ONLINE APPENDIX FOR

When is Inequality Fair?

An Experiment on the Effect of Procedural Justice and Agency

Merve Akbaş Dan Ariely Sevgi Yuksel

Contents:

A. Partial redistribution

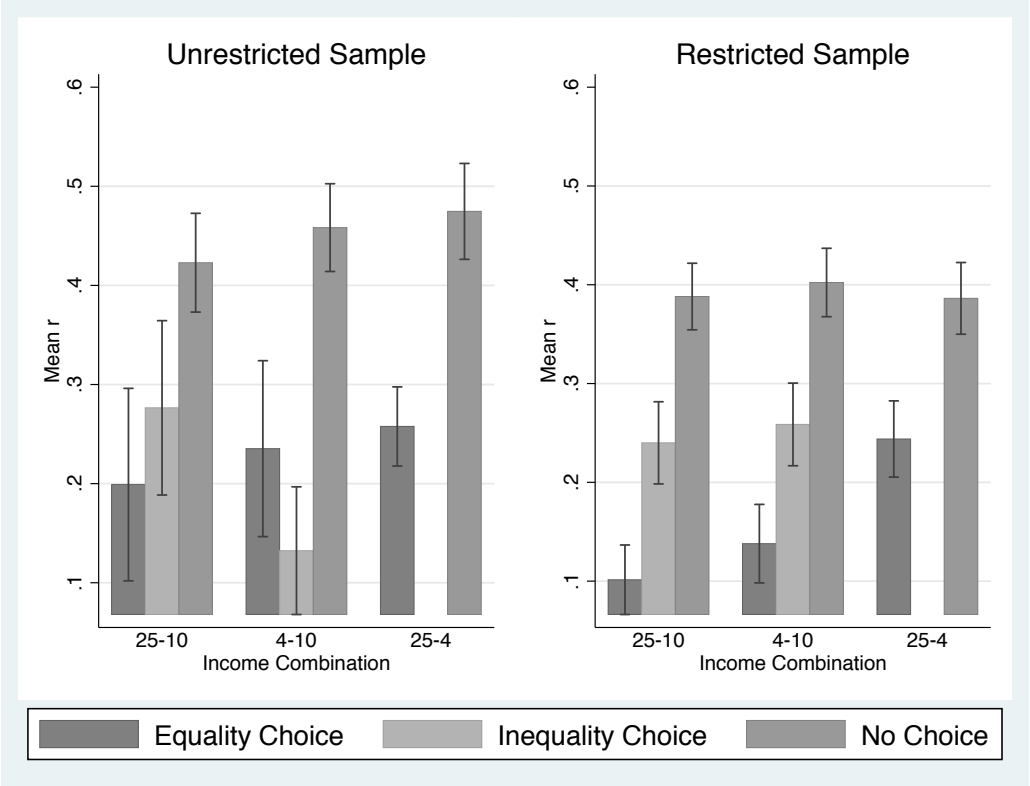
The analysis in the main text focused on two extreme types of redistribution decisions. In this section we analyze the results including all observations. Figure 3 in the main paper shows the histograms of *r* for each treatment and for each income combination. We see that the Equality-Choice treatment has a single peak at r = 0 when stakeholders choose different options (25-10 and 4-10) and double peaks at r = 0 and r = 0.5 when stakeholders choose the same option (25-4). The No-Choice treatment has a single peak at r = 0.5 for each income combination. The Inequality-Choice treatment, on the other hand, has three peaks for the income combination 25-10: one at r = 0, another one at r = 0.5 and a last one at r= 0.33. For this income combination, r = 0.33 corresponds to allocating $15 to the stakeholder with $10 Stage-1 income, which is short of full redistribution, but nonetheless represents a significant degree of redistribution given that the regular range for redistribution was between $10 and $17.5. Hence, we observe that for this income combination and treatment there is greater demand for partial redistribution and greater heterogeneity in our observer sample relative to our other treatments as those who favor no redistribution are similar in share to those who favor full redistribution or partial redistribution. For the income combination 4-10, in the Inequality-Choice treatment we see the same pattern of heterogeneity, with two peaks of r at r =0 and r = 0.5. One other observation about the histograms is that in the Equality-Choice and in the Inequality-Choice treatments, distributions are noisier than in the No-Choice treatment in the sense that there are more redistribution decisions outside of the no redistribution to full split range.

