Should I Stay or Should I Go?
A Behavioral Approach to Organizational Choice in Tajikistan's Agriculture

Malte Müller and Jens Rommel

Most communist economies were dominated by large collective farms. Today, smaller family farms often coexist with larger corporate and collective farms in these countries. The roles of other-regarding preferences and social norms have been largely neglected in the debate on farmers' organizational choices. We conducted lab-in-the-field ultimatum game experiments with 397 cotton farmers from collective and family farms. Large and statistically significant differences existed in the rejection behavior among the two farm types. Punishment of unfair behavior explained organizational choice, both with and without controlling for other factors. We conclude that the continuation of dual farm structures requires tailored policy support.

Key words: Central Asia, decollectivization, experimental economics, farm structure, social preferences, structural change, transition, ultimatum game

Introduction

Optimal farm size and organization are highly debated in agricultural economics (Allen and Lueck, 1998; Hermans et al., 2017; Feder, 1985; Schmitt, 1991; Pollak, 1985). Which property rights, labor-to-capital ratios, and farm sizes maximize farm profit? How are farm characteristics related to climatic conditions and macro-institutional environments? The breakup of the Soviet Union and other centrally planned systems has offered a wide range of interesting cases to study these questions (Pingali and Xuan, 1992; Lerman et al., 2003; Mathijs and Swinnen, 1998; Sarris, Doucha, and Mathijs, 1999; Thiele and Brodersen, 1999; Beckmann, 1997; Macours and Swinnen, 2002). The debate over the advantages and disadvantages of collective farming and the lasting effects of history on agricultural structures continues today (Agarwal, 2018; Xu, 2017). Collective structures persist in countries with unfavorable policies, such as a lack of private property rights for agricultural land, land restitution to former owners, and high bureaucratic burdens for leaving the collective (Mathijs and Swinnen, 1998). Conversely, private farming took off rapidly in countries with favorable terms of trade for agricultural products and low land-to-labor ratios (Rozelle and Swinnen, 2004).

Although agricultural reform has generally paved the way for a shift toward individual and family farms in most post-communist economies, differences within countries persist. Large corporate and small family farms often coexist, and family farms are generally not more efficient than corporate farms (Mathijs and Swinnen, 1998; Rizov et al., 2001; Balmann, 1994; Agarwal, 2018). This within-country variation of decollectivization cannot be easily explained by differences in efficiency or macro-economic conditions and institutions

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Review coordinated by David K. Lambert.

(Mathijs and Swinnen, 2001; Thiele and Brodersen, 1999), and it remains an open question as to which factors drive farmers' organizational choices within a country.

Individual and household characteristics, as well as motivational factors, may affect organizational choice in agriculture (Rizov et al., 2001; Nilsson, Hansson, and Lagerkvist, 2017). However, individuals' behavior also depends on the actions and preferences of others. Humans do not necessarily act selfishly, and concerns regarding fairness and equity matter (Fehr and Falk, 2002). Recent economic models incorporate so-called "social preferences," also termed "other-regarding preferences," "inequity aversion," or "fairness concerns" in the literature (Bolton and Ockenfels, 2000; Fehr and Schmidt, 1999; Platteau, 2000; Rabin, 1993). Social preferences are context-dependent (Fehr and Falk, 2002) and differ across and within cultures (Fischbacher, Gächter, and Fehr, 2001; Henrich et al., 2004). To date, little is known about the role of social preferences in agriculture (Colen et al., 2016; Viceisza, 2016).

This paper investigates the role of social preferences on the persistence of dual farm structures. Evaluating Tajikistan, a former Soviet republic that experienced a rather recent partial shift from collectivized agriculture to family farming (particularly in cotton production) (Hierman and Nekbakhtshoev, 2018; Hofman and Visser, 2014), we study the organizational choice of cotton farmers in a post-collectivization environment.

Decollectivization in Agriculture and the Role of Social Preferences

In communist economies, agriculture is typically organized in large, state-controlled production collectives. These farms are often inefficient (Rozelle and Swinnen, 2004; Mathijs and Swinnen, 2001). Specifically, some researchers have argued that family farms have a transaction cost advantage compared to collectives: the costs of monitoring labor, which may reduce other economies of scale in production, are assumed to be lower for family farms (Schmitt, 1991; Pollak, 1985; Allen and Lueck, 1998; Sarris, Doucha, and Mathijs, 1999; Deininger, 1995; Beckmann, 1997). In addition, farm workers on state-owned farms face a lack of incentives, as they are rarely paid according to their actual labor input, productivity, or farm profits (Rozelle and Swinnen, 2004). After the breakup of the Soviet Union, most countries privatized land and other production factors. State-owned farms were dissolved or restructured. Frequently, introducing individual farms and private property rights led to an increase in gross agricultural productivity (Macours and Swinnen, 2002, 2000). Yet there is considerable heterogeneity among countries (Mathijs and Swinnen, 1998), and collectives continued to exist in several countries for several years after reform (Sarris, Doucha, and Mathijs, 1999; Lerman et al., 2003; Csaki and Lerman, 2000). To explain this phenomenon, the literature distinguishes between macro-level institutional and biophysical factors and micro-level factors at the farm.

Farms with low labor-to-capital ratios that also employ modern technology are more likely to stay in business. Mathijs and Swinnen (1998) showed that collective farms with high initial productivity are less likely to dissolve. Organizational choice also depends on land ownership and biophysical conditions. If land ownership is fragmented and the landscape is scattered, smaller family farms can economize on organizational and monitoring costs, giving them an advantage over collective farms (Mathijs and Swinnen, 1998; Rizov et al., 2001).

If there is a critical mass of farmers willing to exit, a collective may be dissolved. Petrick and Carter (2009) showed that internal and external tipping points are important drivers of decollectivization. In addition, external factors, such as the availability of rural services and linkages to markets, critically affect organizational choice. Collective farms exhibit positive economies of scale in risk management (Carter, 1987) and marketing as well as information and credit procurement through stronger vertical integration and bargaining positions (Rizov et al., 2001; Mathijs and Swinnen, 1998). Collective farms may offer services and infrastructures that would otherwise not be provided in structurally weak rural areas. Where collective structures serve as a safety net, starting an individual farm is a risky decision (Lerman, Csaki, and Feder, 2004).

The literature has also identified a number of individual and farm-level factors that drive farmers' organizational choice, such as farmers' human capital and specialization. Low education and farm-specific training and knowledge make farmers less likely to leave the collective. There may also be nonlinear relationships among education, age, and organizational choice (Rizov et al., 2001). Young and old farmers stay in the collective, whereas middle-aged farmers are more likely to start individual farms. While education is generally positively associated with individualization, very well-educated farmers are more likely to leave agriculture to work in other sectors. In some cases, exited farmers leave their land with the collective and formally remain members (Rizov et al., 2001).

Social preferences and norms are important drivers of organizational choice in agriculture (Petrick and Carter, 2009; Bezemer, 2002; Hierman and Nekbakhtshoev, 2018). Referring to decollectivization processes in the Czech Republic and Slovakia, Bezemer (2002) even argues that "preferences, beliefs and norms...define the outcome of the process of institutional choice for each type of decision maker" (p. 728). The importance of social preferences has been theoretically and empirically widely acknowledged in economics (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000). Economic experiments are increasingly used in the field to investigate differences in social preferences between groups and individuals (Carpenter and Seki, 2011), in particular in collective resource management (Bouma, Bulte, and van Soest, 2008). An increasing number of studies has been conducted with farmers in the field (e.g., Moser and Mußhoff, 2016; Gregg and Rolfe, 2017; Müller, Rommel, and Kimmich, 2018; Saenger et al., 2013; Bougherara et al., 2017). However, studies on farmers' social preferences are still rare (see Viceisza, 2016), and there has been a lack of empirical analysis to date on their impact on organizational choice in agriculture.

