Just Luck:
An Experimental Study of Risk Taking and Fairness
Webappendix, not to be published.

August 13, 2012

A.1 Introduction

In this web-appendix, we report further data analysis and robustness checks. Enclosed at the end are the instructions given to participants.

A.2 Lorenz-curves

We here present the Lorenz-curves for the before and after transfer distributions of earnings, as referred to in footnote 8 in the paper.

[Figure A.1 about here.]

A.3 Regression on share given to unlucky risk-takers

We show here the fixed-effect regression referred to in footnote 9 in the paper, where we regress share given to the unlucky risk-taker on dummies for the value of the safe alternative.

[Table A.1 about here.]

A.4 Fit of fairness ideals

We here provide further details on the fit of the different fairness ideals, as reported in footnote 10 in the paper.

[Table A.2 about here.]

A.5 Robustness to functional form

We consider two alternative versions of equation (1), inspired by two widely used models of distributive preferences in risk-free settings. First, we consider a utility function which is linear in the cost of acting unfairly (Fehr and Schmidt 1999):

$$V^{FS}(y;\cdot) = \gamma y - \beta|y - F^k|. \tag{A.1}$$

This formulation implies that a stakeholder takes everything if $(\gamma/\beta) > 1$ and chooses a fair division if $(\gamma/\beta) < 1$. The stakeholder is, therefore, indifferent among all allocations if $(\gamma/\beta) = 1$. The present formulation does not introduce the idea that a person suffers more from an unfairness that is to his or her disadvantage, which is a prominent feature in Fehr and Schmidt (1999), since our study focuses on a dictator game where a decision-maker typically makes a trade-off between self-interest and an unfairness that is to her advantage.

Second, we consider an alternative way of modeling a smoother trade-off between self-interest and fairness, where the cost of acting unfairly is increasing in the distance to the fair solution (Bolton and Ockenfels 2000):

$$V^{BO}(y;\cdot) = \gamma y - \beta(y - F^k)^2/2X^2. \tag{A.2}$$

The interior solution, y^*, is here given by,

$$y^* = F^{k(i)} + (\gamma/\beta)X^2. \tag{A.3}$$

Hence, a stakeholder takes at least what he or she considers fair, or more, depending on how much weight the decision-maker assigns to fairness.

The difference between (A.2) and equation (1) in the paper relates to how share taken, y^*/X, depends on total earnings: (A.2) implies that share taken is increasing in total earnings, whereas (1) implies that share taken is constant in total earnings.

As in the main analysis, we assume that the spectators maximize the same utility function as stakeholders with the exceptions of the first term always being zero and the second term being defined for the spectator's preferences over the income of one of the two stakeholders in the pair.[1]

[1] Note that our model of spectator choices deviates from the approach adopted by Fehr and Schmidt (1999) and Bolton and Ockenfels (2000). They explicitly formulate models from the perspective of the decision maker, which implies that the spectator decision is considered involving three persons: the spectator and the two participants who have been involved in the risk-taking phase. In contrast, we model the spectator with a utility function that only includes fairness considerations related to the distribution of income between the two other participants. As pointed out by an anonymous referee, these two approaches are not equivalent. An alternative to our approach would therefore be to apply the approach of Fehr and Schmidt (1999) and

As shown in Table A.3, the estimated population shares appear robust to the choice of functional form. We observe that there are some differences in the other estimated parameters across the different versions of the model, but, as shown in Figure A.2 and Figure A.3, these differences are of minor importance for the predictions made by the estimated models.

[Table A.3 about here.]

[Figure A.2 about here.]

[Figure A.3 about here.]

A.6 Robustness to pooling of observations

We here report the population estimates for the pooled model, as referred to in footnote 14 in the paper. We also include pooled models that rely on alternative functional forms and, for each version of the model, remove, in turn, one of the fairness views. Also for the pooled models, we observe that the inclusion of all three fairness types is crucial, but not the choice of functional form.

[Table A.4 about here.]

Based on the estimated pooled models the restriction the the population shares of the different fairness types are the same cannot be rejected by a likelihood ratio test (p-values are 0.94, 0.89, and 0.86 for the main model in the paper (MM), FS, and BO, respectively).

Bolton and Ockenfels (2000), and model the spectator choices as involving three persons. If we do so without introducing the three fairness types, however, this approach clearly fails in explaining the observed spectator behavior. In Fehr and Schmidt (1999) the aversion to inequality among others is indirectly driven by the disutility a person suffers from inequalities between herself and another person. If a person can neither affect her own payoff nor the total amount to be paid off, as is the case for the spectators in the present experiment, she can only improve her utility by redistributing money from those who are richer to those who are poorer than herself. For the distribution situations at hand this means that the size of the cake should be crucial for the spectators. If total earnings are 700 NOK (2 times the spectators payoff) or larger, then the spectator would never give one of the participants less than 350 NOK. This prediction clearly fails in the experiment. For example, in the distributive situations where a lucky risk-taker meets an unlucky risk-taker and total earnings are 800 NOK, we observe that the spectators give less than 350 NOK to the unlucky risk-taker in 55 out of 95 situations. In Bolton and Ockenfels (2000), the only driving force (next to the own payoff) is the demand for a fair share which equals the cake divided by the number of persons involved in the distributive situation. For the spectators' decisions in this experiment, this means that they are completely indifferent between all allocations between the two other participants, since they cannot manipulate their own share of the total cake. The observed spectators choices, however, clearly reject the hypothesis that the spectator allocations are random. Thus, in sum, if we were to model the spectator decision as involving three person, we would need to extend the definitions of the choice egalitarian and ex ante fairness views to also cover these cases. However, given that our present model of spectator choices already predicts nicely the observed behavior in the experiment, as shown in Figure 2 in the paper, we have not pursued this possibility.

Note that standard likelihood ratio tests do not apply to the comparison of the full model with a model where we have removed one of the fairness ideals, since the hypothesis that one of the λ^k is zero is on the boundary of the parameter space (Andrews 2001).

A.7 Robustness to the treatment of strictly selfish individuals

As referred to in footnote 12 in the paper, we also consider how robust the results are to how we handle the strictly selfish individuals in the estimations for stakeholders. To study this question, we use two different approaches. First, we allow for a mass m_0 of people assigning no weight to fairness considerations in the formulation of the likelihood function. Second, we remove all stakeholders taking everything in all distributive situations (20 out of 78) from the estimation sample. As shown in Table A.5, the populations shares remain largely the same as reported in Table 4 in the paper.

