Express Yourself: The Price of Fairness in a Simple Distribution Game*

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Abstract

A simple two-person distribution game similar to the ultimatum game is introduced. However, unlike the standard ultimatum game, responders can determine the payoff for the proposer in case of rejection. Therefore, they can express their concerns in monetary quantities. The experimental data are analyzed with respect to inequity aversion and intended punishment. The analysis casts doubt on a single motivation of responders' actions, but supports a combination of reciprocity and inequity aversion. Based on these findings, the data support a simple model for distribution preferences based on an increasing price for exposing responders to unkind offers.

Keywords: ultimatum bargaining, inequity aversion, efficiency concerns, fairness preferences
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1 Introduction

There are things that everyone knows but no one can define in an appropriate way. Fairness is one of them. Although a crucial factor for the coexistence of human beings, and, as such, for economic behavior, individual fairness concerns have been denied by economics for many years. Moreover, economists were astonished when individuals spent money on punishing others, though they accepted all kinds of preferences for bizarre but tradable goods (Rabin, 2002). For the last two decades, this has changed. There have been an increasing number of attempts to explain non-selfish behavior. But still little is known about fairness. Earlier studies proposed that the demand for fairness is price sensitive (e.g., Telser, 1995, Zwick & Chen, 1999). These studies treat fairness as a dichotomous commodity (either "fair" or "unfair"), vary the price for punishing unfair proposals, and observe proposers' rejection frequencies. This approach, however, draws only a rough picture of such a complex system as fairness concerns. This article aims to explore the character of fairness in more detail. In particular, I will show that existing fairness concepts misspecify individual behavior whenever fairness is not a matter for a dichotomous decision, i.e., being either unfair or fair. Therefore, I introduce a game similar to the standard ultimatum game which allows subjects to react in an individually different way to (un)fairness. Thus, this article is organized as follows: Section 2 introduces the new game and discusses the expectations for individual behavior based on existing fairness models. Section 3 analyzes experimental data of the game with respect to different types of social preferences. Section 4 provides a different approach of fairness preferences combining earlier models and rethinking the relation between reciprocity and inequity aversion. Finally, Section 5 concludes.

2 Two sides of fairness preferences

Human relations are typically not a matter of one-shot interactions. In most cases, individuals are required to maintain a group in order to achieve a goal. There are very few cases where members actually quit cooperation after being exposed to unfairness (consider for instance the case of team production). More often, individuals have to continue their interaction, but do express their anger, though this usually leads to some loss in efficiency, i.e., a reduction in the payoff of both parties. However, among the two important concepts of other-regarding preferences, inequity aversion and reciprocity models, the former models (e.g., Fehr & Schmidt, 1999, Bolton & Ockenfels, 2000) treat human relations as if there were no sequences of interaction that influences behavior but only independent periods of interaction. Consequently, models of inequity aversion assume fairness to be a result of individual preferences for equity in final outcomes. On the other side, reciprocity models rely on the psychological notion of intentions and intentional actions (e.g., Rabin, 1993, Falk & Fischbacher, 1999, Cox, Friedman & Gjerstad, 2004, Dufwenberg & Kirchsteiger, 2004). Here fairness concerns motivate individuals to respond to actions of others in a way that expresses the individual's intention. Perceived kindness by others leads to kind reactions, a perceived hostile action is responded by an equally hostile reaction. However, those models do not clarify what the source for kindness is and what triggers actions to be perceived as kind or hostile.

I will introduce a simple distribution task - called the expression game - where both, individual actions and intentions, are observable in a controlled way. As in standard two-person ultimatum game (Güth, Schmittberger & Schwarze, 1982), proposers, in a first stage, have to offer a share of a pie to another, anonymous person (so that the source of perceived (un)kindness is known). However, unlike the standard ultimatum game, a second stage is introduced that provides responders with a reaction space ranging from ending the interaction to not punishing at all.

Hence ending the interaction marks an extreme position in this relation but is not the sole alternative to accepting unfairness. A rejection in the standard ultimatum game may indicate inequity aversion since it favors an equal split (0/0) compared to a more unequal distribution of the pie, but may also indicate a hostile answer (0) to an unkind offer. The expression game seeks to mimic normal human interaction in more detail. Interaction in this game does not simply end for players when they reject an offer. Responders have to bear the consequences of unfair offers. As in the ultimatum game, a proposer has to divide a pie P among herself and an anonymous responder. The proposer offers an amount x to the responder with $0 \leq x \leq P$. If the responder accepts the offer, she earns x and the proposer $P - x$. However, by rejecting the offer, the responder "buys" the right to determine the payoff of the proposer at the price of $x/2$. Therefore, the responder receives $x/2$ and decides on the amount of money y with $P - x \geq y \geq 0$ that is received by the proposer. In the second stage of the game, responders have the opportunity to differentiate their reaction. Thus, responders are enabled to express their intentions. Figure 1 shows the game tree of the expression game.