Transition of the Agricultural Sector in Tajikistan

Tajikistan is the poorest of the former Soviet republics and one of the poorest countries in the world in terms of per capita gross national income (Jahan, 2015). Approximately 8.5 million people live in Tajikistan, and about 46.5% of the labor force is employed in agriculture (World Bank, 2015). Agriculture is the main source of income for 70% of the rural population (Lerman, 2012b; Lerman and Sedik, 2008). But geographical conditions limit agricultural production: Only 6.1% of the mountainous and arid country can be used as arable land (Food and Agriculture Organisation of the United Nations, 2014). Consequently, farmers can use on average only small amounts of land. As a legacy of Soviet times, the government sets centrally planned production targets for cotton, and farmers in large parts of the irrigated lands in the Ferghana Valley and in the southern Khatlon Province grow cotton (Van Atta, 2009). After independence, Tajikistan experienced a decline of 55% in gross agricultural production, and yields continued to be low (Lerman and Sedik, 2008). The economic turmoil that followed independence, aggravated by a civil war, led to an increase in the work force employed in agriculture, a decrease in labor productivity, and an increase in the labor-to-capital ratio (Rozelle and Swinnen, 2004).

Agricultural policy reforms aimed to reorganize state-owned and -controlled farms into private enterprises. From 1992 onwards, several laws and presidential decrees initiated a land reform with the aim of privatizing land and farming (Lerman and Sedik, 2008; Rowe, 2010; Robinson et al., 2008). Although land is still formally owned by the state, legal mechanisms had been established by the end of the 1990s giving farmers individual land use rights by withdrawing land from collective farms (Hierman and Nekbakhtshoev, 2018).[1] However, markets for trading land use rights were introduced as late as 2012. Productivity and efficiency remain low, and Tajikistan has witnessed an individualization rather than a privatization of agriculture (Lerman, 2012a; Hofman and Visser, 2014).

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[1] As in many other former Soviet republics, private farming was formerly possible only on so-called household plots. These relatively small plots were predominantly used for subsistence farming (Rozelle and Swinnen, 2004). In Tajikistan, these plots are also known as "presidential land" or "kitchen gardens." They have an important role in ensuring food security (Robinson et al., 2008; Rowe, 2010).

Three farm types can be distinguished in Tajikistan: The 2002 law on dehkan farms recognizes individual, family and collective dehkan farms (Lerman, 2012a).[2] In Article 3 of the 2002 law on dehkan farms, the term is used to define a private farm (being either an individual, family, or collective dehkan farm) and to differentiate it from state-owned corporations and household plots (see Robinson et al., 2008). Farm sizes have decreased in Tajikistan, and the country has witnessed an increase in demand for rural services such as agricultural extension and marketing. Although rural services provisions are still low, similar to other transitional economies, cooperatives play an increasingly important role in improving access to services (e.g., in machinery pools or input and output marketing) (Deininger, 1995; Markelova et al., 2009; Lerman, 2013). Farmers freely choose to provide or buy services, and they can engage in these new hybrid arrangements to enhance their farm's efficiency (Putterman and DiGiorgio, 1985; Rizov et al., 2001).

Farmers can freely choose their farm type, and farmers are well aware of this opportunity (Hierman and Nekbakhtshoev, 2018). However, leaving the collective and starting an individual farm is generally associated with some difficulties (Mathijs and Swinnen, 1998). Often, collective farms remain under strong central management, democratic governance structures are only weakly established, and there is a lack of individual incentives to invest effort (Lerman, 2015; Lerman, Csaki, and Feder, 2004). In many cases, collective farm managers are trying to prevent individualization (Van Atta, 1994; Amelina, 2000). In Tajikistan, collective farm managers make it difficult for members to leave the collective by assigning only marginal land to members seeking to exit the collective (Kassam, 2011; Hierman and Nekbakhtshoev, 2018). Especially in cotton production, strategic debts of collectives for ginneries are a barrier to exit because farmers who want to leave the collective have to first pay their share of the debt. Collective farm managers use these debts to maintain the status quo (Kassam, 2011).

Generally speaking, farmers will leave the collective farm if the benefits exceed the costs (Mathijs and Swinnen, 1998). In Tajikistan, there is some heterogeneity regarding the individualization of agriculture. Particularly in the mountainous regions, there is already a large share of individual farms, while decollectivization is taking place at a slower pace in the cotton-producing, irrigated flat areas (Hierman and Nekbakhtshoev, 2018; Hofman and Visser, 2014). Cotton production in Central Asia is marked by a low degree of mechanization and a high labor-to-capital ratio compared to that in other parts of the world (Pomfret, 2002). However, even under these conditions, collective farms coexist alongside individual and family farms within the same region. Geographic and institutional factors are thus not sufficient to explain farmers' organizational choice. The organizational-behavior literature has argued that exit from organizations is more likely to occur if procedural justice is perceived to be unfair (Turnley and Feldman, 1999), and economic experiments have supported these claims by showing that autocratic leadership makes an individual's exit from a group more likely (Van Vugt et al., 2004). In what follows, we describe our empirical approach to study the role of fairness norms and punishment behavior on farmers' decisions to either leave or stay in a collective.

The Ultimatum Game and Implementation in the Field

To elicit differences in fairness preferences, we conducted an experiment based on the ultimatum game (Güth, Schmittberger, and Schwarze, 1982). In the ultimatum game, there are two players: The proposer can offer any split of a predetermined amount of money. The responder decides whether to accept the proposed split. If the responder accepts the proposal, the proposer's decision is implemented; if the responder rejects the proposal, neither of the players receives a payoff. The equilibrium solution for rational and selfish players is that the proposer offers the smallest possible amount and the responder accepts any offer greater than 0. This equilibrium is rarely found in empirical studies (Henrich et al., 2004; Cardenas and Carpenter, 2008). Typically, proposers

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[2] Dehkan means "peasant" in Tajik.

offer relatively high shares, and responders often reject small offers that are greater than 0. Some researchers have argued that norms of fairness drive this behavior, or, as Gintis (2004) puts it, "In fact, responders reject positive offers because they are angry at being treated unfairly, and they are willing to pay. . . to hurt the person who perpetrated this unfairness" (p. 64). The ultimatum game has been widely used to investigate fairness norms across groups and cultures, and the vast majority of studies confirm that people offer greater shares and reject more offers than predicted (Chuah et al., 2007; Henrich, 2000; Henrich et al., 2001, 2004; Solnick, 2001).

We propose a correlation between farmers' behavior in the ultimatum game and their organizational choices. In Tajikistan, collective farms are marked by a lack of incentives to invest effort, and shirking prevails (Lerman, 2015). In addition, there is only weak democratic governance, and procedural justice may be perceived as unfair. Farmers who want to leave the collective must be willing to oppose (reject) decisions of proposers that are unfair, where "unfair" typically refers to offers of 20% or less in the ultimatum game (Henrich et al., 2004). Farmers who perceive a decision to be unfair must be willing to enforce their interest at a cost. These costs may be direct (e.g., a group benefit is not realized) or indirect (opposition may cause social isolation or retaliation) (see Mathijs and Swinnen, 1998). While some farmers may be willing to confront these costs, others may not. We assumed that farmers who have left the collective would show a higher propensity to reject offers in the ultimatum game than farmers who are still engaged in the collective. Proposers may anticipate rejections and may therefore adjust their strategies accordingly. In our case, we expected that being paired with a family farmer within a cooperative group would increase offers.