[Table A.5 about here.]

We observe some differences across specifications for the other estimated parameters. In particular, the estimated average weight on own payoff decreases when removing the individuals who take everything.

As pointed out by an anonymous referee, there might also be stakeholders who view it as fair taking everything to themselves. The present design does not allow us to separate this group from truly selfish stakeholders who do not care at all about fairness. The analysis in this section, however, indicates that the inclusion of such a group is not crucial for determining the relative importance of the three fairness views under consideration in the present study.

A.8 Robustness analysis of choice model

As referred to in footnote 11 in the paper, we here consider a generalized version of the main model, introducing the possibility of a threshold value in the fairness views. The threshold captures the idea that the participants may be concerned with securing everyone at least a certain level of income, and thus may allow choice egalitarian and ex ante fairness considerations only to play a role above the threshold.

In the threshold model, participants with sufficiently high threshold value would act in line with the ex post fairness view and participants with a sufficiently low threshold value would act in line with either the ex ante or the choice egalitarian fairness view. A participant with an intermediate threshold value would adopt the ex post fairness view when the total amount of earnings are below the threshold value and one of the two other fairness views when the total amount of earnings are above the threshold. Thus, the main model in the paper is a limit case of this more general model, where participants have either a very high threshold (and are classified as having the ex post fairness view) or a very low threshold (and are classified as having either the choice egalitarian or ex ante fairness view).

To formalize the threshold model, we introduce the threshold $t \geq 0$ and assume that everyone either holds the choice egalitarian or ex ante fairness view. Participants with the ex post fairness view are thus identified from having a very high threshold. We now combine (2), (5) and (6) in the paper with the following equation, where $k = CE, EA$,

$$m(F^k, t, X) = \begin{cases} X/2 & \text{if } X \leq 2t, \\ t & \text{if } X > 2t \text{ and } F^k < t, \\ X - t & \text{if } X > 2t \text{ and } X - F^k < t, \\ F^k & \text{if } \min(F^k, X - F^k) \geq t. \end{cases} \tag{A.4}$$

We assume that t is a mixture of a log normal distribution and a mass at $t = 0$ (since this improves stability and fit). Note that the threshold model allows for three heterogeneities at the individual level: stakeholders may differ in fairness views, with respect to how much they care about fairness, and in their threshold level.

Figure A.4 reports the estimated distributions of thresholds for spectators and stakeholders, which provides evidence for some participants being motivated by threshold considerations in their distributive choices. Thus, some of the participants being classified as holding the ex post fairness view by the main model in the paper may be willing to accept choice egalitarian and ex ante fairness considerations above a certain threshold, whereas some of the participants being classified as holding the choice egalitarian or ex ante fairness view by the main model in the paper may consider the ex post fairness view to be appropriate below a certain threshold.

[Figure A.4 about here.]

As shown in Table A.6, the relative importance of the three fairness views, however, largely remains the same when introducing a threshold level, and, overall, as shown in Figure A.2 and Figure A.3, the threshold model does not fit the data better than the estimated version of (1).

The estimated threshold model highlights, however, that the share of ex post egalitarians is sensitive to the threshold level used to define this fairness type. In a comparison with the estimates of the main model in the paper, our preferred cut-off level is 400 NOK, since, given the design of the experiment, a spectator with such a threshold would distribute equally in almost all distributive situations in the experiment. There are two more conservative positions one can take on this issue, also reported in A.6.

[Table A.6 about here.]

A.9 Classification of individuals

We show here that the classification of individuals is not sensitive to the choice of functional form, and and that the fairness types are equally consistent in their choices. We also provide classifications for the threshold model, where we observe that fewer spectators are classified to be of the ex post fairness type.

For the models introducing other functional forms in (1) we follow the procedure described in section III.C in the paper. We provide here a more detailed discussion of how to do the classifications for the threshold model.

A.9.1 Classifications for the threshold model

To implement the classification of individuals for the threshold model, let W stand for the full history of behavior and situations faced by an individual, where everything is in terms of a single individual and we assume the estimated parameters to be known. The joint likelihood $p(W)$ can be written as

$$p(W) = \iint \sum_{k \in \{CE, EA\}} \lambda^k p(W|k, \beta, t) f(\beta, t) \; d\beta dt.$$

The fact that t is a mixed variable with mass at zero ($p^{t=0}$) creates the need for extending the notation from the main paper. Let $\overline{\tau}$ be the relevant cut-off above which we consider individuals to be of the ex post fairness type. Applying Bayes' theorem, we can write

$$p(k, \beta, t \leq \overline{\tau}|W) = \frac{p(W|k, \beta, t \leq \overline{\tau}) p(k, \beta, t \leq \overline{\tau})}{p(W)}.$$

Of this expression, $p(W)$ is already defined, and

$$p(k, \beta, \tau \leq \overline{\tau}) = \lambda^k f^\beta(\beta) \left(p^{t=0} + (1 - p^{t=0}) \int_0^t f^t(t) dt \right).$$

To put numbers to everything we need to calculate

$$p(W|k, \beta, t \leq \overline{\tau}) = p^{t=0} \cdot \prod_j \frac{e^{V_j(0,\cdot)}}{\sum_s e^{V_{sj}(0,\cdot)}} + (1 - p^{t=0}) \cdot \int_0^t \prod_j \frac{e^{V_j(t,\cdot)}}{\sum_s e^{V_{sj}(t,\cdot)}} f^t(t) dt.$$

In order to calculate the relevant classification probabilities, we need the marginal distribution of (k, t), and we can calculate

$$p(k, t \leq \overline{\tau}|W) = \frac{1}{p(W)} \int_0^\infty p(W|k, \beta, t \leq \overline{\tau}) p(k, \beta, t \leq \overline{\tau}) d\beta \quad \text{for } k \in \{CE, EA\}.$$

The final classification probability is

$$p(EP|W) = p(t > \overline{\tau}|W) = 1 - \Big(p(CE, t \leq \overline{\tau}|W) + p(EA, t \leq \overline{\tau}|W) \Big).$$

This gives us classification probabilities that can be used in the same way as the ones calculated for the main model in the paper.

A.9.2 Classification results

From Figure A.5, we observe that the different specifications agree fairly well about the classification consistency of individuals. The threshold model has fewer individuals with high classification probability of holding the ex post fairness view, corresponding to the slightly fewer individuals estimated to be of the ex post fairness type in Table A.6.

