

Confusion or Fairness in the Field? Rejections in the Ultimatum Game under the Strategy Method.

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Abstract

Field experiments conducted in the Russian Republics of Tatarstan and Sakha showed that proposers in the "ultimatum game" almost invariably made offers that split a day's wage at 50/50. These experiments were conducted in a variety of settings, from small isolated villages to large urban areas. While the consistency in proposer behavior seemed odd, it was not given the expectations of the responders. Using the strategy method to elicit a profile of rejections, we find that responders invoke an exceedingly strong norm of a 50/50 split or nothing at all. This paper focuses on the profile of rejections and combines the experimental data with data drawn from an extensive face-to-face attitudinal survey conducted on the same subjects six weeks prior to participating in the experiment.

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Introduction

Only recently in experimental economics have experiments emerged from laboratories in our own Universities and out into the world. Ordinarily the aim of such experiments has been to test theoretical concepts and see how well they stand up to cultural variation. So far the record is mixed, with the impact of culture uncertain (see for example papers by (Roth, Prasnikar et al. 1991); (Ensminger 2000); (Henrich 2000); (Henrich, Boyd et al. 2001); (Oosterbeek, Sloof et al. 2001); (Buchan, Croson et al. 2002); (Paciotti and Hadley 2003); (Ashraf, Bohnet et al. 2003). There is also a tradition in sociology – see, for example (Yamagishi, Cook et al. 1998).) At the same time it is important to see how well behavioral generalizations hold up to heterogeneous populations. Only a handful of studies have gone into the field to test standard designs from experimental economics (see the discussion in (Henrich, Boyd et al. 2001)).

The experiment reported here details findings from a large-scale research project in a transitional nation. This study uses a random sample of the population from two autonomous Republics in Russia – Tatarstan and Sakha. These Republics were chosen because they are similar in their potential for economic development, because they both have experienced strong nationalist political movements and because they have a population divided into two large ethnic groups in opposition to one another.

The Ultimatum game is used in this study as a test of subject's commitment to norms of fairness. In this design two subjects are randomly paired. One subject, the proposer is given the right to allocate a fixed amount of money. The recipient is given the right to accept or reject what is proposed. If accepted, both parties get the allocation that is proposed. If rejected, then neither party gets anything. We do not try to test between the various behavioral models of fairness that have been proposed.¹ We are concerned with whether there are norms of fairness in these societies. If proposers converge on a particular allocation or if responders converge on a particular pattern of accepting, then we can draw inferences about what people believe to be fair in society.

¹ For example, see Rabin, M. (1993). "Incorporating Fairness into Game Theory and Economics." *American Economic Review* **83**(5): 1281-1302.; Levine, D. (1998). "Modeling Altruism and Spitefulness in Experiments." *Review of Economic Dynamics*. **1**: 593-622.; Bolton, G. E. and A. Ockenfels (2000). "ERC: A Theory of Equity, Reciprocity, and Competition." *American Economic Review* **90**(1 (March)): 166-193.; and Fehr, E. and K. M. Schmidt (1999). "A Theory of Fairness, Competition and Cooperation." *Quarterly Journal of Economics* **114**(3): 817-868..

Motivation

The focus of this paper is with the Ultimatum game. This experimental design has been used extensively in the experimental economics tradition. It was employed here in order to assess concepts of fairness in transitional Republics in Russia.

The ultimatum game is a standard instrument for laboratory experimentalists. It has several attractive features. First, the game has been replicated a large number of times, with consistent results (see reviews by (Thaler 1988); (Guth and Tietz 1990); (Camerer and Thaler 1995); (Roth and Erev 1995); (Cameron 1999)). Second, the game has been tested in a variety of environments (see for example, (Roth, Prasnikar et al. 1991) and (Henrich 2000)). Third, the game taps interesting characteristics that relate to concepts of fairness (Eckel and Wilson 2001).

While the theoretical properties of the ultimatum game are well understood, the empirical findings show that equal splits are common and rejections are not unusual. The pattern of outcomes appears to point to ways in which individuals conceive fairness.

In laboratory experiments, where subjects can choose their own allocation, the majority of subjects propose somewhere between a 50/50 and 60/40 split. However, when proposers take larger shares, such as an 80/20 split, then over half of the time the division is rejected. It is, (Camerer 1997) notes, as if subjects have an implicit notion of fairness that they bring to these games. Traditional equilibrium concepts from game theory predict neither fairness nor rejection and theorists are worried about both (see (Fehr and Schmidt 1999), (Bolton and Ockenfels 2000), (Rabin 1993) and (Falk and Fischbacher 1998) for various theoretical attempts at understanding these concerns).

Most of ultimatum games are run one time with proposers suggesting an allocation and responders accepting or rejecting that particular allocation. This generates a single observation for each pair of actors. Generally there are few rejections and so it is difficult to understand what it is that responders might prefer. To get around this problem some researchers have use the "strategy method" (see for example (Mitzkewitz and Nagel 1993) or (Solnick and Schweitzer 1999)). Prior to being informed about the allocation the recipient responds with a list that provides a contingent strategy for each allocation. For every feasible allocation the recipient indicates whether such an offer will be accepted or rejected. In the play of the game the proposal is matched with the list and the experimenter imposes the outcome. Interestingly, although great deal of data is generated, there has been little systematic work analyzing the pattern of rejections.²

² Of course, there is a question whether subjects behave differently if using the strategy method. Data presented by Güth, W., S. Huck, et al. (2001). "The Relevance of Equal Splits in Ultimatum Games." *Games and Economic Behavior* 37: 161-169. suggests that the type of elicitation method matters, Oosterbeek, H., R. Sloof, et al. (2001). Cultural differences in ultimatum game experiments: Evidence from a meta-analysis. *Department of Economics, University of Amsterdam*. Amsterdam. are of two minds on the subject and Brandts, J. and G. Charness (2000). "Hot vs. Cold: Sequential Responses and Preference Stability in Experimental Games." *Experimental Economics* 2(3): 227-238. suggest that it makes little difference.