Because farmers belonging to family farms or collective farms may differ in various ways, we took great care to recruit only farmers for our study that were comparable in terms of key observable characteristics. To limit the impact of other variables—such as crops planted, geographic conditions, and land endowments (Hofman and Visser, 2014)—we focused on cotton farmers in the Sughd and Khatlon provinces, the main agricultural production zones of Tajikistan.

In collaboration with a local non-government organization (NGO), and using a geographical stratification, we randomly selected 17 farmer groups (6 in Khatlon and 11 in Sughd, proportional to the number of groups the NGO works with). Our sample was also stratified by farm organization. There were nine collective farms (Group 1 in Table 1B) for which land was pooled, jointly farmed, and residual claims were distributed proportionate to equity. Most shareholders were employed by the collective farm (we focused our analysis only on active shareholders). Employees were paid in kind and in cash. Managers are elected at annual meetings, and each member has one vote.

In addition to farmers from collectives, we recruited individual dehkan farmers from eight cooperative groups (Group 2 in Table 1B). In these groups, farmers receive extension services and jointly organize activities, such as input supply and output marketing. However, they are more informally organized than traditional service and marketing cooperatives. More importantly, the degree of integration is much lower than in collective farms: Land is not pooled, and farming is organized individually. Per capita land endowments do not differ significantly across the two groups (e.g., "Land owned" in Table 1B), and the main difference is the organization of production (i.e., collective versus individual farming). [3]

We conducted the experiment in 17 sessions from September to October 2015. Participants were either members of a collective farm or of a cooperative group. In total, the analysis uses data from 397 farmers.[4] Participation was voluntary, and participants were free to leave at any time. Our stratification ensured that half of the farmers came from a collective farm ($N = 198$), and half were

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[3] In our sample, there is an overproportionate share of collective farms from Sughd. The share of collective farms from Khatlon is below the population average. Consequently, the sample sizes for individual farms in Sughd and for collective farms in Khatlon are small, which decreases the statistical power of tests in the respective subsamples.

[4] In total, we recruited 407 people for participation. Three subjects were younger than 18, and two subjects left before the start of the experiment, leaving 402 subjects who started the experiment. Five people left during the experiment.

individual farmers ($N = 199$). The experiment was conducted with paper and pen.[5] Every session started with a welcome note and general instructions on the ultimatum game. Several examples were used to ensure comprehension. Participants were randomly assigned to either the proposer or the responder roles by means of a randomly distributed identification number. There were no systematic differences between the two groups (see Table S1 in the online supplement).

Proposers could suggest any integer allocation of 40 Tajikistani Somoni (TJS)[6] between themselves and a randomly matched responder from the same session by ticking the proposed allocation on a sheet of paper (see the online supplement (www.jareonline.org) for experimental protocols and materials). Responders received the sheet, learned about the proposed allocation, and could either accept or reject the offer. All decisions were incentivized, and participants received their payoffs in a closed envelope after the experiment. The experimental protocol ensured that all decisions and payments were made privately and anonymously.

After the experiment and before receiving the payoffs, participants were asked to complete a short questionnaire that took approximately 20–25 minutes. The questionnaire included basic questions on participants' socioeconomic backgrounds, education, household and farm characteristics, and attitudes. The questionnaire was available in both Tajik and Uzbek. There were small differences in the questionnaire for individual and collective farms. Because Tajikistan had recently been engaged in a civil war, we also included questions on conflict exposure, which may have had an impact on social preferences and cooperation more generally (Bauer et al., 2016; Cassar, Grosjean, and Whitt, 2013). Because the questionnaire contained sensitive elements, it was self-administered, and field staff were trained to ensure anonymity. This was also done to minimize interviewer effects but resulted in some missing observations.

Results

Differences among Farm Types

We began our analysis by investigating differences between farmers from collective and individual farms (Table 1B). One-third of participants were female, and one-quarter of participants were ethnic Uzbeks. There were no notable differences for these two variables between the two farm types. Individual farmers were, on average, older and more educated. Approximately 58% of participants indicated that they suffered from the civil war ("Victimization dummy"). Farmers in collectives were more likely to have professional training in agriculture; they were also, on average, more experienced. Household wealth was introduced by means of an index based on principal component analysis (Filmer and Pritchett, 2001). Here, we used the first two components ("Pca asset1" and "Pca asset2") and found that individual farm households had more assets on average. There were no statistically significant differences in land endowments ("Land owned"), and land endowments of our samples were close to figures found by Lerman (2012b). Individual farmers were more likely to have formal titles ("Certificate or land title"), have access to off-farm income ("Other income"), and be more optimistic regarding a future in farming ("No farmer in 5 years"). Although some differences were statistically significant, they were rather small in magnitude.

In addition to the variables described in Table 1A, we asked farmers from collectives about their perceived control over profit allocation and influence on decisions on a three-point scale (no influence, some influence, strong influence). Although farmers perceived their influence and freedom

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[5] The ultimatum game was preceded by a dictator game. There were four treatments for this experiment. We tested for carry-over from these preceding experiments. We do not find evidence for an effect of dictator game treatments on the ultimatum game reported here. Results are available from the authors upon request. The experimental protocol ensured that subjects did not receive feedback or learn about the behavior of others until the end of both experiments.

[6] 40 TJS were a large monetary incentive, equivalent to approximately $6 USD at the time of the study, which was approximately equal to four days' agricultural wages or one day's wage in other sectors (TAJSTAT, 2017).

Table 1A. Variable Descriptions

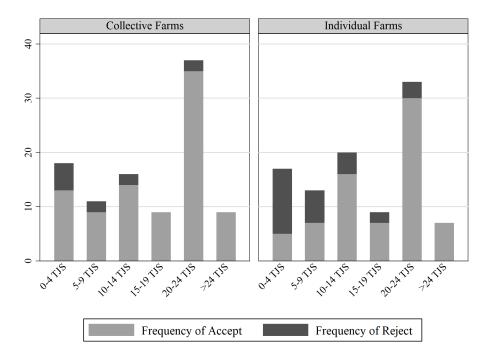| Variable Name	Description
Female	Indicator variable equal to 1 if female, and 0 otherwise
Age	Age in years
Education	Years of education
Uzbek	Indicator variable equal to 1 if ethnic Uzbek, and 0 otherwise
Victimization	Indicator variable equal to 1 if experienced some form of victimization during civil war, and 0 otherwise
Agri. background	Indicator variable equal to 1 if profession as a farmer, agronomist, biologist, or "obtschi" (water-engineer), and 0 otherwise
Degree or prof. exp.	Indicator variable equal to 1 if indicated any professional experience or degree, and 0 otherwise
Agri. experience	Years of experience working in agriculture
Household size	Number of adults (above 18 years) living in household
Pca asset1	First component of principal component analysis of assets owned by household (car, bank account, motorbike, television, smartphone, washing machine, agricultural machinery)
Pca asset2	Second component of principal component analysis of household assets
Land owned	Land with permanent use rights in hectares
Certificate or land title	Indicator variable equal to 1 if possesses a land title or statement for land size used by the collective farm, and 0 otherwise
Farm size	Farm size in hectares for individual farms and collective farms
Other income	Indicator variable equal to 1 if household has nonagricultural income, and 0 otherwise
No farmer in 5 years	Indicator variable equal to 1 if expects to leave farming in the next 5 years, and 0 otherwise