In Table A.7 we see that the different versions of the main model report the same level of individual consistency (defined as how consistent individual choices are with the classified type). In the threshold model, we observe that the mean fraction of consistent decisions of those holding the ex post fairness view is very high.

[Figure A.5 about here.]

[Table A.7 about here.]

A.10 Political view

Table A.8 reports, using the main model, how the average posterior probability of having each of the three fairness views relates to political views. Interestingly, we observe that moderate and right-wing individuals are much more likely to hold the ex ante fairness view, whereas the ex post fairness view is most likely among left-wing individuals. This suggests that the fairness preferences expressed in this experiment reflect deeper political convictions, and, consequently, that the observed heterogeneity is also present in situations outside the laboratory where gains and losses from risk-taking are distributed.

Among the stakeholders, the tendency to be consistently selfish is not systematically related to political view. There are 20/78 stakeholders that always takes everything; 6/27 among the left, 6/24 among the moderate and 8/27 among the the right ($p = 0.82$ using a $\chi^2(2)$ test).

[Table A.8 about here.]

References

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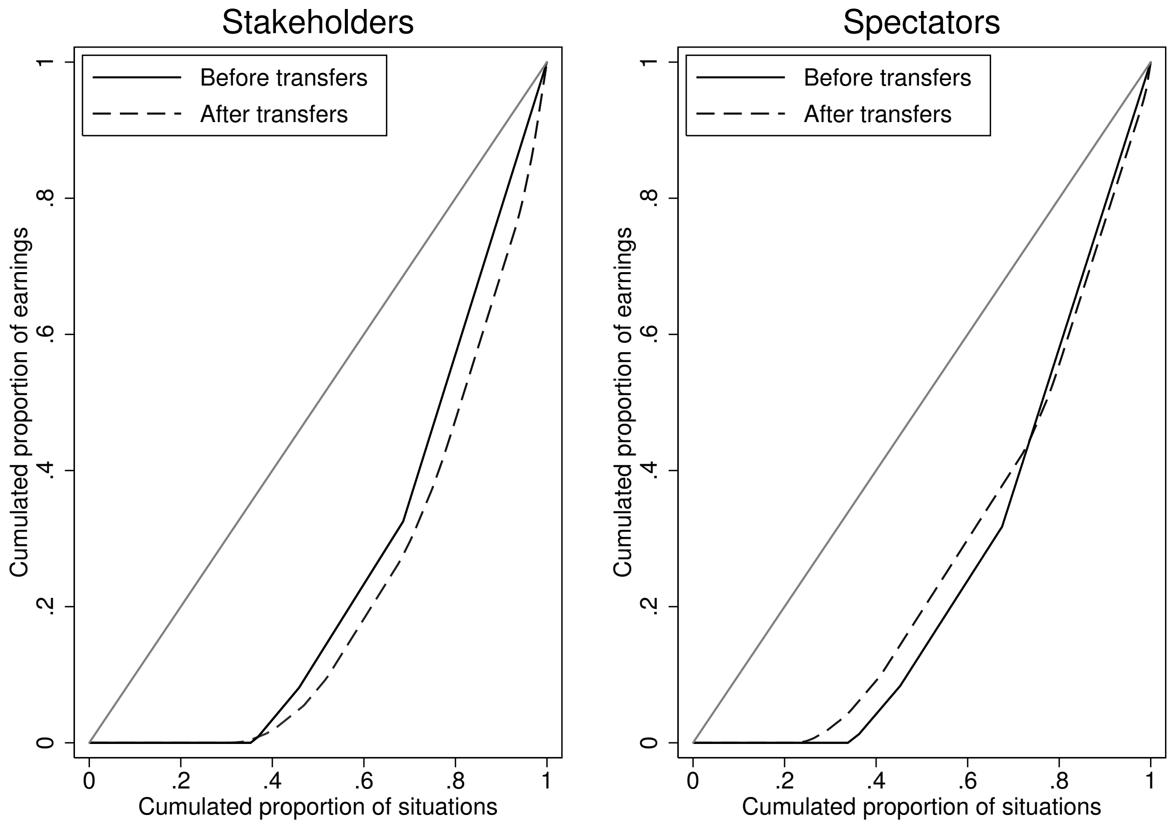

Figure A.1: **Lorenz curves, before and after transfers**

Note: The Lorenz curve before transfers for stakeholders shows the distribution of before transfers earnings for all individuals, whereas the Lorenz curve before transfers for spectators shows the distribution before transfers earnings for the individuals involved in the subset of situations where spectators make a decision. The after transfers Lorenz curves show the corresponding after transfers earnings following from the decisions made by stakeholder and spectators.

