Unequal Incentives and Perceived Fairness in Groups

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Abstract

In many groups heterogeneous incentives induce people to make unequal contributions to a common pool. This paper studies whether people consider the random assignment of such unequal incentives as unequal opportunities and demand more egalitarian distributions of the pool. The aggregate experimental results show that low contributors do not make such consideration if their incentive scheme provided opportunities for private gains in case of low contributions. When incentives induce lower contributions in order to avoid private losses, some people increase their claim but these increases are lower than in the case of unequal opportunities. Meanwhile high contributors reward low contributors if they do not follow incentives.

1 Introduction

People demand more egalitarian distributions when luck rather than effort determined economic outcomes. The persistence of unequal opportunities justifies redistributive policies (Alesina and Angeletos, 2005, Alesina and La Ferrara, 2005). However, in many situations differences in economic outcomes do not derive from unequal opportunities but from unequal incentives. In this context the set of possible actions does not differ between people but the payoff consequences of the various decision alternatives do. Hence, differences in incentives do not affect the feasibility of actions but their reasonability. The question is now whether people take the random assignment of such incentives into account when they make distribution decisions. Are such unequal incentives equivalent to unequal opportunities because people could not alter the incentives themselves and it would have been unreasonable not to follow them? Or do they not influence meritocratic considerations at all because people could have acted differently? This paper studies these questions with experimental data.

The following example illustrates the problem. Think of workgroup in a firm in which members contribute to a joint project. The project can generate a rent which has to be distributed among the group members. Now a senior manager asks one randomly chosen group member to do an additional task. Even if it is not an explicit order, the assignment provides an incentive for the appointee to pursue this task and focus less on the group project. Note that the incentive can be 'positive' or 'negative'. The randomly chosen group member may hope for a promotion if she follows the manager's request. She may fear a dismissal if she does not do so. In both circumstances it can be reasonable to pursue the additional task and reduce the effort on the group project. *Ceteris paribus* such unequal incentives induce the group members to make unequal contributions. The question is now whether this person with the altered incentives thinks that her fair share from the economic rent of the group project should be larger than her contribution and how the other group members react to her pursuit of incentives.

The model of Cox, Friedman and Gjerstad (2007) provides an analytic framework for studying the acceptance of inequality if a combination of luck and effort determined

outcomes.[1] However, their model only focuses on situations in which the influence of these two factors is exogenously manipulated. In the context of randomly assigned unequal incentives the influence of these factors is endogenous. People can choose whether they follow the incentives or not. Hence it is not clear whether people assess the importance of luck and effort in the same way even if they have the same perspective on distributive justice otherwise.

One measure for the relative influence of luck and effort is the share of people who follow the incentives. If all people ignore the request of the senior manager from the example, only effort determines contributions to the group's project. If all people follow the manager's request the impact of luck is the largest because the manager assigned his request to a randomly chosen person and ignoring it seems unreasonable to everyone. Hence, in the latter case unequal incentives appear to induce unequal opportunities.[2] Such a measure is in line with some prominent approaches towards distributive justice. Roemer (1998) for example argues:

> "It is morally wrong to hold a person accountable for not doing something that would have been unreasonable for a person in his circumstances to have done." (Roemer, 1998, p 18)

For Roemer, a behavior is considered as unreasonable if other persons in the same position have refrained from doing so. Hence people should not be accountable for following the incentives if these incentives have been imposed exogenously and most of the other people in the same position have acted likewise.

However, the proposed measure certainly provides an upper bound regarding the relative role of luck. Falk and Fischbacher (2006) have a more nuanced perspective on reasonability than Roemer (1998) has. They argue that

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[1] The model integrates a large part of the relevant empirical literature. Many studies show more acceptance of inequality in incomes if it results from hard work rather than from pure luck (see for example Burrows and Loomes (1994), Hoffman, McCabe, Shachat and Smith (1994), Ruffle (1998), Konow (2003), Durante and Putterman (2009)). Unequal contribution opportunities lead, on average, to more egalitarian distributions (Cappelen, Hole, Sørensen and Tungodden, 2007, Eisenkopf, Fischbacher and Föllmi-Heusi, 2013).
[2] The measure is related to the measurement of responsibility in Bartling and Fischbacher (2012) which links individual responsibility for an allocation with the overall probability for the specific outcome.