Figure 1. Distributions of Offers and Responses by Farm Type

Table 1B. Summary Statistics by Farm Type

Variable Name		Group 1: Collective Farms (Collective farm = 1)					Group 2: Individual Farms (Collective farm = 0)					Test for Differences
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max		
Female	199	0.36		0	1	197	0.30		0	1	$\chi^2 = 1.83^a$ $p = 0.18$
Age	198	44.80	11.97	18	75	194	46.87	13.71	18	74	$z = 2.14^b$ $p = 0.03$
Education	190	10.63	2.35	0	18	192	11.39	2.47	3	19	$z = 3.21^b$ $p = 0.00$
Uzbek	199	0.29		0	1	197	0.22		0	1	$\chi^2 = 2.53^a$ $p = 0.11$
Victimization dummy	194	0.58		0	1	196	0.59		0	1	$\chi^2 = 0.05^a$ $p = 0.82$
Agri. background	158	0.48		0	1	180	0.27		0	1	$\chi^2 = 16.64^a$ $p = 0.00$
Degree or prof. exp.	158	0.92		0	1	180	0.84		0	1	$\chi^2 = 4.81^a$ $p = 0.03$
Agri. experience	195	20.28	11.69	0	60	195	19.29	12.97	0	52	$z = -0.87^b$ $p = 0.38$
Household size	198	7.33	3.07	1	20	196	8.75	4.02	1	20	$z = 3.51^b$ $p = 0.00$
Pca asset1	187	−0.15	0.92	−1.65	2.67	183	0.16	1.06	−1.65	3.02	$z = 2.46^b$ $p = 0.01$
Pca asset2	187	−0.16	0.71	−0.81	3.20	183	0.17	1.21	−0.81	5.94	$z = 1.82^b$ $p = 0.07$
Land owned	189	0.88	0.86	0	6	175	0.73	0.62	0	3.5	$z = -1.61^b$ $p = 0.11$
Certificate or land title	154	0.86		0	1	165	0.92		0	1	$\chi^2 = 2.84^a$ $p = 0.09$
Farm size	199	81.42	46.62	35	185	185	5.41	4.96	0	25	Not applicable
Other income	159	0.39		0	1	169	0.50		0	1	$\chi^2 = 4.03^a$ $p = 0.04$
No farmer in 5 years	184	0.11		0	1	186	0.06		0	1	$\chi^2 = 2.86^a$ $p = 0.09$

Notes: [a] χ^2 test. [b] Wilcoxon–Mann–Whitney test.

Table 2. Decisions in the Ultimatum Game by Organizational Type

	Collective Farms (Collective farm = 1)	Individual Farms (Collective farm = 0)	Differences in Distributions/Proportions
Amount offered			
N	100	99	
Mean	14.33	13.40	$0\ (z = -0.69)$[a]
Mode	10	10	
Median	20	20	
SD (min; max)	9.01 (0; 35)	8.66 (0; 35)	
Reject (= 1 if yes)			
N	99	99	
Proportion	11.11%	29.29%	$-18.18^{***}\ (z = 3.19)$[b]

Notes: Triple asterisks (***) indicate significance at the 1% level.
[a] Wilcoxon–Mann–Whitney test.
[b] Two-sample test of proportions.

to be limited in 35% and 33% of the cases, respectively, the majority of farmers in collectives believed they had at least a medium level of control and influence. We also asked about the perceived freedom to leave the collective, and approximately 60% of respondents indicated that it would be, in principle, rather easy for them to leave the collective.[7] We asked individual farmers whether they could freely choose the crops they grew or whether there was state interference. The vast majority, 84%, stated that there was no interference from government officials.

Results from the Ultimatum Game

On average, proposers offered 13.87 TJS (35% of the initial endowment of 40 TJS) to responders. The modal offer was 20 TJS (50%), similar to what is commonly found in laboratory and field experiments (Henrich, 2000). Figure 1 displays the distribution of offers and responses by collective and individual farmers.[8] Dark grey bars indicate rejected offers. While there were no differences in proposers' behavior, the graphical analysis suggests that similar offers were more frequently rejected by individual farmers.

Differences in the distribution of offers were neither large nor statistically significant (Table 2). A combined Kolmogorov–Smirnov test ($D = 0.085$, $p = 0.827$, cf. Figure S1 in the online supplement) and a Wilcoxon–Mann–Whitney U test (see Table 2) did not reject the null hypothesis of equal distributions. Notably, there were large and statistically significant differences in responders' behavior. Individual farmers were more likely to reject offers than collective farmers. Individual farmers rejected two-thirds (20 out of 30) of all offers below 10 TJS compared to less than one-quarter of farmers from collectives (7 out of 29). We also found a few cases in which offers of 20 TJS or more were rejected, a pattern that has been observed in other contexts as well (Cardenas and Carpenter, 2008).

Controlling for Socioeconomic Heterogeneity

In the next step, we investigated whether the differences in rejection behavior between individual and collective farms was maintained after controlling for socioeconomic heterogeneity in regression models. As in other studies on self-selection into groups (e.g., Carpenter and Myers, 2010), we used experimental decisions in the ultimatum game as an explanatory variable for real-world decision

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[7] We did not find a large or statistically significant correlation between any of these variables and behavior in the ultimatum game.

[8] Also see online supplement Figure S1 for kernel density estimates by organizational choice.

making. In our econometric model, the utility U of farming in a collective is

$$(1) \qquad\qquad U \quad = \quad \alpha + \beta I + \gamma H + \delta S + u,$$

where I is an individual characteristic such as age, education,[9] ethnicity, or victimization and H is a household characteristic, such as household size, assets, or landholding. We included these variables because they may also drive organizational choice, as they reflect, for instance, human capital and other production factors. S represents fairness norms and the willingness to punish others for unfair behavior, as measured by offers and rejections in the ultimatum game; α, β, γ, and δ are parameters to be estimated; and u is an *i.i.d.* error term. Because we cannot directly observe the utility of farming in a collective U, we used the observed membership in a collective farm (C = "Collective farm") as a latent variable, where

$$C \quad = \quad 1 \text{ if } U > 0 \text{ and}$$
(2)
$$C \quad = \quad 0 \text{ if } U \leq 0.$$

We estimated the effect of covariates on the probability of being a member in a collective in four logistic regressions (Table 3). Column 1 shows a model that includes covariates with few missing observations. Column 2 displays a model that uses all socioeconomic covariates. Column 3 adds proposers' decisions ("Amount offered") for one half of the sample. Column 4 adds responders' decisions ("Reject") for the other half of the sample as a variable. Because of missing observations for some of the covariates, the number of observations was smaller than 397.[10] There were no large differences in coefficients between columns 1 and 2. Small changes in coefficients occurred due to different samples.

The coefficient for the amount offered was small and statistically not significantly different from 0. In other words, and as shown earlier, offers in the ultimatum game cannot predict organizational choice. The coefficient of our main variable of interest, rejection of offers, showed a large and statistically significant effect. Rejections were 6.82 times more likely to be from an individual farmer (reversed odds ratio of the "Reject" coefficient $= \exp(-1.92)$). In other words, farmers who were willing to punish others were less likely to stay in the collective.

We found a linear negative effect of age. We could not confirm the earlier findings of Rizov et al. (2001), who found a quadratic relationship between age and education. Having a background and experience in agriculture increased the propensity for being a member in a collective. Furthermore, a shorter time horizon with respect to agricultural occupation increased the propensity to farm in a collective ("No farmer in 5 years"). Larger households were significantly more likely to farm individually, which may be driven by the availability of family labor, but the effect is rather small in magnitude. Neither land endowment nor household assets showed large or significant effects on farming in a collective. Rizov et al. (2001) found that having an off-farm income source increased the propensity to farm individually, but we could not confirm this finding in our full-sample models (columns 1 and 2).