One exception is a paper by (Hennig-Schmidt, Li et al. 2002) in which Chinese students are found to violate expectations about their strategy profile. The usual expectation is that subjects will choose to reject low offers, up to some point, and then switch to accepting all subsequent offers. (Hennig-Schmidt, Li et al. 2002) find that the modal set of strategies is non-monotonic, with subjects rejecting both low and high offers. Based on videotapes from the experiments, they conclude that subjects are using a fairness criteria to justify this deviation from monotonicity. By contrast (Güth, Schmidt et al. 2003) run an experiment on a large population set up as a form of a newspaper contest. The task was an ultimatum game, and subjects indicated what they were willing to accept. They find subjects were willing to accept a very small share and they also found evidence for non-monotonic responses by responders using a variation of the strategy method. Under their coding scheme less than 10 percent of the subjects had such a strategy profile and the authors ascribe this to a concern for fairness.

Generally, the power of the strategy method has been overlooked. We will return to this point when the experimental design for this research is discussed. We think that non-standard patterns to rejections provide considerable insight into the norms held by individuals.

Tatarstan and Sakha.

As part of a larger project we focused on two Russian Republics that were in transition and had experienced considerable inter-ethnic hostility. Because of the fairness properties attributed to the ultimatum game, it was a natural instrument to run. We did so in order to understand the underlying commitment to norms of fairness.

We focused on Sakha and Tatarstan for several reasons. As leaders in the campaign for republic sovereignty and for interethnic accommodation, they represent critical cases for the study of interethnic relations. They were also the focus of an earlier study, by Donna Bahry, Gail Lapidus (Stanford) and Leokadia Drobizheva (Institute of Ethnology and Anthropology, Moscow) in 1997-98, on public orientations toward sovereignty and secession.

While the republics are similar in their quest for sovereignty, they also represent contrasting cultures – ranging from reformist Islam among Tatars to shamanism among Yakuts, from habitable environments in Tatarstan to the coldest inhabited city in the world in Sakha. The two regions also differ in the character of local production and the cultural division of labor among nationalities. The Sakha economy is predominantly geared to primary industries, accounting for most of the Russian Federation's diamonds, and a good share of its gold, plus oil, gas, and other natural resources. In the Soviet era, the development of these sectors was managed in Moscow, and the region got very little of the proceeds. The mines/mineral sites were worked largely by immigrants from the Western part of the USSR lured to Siberia by very high wages and generous benefits ((Marples 1999)). Yakuts were employed in other, far less remunerative sectors, such as agriculture and services ((Maksimov 1990)).

With the quest for sovereignty in 1990, the republic government pushed for and obtained a sizeable stake in the development of the most profitable resources such as diamonds and gold ((Kempton and Levine 1995)); attempted to appoint more Yakuts into management and into mining jobs; and obtained the right to sell its products abroad and attract foreign investment on its own. As well, political transformation since 1989 has led to an overwhelming predominance of the titular nationality in both elective and appointive offices ((Khazanov 1995)).

But the republics also faces a host of problems. The rollback of republic privileges under Vladimir Putin since 2000 has reduced local access to revenues from the republic's abundant resources, and generally trimmed the region's autonomy. Nativization of managerial ranks has proved to be difficult in Sakha due to few Yakuts with training and experience in key sectors. Recruiting them to high-paying mining jobs has also proved to be complicated, though explanations for the problem vary.³

Climate and location also make Sakha a good case study for our purposes: The harsh conditions in the arctic intensify the risks and uncertainties of the transition. The area is rich in resources, but many tend to be located in remote areas with high extraction costs. The relative underdevelopment of the consumer goods sector means that most goods must be imported, also at high cost.

Some Yakut informants suggest that the climate and harsh physical surroundings also shape ethnic norms: since individuals can't survive alone in the bitterly cold conditions, they need to cooperate with each other to survive. The difficult climate and the concentration on minerals also affect the orientations of the local Russian population who are attracted to the republic by high wages, but find the conditions too forbidding to settle permanently. To many Yakuts, it appears that the immigrants have little stake in the republic or in developing accommodation or tolerance toward Yakut culture and customs – or learning the local language ((Balzer 1995)). Interethnic relations have therefore been strained at times, especially in the late 1980s – early 1990s.

As an oil-producing region, Tatarstan too has had a high stake in greater economic sovereignty. Agreements from 1992 onward have granted it a substantial degree of control over the local economy and over the right to integrate into global markets ((Mukhariyamov 1998)), though it, too, has faced a rollback of local rights under Putin. With its more diversified economy, it has had somewhat greater success with foreign investment ((Morozov 1998)).