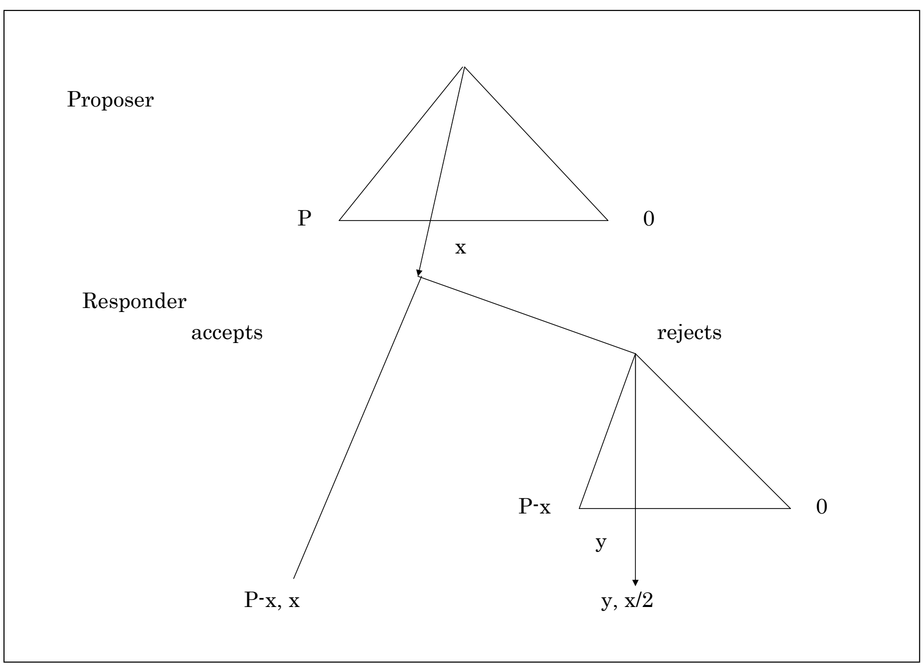

Figure 1: Game tree of the expression game

Of course, assuming pure profit maximizing preferences leads to an optimal offer of the smallest feasible amount since rejection of the offer would halve this amount. As in the standard ultimatum game, the responder should never reject except in case of a zero offer when she is indifferent.

In contrast, inequity aversion concerns would result in some positive rejection threshold. Offers which are disliked due to the strong dispersions among the players' payoffs are rejected. Hence one can observe rejections of offers that would result in payoffs differing too much (in favor of the proposer, but also in favor of the responder) from the equal split. However, according to all types of inequity aversion preferences, in case of rejection responders should assign the same amount of money to the proposer as they receive since this minimizes the distance between payoffs.

Conversely, according to reciprocity concerns, unkind offers lead to unkind responses. Thus, decreasing offers are perceived as unkind and, in case of rejection, returned by decreasing responses. However, taking the mathematical modelling for reciprocal preferences (e.g., Dufwenberg & Kirchsteiger, 2004) literally, each monetary quantity assigned to the opponent is either evaluated kindly or unkindly. If responders receive an unkind offer and reject it, they evaluate any positive payoff of the proposer negatively. Consequently, responders express their anger by returning a zero amount of money to the proposer in case of rejected offers.

3 Experimental results of the expression game

I tested the expression game in a pen-and-paper experiment in the hall of the cafeteria of the Friedrich Schiller University of Jena, Germany. In total, 243 subjects participated in two sessions which took place in two cafeterias on two days in September and October 2003.[1] Participants were mostly students (59% females) in their first or second year of study, on average aged 21 (sd 3 years). I used the strategy vector method, where subjects were asked to play both roles, that of proposer and responder. After the distribution of instructions, the decision sheets were filled in for both the proposer and the responder roles. Additionally, participants were asked for their expected offer in this game and some questions concerning their personal background. I controlled for an order effect by providing one half of the participants first with the proposer decision sheet and then the responder sheet while the other half received first the responder sheet and then the proposer sheet. However, no order effect was found. Desks were provided where subjects could answer questions privately. On average it took subjects 10 minutes to read the instructions and fill in the decision forms. For payment, participants had a 2-in-5 chance to earn a fraction of a 10 euros pie based on their decisions. I selected one out of five participants' decision forms randomly[2] for the proposer role and one out of the remaining four decision forms randomly for the responder role.