Comparing the means of the redistribution share in each treatment supports the main results from the previous section. Figure 1 below shows the mean redistribution share in each treatment for each income combination: The left panel includes all decisions. The right panel replicates the analysis excluding redistribution decisions that are outside of the no redistribution to full split range (excluding decisions with $r > 0.5$ or $r < 0$). We will refer to the excluded redistribution decisions as extreme decisions. In both panels, mean redistribution share in the No-Choice treatment is higher than mean redistribution share in the Equality-Choice treatment for each income combination, including the income combination 25-4 where the inequality in incomes is due to factors outside of stakeholders' control in the Equality-Choice treatment. We compared the means with t-tests, as well as the distributions with non-parametric Mann Whitney-Wilcoxon tests. All test results give us the same significance levels. For the sake of simplicity, we only report Mann Whitney-Wilcoxon test results. All differences are significant at 1% level using Mann Whitney –Wilcoxon test.

The difference in mean redistribution share between the Inequality-Choice and the Equality-Choice is not significant for income combinations 25-10 and 4-10 when we include all observations in the statistical test. (For 25-10: Equality-Choice = 0.2, Inequality-Choice = 0.28, Mann-Whitney (z) = -1.18, p = 0.23; for 4-10: Equality-Choice = 0.24, Inequality-Choice = 0.13, Mann-Whitney (z) = -0.25, p = 0.8). However, contrasting the right panel to the left panel in Figure 1 reveals that extreme decisions play a significant role in this result: When we drop extreme redistribution decisions, mean redistribution share in the Inequality-Choice treatment is significantly higher than the mean redistribution share in the Equality-Choice treatment for both of these income combinations. (For 25-10: Equality-Choice = 0.1, Inequality-Choice = 0.24, Mann-Whitney (z) = -2.3, p = 0.02; for 4-10: Equality-Choice = 0.13, Inequality-Choice = 0.26, Mann-Whitney (z) = -1.97, p = 0.05).

FIGURE 1

Mean Redistribution Share In Each Treatment For Each Income Combination



^ The left panel includes all observations, the right panel includes decisions that are less than or equal to equal split or more than or equal to no redistribution.

B. Gender and Voting Behavior

After all redistribution decisions were made, we asked participants for their gender and voting behavior in the 2012 general elections. Even though our sample size is small to make comparisons among groups, this information will serve as a randomization check for us. In the Equality-Choice treatment 65% of observers were female, in the Inequality-Choice treatment 59% of observers were female and in the No-Choice treatment 53 % of observers were female. There is no statistically significant difference in the distribution of gender among three treatments, based on a Kruskall-Wallis test of equal proportions ($\chi^2 = 0.63$), reducing the possibility that differences might be driven by a difference in preferences of females and males. In terms of redistribution decisions, mean redistribution share of male observers is 0.33, mean redistribution share of female observers is 0.28 when we pool all treatments and the difference is not statistically significant, based on a random effects GLS regression. Our second randomization check was with voting behavior. Table 1 shows the distribution of voting behavior in each treatment. We can see that there are no striking differences among three treatments: In Equality-Choice and No Choice, the highest share belongs to those who did not vote and the second highest share is Democrats. In Inequality-Choice, this ranking is switched with Democrats making up the biggest share and those who did not vote ranking the second biggest group. The share of Republicans and those who did not want to reveal their vote make up less than 7% in each treatment. The fact that distributions are similar verifies the success of our randomization and reduces the possibility that our results might be driven by differences in voting behavior among the treatments.

TABLE 1

PERCENTAGE OF VOTES IN 2012 ELECTIONS

(OBSERVERS)

	Equality Choice	Inequality Choice	No Choice
Democrat	29.41	44.12	28.12
Republican	2.94	5.88	6.25
No Vote	35.29	29.41	40.62
Not Eligible	26.47	17.65	18.75
Don't want to say	5.88	2.94	6.25
N	34	34	32

C. Stakeholders

Our main focus in this experiment was observer behavior. But, we also asked the stakeholders how they would like to redistribute the total earnings between themselves and the other stakeholder. We chose this design primarily because we wanted the Stakeholders to think further about what their choice set and decisions in Stage 1 can mean in the redistribution stage, not just for Observers who have no payoff incentive, but also for other Stakeholders. Given that the Stakeholders were aware of the redistribution stage, we thought this was important for how Stage 1 decisions would be interpreted by Observers.