Also in contrast to Sakha, Tatarstan's initial cultural division of labor was not nearly so unbalanced. There were fewer sectors dominated by either Tatars or Russians, except for agriculture (Tatar) and some areas of heavy industry such as truck production (Russian,

³ Some Slavic officials explain that Yakuts themselves refuse to work in high-paying mining jobs, because Yakut culture and physical abilities are not suited to conditions in the mines. Many Yakut informants dispute this description, arguing that they face an unfriendly environment among the Russian-speakers in the mines. We take these disagreements to signal deeply embedded stereotypes about each group.

in Naberezhnye Chelny). The more temperate climatic conditions and diversified economy in Tatarstan also mean that Russian immigrants have been more willing to stay. Most Russians would thus appear to have a higher stake in republic development and in interethnic accommodation

Experimental Design

The project has two empirical parts. Subjects in the experiment were first interviewed using a face-to-face survey. That survey lasted around two hours and covered a number of items related to past work habits, ethnicity and nationalism, and trust items. Subjects were interviewed three to four weeks prior to the experiment. To date a total of 2390 individuals have been interviewed and their data have been machine recorded.

In the second part of the project, subjects who were interviewed were asked to participate in a laboratory experiment. Typically, the respondents were contacted three to five weeks following the interview. While we sought a random sample of respondents, this was not always feasible. We did not run experiments in villages that were too small to have generated at least 20 interviews. As well we were dependent on interviewers returning to ask those they had previously interviewed. Some interviewers worked harder than others.

The design of the experiment allows us insight into different ethnic mixes. We deliberately chose regions of each Republic in which we could find heterogeneous and homogeneous ethnic groups. For example in Sakha we chose villages that were entirely Yakut, we chose the largest city, Yakutsk, which was mixed Yakut and Russian and we chose Neryingri, a small city which was almost entirely Slavic. Yakuts and Slavs are quite different in appearance and subjects could easily tell the ethnic composition of their group.

Approximately a week from the planned experiment session interviewers returned to respondents and again asked whether they would like to attend. They were promised 150 rubles as a show-up fee (approximately \$4.50 US and close to the average daily wage in Tatarstan). Those who agreed at this point were given 30 rubles and told the remainder would be paid on showing up. In addition, subjects were told that they would have an opportunity to earn more money during the course of the experiment. Interviewers were paid 20 rubles per subject who turned up and whom they had recruited. Subjects were given a letter indicating the time and place and they were asked to bring that letter with them – almost as a ticket of admittance. This served (partly) to ensure that we conducted experiments on people who had previously been interviewed, with the aim of linking their behavior in the experiments to their attitudes expressed in the surveys. We still had to double check people's names and addresses against a master list of those who had been interviewed. The typical experiment would find one or two subjects showing up who had not been interviewed. They were substituting for a relative, accompanied a friend or had heard that they could make money participating in the experiment. Those individuals were turned away.

A total of 646 subjects were tested, with 252 from Tatarstan and 394 from Sakha. A total of 47 experimental sessions were conducted over a period of 9 weeks.⁴ Each session lasted approximately two hours. Twenty of the sessions were in Tatarstan and the remainder were in Sakha. Sessions averaged 13.8 subjects (ranging from a low of 7 to a maximum of 23). The average payoff was 540 rubles in Tatarstan and 558 rubles in Sakha (between \$17.40 and \$18.10 US).

Facilities and Set-up.

The facilities varied a great deal. Most of the experiments were held in schools or public libraries. Some had more space than others. Typically subjects sat at tables with sufficient space for their tasks. All subjects were in the same room for all experiments. Logistically it was nearly impossible to obtain more than a single room.

As well, we used the same experimenter in each region. It would have been difficult to run these experiments in two different rooms. We had one experimenter in each location who was fluent in both Russian and the titular language (Tatar or Yakut). In fact in several sessions, because of the mix of the subjects, the instructions were given in the local language. All written materials were in Russian.

Prior to being seated, subjects were handed a consent form and asked to read it. Our subjects were loathe to sign anything. They were guaranteed anonymity and they did not want to leave behind any signature that they felt could be turned over to authorities. Consequently the consent form outlined what they would be doing over the course of the experiment and indicated that they could leave at any time without penalty. If they did not want to participate they could take their show up fee and leave immediately.⁵ By remaining in the experiment after reading the form they were informed they had given their consent. Once the consent form was read and agreed to, subjects were checked into the experiment and then were handed an index card with their ID number for the experiment (the ID cards were randomly ordered). They were seated randomly throughout the room with the aim of breaking up subjects who had arrived together.

An Administrator conducted each experiment. A different Administrator was used in Tatarstan and Sakha. Both were female, were native and were fluent in Russian and the titular language (Tatar or Yakut). All written materials were in Russian, including the script and outline for the experiment. However in a number of sessions the instructions by the Administrator was given in the titular language as requested by the subjects. At the outset of the experiment there was a 10 minute introduction and the Administrator answered any questions that were raised. Sessions varied as to the number of questions,

⁴ Five sessions were conducted in late September and early October in Sakha. Because of the difficulty with tracking down subjects during the late summer months the last five sessions were delayed. The claim was that subjects were either in the forest hunting, at their dacha planting, or in the village visiting relatives. These late sessions were conducted by the first author in the largest city in Sakha, Yakutsk. In addition 6 subjects were "lost" from the experimental data. Those subjects participated in the experiment but were never interviewed. Given the complexity of the design, we were amazed we lost so few subjects.

⁵ We had a total of five subjects who showed up, collected their fee, and refused to participate.

but in every session people were curious about the types of decisions they would be making and why we were interested in them. A scripted set of answers were prepared and subjects were told they would be given very explicit instructions later on in the experiment.

Subjects were first given a simple questionnaire. The questions were very limited and the instrument was designed to train subject to write their ID number in the upper right box hand for all forms. The instrument was easy to complete and rarely took more than five minutes. It also reassured the subjects – they were quite used to filling out forms with basic personal information.