The overall average payoff was 4.09 euros (sd 1.63 euros) for those participants who played for the 10 euros pie. Proposers offered on average 4.74 euros (sd 1.08 euros) while proposers expected on average 4.95 euros (sd 1.48 euros).[3] Since subjects played both roles, that of the proposer and the responder, one could generally expect a lower rate of rejection. But the experimental data shows results consistent with typical ultimatum games as reported in Roth (1995). Figure 2 shows the rejection rates for increasing offers.

[1] Due to the fact that both cafeterias are situated in different areas of the university and mostly visited by students from different study fields (one is located in the area of natural science studies and the other in the area of behavioral sciences), the probability that one subject participated in both sessions was very low. Additionally, each participant got a mark on her hand in order to assure that none participate for more than once in one session.

[2] I introduced equal chance by throwing dice.

[3] Since we did not pay subjects for their expectations, we do not analyze the latter in more detail.

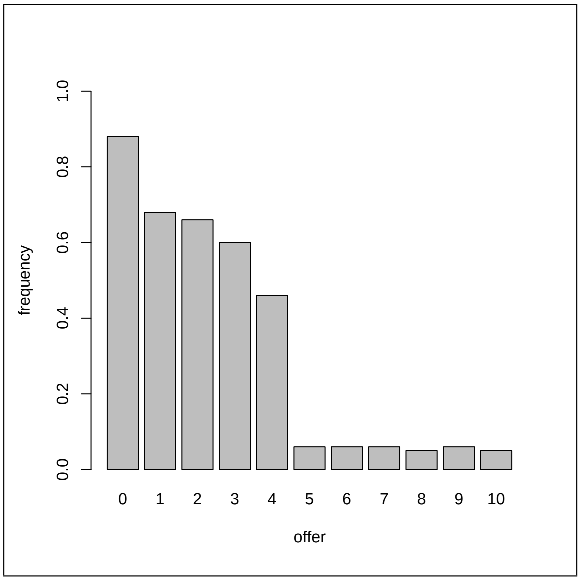

Figure 2: Percentage of rejections

The rejection rate varies at 5% (between 11 and 14 subjects) for offers above 4 euros. Note that in contrast to the classical ultimatum game, one finds also rejections of equal splits (14 subjects). The rate of rejection increases from 46% for offers of 4 euros to 88% for 0 offers.

For an analysis of the amount of money that is returned to the proposer in case of rejection, it is important to mention that return rates for offers greater than 6 are censored in the sense that the responder could return at most $P - x$ while keeping $x/2$ for themselves. Table 1 shows the average return rates and their standard deviations. For $x > 6$, the responder could not return equal splits. The average return rates for those offers reveals that responders returned virtually everything they could, only decreasing their own share. This supports the assumption of inequity aversion as well as kind behavior. But for $x < 4$, data shows little support for inequity concerns in the return rate. Estimating a linear regression of the average return (y) for all rejected offers smaller than 7 yields the relation $y = 2.02 + 0.138\ x/2$.[4]

[4]p-values 0.000 and 0.002

offer	9	8	7	6	5	4	3	2	1	0
mean y	0.91	1.79	2.46	3.00	2.64	2.58	2.28	2.33	1.96	2.25
sd	0.22	0.41	0.62	0.74	0.68	1.69	1.86	2.24	2.41	3.41

Table 1: Average return rates for rejected offers

Analyzing the data on an individual level confirms the previous results. I divided the return rates of all rejections into three categories: "zero-rate" counting all returns of $y = 0$ (for reciprocity concerns), "equal-rate" counting all returns of $y = x/2$ (for inequity aversion), and the category "generous-rate" counting all returns of $y > x/2$. Figure 3 shows the result of this division.