Robustness Checks and Discussion

We tested the robustness of our results using different model specifications, estimation strategies, and subsamples. To exclude the influence of farmers who had never experienced collective farming

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[9] A previous study found quadratic relationships between organizational choice and age and education (Rizov et al., 2001). The extremes (young and old, as well as uneducated and highly educated) were less likely to farm individually. Thus, we also introduced squared terms for these variables. For the linear terms, we used the distance from the sample mean to avoid correlation between the linear and squared terms. The interpretation of marginal effects was not affected by this transformation.

[10] In addition to the estimates presented in column 1 of Table 3, we ran additional models excluding variables with a high number of missing observations. These estimates can be found in online supplement Table S2 and confirm our findings (i.e., the estimates are similar).

Table 3. Logistic Regressions on Collective Farming

Dependent Variable: Collective farm	Full Sample (reduced) 1	Full Sample 2	Only Proposer 3	Only Responder 4
Amount offered			0.02	
			(0.04)	
Reject				−1.92***
				(0.62)
Female	−0.08	−0.65	−1.05	−0.85
	(0.65)	(0.79)	(0.77)	(0.79)
Dist. to mean age	−0.05**	−0.07***	−0.09**	−0.06*
	(0.02)	(0.02)	(0.04)	(0.03)
Dist. to mean age^2	−0.00**	−0.00	−0.00	−0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Dist. to mean edu.	−0.10	−0.05	0.14	−0.22*
	(0.06)	(0.07)	(0.13)	(0.12)
Dist. to mean edu.^{2}	−0.01	−0.01	−0.02	0.05*
	(0.01)	(0.01)	(0.03)	(0.03)
Uzbek	−0.05	−0.78	−1.14	−1.04
	(0.81)	(0.86)	(1.08)	(0.68)
Victimization dummy	−0.11	0.14	0.78*	−0.45
	(0.37)	(0.42)	(0.48)	(0.56)
Agri. background		0.91**	0.59	1.95***
		(0.36)	(0.51)	(0.60)
Degree or prof. exp.		0.76	1.24*	0.45
		(0.62)	(0.66)	(0.88)
Agri. experience	0.05***	0.06***	0.09***	0.02
	(0.02)	(0.02)	(0.03)	(0.03)
No farmer in 5 years		1.77*	2.35**	2.26**
		(0.94)	(1.11)	(0.94)
Household size	−0.10**	−0.12**	−0.26***	−0.06
	(0.05)	(0.06)	(0.08)	(0.07)
Pca asset1		−0.26	−0.80**	0.28
		(0.20)	(0.35)	(0.35)
Pca asset2		−0.31	−0.54**	−0.47
		(0.21)	(0.27)	(0.35)
Land owned		0.32	0.54*	0.42
		(0.32)	(0.28)	(0.49)
Other income		−0.40	−0.43	−0.93**
		(0.35)	(0.60)	(0.40)
Constant	0.24	−1.00	−1.70	0.23
	(0.87)	(1.10)	(1.23)	(1.50)
Share of Collective farm = 1	49.04%	47.37%	47.15%	47.58%
Share of Reject = 1				24.19%
N	367	247	123	124
Log-likelihood	−235.05	−141.31	−63.14	−59.16
Pseudo-R^2	0.08	0.17	0.26	0.31

Notes: Standard errors (clustered for sessions) in parentheses. Single, double, and triple asterisks (*, **, ***) indicate significance at the 10%, 5%, and 1% level.

Table 4. Effect of Rejection Behavior on Membership in a Collective Farm for the Unmatched and Matched Samples

Sample	Treated (Reject = 1)	Control (Reject = 0)	Absolute Difference	Std. Err.	*t*-Statistic
Unmatched	28.2%	56.0%	−0.278	0.088	−3.16***
N	39	150			
Matched (ATT)	25.7%	54.3%	−0.286	0.109	−2.79***
N	35	61			

Notes: Triple asterisks (***) indicate significance at the 1% level.

and might not have considered the option of joining a collective farm, our survey had one item on experience with a collective farm. When we excluded the 40 farmers who had never been part of a collective farm from the regressions, the results did not substantially change. Our main coefficient of interest even increased slightly (see the row for "Reject" in Table S3 in the online supplement).

The distribution of proposers' offers in the ultimatum game was approximately equal among farm types. In addition to respondents' individual characteristics, the amount offered was a key driver of rejection behavior. As a complement to the graphical analysis and statistical tests, we used propensity score matching (Rosenbaum and Rubin, 1983) to estimate the effect of offer rejection on responder membership in a collective farm. This approach is widely applied to eliminate self-selection bias in observational data (see Liu, Rommel, and Feng, 2018, for a recent example). We included the amount offered in the equation to estimate propensity scores. Matched observations did not differ in terms of the amount offered and further covariates, and only the decision of whether to reject an offer remained part of the organizational choice equation.

We first used a probit model with offer rejection/acceptance as the dependent variable to generate propensity scores. In addition to the amount offered, we added variables that had previously been used in the literature to explain rejection behavior or reservation prices in ultimatum bargaining, such as age, marital status, education, and gender (see Andersen et al., 2011; Carpenter, Burks, and Verhoogen, 2005; Ferraro and Cummings, 2007). There was a statistically significant effect of the amount offered on rejections (Table S4 in the online supplement). The propensity scores of the "treated" participants (those who rejected offers) and the "untreated" participants (those who accepted offers) were matched. We used nearest neighbor matching with replacement and three nearest neighbors to generate a matched, unbiased sample (Caliendo and Kopeinig, 2008). Four of 39 rejections were dropped in the matched sample because there were no adequate matches in the control group. Table 4 displays the share of collective farmers separated by treatment in the matched/unmatched sample. The average treatment effect on the treated (ATT) reveals that rejection behavior significantly affected organizational choice, even when there were no differences in the amount offered and other characteristics that could explain rejection behavior.

Access to irrigation is critical for farming in arid Tajikistan, especially in the south of Tajikistan (Khatlon), and water access may be related to organizational choice. Large collectives may have an advantage in providing access to irrigation. However, a recent empirical study in the same region showed that differences in water access were small for the farm types studied here (Klümper, Herzfeld, and Theesfeld, 2017). In addition, the authors showed that small hydrological differences between large and small farms were compensated for by opposite effects in water governance. A joint water security index, which includes social and hydrological aspects of access to irrigation water, was almost identical for medium-sized and small farms as well as large commercial and collective farms (Klümper, Herzfeld, and Theesfeld, 2017, p. 13).

Conclusions

In a sample of 397 Tajikistani farmers, we found that farmers who rejected low offers that they perceived to be unfair in the ultimatum game were more likely to farm individually. Farmers who preferred collective farming may not like to question the decisions of others and may have a stronger sense of loyalty (Petrick and Carter, 2009). Rejection of perceived unfair offers by farmers who preferred individual farming may be driven by their greater cost of being treated unfairly. Collective farms have been described as "inefficient due to free riding, moral hazard, [and a] lack of individual incentives" (Lerman, 2000, p. 15). Yet the share of land under collective ownership remains large in many post-communist economies (Petrick and Carter, 2009; Kimhi and Lerman, 2015). In a region with stable institutional and biophysical conditions, individual and behavioral factors may play a more important role than previously thought. Here, we have argued that fairness preferences and the willingness to punish others critically affects farmers' organizational choices.