Once the forms were collected, subjects were given their own private cubicle – a small cardboard box with one side cut out. This was an easily portable screen for subjects that ensured privacy when making decisions. In Tatarstan the boxes came in all shapes, sizes and flavors (several boxes that had transported dried fish were rejected for obvious reasons). In Sakha the boxes were more uniform in size. Carrying the broken down boxes on the street caused more than a few remarks from passersby. Not only did the subjects need privacy, but at various points in the experiment they needed to hide the color of their poker chip and their ID card from others. However, the research assistant passing out forms and returning envelopes needed to observe these things. All-in-all the arrangement worked very well, even in close quarters.

Prior to the ultimatum game subjects made five distinct decisions and then played a trust game within the group. In the first two decisions subjects played the role of a “dictator” allocating 8 ten-ruble notes between themselves and counterparts not in the room.⁶ In the next two decisions they were handed envelopes from other people (again, not in the room) and asked to predict what those people had decided. In the final decision subjects were given two envelopes, each with a picture of the person who had made the allocation. Subjects were asked to choose an envelope and then guess the contents. Subjects were not allowed to open the envelopes – instead they were told to put all three envelopes to the side and were told they would later be able to open them and keep the contents. Once they had finished all of these decisions, subjects played the trust game.

The trust game was a standard investment game based on (Berg, Dickhaut et al. 1995) and details are reported in (Bahry, Whitt et al. 2003). At this point subjects were told they were no longer making decisions about some unknown other person. Instead they were making decisions with the other people in the room. They were told that they would be randomly matched with another person, that they would not know who that person was and that person would not know them. All matching was by ID numbers and because everyone’s ID was hidden, no one knew their counterpart.

In this experiment subjects passed money between each other, with the amount sent from the first mover being tripled. The second mover then decided how to allocate the tripled

⁶ In the first treatment they were told their counterpart was someone in the same Republic. In the second treatment they were told their counterpart was someone in a different Region. In both instances what they allocated was passed on.

amount. While second movers knew how much they earned (based on what they kept), first movers held onto a sealed envelope that was not opened until the end of the experiment.

Once finished with the trust game, then subjects played the ultimatum game. While it would have been nice to randomize the order of all the games, this was impossible to carry out in the field. The experimenters were instructed to stick with the script and they resisted any changes once they learned it. It is very likely that the order of the games affected the behavior of subjects. However, because all subjects faced the same order, then any between subject variation must be due to differences in subject characteristics. Because we have a detailed survey instrument for each subject, we have substantial information about individual characteristics.

The ultimatum game was very standard, except that both proposers and responders were in the same room. In order to insure that no one knew the role to which others were assigned, subjects were randomly assigned to their position by drawing poker chips from a hat. Subjects drawing a blue chip were assigned as proposers and those drawing white chips were responders. Subjects were told that once they made their draw they needed to keep their chip hidden from view. This made it difficult for subjects to figure out with whom they might be paired. Once subjects drew their chips they were given oral instructions and asked to listen very carefully. We wanted subjects to understand what both parties to the decision would be doing. Following the instructions the materials were passed out. Proposers (blue chip subjects) were given a sheet of paper on which they would mark their allocation choice from among nine different allocations. Responders were also given a sheet of paper with nine different possible allocations and with check boxes to indicate whether they would accept or reject the allocation if proposed.

Before handing out the materials (but after the chip draw), subjects were read instructions concerning what proposers (blue chip players) would do and then they were read instructions about what responders (white chip players) would do. In this sense both types of players heard what both sides would do in the experiment. Subjects worked from forms, but to reinforce the fact that they were making an allocation decision over “real” money the amounts were displayed to them. The sum that was divided was equivalent to an average day’s wage (160 rubles in Tatarstan and 240 rubles in Sakha).

The materials were handed out and an abbreviated version of the instructions was given. Proposers and responders alike were told to take their materials and work in their box out of view of those around them. Both groups were asked to write their ID number in the upper right hand corner of their sheet of paper. Once everyone was finished the sheets were collected and given to Rick Wilson. As the sheets were collected the experimenter assistant checked the sheets to make certain they were completely filled out. Subjects who made “odd” choices in rejections (for example, choosing to reject everything except an equal split) were asked whether that was what they intended and given examples to show what would happen if they were matched with someone making the offer. With the exception of one or two subjects, none changed their mind and stuck with their original

choices. Subjects seemed very clear about to what they intended to do. While not exactly a “double-blind” experiment, he was usually stationed in the hallway and could not identify the subjects. He randomly matched the subjects and then filled envelopes with money based on the offer and whether it was accepted.

While the data were being recorded and payments readied, subjects then played a variation of a risk game. Once that game was finished, the envelopes with earnings from the ultimatum game were handed back to subjects and they were free to leave.

Cautions.

When conducting cross-national research, (Roth, Prasnikar et al. 1991) raise five issues. In their view, to have meaningful comparisons across experiments, all five should be addressed. While a useful guideline, some aspects of this wish list ignore problems with field work.

1. Controlling for subject pool equivalency.

Because of the possibility of very different types of convenience samples (college students picked in one country, day laborers in another) (Roth, Prasnikar et al. 1991) recommend selecting comparable populations. (Buchan, Croson et al. 2001) sensibly suggest college students, in large part because these are easy groups to find and because they are relatively homogeneous. In footnote 5 they suggest that a random sample of the population would be nice, but nearly impossible. Our populations are randomly selected and constitute a cross-section of the population. While not impossible to obtain, it was exceedingly difficult and costly.