As our goal was to focus on Observer behavior, we have limited data from Stakeholders. Since observers made different redistributive decisions based on their choices in the two choice treatments, our sample size does not allow for comparing redistribution decisions across treatments for each income combination.[1] To report our data fully, we include histograms for percentage of total earnings demanded by Stakeholders for each income combination in Figure 2. We also further divide the data to distinguish between cases where (a) the decision-maker earned a higher income than the other stakeholder, (b) the decision-maker earned less income than the other stakeholder.

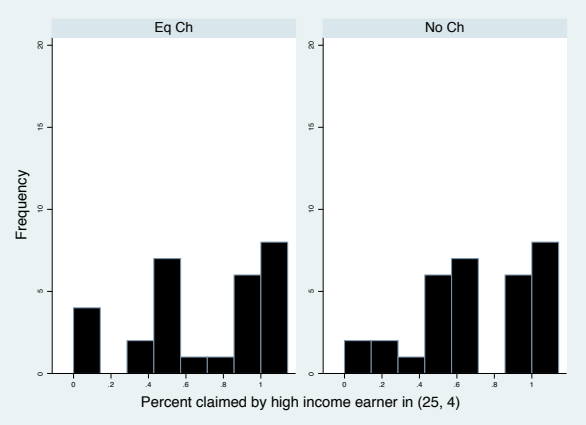
The histograms reveal Stakeholders' redistribution decisions to be concentrated around two extremes. Stakeholders either go for full extraction, namely take the opportunity to claim all the earnings for themselves, or they split total earnings equally between the two parties. This pattern in observed for all income combinations in all treatments. Since our experiment was not designed to study Stakeholder redistribution decisions, we refrain from further analysis.

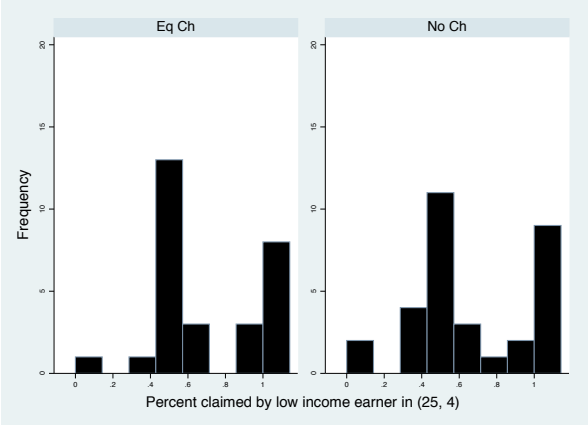
[1] Stakeholders in the No-Choice treatment made their redistribution decisions for every possible income combination before they learned their own stage-1 income. Stakeholders in the two choice treatments made their redistribution decisions after they made a choice, for all possible income combination given their choice. For example, if a stakeholder chose the safe option in the Equality-Choice treatment, he only made redistribution decisions for a) when he gets $10 and the other stakeholder gets $10, b) when he gets $10 and the other stakeholder gets $4, and c) when he gets $10 and the other stakeholder gets $25.