One may argue that, over time, preferences are also shaped by daily experience. In other words, there may be reverse causality: Fairness norms may be shaped by the daily experience of being engaged in a collective. However, social preferences have been shown to be stable over long periods of time, and they evolve only slowly over the course of generations (Chuang and Schechter, 2015). Within a population, different types of social preferences can coexist (e.g., Fischbacher, Gächter, and Fehr, 2001), and people choose to become part of different institutions contingent on their preferences (Gürerk, 2006). Our results are consistent with the view that farmers' organizational choices are driven by social preferences.

In 2015, Tajikistan received $426.35 million U.S. dollars of official development assistance (Organisation for Economic Co-operation and Development, 2018), a substantial part of which was directed toward land reform, farm restructuring, and market development. Under the premise that individualization and privatization increase agricultural productivity, food security, and farmers' incomes, donors advocated the breakup of large collective farms in favor of small and medium-sized individual and family farms (e.g. U.S. Agency for International Development, 2016). Our results suggest that some farmers are better suited for individual farming than others. Policy makers are ill-advised to force farmers into structures that do not match their preferences. Institutional diversity would be the best response in a heterogeneous population and could enhance efficiency (Agarwal, 2018).

Strengthening the legal environment in favor of strong land rights could enhance farmers' liberty to organize their farms in ways that match their preferences. Tajikistan does not have a well-functioning market for agricultural land use rights. Strengthening land rights could lower the costs for farmers switching between organizations. Farmers who would like to leave the collective would face lower risks and investment costs if they could rent in and out agricultural land at market rates. If dual farm structures continue to exist, targeted support for family farms and large collective and corporate farms will become important (see Keyzer et al., 2013). For instance, small family farms could benefit more from rural services and access to credit, whereas larger collective farms could benefit more from managerial training and capacity-building schemes that target organizational governance and control structures.

In Western countries, farmers' cooperatives and other farmer groups are typically governed more democratically. It would thus be instructive to repeat our study in a Western setting. We would expect a higher willingness to punish others among members of farmer cooperatives in Western countries, but this may differ in some of the large dairy cooperatives with professional boards of directors. Similar to Tajikistani collectives, a sense of loyalty and willingness to accept other individuals' decisions may be important criteria to retaining membership in these cooperatives.

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Table S1. Socioeconomic Comparison of Random Assignment to Ultimatum Game Role

	Proposer					Responder					p-Value for Test of Differences
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max	
Female	199	0.37	0.48	0	1	197	0.29	0.46	0	1	$p = 0.13^b$
Age	197	45.39	12.69	18	75	195	46.26	13.09	18	74	$p = 0.46^a$
Education	191	11.13	2.48	1	19	191	10.90	2.40	0	18	$p = 0.59^a$
Uzbek	199	0.25	0.43	0	1	197	0.26	0.44	0	1	$p = 0.77^b$
Victimization dummy	198	0.59	0.49	0	1	192	0.58	0.49	0	1	$p = 0.96^b$
Agri. background	170	0.41	0.49	0	1	168	0.33	0.47	0	1	$p = 0.13^b$
Degree or prof. exp.	170	0.90	0.30	0	1	168	0.85	0.36	0	1	$p = 0.17^b$
Agri. experience	197	19.97	12.30	0	60	193	19.59	12.41	0	47	$p = 0.82^a$
Household size	197	8.18	3.61	1	20	197	7.90	3.67	1	20	$p = 0.32^a$
Pca asset1	186	−0.03	1.00	−1.65	3.02	184	0.03	1.00	−1.65	3.02	$p = 0.48^a$
Pca asset2	186	0.03	1.05	−0.81	5.94	184	−0.03	0.95	−0.81	5.75	$p = 0.57^a$
Land owned	181	0.82	0.74	0	4	183	0.79	0.78	0	6	$p = 0.36^a$
Certificate or land title	160	0.89	0.31	0	1	159	0.89	0.31	0	1	$p = 0.96^a$
Other income	164	0.42	0.50	0	1	164	0.48	0.50	0	1	$p = 0.32^b$
No farmer in 5 years	185	0.09	0.28	0	1	185	0.09	0.29	0	1	$p = 0.86^b$

Notes: [a] Wilcoxon–Mann–Whitney *t*-test; [b] χ^2 test.

Table S2. Additional Logistic Regressions on Collective Farming with Reduced Number of Variables

Dependent Variable: Collective Farm	Full Sample 1	Only Proposer 2	Only Proposer 3	Only Responder 4	Only Responder 5
Amount offered		0.01	0.01		
		(0.03)	(0.03)		
Reject				−1.20***	−1.20***
				(0.41)	(0.44)
Female	−0.08		−0.28		−0.01
	(0.65)		(0.73)		(0.65)
Dist. to mean age	−0.05**		−0.05*		−0.07**
	(0.02)		(0.03)		(0.03)
Dist. to mean age^2	−0.00**		−0.00		−0.00***
	(0.00)		(0.00)		(0.00)
Dist. to mean edu.	−0.10		−0.00		−0.24**
	(0.06)		(0.08)		(0.10)
Dist. to mean edu.^{2}	−0.01		−0.01		0.03
	(0.01)		(0.01)		(0.03)
Uzbek	−0.05		0.12		−0.10
	(0.81)		(0.91)		(0.78)
Victimization dummy	−0.11		0.02		−0.28
	(0.37)		(0.46)		(0.40)
Agri. experience	0.05***		0.06***		0.04
	(0.02)		(0.02)		(0.02)
Household size	−0.10**		−0.18***		−0.03
	(0.05)		(0.07)		(0.06)
Constant	0.24	−0.16	0.36	0.23	0.20
	(0.87)	(0.61)	(0.87)	(0.51)	(1.02)
Share of Collective farm = 1	49.04%	50.25	49.46%	50.00%	48.62%
Share of Reject = 1				20.20%	21.55%
N	367	199	186	198	181
Log-likelihood	−235.05	−137.66	−116.86	−132.02	−107.46
Pseudo R^2	0.08	0.00	0.09	0.04	0.14

Notes: Standard errors (clustered for sessions) in parentheses. Single, double, and triple asterisks (*, **, ***) indicate significance at the 10%, 5%, and 1% level.

Table S3. Logistic Regressions on Collective Farming Excluding the Subsample of 40 Farmers without Any Collective History (Collective history $= 1$)

Dependent Variable:	Full Sample	Only Proposer	Only Responder
Collective farm	1	2	3
Amount offered		0.00	
		(0.04)	
Reject			−2.17***
			(0.66)
Female	−0.59	−0.85	−0.87
	(0.72)	(0.85)	(0.77)
Dist. to mean age	−0.07***	−0.09*	−0.06*
	(0.02)	(0.05)	(0.04)
Dist. to mean age^2	−0.00	0.00	−0.00
	(0.00)	(0.00)	(0.00)
Dist. to mean edu.	−0.07	0.03	−0.18
	(0.07)	(0.09)	(0.13)
Dist. to mean edu.^{2}	−0.01	0.00	0.05*
	(0.01)	(0.02)	(0.03)
Uzbek	−0.93	−1.41	−1.10
	(0.87)	(1.11)	(0.71)
Victimization dummy	0.16	1.09**	−0.40
	(0.41)	(0.53)	(0.61)
Agri. Background	0.83***	0.23	1.81***
	(0.31)	(0.54)	(0.60)
Degree or prof. exp.	1.00	2.08*	0.50
	(0.73)	(1.14)	(0.94)
Agri. experience	0.05**	0.09*	0.01
	(0.03)	(0.05)	(0.03)
No farmer in 5 years	2.19**	0.00	2.87***
	(1.04)	(.)	(0.95)
Household size	−0.12**	−0.29***	−0.04
	(0.05)	(0.08)	(0.07)
Pca asset1	−0.34	−1.10***	0.27
	(0.21)	(0.40)	(0.36)
Pca asset2	−0.29	−0.60**	−0.51
	(0.21)	(0.29)	(0.36)
Land owned	0.29	0.72**	0.36
	(0.34)	(0.31)	(0.45)
Other income	−0.44	−0.59	−0.85**
	(0.35)	(0.64)	(0.40)
Constant	−0.93	−1.82	0.43
	(1.16)	(1.53)	(1.51)
Share of Collective farm $= 1$	52.23%	52.38%	50.86%
Share of Reject $= 1$			25.00%
N	224	105	116
Log-likelihood	−127.28	−51.39	−55.02
Pseudo R^2	0.18	0.29	0.32

Notes: : Standard errors (clustered for sessions) in parentheses. Single, double, and triple asterisks (*, **, ***) indicate significance at the 10%, 5%, and 1% level.