2. Controlling for currency effects.

Because there are differences across countries in terms of how money is valued, comparability requires similar units. Although both Republics use rubles, there was some difference in cost of living. That was adjusted for in the Ultimatum game. The 160 rubles given to the first mover was equivalent to a full day’s wage in Tatarstan and the 240 rubles was equivalent to a day’s wage in Sakha.

3. Controlling for Language Effects.

The same script should be used across countries. This ensures that subjects are hearing the same instructions. While all of our instructions were in Russian (and had been forward and backward translated), our Administrators often slipped between Russian and the titular language. We worked closely to ensure that everything was stated similarly in both regions. However, consistency depended on the Administrator keeping with the script when speaking in Tatar or Yakut.

4. Controlling for Experimenter Effects.

The experimenters should not have an independent effect. We tried to control for this by using females as Administrators in each Republic. Both were of the regional ethnic type. The assistant to the Administrator was the same male graduate student who was

present in both Republics.

5. Controlling for Comprehension of Experimental Task.

Subjects should demonstrate they understand the task. All of the tasks required subjects to respond to a comprehension check. This check was performed orally and subjects were also given the opportunity to raise their hand and have questions answered.

Given the conditions under which some of the experiments were performed (often with no electricity or running water in remote villages), we think we have gotten close to experiments run in the lab. The difference here was that the lab went into the field.

Results.

The size of the pie differed across the two Republics. We tried to normalize the amount to be equivalent to a full day's wage. This was 160 rubles in Tatarstan and 240 rubles in Sakha. The offers were constrained to 9 different allocations, with offers made in 20 rouble increments in Tatarstan and 30 rouble increments in Sakha.

On average, 47 percent of the total is offered to the counterpart. There is barely any difference between the two Republics, with Tatars offering 45.8 percent of the pot and Yakuts offering 47.79 percent. The differences are not significant ($t=-1.20$, $df=327$, $p=.23$). Similar to many other findings, almost all of the offers are for an equal split. As seen in Table 1 the Tatars offer an equal split 64 percent of the time. The Yakuts make such an offer 71.6 percent of the time.

Overall, only 17 percent of the proposals were rejected. There is a systematic pattern to these rejections (see Table 2). Among Tatars, among the 10 offers below a 50/50 split, 40 percent were rejected. Among Yakuts 23 of 40 offers below 50/50 were rejected (57.5%). These subjects also made some odd choices. They rejected 16 of 226 50/50 offers (7.1% of these offers). Possibly more interesting is that 8 of 24 offers that gave the recipient more than half the amount were rejected (33.3%).

Table 1
Percentage of offers made to recipient by category and Republic.

Tatarstan		Sakha	
<i>Offer to Recipient</i>	<i>Percentage (Frequency)</i>	<i>Offer to Recipient</i>	<i>Percentage (Frequency)</i>
0	.8 (1)	0	1.96 (4)
20	3.2 (4)	30	4.41 (9)
40	4.0 (5)	60	3.92 (8)
60	23.2 (29)	90	9.31 (19)
80	64.0 (80)	120	71.57 (146)
100	2.4 (3)	150	3.92 (8)
120	.8 (1)	180	.98 (2)
140	0.0 (0)	210	.98 (2)
160	1.6 (2)	240	2.94 (6)

By comparison with results found by others, there are several odd features to these data. First the offers are high. First movers do not take advantage of their position, and instead offered an equal split well over half of the time. Second, there are a surprising number of rejections for hyper-fair offers. These are offers exceeding half of the amount available. The question this raises is whether the subjects are simply confused by the task, or whether there is something more systematic going on in these data. Fortunately we used the strategy method in the experiment and took great care to ensure that subjects understood both roles in the experiment. The use of the strategy method allows us to observe the complete portfolio of rejections by responders.

Table 2
Rejection rates by offer and Republic.

Tatarstan		Sakha	
<i>Offer to Recipient</i>	<i>Percentage Rejected (Frequency)</i>	<i>Offer to Recipient</i>	<i>Percentage Rejected (Frequency)</i>
0	0.0 (0/1)	0	75.0 (3/4)
20	50.0 (2/4)	30	77.8 (7/9)
40	40.0 (2/5)	60	62.5 (5/8)
60	17.4 (5/29)	90	42.1 (8/19)
80	5.0 (4/80)	120	8.2 (12/146)
100	33.3 (1/3)	150	75.0 (6/8)
120	100.0 (1/1)	180	0.0 (0/2)
140	0.0 (0/0)	210	0.0 (0/2)
160	0.0 (0/2)	240	0.0 (0/6)

The first thing we observe is that it was in the interest of proposers to offer a 50/50 split. Table 3 details the rates of rejections for hypothetical offers by each Republic. The lower the offer, the more likely each population is to reject the offer. The percent rejecting an offer decreases monotonically as the offer goes to an equal split. Over 93 percent of all 50/50 offers would have been accepted in either Republic. However, as hyper-fair offers are made, the percentage rejecting those offers climbs monotonically. As a consequence, proposers were very justified in making equal split offers – this appears to be an expectation on the part of responders.

Table 3a
The percentage accepting and rejecting hypothetical offers for Tatarstan.