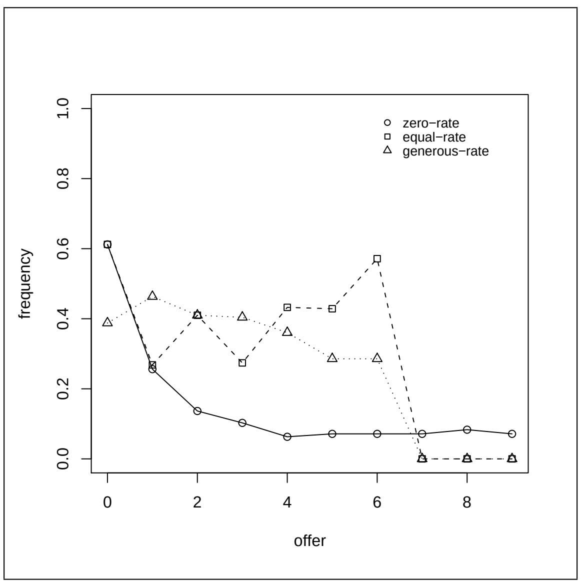

Figure 3: Categories of return rates with respect to proposers' payoffs

Note that, again, subjects were restricted for $x > 6$ to the fact that the responder could return at most less than the equal split so that the rates for those offers give little insight. Further, equal-rate and zero-rate express the same for an offer $x = 0$ (as in the classical ultimatum game, see Section 2) so that the increase of those rates for $x = 0$ is not a result of the rising importance of either inequity aversion or reciprocity concerns but a combination of those motives. Beside this effect, inequity aversion adequately characterizes return rates for offers $7 > x > 3$ ranging from 57% (8 of 14 subjects who rejected) to 43% (48 of 111 subjects). However, in total only 39% of return rates can be explained by equity concerns. These results are rather low for a mono-causal motivation of inequity aversion for rejections and return rates. Surprisingly, there is a high number of return shares which were higher than the remaining payoff for responders in case of rejections ($y > x/2$). In 38% of all rejections the proposer earned more than the responder (who rejected). Even "very" unkind offers of 0 (or 1) were answered in 39% (46%, respectively) by "generous" returns. On the other hand, only 14% of all responders returned 0 in case of rejection. Only for small offers ($x = 1$) did more than 20% of subjects (exactly 26% or 42 of 164 subjects) return 0.

To ask which offers were perceived as unkind provides more details. Considering the mathematical formulation of existing reciprocity preferences, kind offers are rejected and responded to in a hostile manner. In the relevant models, each positive amount received by the opponent is either evaluated positively (for kind reciprocity) or negatively (for unkind reciprocity). Thus, responders maximize their motivation for rejected offers by returning zero to the proposer. For this reason, I define return rates of 0 (hereafter cutoff-point 0). I analyzed the maximum offer for each subject which was rejected and returned by 0. The frequency for all subjects are reported in Figure 4.

It should be noted that the number -1 indicates those subjects who never returned 0 in case of rejection. Referring to the cutoff-point 0, only 17% of all subjects were unkind since those who never returned 0 or did so only for an offer of 0 (83%) did not express unkindness in the sense that they gave the other less than their own share. Interestingly, analyzing the data for a cutoff-point 1, 38% of all subjects never returned an amount less or equal to 1. Again, those numbers seem rather low for "pure" reciprocity concerns in their existing mathematical formalization since I found too little evidence in the data for unkindness. It seems there is a trade-off between inequity aversion and reciprocity concerns.

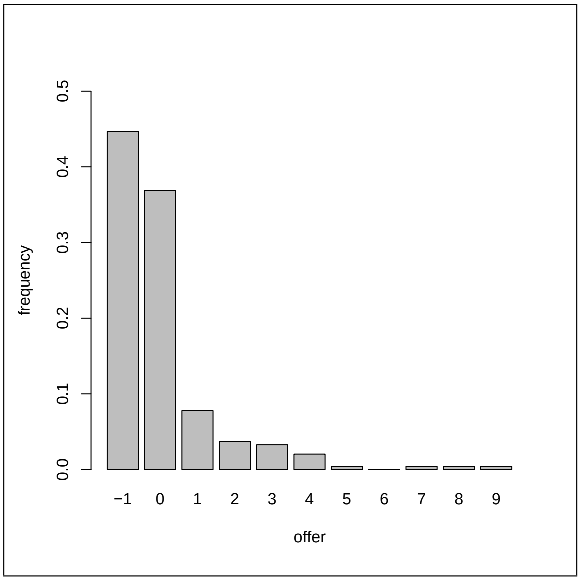

Figure 4: Unkind return rates with respect to the cutoff-point 0

4 Rethinking the connection between reciprocity and inequity aversion: The price of fairness

So far I tried to emphasize the shortcomings of both fairness concepts, reciprocity and inequity aversion. While the former does not answer the question what triggers kindness/unkindness, the latter relates fairness exclusively to the distribution of wealth irrespective of former interactions. Fairness is bound to some thresholds that divide acts of distribution into fair and unfair ones. But who can say whether those thresholds are stable across the entire sequence of interaction? Whenever one assumes unstable preferences, reciprocity could be interpreted as a reaction, i.e., the shift of the threshold as a result of prior interaction. Consequently, we expect individualistic behavior where inequity aversion triggers rejections but reciprocity leads to punishment, although the results of punishment violate initial inequity aversion. Hereby, we assume that responders think sequentially. They are first focused on the relative size of the offer but then, in case of rejections, on the amount of the pie taken away from the proposer (or left to the proposer, respectively). One can interpret the relative amount of vanished payoff as a compensation the proposer has to pay for exposing the responder to unfairness. Ultimately, by rejecting an offer subjects buy the right to decrease the payoff of the proposer.