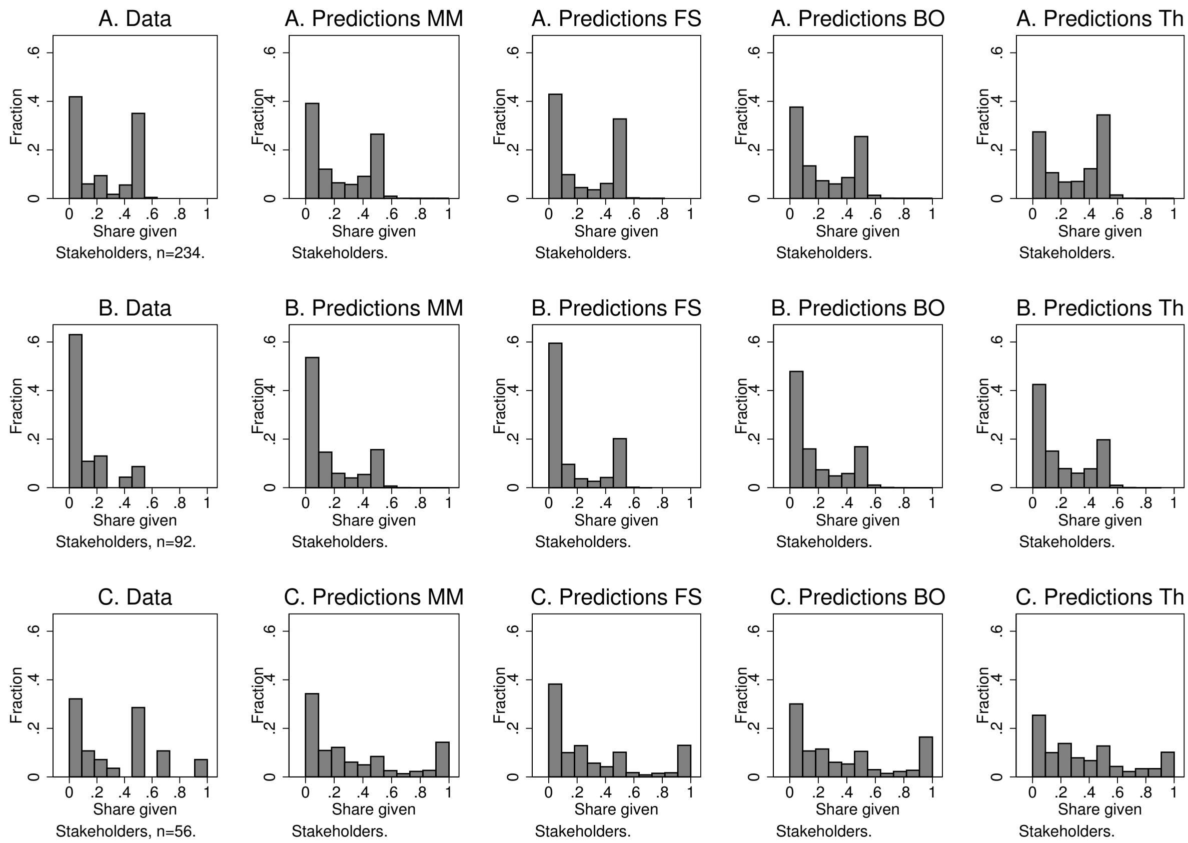

Figure A.2: **Actual and predicted share given by stakeholders in various distributive situations**

Note: Predictions refer to simulations of each of the models. The simulations are based on the estimates reported for stakeholders in Table A.3 for the Main model (MM), FS, and BO and, in Table A.6 for the threshold model (Th, introduced in section A.8). Calculations are done with 1000 replications of each individual and the distributive situations in which he or she is involved. Each replication is randomly assigned a fairness view F^k, β, γ, and t (in the threshold model) in accordance with the estimates. A: Distribution of stakeholder decisions when ex post earnings are equal, share given to the other participant. B: Distribution of stakeholder decisions when lucky meets unlucky, share given to the other participant. C: Distribution of stakeholder decisions when risk-taker meets safe, share given to the other participant. The Main model, FS, and BO are defined by combining equations (4)-(6) in the paper with equation (1) in the paper, (A.1), and (A.2), respectively. The threshold model is defined by combining equation (1) in the paper with (5)-(6) in the paper and (A.4).

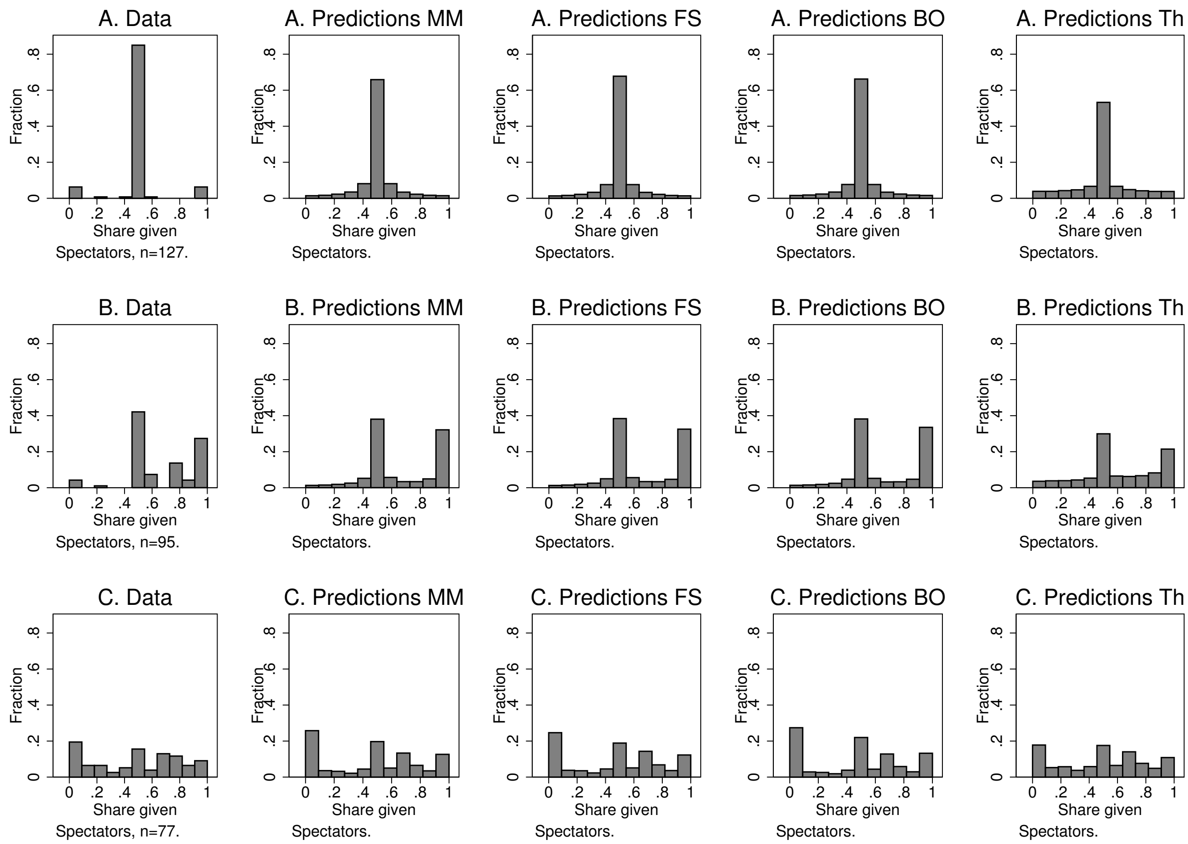

Figure A.3: **Actual and predicted share given by spectators in various distributive situations**

Note: Predictions refer to simulations of each of the models. The simulations are based on the estimates reported for spectators in Table A.3 for the Main model (MM), FS, and BO and, in Table A.6 for the threshold model (Th, introduced in section A.8). Calculations are done with 1000 replications of each individual and the distributive situations in which he or she is involved. Each replication is randomly assigned a fairness view F^k, β, and t (in the threshold model) in accordance with the estimates. A: Distribution of spectator decisions when ex post earnings are equal, share given to the first person in the pair (randomly determined). B: Distribution of spectator decisions when lucky meets unlucky, share given to the lucky participant. C: Distribution of spectator decisions when risk-taker meets safe, share given to the risk-taking participant. The Main model, FS, and BO are defined by combining equations (4)-(6) in the paper with equation (1) in the paper, (A.1), and (A.2), respectively. The threshold model is defined by combining equation (1) in the paper with (5)-(6) in the paper and (A.4).

