Wealth Index			-3.17*
			(1.74)
Village fixed effects	No	Yes	Yes
Constant	3.03***	3.43***	4.72***
	(0.24)	(0.54)	(0.91)
Observations	123	123	123
R-squared	0.20	0.27	0.35

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at 1% level, ** at 5% level and * at 10% 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.

Table 6: Explaining within-individual changes in MAO across seasons

Dependent variable	TPPG MAO Difference		
	(1)	(2)	(3)
Age	0.00	0.00	-0.01
	(0.03)	(0.03)	(0.03)
Schooling (completed year)	0.13	0.10	0.10
	(0.11)	(0.09)	(0.11)
Number of household members	0.03	0.05	-0.03
	(0.11)	(0.10)	(0.10)
Cash earned in past 30 days (ths AFN) - Lean season	-0.06	-0.07	
	(0.04)	(0.04)	
Cash earned in past 30 days (ths AFN) - Post-harvest season	0.13		0.11
	(0.18)		(0.17)
Wealth Index - Lean season	-0.84	-0.40	
	(4.05)	(4.16)	
Wealth Index - Post-harvest season	4.88		5.90**
	(3.23)		(2.81)
Village fixed effects	Yes	Yes	Yes
Constant	-3.46*	-2.82	-2.62
	(1.92)	(1.79)	(1.61)
Observations	52	52	52
R-squared	0.26	0.23	0.24

Notes: OLS coefficients. Robust standard errors in parentheses. *** denotes significance at 1% level, ** at 5% level and * at 10% 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 Appendix

Table A1: Village level effects

Dependent variable	DG Transfer			TPPG Transfer		
	Full	Lean	Post-harvest	Full	Lean	Post-harvest
	(1)	(2)	(3)	(4)	(5)	(6)
Marghzar	0.40	1.11	-0.30	0.59	1.43	-0.25
	(0.78)	(1.20)	(1.06)	(0.76)	(1.22)	(0.95)
Koche Aghaz	-1.32*	-1.36	-1.29	-0.64	-0.71	-0.57
	(0.71)	(1.14)	(0.93)	(0.71)	(1.13)	(0.94)
Jaw-Paya Ali Abad	-0.29	-0.39	-0.18	0.34	-0.82	1.50*
	(0.77)	(1.15)	(1.10)	(0.86)	(1.20)	(0.80)
Baizai Bala	0.40	0.36	0.45	0.90	1.05	0.75
	(0.77)	(1.14)	(1.11)	(0.73)	(1.11)	(1.04)
Abpartob	1.21	1.19	1.24	1.55*	1.76	1.33
	(0.81)	(1.21)	(1.15)	(0.85)	(1.20)	(1.31)
Kheirabad	1.05	-0.14	2.24**	1.38	0.10	2.67***
	(0.94)	(1.18)	(1.03)	(0.98)	(1.20)	(0.96)
Quala-e-Noorak	0.09	0.23	-0.05	0.34	0.80	-0.12
	(0.76)	(1.17)	(1.05)	(0.70)	(1.10)	(0.94)
Shuran-e-Bala	-0.39	-0.34	-0.43	0.21	0.83	-0.40
	(0.82)	(1.42)	(0.95)	(0.76)	(1.31)	(0.85)
Kalahkan Pain	-0.41	-0.27	-0.55	-0.41	-0.32	-0.50
	(0.81)	(1.20)	(1.18)	(0.75)	(1.20)	(0.99)
Constant	3.29***	3.14***	3.43***	2.79***	2.57**	3.00***
	(0.65)	(1.06)	(0.84)	(0.62)	(1.05)	(0.76)
Observations	136	68	68	136	68	68
R-squared	0.16	0.21	0.20	0.13	0.23	0.21

Notes: OLS coefficients. The constant represents the omitted village, Kalakhan-e-Bala. Robust standard errors in parentheses. *** denotes significance at 1% level, ** at 5% level and * at 10% level. In Columns 1 to 3 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Columns 4 to 6 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10).

Table A2: Effect of seasonality on DG and TPPG transfers (Ordered probit)

Dep. Variable	DG transfer			TPPG transfer		
	(1)	(2)	(3)	(4)	(5)	(6)
Lean season	-0.12	-0.14	-0.09	-0.14	-0.15	-0.07
	(0.13)	(0.14)	(0.17)	(0.16)	(0.17)	(0.18)
Age			-0.02*			-0.01
			(0.01)			(0.01)
Schooling (completed years)			-0.05			-0.04
			(0.04)			(0.03)
Number of household members			-0.05			-0.04
			(0.03)			(0.03)
Cash earned in past 30 days (ths AFN)			-0.01			0.04
			(0.03)			(0.03)
Wealth Index			-0.71			-0.16
			(0.89)			(0.67)
Village fixed effects	No	Yes	Yes	No	Yes	Yes
Observations	136	136	136	136	136	136

Notes: Ordered probit. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at 1% level, ** at 5% level and * at 10% level. In Columns 1 to 3 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Columns 4 to 6 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). For one observation (id=5109) the wealth index measure was missing due to the fact that the participant did not respond to one of the survey questions. The missing observation was replaced by an average wealth index for the given round. The results are robust to replacing by a minimum as well as by a maximum wealth index amount (analysis available upon request).