Computing the relative return rates in case of rejection yields a clear structure. Table 2 shows the comparison of average return rates on rejected offers divided by the proposer's initial share (i.e., the pie minus the offer):

offer	9	8	7	6	5	4	3	2	1	0
mean $\frac{y}{P-x}$	0.91	0.9	0.82	0.75	0.52	0.43	0.33	0.29	0.22	0.23

Table 2: Relative return rates on rejected offers

Dividing the return rates according to the part of the initial share of the proposer that was taken away after rejection, results in Figure 5. The partition "take $> 3/4$" ("take $< 1/4$") shows the relative frequency of return rates which were decreased by the factor 3/4 or more (1/4 or less, respectively) compared to the initial amount, whereas the partition "take $\sim 1/2$" counts all those return rates that do not belong to the former. Note that the frequencies for offers greater than 4 are based on much fewer data.

There is a clear, statistically significant structure in punishment. A binomial test for the dominance of "take $> 3/4$", "take $\sim 1/2$", and "take $< 1/4$" for ranges of offers greater than 6, between 6 and 4, and smaller than 4 rejects the hypothesis that this structure occurs simply by chance on an $\alpha < 0.01$ level except for offers of 6 ($p = 0.12$) and 5 ($p = 0.02$). Interestingly, one can see the different motivation for the majorities of rejections. In case of rejected offers for the range of offers greater than 6, responders do not punish proposers but decrease their own payoffs. This could result from inequity aversion. In the range for offers smaller than 4, the majority of responders punish proposers for their rejected offer by reducing the return share by at least $\frac{3}{4}$. Finally, for the majority of rejected offers between 4 and 6, we observe return

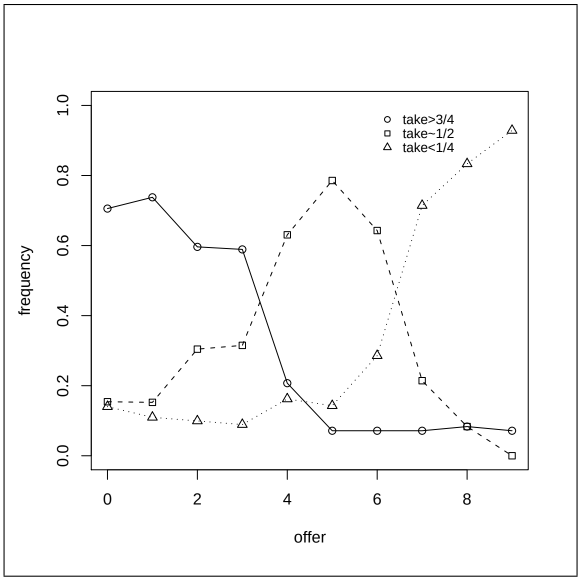

Figure 5: Categories of return rates with respect to vanished proposers' shares

rates of approximately $\frac{1}{2}$ of the initial payoff. It seems that subjects dislike the absolute amount of the opponent's payoff, but want to keep the shares constant.

However, there are important individual differences. Focusing on monotonic rejection structures[5] (209 out of the 243 subjects), as they indicate clear-cut preferences, shows that there are three predominant types of responders: type 1 responders who never return less than $\frac{1}{4}$ of the proposer's initial share, type 2 responders who return for higher rejected offers more than $\frac{1}{4}$ of the proposer's initial share, but returned less than $\frac{1}{4}$ for smaller rejected offers, and type 3 responders who always return less than $\frac{1}{4}$ of the proposer's initial share. Out of the 209 subjects taken into consideration, 84 (40.2%) belong to the group of type 1 responders, 58 (27.8%) to the group of type 2 responders, and 67 (32.0%) to the group of type 3 responders.

Since there are offers that are rejected but for which proposers are not punished at all, I argue that inequity aversion thresholds that differentiate between kind and unkind offers are unstable in both directions. The

[5] I denote non-monotonic rejection structures as responder's behavior which alternates between rejection and acceptance in relation to decreasing offers.

thresholds are modified either in such a way that they favor the opponent's shares one's own shares. Let us formalize this modification. For simplicity, we model inequity aversion in the way introduced in the ERC model by Bolton & Ockenfels (2000). Hereby, each player maximizes the expected value of the individual motivation function

$$v_i = v_i(z_i, \sigma_i) \tag{1}$$

that is twice differentiable, and where z_i denotes the individual absolute payoff and σ_i i's relative share of the payoff. For absolute payoffs it holds that

$$\frac{\partial v_i}{\partial z_i} \geq 0 \text{ and } \frac{\partial^2 v_i}{\partial z_i^2} \leq 0 \ , \tag{2}$$

and for relative shares the function is characterized by

$$\frac{\partial v_i}{\partial \sigma_i} = 0 \text{ for some } \sigma_i = \sigma^* \approx 0.5 \text{ and } \frac{\partial^2 v_i}{\partial \sigma_i^2} \leq 0 \ . \tag{3}$$