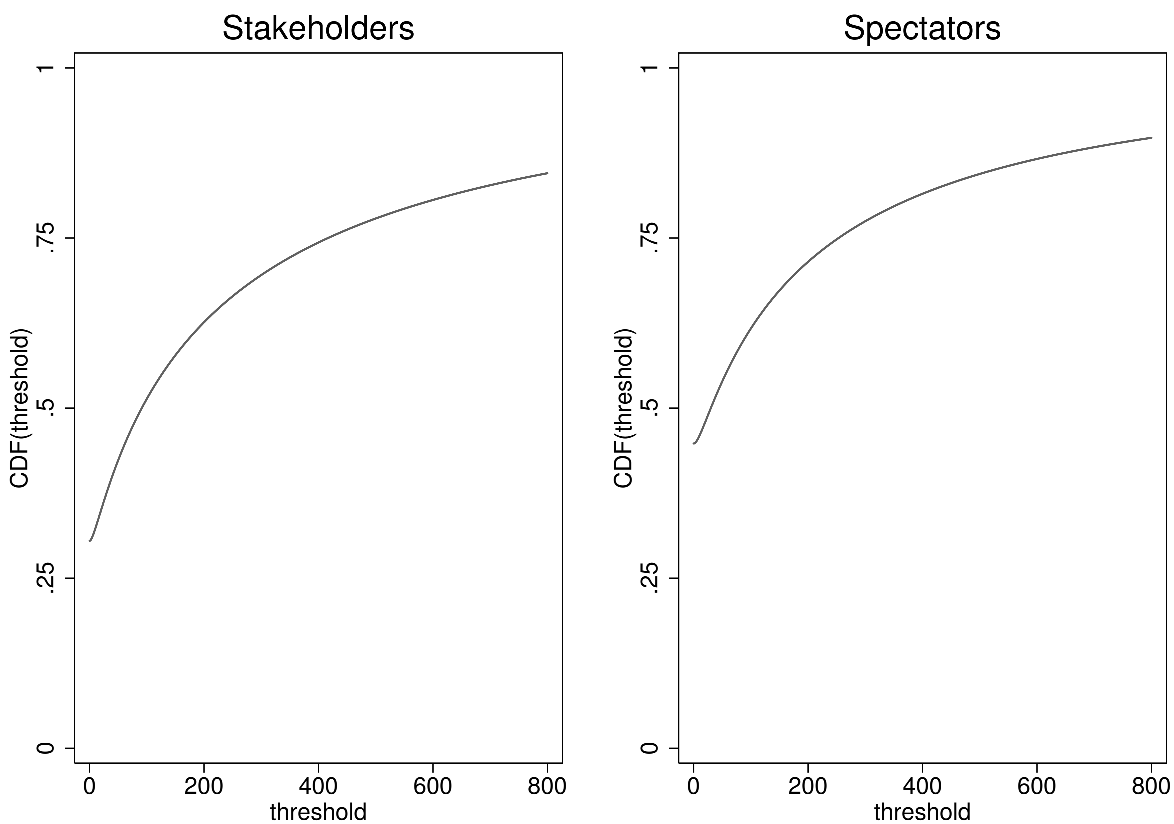

Figure A.4: **Estimated distributions of thresholds**

Note: The threshold model is defined by combining equation (1) in the paper with (5)-(6) in the paper and (A.4). Based on estimated parameters reported in Table A.6.