<i>Offer</i>	<i>Percent Accepting</i>	<i>Percent Rejecting</i>	<i>Total N</i>
0	24.8	75.2	125
20	45.6	54.5	125
40	56.0	44.0	125
60	73.60	26.4	125
80	96.0	4.0	125
100	72.0	28.0	125
120	63.2	36.8	125
140	59.7	40.3	124
160	53.6	46.4	125

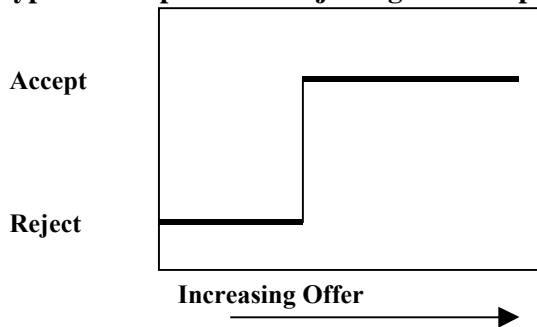
Table 3b
The percentage accepting and rejecting hypothetical offers for Sakha.

<i>Offer</i>	<i>Percent Accepting</i>	<i>Percent Rejecting</i>	<i>Total N</i>
0	22.6	77.4	204
30	30.4	69.6	204
60	44.1	55.9	204
90	61.3	38.7	204
120	93.6	6.4	204
150	66.7	33.3	204
180	59.8	40.2	204
210	52.5	47.5	204
240	50.5	49.5	204

Individual subjects could be very confused or else they may be choosing a very specific set of strategies. There are a handful of patterns that make sense.

The first pattern, given in Figure 1a, is consistent with most ways of thinking about the strategies that subjects might adopt. In this figure subjects hold a consistent ordering in their rejections. As their share of the pie increases at some point they switch from rejecting to accepting the offer. With heterogeneity in the population, individuals might select very different points at which they are willing to accept an offer. Standard game theoretic treatments of this problem predict that a subject would accept any non-zero offer. Where that cut point occurs is not relevant to this study – we only care whether a subject switches at some point and then remains consistent.

Figure 1a.
Hypothetical pattern of rejecting and accepting for a monotonically-rational (M-R) subject.

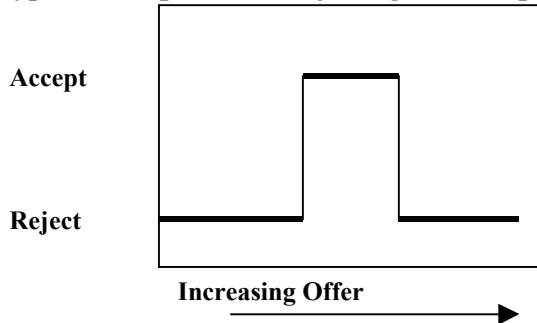


The second pattern, represented by figure 1b, involves a subject with an inverted “U” shape in which low or high offers are rejected and all others are accepted. Such subjects may have a very distinct concept of fairness. They will reject offers that are too low just as might be predicted by the first type, but this type also rejects offers that are too high. While this may seem strange, such subjects may be very committed to a concept of fairness. Rejecting a hyper-fair offer may be a sign of fairness norms that are deeply

embedded in the society. Again, with heterogeneity in the population, those with more experience or those who have been socialized might adopt such norms.⁷

Figure 1b.

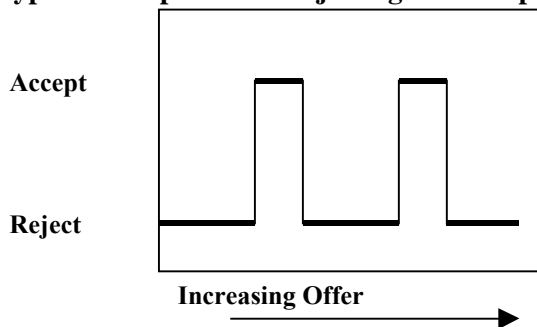
Hypothetical pattern of rejecting and accepting for a hyper-fair (H-F) subject.



A third pattern, given by figure 1c, involves subjects who are behaving in a confused fashion. Such individuals might change their mind several times, accepting and rejecting alternatives in a seemingly random pattern. As well, a reverse monotonic pattern might well be associated with a confused subject. That is, subjects who accept low offers and then switch to rejecting high offers might be confused.

Figure 1c.

Hypothetical pattern of rejecting and accepting for a Confused (C) subject.



Figures 2a and 2b graph what was accepted and rejected by each individual, broken out by Republic. These graphs are meant to correspond to Figures 1a-c. The vertical axis indicates whether a subject accepted or rejected an offer. Rejections are at the bottom and acceptances are at the top. The horizontal axis reflects increasing offers. An offer of nothing is at the left and an offer of everything is on the right.

⁷ Many experiments are conducted using samples of convenience. Often this means running experiments in the laboratory on students. Quite often this is preferred because it insures homogeneity between subjects and allows for greater control. This satisfies an important internal validity requirement for an experiment. However, it may be that inferences about general human responses are limited if the phenomenon under study is differentially distributed in the population. For example, the adherence to norms may vary with a function of experience in the workplace. Or, in the case studied here, the norms may have been a product of a particular (Soviet) period of socialization. To investigate this question a random sample of the population is justified.

Figure 2a
Graph of acceptances and rejections across increasing offers for Tatarstan by individual subjects.