Consequently, the motivation function v_i is strictly concave in σ_i, where σ^* defines a social reference point for equal divisions (Bolton & Ockenfels, 2000). Note that (most) experimental observations correspond to motivation functions where

$$v_i(z_i, \sigma_i) \leq 0 \text{ for } 0 < \sigma_i \leq \sigma' < 0.5 \tag{4}$$

but also (less frequent)

$$v_i(z_i, \sigma_i) \leq 0 \text{ for } 1 > \sigma_i \geq \sigma'' > 0.5 \ , \tag{5}$$

i.e., rejections of positive monetary payoff for the sake of punishing unfair splits. I stated that σ^*, σ', and σ'' are subject to a shift that is motivated by human interaction. Let σ_0^*, σ_0', and σ_0'' denote the initial locations of the three points, and σ_1^*, σ_1', and σ_1'' the location after interaction, i.e., for the second stage of the expression game. However, for the first stage of the game we cannot measure the individual σ_0^*, but only σ_0' (σ_0''). Thus, since v_i is a strictly concave function in σ_i, the distance between $P\sigma_0'$ ($P\sigma_0''$) - the minimum (maximum) acceptable offer - and the rejected offer x approximates the unfairness of x, i.e., how far the actual offer deviates from the social reference point. For the game's second stage, I suppose that in case of rejection responders chose their σ_1^*, while for the first stage inequity aversion assumes $\sigma_0^* \approx \frac{1}{2}$. Therefore, whenever the relation $\frac{P-x-y}{x/2} = 1$, the threshold did not respond to the prior interaction, i.e., it holds that $\sigma_0^* = \sigma_1^*$. Whenever $\frac{P-x-y}{x/2} > 1$, offers were responded to kindly ($\sigma_0^* < \sigma_1^*$), but whenever $\frac{P-x-y}{x/2} < 1$, offers were responded to unkindly ($\sigma_0^* > \sigma_1^*$).[6] Consequently, we can estimate the shift as the relation

$$C + \theta(P\sigma' - x) = \frac{P - x - y}{x/2} \tag{6}$$

or, in a more general mathematical form,

$$e^{C+\theta(P\sigma'-x)} = \frac{P - x - y}{x/2} \tag{7}$$

where C denotes a constant term. Note that the right-hand side of (7) can also be interpreted as the price the responder let the proposer pay for each unit $\frac{x}{2}$ the responder spends to compensate for the unfair offers. Based on the amount of money responders keep from proposers' initial shares in case of rejection, one can estimate the increase in price proposers have to pay for exposing responders to unfair offers. I want to characterize this price as "the price for fairness."

However, there are important individual differences for the relation between x and $\frac{P-x-y}{x/2}$. As shown for the division of individual rejection rates, there are three predominant types of responders reflected in the data. I estimate the logarithmal price for fairness using panel estimation with fixed error term for all data points, but also for the three types of responders. As a result, one is faced with two problems: First, there are data points where the price is infinite (as the responder can punish an offer of 0 euros at no cost). Therefore, responding behavior for 0 offers is somehow ambiguous. Consequently, all those data points are excluded for all players, and subjects are divided into the three groups with respect to rejection rates for offers between 9 and 1. Second, there are data

[6] Unfortunately, I observed only a small number of high offers that were rejected. Therefore, I have only sufficient amounts of data regarding estimations for the unkind responses.

points where the price is zero (so that nothing of the proposer's share vanishes in case of rejection). This is an important information but one cannot compute $ln(0)$. In order to take these data points into consideration, I approximate the return rates by setting $P - x - y$ to 0.01, as 1 euro cent is the smallest possible fraction of the pie in the experiment.[7] Table 3 reports the results of the estimation for model (7) and types on the basis of all monotonic rejection structures (209 subjects).

	all	type 1	type 2	type 3
C	-0.425	-1.367	-0.38	0.99
θ	0.703^{***}	0.420^{***}	0.821^{***}	0.664^{***}
	(0.028)	(0.079)	(0.04)	(0.011)
R-square	86.0	89.3	73.5	96.2
observations	209	84	58	67

Table 3: Estimation of compensation price of unacceptable offers, with standard errors in parenthesis[8]