"[…] it is not reasonable to demand that the other person is fair to me if this implies that (relative to me) she puts herself in a disadvantageous position". (Falk and Fischbacher, 2006, p 311)

In the context of unequal incentives, this statement implies that a unilateral (and disproportionate) reduction in private earnings in order to foster group benefits is not a reasonable decision. Hence, the reasonability argument applies predominantly in the case of negative incentives such as a threat of dismissal, but not necessarily in case of positive incentive such as a chance for promotion. Meanwhile, Konow's (2000) accountability criterion does not take reasonability into account. It focuses on the available alternatives only:

"The entitlement varies in direct proportion to the value of the subject's relevant discretionary variables ignoring other variables, but does not hold a subject accountable for differences in the values of exogenous variables." (Konow, 2000, p 1075)

Even if the incentives themselves are exogenously determined, the behavioral consequences are clearly determined by choice. Unlike technological or cognitive restrictions incentives do not limit the feasible set of actions but affect the resulting payoffs and utility. Typically they also do not limit personal freedom. This interpretation means that unequal incentives do not lead to larger entitlements as in case of equal opportunities.

In this paper I study perceived entitlements with results from an experiment in which two group members made either a high or a low contribution to a group account. Each group member also got some money into a private account. Participants were assigned into groups of two persons who shared a group account. In a treatment with equal opportunities – one behavioral benchmark - the size of the individual contribution depended on the performance in a real effort task. The best 50 percent of the subjects in a session were high contributors, the others low contributors.[3] The group members negotiated about the distribution of the group account by means of an ultimatum game.. The main focus of the analysis is on those groups in which the group members

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[3] Hence, some groups contained two high contributors, others two low contributors and the rest one high and one low contributors.

made unequal contributions because these groups provide the greatest scope for the application of different distribution norms.

The other treatments assigned different contribution opportunities/incentives to one randomly chosen group member. In the Unequal Opportunities Treatment one randomly chosen member in each group got a reduction in performance which limited her opportunities to become a high contributor. In the two treatments with unequal incentives the subjects had to choose between a reduction in performance and a change in the private account. More specifically, in the Loss Treatment one randomly chosen group member faced a loss in her private account if she did not choose to reduce the performance. In the Gain Treatment such a randomly chosen person could participate in a lottery to gain extra money for her private account if she reduced her performance. The purpose of the lottery is to ensure a comparability of private accounts across treatments. Hence the analysis focuses on those participants who reduced their performance but whose private account did not change. In both treatments the incentives were so strong that a cut in performance maximized the expected income of the decider as well as the expected aggregate income of the two persons in a group and the overall income of all subjects in a session. However, the expected impact on the other group member's income was, *ceteris paribus*, negative.

The results show that randomly assigned unequal incentives elicit rather meritocratic claims. Low contributors do not consider unequal incentives as unequal opportunities if they had had a chance to make themselves better off than the other group member by following the incentives. Virtually no one applies Roemer's reasonability criterion in this context. People are more ambiguous when not following the incentives would have made them worse off than others. In this case more than 20% of the subjects apply the reasonability criterion. High contributors meanwhile have a nuanced perspective on pursuit the incentives. If they themselves had opted against the incentives they provide slightly more generous offers in general. However those who would have followed the incentives were more generous towards low contributors who did not follow the incentives.

The paper also contributes to the literature on incentives and public good provision. Several papers have studied how randomly assigned unequal incentives affect contributions to public goods. The results on the impact of unequal incentives in public good games are mixed (Reuben and Riedl, 2009). For example, Glöckner et al. (2011) find that if contributions constitute a sacrifice for the player with higher incentives, the other team members are more inclined to cooperate than if contributions are strictly dominant for the strong player. Participants in groups with unequal incentives often punish highly incentivized people but punishment mechanisms do not enhance cooperation strongly in these circumstances (Reuben and Riedl, 2009, Fuster and Meier, 2010). However, the reasons for punishing people with high or low incentives are unclear in these contexts. Punishment can reflect the desire to uphold cooperation norms or a response to perceived unfair distributions that derived from the unequal allocation of incentives. The low minimum demands in case of 'positive' incentives in this study indicate that these followers were aware of their uncooperative behavior and tried to mitigate it with their minimum demands. In general the rather low levels of bargaining failure across all treatments and the relatively high offers for non-followers suggest that people have a strong interest is settling any distribution conflict rather amiably.