Table A3: Effect of seasonality on DG and TPPG transfers (subsample of PAs who do not recall own previous round DG transfer)

Dep. Variable	DG transfer			TPPG transfer		
	(1)	(2)	(3)	(4)	(5)	(6)
Lean season	-0.13	-0.13	-0.03	-0.15	-0.15	-0.05
	(0.29)	(0.31)	(0.36)	(0.35)	(0.37)	(0.41)
Age			-0.03*			-0.02*
			(0.02)			(0.01)
Schooling (completed years)			-0.10			-0.08
			(0.08)			(0.06)
Number of household members			-0.09			-0.05
			(0.07)			(0.07)
Cash earned in past 30 days (ths AFN)			-0.05			0.03
			(0.06)			(0.07)
Wealth Index			-1.93			-0.58
			(1.34)			(1.23)
Village fixed effects	No	Yes	Yes	No	Yes	Yes
Constant	3.28***	3.87***	6.33***	3.15***	3.48***	5.05***
	(0.28)	(1.13)	(1.35)	(0.26)	(0.82)	(1.22)
Observations	92	92	92	92	92	92
R-squared	0.00	0.18	0.28	0.00	0.12	0.18

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at 1% level, ** at 5% level and * at 10% level. In Columns 1 to 3 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Columns 4 to 6 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.

Table A4: Effect of seasonality on TPPG MAO (Ordered probit)

Dependent variable	TPPG Minimum Acceptable Offer		
	(1)	(2)	(3)
Lean season	-1.07***	-1.13***	-1.11***
	(0.20)	(0.21)	(0.24)
Age			-0.02***
			(0.01)
Schooling (completed years)			0.00
			(0.03)
Number of household members			-0.02
			(0.03)
Cash earned in past 30 days (ths AFN)			-0.09**
			(0.04)
Wealth Index			-2.20*
			(1.28)
Village fixed effects	No	Yes	Yes
Observations	123	123	123

Notes: Ordered probit. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at 1% level, ** at 5% level and * at 10% 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.

Table A5: Effect of seasonality on DG transfers, TPPG transfers, and TPPG MAO (by ethnic group)

Dep. Variable	Tajik			Hazara		
	DG transfer (1)	TPPG transfer (2)	TPPG Minimum Acceptable Offer (3)	DG transfer (4)	TPPG transfer (5)	TPPG Minimum Acceptable Offer (6)
Lean season	-0.44	0.16	-2.06***	0.04	-0.50	-1.31***
	(0.39)	(0.39)	(0.53)	(0.41)	(0.54)	(0.46)
Age	-0.02	-0.01	-0.06***	-0.05***	-0.04**	-0.00
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Schooling (completed years)	-0.16*	-0.10	-0.04	0.05	0.00	0.05
	(0.08)	(0.07)	(0.05)	(0.07)	(0.07)	(0.10)
Number of household members	-0.11	-0.09	-0.02	0.02	0.01	-0.08
	(0.07)	(0.06)	(0.04)	(0.06)	(0.08)	(0.09)
Cash earned in past 30 days (ths AFN)	0.00	0.13*	-0.28***	-0.06	-0.00	-0.01
	(0.08)	(0.08)	(0.08)	(0.06)	(0.08)	(0.03)
Wealth Index	4.11	1.98	-2.84	-2.96**	-0.66	-3.47
	(2.58)	(2.36)	(2.63)	(1.18)	(1.34)	(2.67)
Village fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	5.55***	3.78***	6.75***	3.51***	3.48***	4.92***
	(1.05)	(0.94)	(1.27)	(0.63)	(0.77)	(0.73)
Observations	74	74	63	62	62	60
R-squared	0.26	0.24	0.52	0.45	0.25	0.29

Notes: OLS coefficients. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at 1% level, ** at 5% level and * at 10% 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 to 5 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). In Columns 3 to 6 the dependent variable in all models is the third party punishment game (TPPG) minimum acceptable offer (MAO).