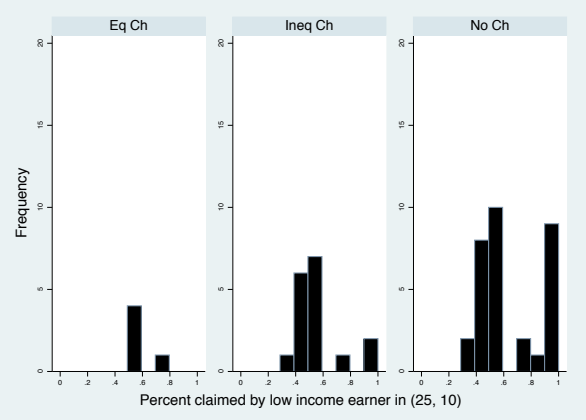
FIGURE 2

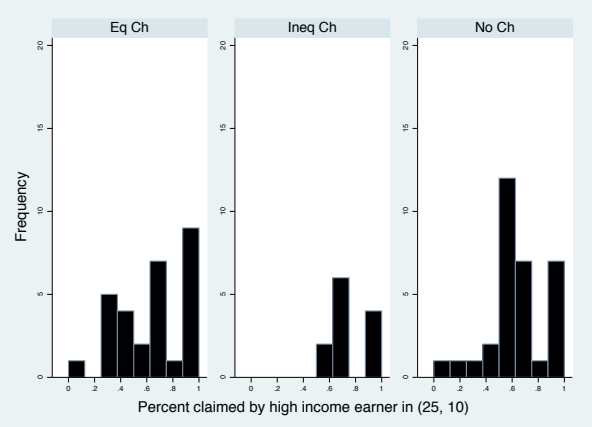
Histograms Of Percent of Total Earnings Demanded by Stakeholders

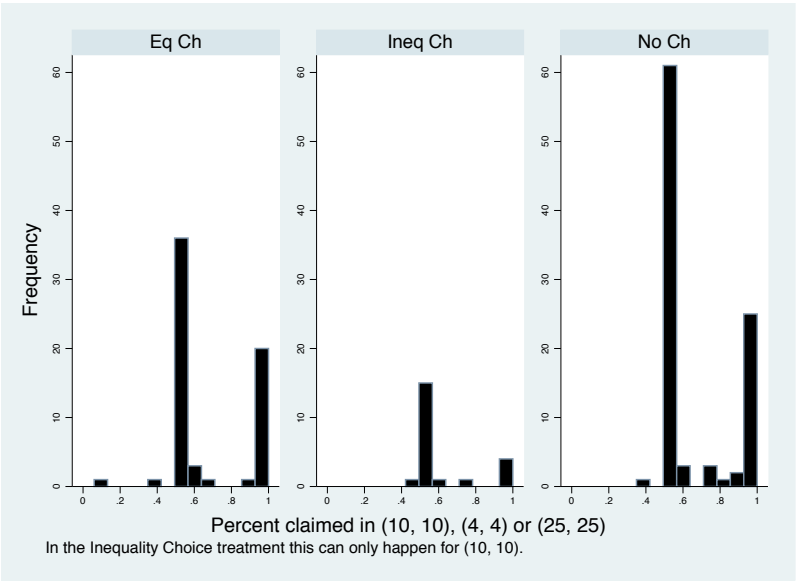
(For Different Income Combinations In Each Treatment)










Eq Ch
Ineq Ch
No Ch
Frequency
0
10
20
30
40
50
60
0
.2
.4
.6
.8
1
Percent claimed in (10, 10), (4, 4) or (25, 25)
In the Inequality Choice treatment this can only happen for (10, 10).

D. Additional Tables

TABLE 2

PERCENTAGE OF NO REDISTRIBUTION DECISIONS
BASED ON TWO ALTERNATIVE DEFINITIONS

Variable	Income Combination	Equality Choice	Inequality Choice	No Choice	Equality Choice vs No Choice	Equality Choice vs Inequality Choice	Inequality Choice vs No Choice
r < 0.05	25-10	0.62	0.41	0.16	p < 0.00	p = 0.09	0.02
(No Redistribution)	4-10	0.62	0.47	0.13	p < 0.00	p = 0.22	p < 0.01
	25-4	0.41		0.13	p < 0.01	-	-
r < 0.25	25-10	0.65	0.41	0.16	p < 0.00	p = 0.05	p = 0.02
(No Redistribution)	4-10	0.71	0.53	0.19	p < 0.00	p = 0.14	p < 0.01
	25-4	0.44		0.16	p = 0.01	-	-

^ All tests are based on Probit regressions.

TABLE 3

CORRELATIONS IN REDISTRIBUTION DECISIONS 1

			r in **25-10**	*r in* **4-10**
Equality Choice	*r in*	**4-10**	0.75***	
		25-4	0.29	0.23
Inequality Choice	*r in*	**4-10**	0.68***	
No Choice	*r in*	**4-10**	0.84***	
		25-4	0.96***	0.91***

* p < 0.05, ** p < 0.01, *** p<0.001

r is between equal split and no redistribution

^ Data includes only observer decisions for which *r* (redistribution share) is between zero and one half.