Table S4. Probit Model on Rejection Behavior to Generate Propensity Scores

Dependent Variable: Reject	Probit Model
Amount offered	−0.09***
	(0.02)
Married	0.49*
	(0.28)
Age	0.00
	(0.01)
Female	−0.29
	(0.28)
Education	0.08
	(0.05)
Constant	−1.03
N	189
Log-likelihood	−75.50
LR χ^2	41.44
Pseudo R^2	0.22

Notes: Single and triple asterisks (*, ***) indicate significance at the 10%, 5%, and 1% level.

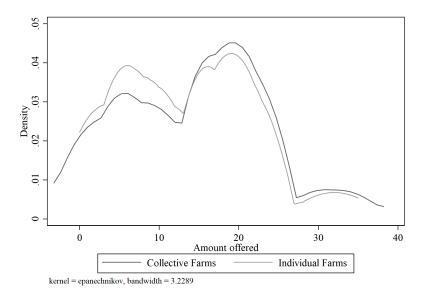kernel = epanechnikov, bandwidth = 3.2289

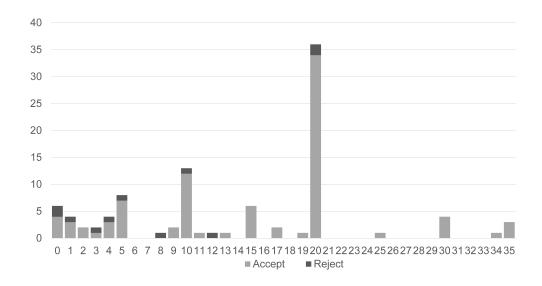**Figure S1. Kernel Density Estimates of Amount Offered by Farm Type**

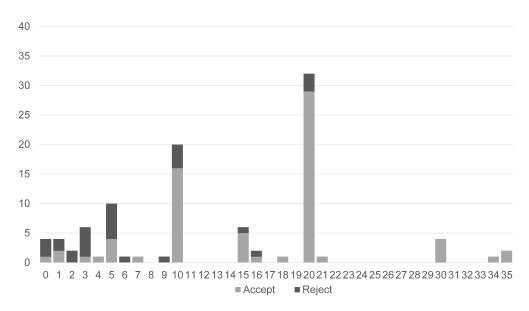**Figure S2. Absolute Frequencies of Amounts Offered by Responder Decision for Collective Farms**

Figure S3. Absolute Frequencies of Amounts Offered by Responder Decision for Individual Farms

Online Supplement: Protocol and Instructions:
Dictator Game and Ultimatum Game Tajikistan

Arrival and Setup

GROUPS OF 20-40 PARTICIPANTS (EVEN NUMBER NECESSARY, IF UNEVEN NUMBER SHOW-UP FEE OF 20 TJS TO ONE RANDOMLY DRAWN PLAYER). LOOK OUT FOR A QUIET PLACE WITH ENOUGH SPACE (CLASSROOM OR OTHER PUBLIC ROOM IS PREFERRED).

PREPARE BLINDERS.

MAKE SURE THAT EVERYONE TAKES PLACE SEPARATELY AND PEOPLE CANNOT LOOK ON OTHER'S SHEETS OR BE ABLE TO OBSERVE OTHER'S ACTIONS.

Welcome and General Introduction by Assistant

(IN TAJIK, AND/OR UZBEK)
"*Hello everybody, and thank you for being here today! You will participate today in a study*

on economic decision-making that is organized by researchers from a German university. Your participation in this event is completely voluntary, and you can leave whenever you want.

We will ask you today to make two decisions. Depending on your decisions and the decisions of others you can earn money. However, you can only receive the money if you stay with us.

In our study all of you have to make two decisions. Afterwards you will also have to fill a small questionnaire, where we would like to learn more about you and your farm. If you have any questions, you can always raise your hand, and we will respond to you individually. If you cannot read anything, please raise your hand and we will assist you.

Before we start, let me highlight an important point: The decisions you will make and the information you will provide today in the questionnaire will be treated completely confidential. All decisions will be made in private and all are anonymous. We will not know who decided in which way. The same applies to the questionnaire. You will receive a number provided by us for your identification, but we will not know from this number who you are. To ensure that no one knows how you decided in the decision task, it is very important that you don't talk to each other during the session and that you don't look at what others do.

One more thing: Please make sure your mobile phones are turned off to avoid interruptions during the session! Is everyone okay to start, or are there any upfront questions?"

[WAIT FOR QUESTIONS]

"As I said in the beginning, you are always free to leave. Because you heard now the introduction: is there anyone who wishes to not participate in the tasks today?

(If not,) We will start now to distribute envelopes with further information inside to every one of you. You can randomly draw one of the envelopes, but please do not yet open the envelopes."

Distribution of Envelopes

[HAVE ENVELOPES AND CLIPBOARDS ACCORDING TO DISTRIBUTION MECHANISM PREPARED (25% FOR EACH DG TREATMENT AND 50% UG RESPONDERS AND 50% UG PROPOSERS)].

[LET PARTICIPANTS DRAW ONE RANDOM ENVELOPE]

[ID WRITTEN ON EVERY SHEET OF PAPER INSIDE THE ENVELOPE].

WITHIN EACH ENVELOPE THERE ARE (IN THIS ORDER):

- DG INFORMATION ...

- IN 50% OF THE ENVELOPES THE UG PROPOSER FORM ONE SHEET WITH THE RESPECTIVE ID IN BIG LETTERS

- THE QUESTIONNAIRE (ALL SHEETS ARE STAPLED AND TEARED OFF AFTER EACH TASK)

Explanation DG and Decision

[...]

DG DECISION

[...]

Explanation of the Ultimatum Game with Examples

"I will now explain you the next task for today. In this task your group is divided into two halves. Half of you have one sheet with a table on it on their clipboard. The other half will find only a sheet with a number on it. This is your personal identification number. You will need it later for the final payments.

There will be 40 Somoni in the following task. The persons who have the sheet with the table right now are proposers in this task: They can propose how to share this money between him/her and another person/member of your group/farm. The other person with no sheet at the moment is the responder. Every responder is matched randomly to a proposer in this room. You and the other person will never know whom you are matched to. The proposers who have the sheet right now can suggest any possible distribution of the 40 Somoni between both persons. After the proposers have made their offers, every responders will get one sheet and will learn about the suggested distribution. The proposer can decide whether he accepts or rejects the offer. Now comes a very important point: When he or she accepts the offer, both get the proposed amounts. But, when he or she rejects the offer, both get nothing. Let me introduce you to some examples to make it clearer for you:

The proposer decides on the table that he will receive 30 Somoni out of the 40 Somoni and the responder will receive 10 Somoni. Then the responder will get the sheet. He can then decide whether he accepts or rejects the offer. Let us assume that he or she accepts the offer: Then the proposer will get 30 Somoni, and the responder will get 10 Somoni. We will pay you the amounts directly after the final task.