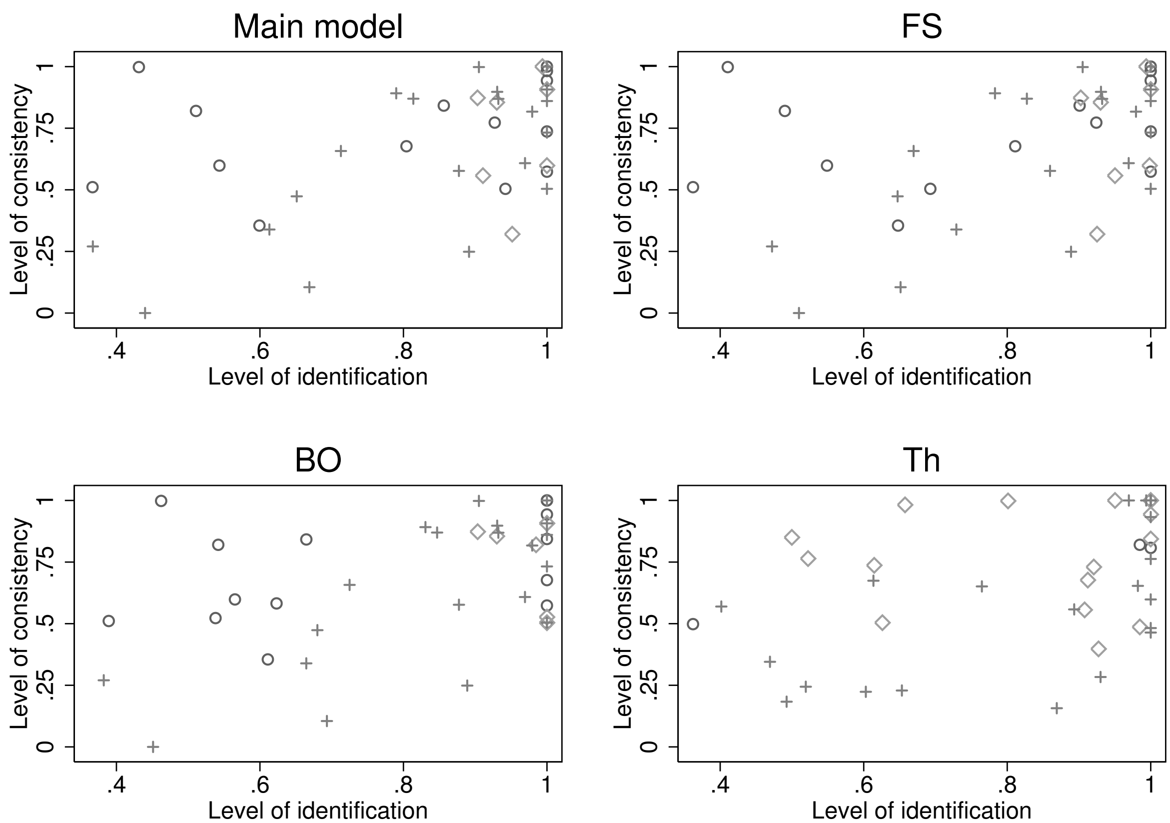

Figure A.5: **Classification consistency, spectators**

Note: Scatter plots of the level of consistency and level of identification for each spectator, corresponding to panel B of Figure 3 in the main paper. Level of consistency is measured by the the fraction of decisions consistent with the most likely fairness view of an individual (restricted to distributive situations with positive total earnings) and the level of identification is measured by the posterior probability of the individual having this fairness view, $\max_k\{P(k|y, Z)\}$ (under the restriction that aggregate proportions are the same as the estimated proportions). Circle, diamond, and cross indicate that a spectator is identified as having the ex post, choice egalitarian, and ex ante fairness view, respectively. For the threshold model, we have chosen $\overline{\tau} = 400$. Calculations of a posteriori probabilities are based on Table A.3 and A.6.

Table A.1: **Share given by spectators when lucky risk-taker meets unlucky risk-taker**

	Share given
safe alternative is 200	-0.035
	(0.044)
safe alternative is 300	0.009
	(0.059)
Constant	0.340
	(0.029)
N	95
Test of no effect of safe alternative:	$p = 0.66$

Note: Regression of share given to unlucky risk-taker when meeting lucky risk-taker on dummies for the value of the safe alternative. There are no distributive situations where the safe alternative is 400 NOK and both participants chose the risky alternative. This reflects the random matching procedure used in the distribution phase and the fact that only seven participants chose the risky alternative when the value of the safe alternative was 400 NOK.

Table A.2: **Share of decisions fitting each of the fairness views (spectators)**

Earnings before transfers	n	EA	CE	EP	Any
Equal	127	0.850	0.850	0.850	0.850
Unequal	156	0.295	0.404	0.314	0.609
All	283	0.544	0.604	0.554	0.717

Note: All observations are for spectators. The table reports the share of decisions fitting exactly each of the fairness views, for different distributive situations.

Table A.3: **Estimates of the choice model - different functional forms**

	Main model		FS		BO	
parameter	Stakeholder	Spectator	Stakeholder	Spectator	Stakeholder	Spectator
λ^{EP}	0.274	0.302	0.314	0.294	0.325	0.312
	(0.086)	(0.087)	(0.086)	(0.086)	(0.083)	(0.090)
λ^{CE}	0.315	0.272	0.316	0.278	0.300	0.248
	(0.095)	(0.089)	(0.093)	(0.091)	(0.090)	(0.087)
λ^{EA}	0.411	0.427	0.370	0.428	0.374	0.440
	(0.091)	(0.091)	(0.085)	(0.090)	(0.093)	(0.093)
ζ	3.094	6.960	2.838	3.702	2.544	7.169
	(0.503)	(0.683)	(0.177)	(0.388)	(0.636)	(0.816)
σ	4.378	4.660	1.686	2.408	4.668	5.214
	(0.655)	(0.706)	(0.240)	(0.330)	(0.695)	(0.882)
γ	15.577		24.491		12.551	
	(0.509)		(0.736)		(0.418)	
$\log L$	−1200.6	−606.5	−1137.1	−550.1	−1238.9	−623.0

Note: The Main model, FS, and BO are defined by combining equations (4)-(6) in the paper with equation (1) in the paper,(A.1), and (A.2), respectively. The specifications are estimated separately for spectators and stakeholders, where λ^{EP}, λ^{CE}, and λ^{EA} are the share of individuals with the ex post, choice egalitarian, and ex ante fairness view. The expectation and the standard deviation of the lognormal β is parameterized such that $\log \beta \sim N(\zeta, \sigma^2)$. The likelihood is maximized using the FmOpt library (Ferrall 2005). One population share and its standard error are calculated residually. Income is scaled in units of 1000 NOK. Standard errors (in parentheses) are calculated using the BHHH method (Berndt, Hall, Hall, and Hausman 1974).

Table A.4: **Pooling and removing fairness ideals**

	1	2	3	4
Model specification Main model:				
λ^{EP}	0.288		0.500	0.381
λ^{CE}	0.293	0.569		0.619
λ^{EA}	0.419	0.421	0.500	
$\log L$	-1807.2	-1971.6	-1930.9	-2067.6
Model specification FS:				
λ^{EP}	0.305		0.553	0.345
λ^{CE}	0.298	0.633		0.655
λ^{EA}	0.397	0.367	0.447	
$\log L$	-1687.3	-1779.4	-1775.3	-1942.5
Model specification BO:				
λ^{EP}	0.320		0.489	0.403
λ^{CE}	0.275	0.511		0.597
λ^{EA}	0.406	0.489	0.511	
$\log L$	-1862.1	-2061.6	-2002.8	-2100.3

Note: In all specifications, stakeholders and spectators are restricted to have the same population shares. We only report population shares and likelihood values, where λ^{EP}, λ^{CE}, and λ^{EA} are the share of individuals with the ex post, choice egalitarian, and ex ante fairness view. The other parameters are allowed to differ for stakeholders and spectators. Specification (1) reports estimates from the full model, whereas we in turn drop one of the fairness ideals in specifications (2)-(4). The Main model, FS, and BO are defined by combining equations (4)-(6) in the paper with equation (1) in the paper, (A.1), and (A.2), respectively. The likelihood is maximized using the FmOpt library (Ferrall 2005). One population share is calculated residually. Income is scaled in units of 1000 NOK.