^^ Each observer made redistribution decisions for three (two in the Inequality Choice treatment) different income combinations. The table reports the Pearson correlation coefficient between *r* (redistribution share) in different income combinations.

TABLE 4

CORRELATIONS IN REDISTRIBUTION DECISIONS 2

			r in **25-10**	*r in* **4-10**
Equality Choice	*r in*	**4-10**	-0.97**	
		25-4	N/A	N/A
Inequality Choice	*r in*	**4-10**	-0.58	
No Choice	*r in*	**4-10**	-0.53	
		25-4	-0.67	N/A

* p < 0.05, ** p < 0.01, *** p<0.001

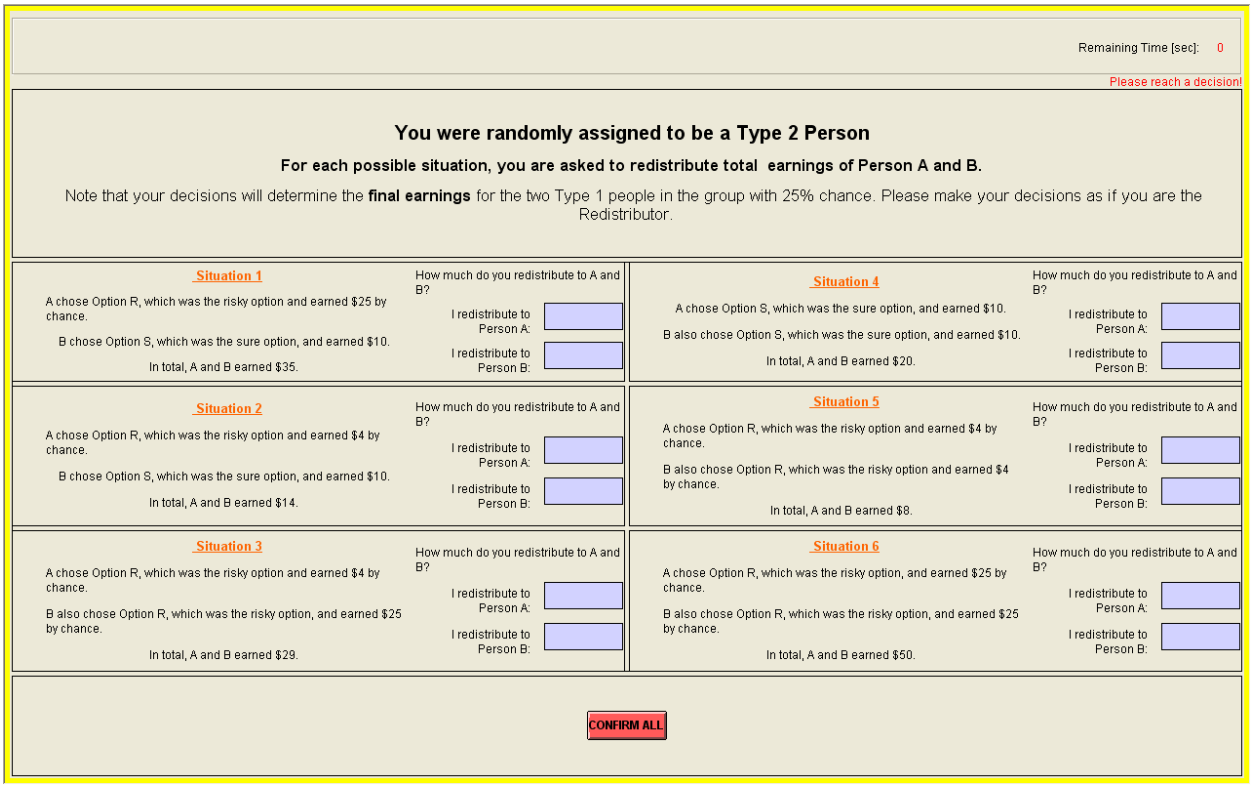
r is more than equal split or less than no redistribution

^ Data includes only extreme observer decisions (decisions for which *r* is less than zero or more than one half).