Another example: The proposer decides on the table that he will receive 25 Somoni and the responder will receive 15 Somoni. Then the responder will get the sheet. Let us assume that he or she rejects the offer: Then both will get nothing.

Another example: The proposer decides on the table that he will receive 39 Somoni and the responder will receive 1 Somoni. Then the responder will get the sheet. Let us assume that he or she accepts the offer: Then the proposer will get 39 Somoni, and the responder will get 1 Somoni. We will pay you directly after the final task.

And a final example: The proposer decides on the table that he will receive 10 Somoni and the responder will receive 30 Somoni. Then the responder will get the sheet. Let us assume that he or she rejects the offer: Then both get nothing."

UG Decision

"For all of you who have no sheet with a table but only this ID number [SHOW SAMPLE SHEETS]:

You are responders in this task. And I would kindly ask you to leave the room/location for some minutes such that the proposers can make their decisions.

WAIT UNTIL ALL RESPONDERS HAVE LEFT [ONE ASSISTANT MAKES SURE THAT RESPONDERS DON'T SPEAK IN BETWEEN TO EACH OTHER]

"All of you in this room: You are proposers and you should have this sheet in front of you" [SHOW UG PROPOSAL SHEET].

You can propose the division of 40 Somoni. Please decide how you want to divide 40 Somoni between you and the other person.

Now I will explain you how you can make the decisions: In the first column of the table you can see how much you will get out of 40 Somoni [SHOW ON SAMPLE SHEET].

In the second column of the table you can see how much the responder (who is one random person of the group waiting outside/over there) [SHOW] *will get.*

In the last column you have to make your decision by ticking the corresponding box in the table. But you can choose only one box. [SHOW ON SAMPLE SHEET].

Please remember, that responders can accept or reject your offer. If a responder accepts, you will both get the proposed split of 40 Somoni. If the responder rejects, you will both get nothing.

Do you have questions about this task? [WAIT . . . . . .]

(If not,) I now ask all proposers to make their decisions on how to divide the amount of 40 Somoni between you and the other person. Then tear the sheet off and please fold the sheet once. We will then collect all proposer sheets, shuffle them, and distribute them randomly to responders."

PROPOSERS MAKE OFFERS AND FOLD THE SHEET

"We will now shuffle the sheets and distribute them to responders. But therefore, I have to ask you to leave the room/location to let the responders anonymously respond to your proposed split"

WAIT UNTIL ALL PROPOSERS HAVE LEFT AND UNTIL ALL RESPONDERS ENTERED THE ROOM/LOCATION AND SIT.

DISTRIBUTE SHEETS RANDOMLY TO RESPONDERS (CAN SEE IT FROM IDS)

"Please leave the sheets still folded!

You are the responders in this task. You can decide whether to accept or reject the proposed division of 40 Somoni. But first of all I ask you now to unfold the sheet and copy your ID from the sheet with the big letters, to the other side of the sheet. [SHOW ON SAMPLE SHEET . . . . . .]

Is this clear? [WAIT . . . . . .] *Please copy it now!* [WAIT UNTIL ALL HAVE COPIED THEIR ID]."

CHECK IF THIS IS DONE CORRECTLY, IF NOT ASSIST

"Thank you!

You can now look at the proposed division of the money on the first side of the sheet. I will now explain you what this means and how you can respond to it: In the first column of the table you can see how much the proposer suggested to get from the 40 Somoni [SHOW ON SAMPLE SHEET . . . . . .]. In the second column of the table you see how much you will get from the proposed split [SHOW ON SAMPLE SHEET . . . . . .]. *Please check the proposed split!*

Is this clear to all of you? Do you understand it? [WAIT . . . . . .]

I know ask you to decide about the offer by ticking whether you accept or reject the offer. [SHOW ON SAMPLE SHEET . . . . . .] *You can accept the offer by ticking the box here* [SHOW . . . !]. *Or you can reject the offer by ticking here.* [SHOW . . . !] *Please remember: When you accept, you and the other person will get the exact amounts right after the final task. When, you reject, you and the other person will get nothing. Take your time and then fold the sheet again!"*

[WAIT UNTIL EVERYONE HAS MADE THE RESPONDER DECISION. . . . . .]

"We will now collect the sheets, and we will then pay you the amounts when you come with your ID sheets after the last task."

SHEETS GET COLLECTED AND MONEY IS ALLOCATED TO PREPARED ENVELOPES (PREPARED WITH IDS). ENVELOPES ARE DISTRIBUTED WHEN PEOPLE COME FOR SIGNATURES

Questionnaire

"On the next three/four pages you will find a questionnaire with some questions regarding you, your farm, and the group. If you have any question, raise your hand and we will answer your question individually. If you only read Uzbek, please raise your hand now.

[DISTRIBUTE UZBEK QUESTIONNAIRES]

For the questionnaire it is important that you try to respond to all questions. If you have any doubts on a question, or if anything is not clear to you, please raise your hand and ask us. The questionnaire has four pages. In some questions you only have to tick boxes, and in some other questions you have to write down an answer. In some questions there can only be one answer; in others you can give multiple answers. In questions [FOR COOPERATIVE GROUPS] *16, 19* [FOR COLLECTIVE DEHKAN FARMS] *you can give more than one answer. If you don't know the answer, in most of the questions you can simply choose "Don't know". It is very important that you understand all questions. Do you have any upfront comment or question to the questionnaire?* [WAIT. . . . . .] *If not, I kindly ask you to answer to the questions. When you are finished, we will collect the questionnaires. You can always ask us questions in between by raising your hand."*

PARTICIPANTS RESPOND TO THE QUESTIONNAIRE, AND QUESTIONNAIRES ARE COLLECTED.

"Thank you very much! You can now come with your ID sheet and the questionnaire to us and we will pay you the remaining amount. We further need your name, signature, and phone or tax number for organizational reasons. Be aware that the person who hands over the money does not know how you decided in the game."

→ SIGNATURE BOOK.

Ultimatum Game Decision Sheet   <ID>
First Decision: Proposer
Please tick one option!

I will get	The other person will get	I choose
40	0	☐
39	1	☐
38	2	☐
37	3	☐
36	4	☐
35	5	☐
34	6	☐
33	7	☐
32	8	☐
31	9	☐
30	10	☐
29	11	☐
28	12	☐
27	13	☐
26	14	☐
25	15	☐
24	16	☐
23	17	☐
22	18	☐
21	19	☐
20	20	☐
19	21	☐
18	22	☐
17	23	☐
16	24	☐
15	25	☐
14	26	☐
13	27	☐
12	28	☐
11	29	☐
10	30	☐
9	31	☐
8	32	☐
7	33	☐
6	34	☐
5	35	☐
4	36	☐
3	37	☐
2	38	☐
1	39	☐
0	40	☐

Second Decision: Responder

Please copy your ID from the sheet here: __.__.__._____

Please read the proposed division of 40 TJS on the back side

The person who made the proposition will get the amount in the first column if you accept.

You will get the amount in the second column if you accept.

You and the proposing person will get nothing, if you reject the offer.

What is your decision? Please tick one option!

☐ Accept   ☐ Reject