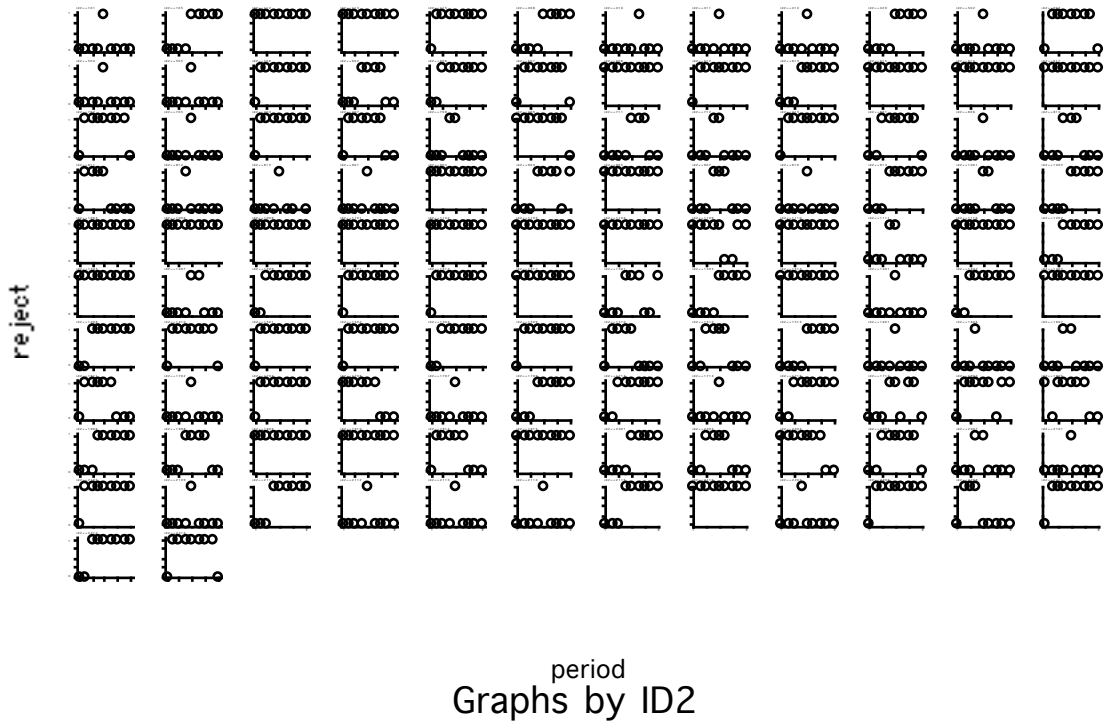
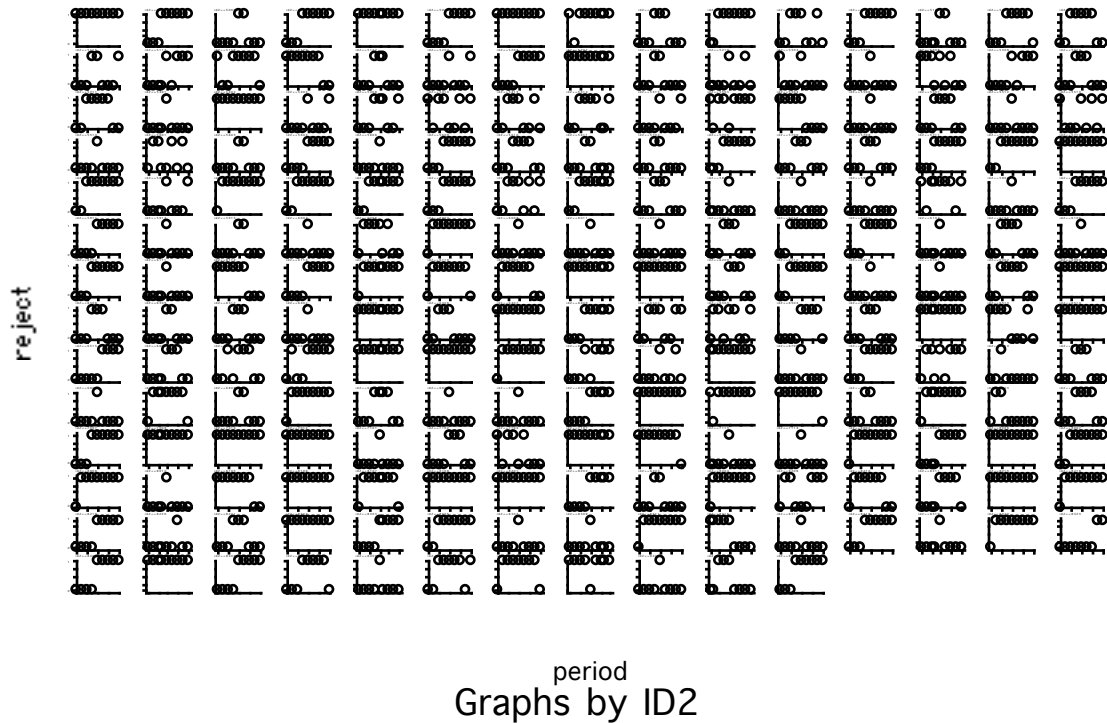


Figure 2b.

Graph of acceptances and rejections across increasing offers for Sakha by individual subjects.



Based on the data in these figures, each subject was coded as either being monotonically rational (M-R), as being hyper-fair (H-F) with an inverted “U” shape to the pattern of accepting and rejecting, or as being confused (C). All subjects who began with rejecting a low offer (or offers) and then switched to accepting all subsequent offers were coded as monotonically rational. This includes the special case of subjects who accepted all offers (this amount to 16.1 percent of the population). Subjects who rejected offers on both the left and right of the equal split and who did not then change back to accepting an offer are coded as hyper-fair. Finally, subjects who “bounce” between accepting and rejecting offers are coded as confused. This group includes any subject who has a string in which an offer was accepted, and subsequently higher offer was rejected and then some further higher offer was then accepted.