One notes a significant, monotonically increasing effect of the distance between the acceptable offer and the price of fairness. Thus, the social reference point responds to the first stage of interaction. Comparison across the different types of responders shows a great variety among the types of players. For type 2 responders' slope, shifts are approximately proportional with the distance.[9] Therefore, they are denoted as equity dominated responders. In contrast, type 1 responders significantly discount their compensation price. The shift of the social reference point is underproportional so that they are denoted as efficiency dominated responders.[10] On the other hand, type 3 players' slope for the shift is overproportional so that each rejected offer is also unkind with respect to earlier characteristics.[11] I interpret this as a negative evaluation of

[7]I am aware that the approximation of 0.01 crucially influences the results of our estimation but found no contrary evidence for other appropriate approximations.

[8]*** significant on a 1-percent level. There are no standard errors and p-values reported for the constant terms, as I operated with a fixed error term model and report the average estimates.

[9]A linear approximation for the slope is 1.45 for each unit by which the offer is decreased.

[10]The linear approximation for the slope of the shift is 0.56.

[11]Linear approximation for the slope yields 2.17.

the opponent's payoff. Thus, type 3 responders are denoted as competitive dominated responders. Figure 6 shows the estimated compensation curves for equity, efficiency, and competitive dominated responders.

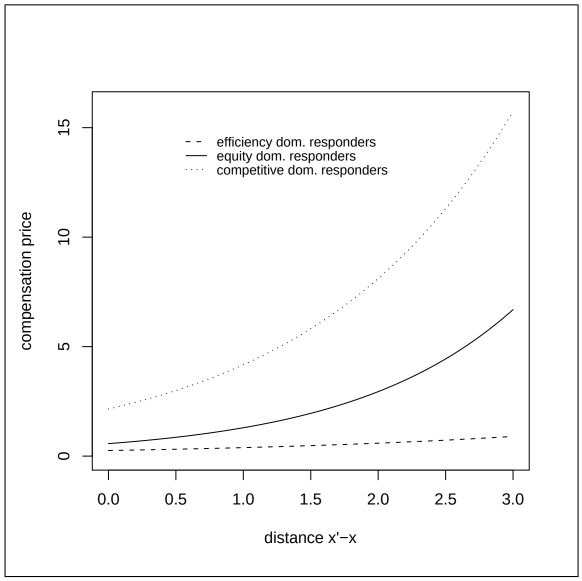

Figure 6: Estimated compensation curves

These findings correspond with the results for the games analyzed by Charness & Rabin (2002) and Engelmann & Strobel (2002) as they found efficiency preferences for a majority of individuals.[12] But there is also evidence for inefficiency preferences in the ultimatum game (Kirchsteiger, 1994) which corresponds with competitive dominated responders.

5 Conclusion

Fairness models can only draw a rough picture of different individual social concerns. The experimental data obtained from the expression game suggests serious shortcomings of "pure" inequity aversion and earlier reciprocity models. By contrast, a model that combines both aspects, where unfairness stimulates a shift of the social reference point of

[12]There were also three responders with a reverse rejection order, i.e., they rejected high offers and returned high rates while accepting small offers. Of course, this happened too few times to show any evidence, but can be explained by a very high evaluation of the opponent's payoff.

equal divisions, is supported by the data. With respect to this model of reciprocal equity preferences, one can define kindness and unkindness of responses to rejected offers. The experimental results suggest that unfair offers entail a need for a compensation price that I have called the price of fairness. The analysis shows that the compensation price (that proposers have to pay for exposing responders to unfair offers) increases with the distance to the minimally acceptable offer. But there are important individual differences regarding the compensation price. Consequently, three phenotypes can be identified based on the individual valuation of the opponent's payoff: competitive dominated responders (who always returned unkind rates), efficiency dominated responders (who never returned unkind rates), and equity dominated responders (who returned equal rates compared to the own payoff).

From a more general perspective, the results confirm earlier studies (e.g., Falk, Fehr & Fischbacher, 2003) which favor a combination of motivational aspects. While earlier experiments showed that fairness is price-sensitive only with respect to the demand for fairness, my results demonstrate an intensified demand for a compensation price for an increasing degree of unfairness. The results of this analysis also show that the relation between the rejection of offers, degree of unfairness, and compensation price can be best formalized by a mixed model of inequity aversion and reciprocity behavior, which can be considered most promising to characterize social preferences in more detail.

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Appendix: Instructions

Thank you for participating in our experiment! We kindly ask you to read these instructions carefully. After the instructions you will receive four questionnaires which you have to fill in completely. The instructions will help you to understand the questions. After you filled in the questionnaires, you will participate in a lottery (see details below), where you can earn money based on your answers in the questionnaires. We kindly ask you to refrain from any public announcements and attempts to communicate directly with other participants during working on the questionnaires. In case you violate this rule, we have to exclude you from the experiment. If you have any questions, please contact one of the experimenters.