Table A.5: **Robustness to the treatment of strictly selfish individuals (stakeholders)**

	Mass (m_0) with no weight to fairness			Removing individuals taking everything		
	Main model	FS	BO	CH	FS	BO
λ^{EP}	0.275	0.331	0.328	0.282	0.306	0.320
	(0.088)	(0.092)	(0.085)	(0.095)	(0.099)	(0.093)
λ^{CE}	0.314	0.348	0.298	0.299	0.353	0.292
	(0.095)	(0.096)	(0.089)	(0.104)	(0.113)	(0.100)
λ^{EA}	0.411	0.321	0.374	0.418	0.342	0.388
	(0.094)	(0.083)	(0.094)	(0.099)	(0.097)	(0.101)
ζ	3.156	3.596	3.407	0.349	2.543	3.030
	(0.596)	(0.124)	(0.669)	(0.693)	(0.286)	(0.830)
σ	4.248	0.639	4.002	3.781	1.619	4.174
	(0.663)	(0.094)	(0.618)	(0.575)	(0.244)	(0.696)
m_0	0.045	0.325	0.156			
	(0.155)	(0.066)	(0.152)			
γ	15.564	26.386	12.554	7.903	10.295	6.541
	(0.605)	(0.748)	(0.490)	(0.574)	(0.740)	(0.473)
$\log L$	−1200.5	−1123.7	−1238.0	−993.1	−957.7	−1007.8

Note: All specifications are only for stakeholders. The specifications in the left part of the table include a mass (m_0) with $\beta = 0$. The specifications in the right part of the table rely on an estimation sample where we have removed all stakeholders taking everything in all distributive situations (20 out of 78) from the estimation sample. Main model, FS, and BO are defined by combining equations (4)-(6) in the paper with equation (1) in the paper, (A.1), and (A.2), respectively. λ^{EP}, λ^{CE}, and λ^{EA} are the share of individuals with the ex post, choice egalitarian, and ex ante fairness view. The expectation and the standard deviation of the lognormal part of the β distribution are given by ζ and σ. The likelihood is maximized using the FmOpt library (Ferrall 2005). One population share and its standard error is calculated residually. Income is scaled in units of 1000 NOK. Standard errors (in parentheses) are calculated using the BHHH method (Berndt et al. 1974).

Table A.6: **Estimates of threshold model**

	Estimates		Implied distribution of types					
			for $\overline{\tau} = 400$		for $\overline{\tau} = 600$		for $\overline{\tau} = 800$	
	Stakeholders	Spectators	Stakeholders	Spectators	Stakeholders	Spectators	Stakeholders	Spectators
Share EP			0.266	0.175	0.209	0.122	0.172	0.090
			(0.057)	(0.037)	(0.052)	(0.027)	(0.048)	(0.020)
Share CE	0.406	0.413	0.298	0.341	0.321	0.363	0.336	0.376
	(0.115)	(0.118)	(0.089)	(0.080)	(0.095)	(0.083)	(0.099)	(0.084)
Share EA	0.594	0.587	0.436	0.485	0.470	0.516	0.492	0.534
	(0.115)	(0.118)	(0.090)	(0.071)	(0.094)	(0.076)	(0.097)	(0.080)
Mean of $\log \beta$	4.423	4.915						
	(0.040)	(0.491)						
S.D. of $\log \beta$	3.479	12.739						
	(0.182)	(46.397)						
Mean of $\log t \| t > 0$	-1.457	-1.549						
	(0.200)	(0.008)						
S.D. of $\log t \| t > 0$	1.811	1.370						
	(0.215)	(0.026)						
Mass at $t = 0$	0.305	0.458						
	(0.127)	0.110)						
Marginal utility of money	14.611	–						
	(0.385)							
Likelihood	-1192.42	-557.01						

Note: The threshold model is defined by combining equation (1) in the paper with (5)-(6) in the paper and (A.4). The implied shares are calculated for a cut-off, above which all individuals are considered to be of the ex post type ($\overline{\tau}$). The implied shares are $1 - F^t(\overline{\tau})$ for the ex post and $\lambda^{CE} F^t(\overline{\tau}), \lambda^{EA} F^t(\overline{\tau})$ for the choice egalitarian and ex ante types respectively, where F^t is the CDF of the estimated distribution of thresholds. Standard errors calculated using the delta method. Estimatation for spectators is not entirely numerically well behaved, and for this group estimation is with Nelder-Meade simplex maximization of the likelihood function and jack-knifed standard errors.

Table A.7: **Individual consistency across fairness type**

	Classified type		
	EP	CE	EA
Main model			
mean fraction of consistent decisions	0.75	0.67	0.71
n	12	11	18
FS-model			
mean fraction of consistent decisions	0.75	0.67	0.71
n	12	11	18
BO-model			
mean fraction of consistent decisions	0.70	0.73	0.71
n	13	10	18
Threshold model, $\overline{\tau} = 400$			
mean fraction of consistent decisions	0.83	0.72	0.66
n	7	14	20

Note: The table reports the number of spectators classified into each fairness type and the fraction of decisions in this group that are consistent with the fairness view (restricted to distributive situations with positive total earnings). Classification of spectators is based on the allocation of individuals to types that maximize total likelihood while restricting the fraction of each type to the population estimates in Table A.3. For further details on this approach, see Cappelen, Drange Hole, Sørensen, and Tungodden (2011). The Main model, FS, and BO are defined by combining equations (4)-(6) in the paper with equation (1) in the paper, (A.1), and (A.2), respectively. The threshold model is defined by combining equation (1) in the paper with (5)-(6) in the paper and (A.4).

Table A.8: **Fairness views and political beliefs**

	Political view		
	left	moderate	right
$\overline{P(EP\|PV)}$	0.363	0.240	0.246
	(0.052)	(0.050)	(0.047)
$\overline{P(CE\|PV)}$	0.327	0.312	0.261
	(0.045)	(0.050)	(0.046)
$\overline{P(EA\|PV)}$	0.310	0.448	0.493
	(0.048)	(0.059)	(0.061)

Note: The table reports average classification probabilities for the fairness types broken down by political view, based on the estimates of the main model presented in Table 4 in the paper. The question stated was: "Below is a seven-point scale on which the political views that people might hold are arranged from very left-wing to very right-wing. Where would you place yourself on this scale?". We have coded 1-4 as "left" ("very left wing" to "moderate"; 5 "moderate "slightly right wing"); and 6-7 as "right" ("right wing" to "very right wing") in order to create roughly equal-sized groups.

Appendix, not for publication:

General Instructions

Introduction

In this session participants will make decisions that determine their earnings and the earnings of other participants.

Please note that your participation is voluntary. You have the right to withdraw at any time and forfeit all payments you have received and will receive from your participation.