Table 4 indicates the percentage of subjects who fit these various types. Several points stand out. First, there are large difference between subjects in Tatarstan and Sakha. In the latter many more individuals fell into the “confused” category. Second, subjects were very likely to use either M-R or H-F strategies. Of those using an H-F strategy, 55 of 136 chose to accept *only* the equal split.

Table 4**The percentage and number of subjects with a specific profile broken out the Republic.**

<i>Type</i>	<i>Percentage – Tatarstan</i>	<i>Percentage – Sakha</i>
Monotonically-Rational (M-R)	50.0 (61)	38.3 (79)
Hyper-Fair (H-F)	42.6 (52)	40.8 (84)
Confused (C)	7.4 (9)	20.9 (43)

The question that these descriptive data raise is whether there is anything underlying these patterns of rejection. From the standpoint of proposers, they are getting it right. They expect subjects to reject almost anything that is not an equal split. However, there appears to be considerable heterogeneity in the population. Is there something about the characteristics of individuals that causes them to choose one type of strategy or another?

To answer this question we turn to unordered multivariate logit. The dependent variable is the “type” of strategy played by a subject as coded above. The baseline category (comparison group) is the M-R strategy. A set of independent variables is included to test for individual differences. The first involves the age of the subject as well as the squared value of the age (the age of subjects ran from 18 to 82, with the average age 42). We expect that there is a generational effect in which middle-aged subjects, who were educated in the post-World War II period, are the most like to be attached to norms of hyper-fairness. We also include a simple variable for educational level that increases from 1 to 3 with increased education. A dummy variable is included for village (which is coded as a place with fewer than 5,000 people – in most of our villages the population was nowhere near this, although if ponies were counted in Sakha, the number might have been close). Villages tended to be much more homogeneous in terms of nationalism and ethnicity. Most of our sessions in villages in both Tatarstan and Sakha were conducted in the titular language. A measure, egalitarianism, was derived from an additive scale of two items asked in the questionnaire touching on egalitarian norms. The first item asked subjects to agree or disagree with a statement that “everyone deserves a normal standard of living regardless of how well they work.” The second item stated that it’s “only natural for some people to live better than others.” The items were reflected in the same direction and added together, generating a scale in which a higher score constitutes a stronger egalitarian outlook. Finally a dummy variable was included for the experiments conducted in Sakha.

Table 5 presents results from the model. There are strong individual differences between those who adopt an M-R and an H-F strategy. These are tied to age, being in a Village and a commitment to egalitarianism. There are few differences between an M-R strategy and a C strategy, except for the Village dummy variable and whether the experiment was conducted in Sakha.

Table 5

Estimates of a subject's rejection strategy with unordered multinomial logit. M-R is the comparison group and standard errors are in parentheses. Bolded coefficients are significant at the .10 level.

	H-F Strategy	C Strategy
Intercept	-3.297 (1.191)	-3.505 (1.460)
Age	.128 (.045)	.035 (.051)
Age-squared	-.001 (.0004)	-.0002 (.0005)
Education 1=Low, 3=High	-.278 (.245)	-.233 (.330)
Village 0=No, 1=Yes	-.590 (.347)	.720 (.391)
Egalitarianism	.190 (.096)	.154 (.126)
Sakha 0=No, 1=Yes	.231 (.272)	1.465 (.440)

Log Likelihood=-300.61, n=312, Pseudo r^2 =.06

From this estimate it is the case that middle-aged subjects (in their mid 40s to mid 50s) are more likely to use an H-F strategy. This is the very group that was most heavily socialized under the old Soviet regime. At the same time a commitment to egalitarian ideals also contributes to the probability of adopting an H-F strategy. This makes a great deal of sense in that an H-F strategy is a very strong expression of norms. Such subjects believe that low offers and high offers alike should be rejected. One might infer that this is a very strong taste for fairness and wanting to enforce such norms can be costly, especially when a high offer is made. Of course, very few such offers were made.

It is also clear that some subjects were confused. There is little that is systematic about people who are categorized as this type. Those in Sakha were more likely to be of this type. It is not clear why this might be the case as there did not appear to be any more confusion in these experiments than those in Tatarstan. Moreover, there are no differences in educational levels or other major demographic variables when comparing the two Republics. There is, however, an effect for Village. Villages in Sakha, in particular, are very isolated and it may be that this is part of what is driving the effect. It is also the case that subjects in Villages are somewhat less educated than those in the cities. Additional research will examine correlates with these aspects of strategic choice.

Conclusion

This research paper is a first look at ultimatum game results from two transitional Russian Republics. The data combine (field) laboratory experiments with survey data. The subjects are a cross section of the population.

The findings are not very surprising. The modal choice for an offer was an equal split of the pie. Almost all offers were accepted. What is surprising, however, is the extent to which an equal offer was made. There is very little variation in the offers. Almost two-thirds of the Tatars and almost three-quarters of the Yakuts make such offers. This is quite high, especially in a country in which the political and economic structure has recently undergone fundamental transformation.

On looking closely at the patterns of rejection under the strategy method it is little wonder that so many equal split offers were made. A sizeable proportion of people in both Republics choose what we have called hyper-fair strategies. They reject both low and high offers. In this sense they appear to have a strong commitment to a norm of fairness that is defined as an equal split of the pie.

The source of that norm is an interesting one to disentangle (and difficult to do with cross-sectional data). However, we think that this norm is residual from the Soviet era. Subjects who were educated in that period are much more likely to adopt hyper-fair strategies. What is surprising is that even though not everyone subscribes to that norm, nonetheless the overwhelming proportion of subjects feel compelled to make equal offers. Given the richness of our data, we ought to be able to tease out these relationships in future work.

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