^^ Each observer made redistribution decisions for three (two in the Inequality Choice treatment) different income combinations. The table reports the Pearson correlation coefficient between *r* (redistribution share) in different income combinations.

E. Screenshots

A Screenshot Of Observer Decisions



F. Instructions for Equality-Choice Treatment

You are about to participate in an experiment on decision-making. What you earn depends partly on your decisions, partly on the decisions of others, and partly on chance. Please turn off cell phones and similar devices now. Please do not talk or in any way try to communicate with other participants. We will start with a brief instruction period in which you will be given a description of the main features of the experiment. If you have any questions during this period, raise your hand and your question will be answered so everyone can hear.

General Instructions

- In this experiment you will be randomly assigned to be a Type 1 or Type 2 person. There are 8 Type 1 and 8 Type 2 people in the room. You will be informed about whether you're a Type 1 or Type 2 person in the beginning of the experiment.
- You will be randomly matched into groups of 4 consisting of 2 Type 1 and 2 Type 2 people. You will not be able to identify whom you're matched with in the room.
- The experiment consists of two stages. In the first stage, initial earnings of Type 1 people are determined. In the second stage, each person in a group makes decisions on how to redistribute the total earnings between the two Type 1 people. Finally, one of these decisions is chosen randomly and implemented to determine final earnings for the Type 1 people. Type 2 people's earnings don't depend on these decisions.

First Stage – Initial Earnings

- In each group of 4, there are two Type 1 people. One is referred to as A, the other as B.
- A and B choose between 2 options: S and R. Initial earnings depend on the choices made and on chance.
- Option S is the sure option and the earnings are $10 for sure.
- Option R is the risky option and gives earnings of $4 with 50% chance and $25 with 50% chance.
    - If option R is chosen, the earnings are determined according a computer-generated random number between 1 and 100. If this number less than or equal 50, the earnings are $4, if it is larger than 50 the earnings are 25.

Option S (Available to both A, B)	Chance	100%	
	Earnings	$10	
Option R (Available to both A, B)	Chance	50%	50%
	Earnings	$4	$25

Second Stage – Redistribution

- Each Type 1 person makes redistribution decisions after choosing an option, but before observing his/her initial earnings, and before observing the choice and initial earnings of the other Type 1 person in the group. Therefore, each Type 1 person will make redistribution decision for every possible situation for his/her own earnings and the other Type 1 person's earning.
    - For example, if a Type 1 person chose option S, one of the situation s/he will be asked about is the following:
        - You chose Option S, which was the sure option and earned $10. The other person chose Option S, which was the sure option and earned $10. How much do you redistribute to the other and to yourself?
    - For all of the situations, the sum of the amounts allocated to the two Type 1 people must equal to the total earnings.
- Type 2 people make redistribution decisions before they observe the choices and the earnings of the Type 1 people. Thus, they will be asked about how to redistribute total earnings for every possible situation for the earnings of the two Type 1 people.
    - Below is one of the situations they will be asked about.
        - A chose Option S, which was the sure option, and earned $10. B also chose Option S, which was the sure option, and earned $10. How much do you redistribute to A and B?
- After redistribution decisions are submitted, one member of the group is randomly chosen as the Redistributor. Depending on the choices and realized earnings, his/her decision rule is used to determine the final earnings of the two Type 1 people in the group.
- Each Type 1 person receives a show up fee of $5 plus his/her final earning from the experiment.
- Each Type 2 person receives a show up fee of $10.
- Note that each member of the group (including Type 1 and 2) has ¼ probability of determining the final earnings for the two Type 1 people in the group. Specifically, each Type 1 person's decision rules affect his/her final earning with ¼ probability. However, the redistribution rules don't affect the earnings of the Type 2 people.

In summary:

In this experiment, you will be randomly matched into groups of 4 consisting of 2 Type 1 and 2 Type 2 people. You will not be able to identify whom you're matched with in the room. There are two stages.

In the first stage, initial earnings of Type 1 people are determined. Both Type 1 people (A and B) choose between two options, S and R. Their earnings depend on the choices they make and on chance.

In the second stage, each person in the group makes decisions on how to redistribute the total earnings between the two Type 1 people. Finally, one of these rules is chosen randomly and implemented to

determine final earnings for the Type 1 people. Type 2 people's earnings don't depend on these decisions.