Rules of Conduct

The results from this experiment will be used in a research project. It is therefore very important that everyone who participates in the experiment follows certain rules of conduct. All cell-phones must be turned off, and you are not permitted to access any internet sites other than the one for this experiment. You are not allowed to talk with any of the other participants during the experiment. If you have questions or need help with the computer, please raise your hand and one of us will help you privately.

Anonymity

All interaction between the participants will take place via a web-based interface. The experiment will be conducted under complete anonymity, that is, no one, including the researcher and other participants, will ever know who made which decisions during the experiment.

Participants and Phases

In this experiment, there are two phases and two types of participants. A Type I Person makes decisions in both Phase 1 and Phase 2 of the experiment. A Type II Person makes decisions only in Phase 2 of the experiment. You will be randomly assigned to Type I or II later in the experiment. We will now describe Phase 1.

Phase 1 Instructions

Investment Phase
Phase 1 is the investment phase. Type I Persons, but not Type II Persons, make decisions in this phase. If you are randomly chosen to be a Type I Person, the following procedures will apply to you.

In this phase, you will face four separate situations. In each situation, you will be asked to choose between two alternatives: alternative A and alternative B. The value of alternative A is a fixed amount of money with certainty. Alternative B, on the other hand, is risky, that is, the value of this alternative will depend, in part, on chance. The four decisions you will make all involve the same risky alternative B, but they differ with respect to the value of alternative A. We will now describe these alternatives in greater detail.

Alternative A (certain)
Alternative A has a different but certain value in each of the four separate situations. The four possible values of this alternative are 400 NOK, 300 NOK, 200 NOK and 25 NOK.

Alternative B (risky)
The risky alternative B is always the same for all four situations. If you choose alternative B in a given situation, you have a fifty percent probability of earning 800 NOK and a fifty percent probability of earning nothing. Thus, the expected value of alternative B is 400 NOK. In other words, the value of this alternative is, on average, 400 NOK.

Summary of Investment Situations
The four situations are summarized in the following table, where p represents the probability of a given outcome in alternative B.

	Investment Situations			
Alternative A	400 NOK	300 NOK	200 NOK	25 NOK
Alternative B	0 NOK with p = 0.5 800 NOK with p = 0.5	0 NOK with p = 0.5 800 NOK with p = 0.5	0 NOK with p = 0.5 800 NOK with p = 0.5	0 NOK with p = 0.5 800 NOK with p = 0.5

If you choose alternative B in a given situation, the computer will select with random and with equal probability a value of 0 or 800 NOK. The situations will be presented in randomized order, that is, they will not necessarily be presented in the order they appear in this table.

Overview of Phase 2
Phase 2 of the experiment concerns the distribution of earnings from Phase 1. Details of the second phase will be provided after the first phase is complete.

When you logon to the experiment, you will be informed whether you are a Type I or Type II Person. Please follow the instructions on your screen.

This concludes the introduction. Throughout the experiment we will update progress on the experiment on the status page, which is displayed on the screen. If there are any questions now or at any point in the experiment, please raise your hand, and one of us will approach you individually.

Please enter the following code on your computer: XXX, and press the button to continue. You should then just wait until everyone has registered.

Everyone has now registered, and in moment you will automatically be transferred to a page that informs you whether you have been randomly selected to be a Type I or Type II Person. If you have been selected to be a Type II Person, please press the button and sit quietly without talking until you are asked to continue.

If you have been selected to be a Type I Person, please press the button to continue to your first investment situation. When you are finished with the first situation, press the button and continue in this manner until you have made decisions in all four situations. Then please sit quietly without talking until you are asked to continue.

Phase 2 Instructions

Distribution Phase
Phase 2 is the distribution phase. In this phase, both Type I and Type II Persons will make decisions about the distribution of earnings from Phase 1. Every participant will make decisions in different distributional situations involving two Type I Persons who are anonymously matched to form a pair. The task in each distributional situation is to distribute the sum of earnings of these two persons from one of their four investment situations.

Decisions of Type I Persons
If you are a Type I Person, you will be asked to make choices in a total of eight different distributional situations. In each distributional situation, you will be *randomly* matched with another Type I Person. You will then be asked to distribute the sum of what you earned and what the person you are matched with earned in one of the four investment situations. Before you decide how you want to distribute the money, you will both be informed about what alternatives the two of you faced in that particular investment situation, the decision you and the other person made in that situation, and the outcome for each of you.

Decisions of Type II Persons
If you are a Type II Person, you will also be asked to make choices in a total of eight different distributional situations that involve only Type I Persons but not yourself. In each distributional situation, you will be *randomly* matched with a pair consisting of two Type I Persons. You will then be asked to distribute the sum of what the two Type I Persons earned in one of the four investment situations. Before you decide how you want to distribute the money, you will be informed about what alternatives the two Type I Persons faced in that particular investment situation, the decisions they made in that situation, and the outcome for each of them.

Payments to Type II Persons
All Type II Persons will be paid the same fixed sum unrelated to their decisions about the distribution of earnings among Type I Persons. If you are a Type II Person, the amount of your fixed payment will appear on your screen before you make your decision.

Payments to Type I Persons

If you are a Type I Person, payments are determined in the following way. For each distributional situation, at most three proposals will be made, one by each of the two Type I Persons and one by a Type II Person. When all Type I and Type II Persons have made their decisions, the computer will randomly select one of the situations you have participated in and will randomly select one of the proposals in that situation as the one that will determine the payments to you.

When the experiment is finished, you will be assigned a payment code, which will be regarded as an identification card for receiving anonymously your payment for the experiment.

In a moment, everyone will be taken automatically to the first distribution situation. When that occurs, you may begin making your decisions. When you are finished with the first decision, continue to the next one until you have completed making all distribution decisions. Then go on to review and confirm your choices. You will be given the opportunity to revise your choices. You have completed the distribution phase when you have confirmed all of your choices. Then, please sit quietly until everyone has completed this phase.

Everyone has now completed the distribution phase. In a moment, you will be moved automatically to a page where you will be shown your payment details. You can then move to answer a few questions. When you are finished answering the questions, you can go on to obtain your payment code. You should write this payment code on the payment form in your folder. It is important that you fill in the correct payment code. Please sit quietly until you are notified that you may leave.

In order to receive your payment, you must complete the payment form, put it in the envelope, and return it. You may either leave the envelope in the box before you leave, or you may put it in the mail. If you wish to mail it, we can provide you with a stamp now.

You may now leave when you are ready. Thanks for participating in the experiment.