Table A6: Effect of seasonality on DG and TPPG transfers (Ordered probit)

	Participating in both rounds		Participant lean season only (drop outs)				in post-harvest season in post-harvest season			
					T-test				T-test	
	Mean	SD	Mean	SD	Difference	t value	Mean	SD	Difference	t-value
Age	38.83	(15.49)	37.25	(15.51)	-1.58	(-0.79)	33.50	(16.00)	-5.32***	(-3.43)
Schooling (completed years)	2.97	(3.82)	2.19	(3.16)	-0.78	(-1.65)	3.14	(4.14)	0.18	(0.45)
Can read letter (d)	0.58	(0.49)	0.54	(0.50)	-0.04	(-0.66)	0.44	(0.50)	-0.14**	(-2.93)
Number of household members	9.66	(4.69)	9.20	(4.20)	-0.46	(-0.78)	8.60	(3.90)	-1.06*	(-2.50)
Household head (d)	0.83	(0.38)	0.77	(0.42)	-0.06	(-1.13)	0.61	(0.49)	-0.22***	(-5.19)
Not married (d)	0.11	(0.32)	0.13	(0.34)	0.02	(0.48)	0.33	(0.47)	0.23***	(5.84)
Married to a single wife (d)	0.71	(0.45)	0.69	(0.47)	-0.02	(-0.33)	0.61	(0.49)	-0.21***	(-4.84)
Married to multiple wives (d)	0.18	(0.38)	0.18	(0.39)	-0.00	(-0.00)	0.05	(0.21)	-0.03	(-1.09)
Daughters below 15	1.93	(1.66)	1.95	(1.39)	0.02	(0.07)	1.54	(1.50)	-0.20	(-1.09)
Sons below 15	2.13	(1.60)	1.93	(1.21)	-0.20	(-0.85)	1.86	(1.69)	0.07	(0.39)
Years living in village	36.98	(16.59)	34.95	(16.38)	-2.03	(-0.95)	32.01	(16.56)	4.25	(0.90)
Sunni (d)	0.51	(0.50)	0.51	(0.50)	0.00	(0.07)	0.47	(0.50)	-0.04	(-0.73)
Irrigated land (in jiribs)	4.47	(7.36)	3.58	(3.79)	-0.89	(-1.05)	3.69	(5.46)	-0.78	(-1.22)
Rainfed land (in jiribs)	10.81	(18.68)	9.67	(14.36)	-1.14	(-0.50)	9.66	(21.73)	-1.15	(-0.58)
Observations	207		84		291		212		419	

Notes: Ordered probit. Clustered standard errors in parentheses. Clustering at individual level. *** denotes significance at 1% level, ** at 5% level and * at 10% level. In Columns 1 to 3 the dependent variable is the dictator game (DG) transfer in ECUs (range from 0 to 10). In Columns 4 to 6 the dependent variable is the third party punishment game (TPPG) transfer in ECUs (range from 0 to 10). For one observation (id=5109) the wealth index measure was missing due to the fact that the participant did not respond to one of the survey questions. The missing observation was replaced by an average wealth index for the given round. The results are robust to replacing by a minimum as well as by a maximum wealth index amount (analysis available upon request).

Table A7: Differences in DG transfers, TPPG transfers, and TPPG MAO by subjects participating in both rounds and in one round only

	Lean season		
	DG transfer (1)	TPPG transfer (2)	TPPG Minimum Acceptable offer (3)
Lean season	-0.14	-0.18	-1.60***
	(0.31)	(0.30)	(0.32)
Participant lean season only (drop-outs)	0.68**	0.42	0.28
	(0.29)	(0.29)	(0.36)
Fresh participant in post-harvest season	-0.37	-0.25	0.01
	(0.49)	(0.45)	(0.56)
Age	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)
Schooling (completed year)	-0.06*	-0.05	0.03
	(0.03)	(0.03)	(0.04)
Number of household members	-0.05*	-0.02	-0.02
	(0.03)	(0.03)	(0.03)
Cash earned in past 30 days (ths AFN)	-0.01	0.03	-0.03
	(0.03)	(0.02)	(0.03)
Wealth index	-0.68	0.00	-0.80
	(1.19)	(0.89)	(1.98)
Constant	4.55***	3.40***	3.53***
	(0.55)	(0.53)	(0.69)
Village fixed effects	Yes	Yes	Yes
Observations	231	231	200
R-squared	0.24	0.20	0.29

Notes: OLS coefficients. Omitted dummy variable is for the subjects who participated in both seasons in the post-harvest round. Robust standard errors in parentheses. *** denotes significance at 1% level, ** at 5% level and * at 10% 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 in all models is the third party punishment game (TPPG) minimum acceptable offer (MAO).

B Image documentation

Figure A1: Selection of experimental subjects from interested villagers

Figure A2: Explaining instructions in a group

(a) Experimental subjects

(b) Explaining instructions in group

Figure A3: Individual player experimental sessions

(a) Individual session 1

(b) Individual session 2

(c) Individual session 3

C Experimental script

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. Here is another example. 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.