In this experiment you and another, randomly and anonymously determined person, who received the same instructions as you did, face the following situation:

One of you (we call her A) receives an amount of 10 euros. Out of these 10 euros, she has to make an offer (denoted as x) to the other person (we call him B). The offer has to be an amount between 0 and 10 euros ($0 \leq x \leq 10$). If person B accepts offer x, B will earn x euros. Then A earns the rest (10-x euros). If B rejects offer x, B will earn an amount of $x/2$ and has to decide which amount A earns (we denote this amount as y). This amount has to be between 0 and 10-x euros ($0 \leq y \leq 10 - x$). Independent of the decision on y, B will receive $x/2$ euros. In the questionnaires, you will be asked for your decisions.

After you filled in all questionnaires, we will twice throw a dice in order to determine two out of five participants who will be paid 10 euros based on the decisions they made in the questionnaires. Questionnaires which are not filled in completely cannot be accepted for the lottery.

Suppose you are in the situation of *B*.						UI-A-063-Y
You receive an offer of…	10 euro	accept	☐	You receive 10.00 euro, the other 0 euro.		
		or reject?	☐	You receive 5.00 euro.	The other receives	0 euro
You receive an offer of…	9.00 euro	accept	☐	You receive 9.00 euro, the other 1.00 euro.		
		or reject?	☐	You receive 4.50 euro.	Which amount should the other receive? (between 1.00 and 0 euro)	☐ euro
You receive an offer of…	8.00 euro	accept	☐	You receive 8.00 euro, the other 2.00 euro.		
		or reject?	☐	You receive 4.00 euro.	Which amount should the other receive? (between 2.00 and 0 euro)	☐ euro
You receive an offer of…	7.00 euro	accept	☐	You receive 7.00 euro, the other 3.00 euro.		
		or reject?	☐	You receive 3.50 euro.	Which amount should the other receive? (between 3.00 and 0 euro)	☐ euro
You receive an offer of…	6.00 euro	accept	☐	You receive 6.00 euro, the other 4.00 euro.		
		or reject?	☐	You receive 3.00 euro.	Which amount should the other receive? (between 4.00 and 0 euro)	☐ euro
You receive an offer of…	5.00 euro	accept	☐	You receive 5.00 euro, the other 5.00 euro.		
		or reject?	☐	You receive 2.50 euro.	Which amount should the other receive? (between 5.00 and 0 euro)	☐ euro
You receive an offer of…	4.00 euro	accept	☐	You receive 4.00 euro, the other 6.00 euro.		
		or reject?	☐	You receive 2.00 Euro.	Which amount should the other receive? (between 6.00 and 0 euro)	☐ euro
You receive an offer of…	3.00 euro	accept	☐	You receive 3.00 euro, the other 7.00 euro.		
		or reject?	☐	You receive 1.50 euro.	Which amount should the other receive? (between 7.00 and 0 euro)	☐ euro
You receive an offer of…	2.00 euro	accept	☐	You receive 2.00 euro, the other 8.00 euro.		
		or reject?	☐	You receive 1.00 euro.	Which amount should the other receive? (between 8.00 and 0 euro)	☐ euro
You receive an offer of…	1.00 euro	accept	☐	You receive 1.00 euro, the other 9.00 euro.		
		or reject?	☐	You receive 0.50 euro.	Which amount should the other receive? (between 9.00 and 0 euro)	☐ euro
You receive an offer of…	0 euro	accept	☐	You receive 0 euro, the other 10.00 euro.		
		or reject?	☐	You receive 0 euro.	Which amount should the other receive? (between 10.00 and 0 euro)	☐ euro

Suppose you are in the situation of *B*.		UI- A-063-Y
The other person receives an amount of 10 euros. This other person has to make you an offer x. The offer has to be between 0 and 10 euros ($0 \leq x \leq 10$). If you accept this offer, you will receive x euros, and the other person the rest (10-x euros). If you reject, you can decide how much the other person earns, i.e., between 0 and 10-x euros.	What offer x do you expect to receive?	☐ euro

Suppose you are in the situation of *A*.		UI-A-063-Y
You receive an amount of 10 euros. You have to make an offer x to the other person. Please make your offer only in integer euros. The offer has to be between 0 and 10 euros ($0 \leq x \leq 10$). If the other person accepts your offer, you will receive the rest (10-x euros). If the other person rejects, he can choose how much you earn, i.e., between 0 and 10-x euros.	What offer x do you want to make?	☐ euro