The paper is structured as follows. Section 2 describes the experimental design and identifies groups that allow for the most accurate treatment comparisons. Section 3 presents the behavioral predictions. Afterwards I show the results and conclude the paper with a summary and a discussion of the results.

2   Experimental design

The paper studies whether people perceive the random assignment of unequal incentives as unequal opportunities. Hence, I explain the common features of the experiment in detail in the next subsection. This part also shows how the design provides for equal and unequal opportunities. In the second subsection I explain the random assignment of unequal incentives and how I want to compare this assignment with the provision of unequal opportunities. The subsection also contains a table that

summarizes the experiment. Afterwards I discuss key features of the design and explain the interesting treatment comparisons.

2.1 Experimental Details and the Provision of Unequal Opportunities

Upon arrival in the lab the subjects took their randomly allocated seat, received their instructions and learned that they were in a group with another anonymous subject. These two group members contributed to a jointly owned group account (in stages 1 and 2 of the experiment) and negotiated about its distribution (in stage 4 of the experiment). Each subject also received 100 points (= 6 Euro[4]) into a private account. This private account was not up for negotiation.

The experiment is then divided into 4 sequential stages. In the production stage (stage 1), the subjects had to count the number of zeros in tables that consisted of 150 randomly ordered zeros and ones (10 rows and 15 columns). The number of correctly counted tables defines the performance of a subject which influences her contribution to the group account (see below, stage 3). In subsection 2.3 I discuss in greater detail the benefits of a real effort task for the analysis and the particular advantages of letting the subjects count zeros.

Stage 2 induced either equal or unequal opportunities. One group had 100 points in the private account and kept the full performance. In the *Equal Opportunities Treatment* both conditions also held for the other group member. In the *Unequal Opportunities Treatment* the other subject also had 100 points in the private account. However, her performance was reduced to 75% of the number of correctly counted tables. A die decided about which group member was affected by this reduction. This ex-post performance then decided about individual contributions to the group account. The best 50% in a session contributed 150 points, the rest 50 points.[5] Hence, some groups had a group account with 300 (100) points because both subjects were high (low) performers and contributed 150 (50) points each. In groups with a group account of 200 points, one member was a high contributor and the other a low contributor.

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[4] 6€ where equivalent to about 7.7 US-Dollars, when I started the experiment in late 2012. The data collection lasted untiul 2014.

[5] In case of equal number of correctly counted tables, z-tree (Fischbacher, 2007) chose random numbers to determine the ranks.

In stage 3, the subjects in all treatments learned about the contribution of each group member towards the group account (i.e. 50 or 150 points). Subjects never received information about the actual number of correctly counted tables of the other group member. More specifically, I did not provide any information about whether subjects with a cut in performance and a contribution of 50 points would have contributed 150 points to the group account without the cut.

In stage 4, the subjects decided about the distribution of the group account in an ultimatum game. Each group member made a distribution proposal and stated a minimum demand. One proposal was selected randomly. If the selected proposal exceeded or matched the demand of the other player, the proposal was implemented. If the proposal was too low the group account was eliminated even if the proposal of the other group member would have been accepted. After the experiment and an accompanying questionnaire the subjects received their earnings from the group and private accounts in cash.

2.2 The provision of unequal incentives

The provision of unequal incentives occurred in stage 2 of the experiment (see the overview in Table 1). Like in the Unequal Opportunities Treatment, subjects in the two *Unequal Incentives Treatments* faced a potential cut of 25% in the number of correctly counted tables. This potential reduction affected their relative performance and in consequence their contributions to the group account. However the subjects faced a decision about whether they were ready to forego benefits in their private account in order to avoid such a declining performance.

		Equal Opportunities	Unequal Opportunities	Unequal Incentives (Loss)	Unequal Incentives (Gain)
		Random assignment into groups of 2			
Stage 1		Production Stage: Real Effort Task			
		– Counting zeros in tables, as in Abeler, Falk, Götte and Huffman (2011).			
		– The number of correctly counted tables determines undistorted performance.			
		Treatment Intervention (relevant for one of the two group members)			
Stage 2	Altern. 1	-----	Keep 100 points in private account Lose 25% of performance	Keep 100 points in private account Lose 25% of performance	Win additional 1100 Points for private account (10% prob.) Lose 25% of performance
	Altern. 2	-----	----- (no choice)	Lose 100 points in private account. Keep full performance	Keep 100 points in private account. Keep full performance
		Information			
Stage 3:		– Determination of private account in the Gain Treatment if the relevant person has chosen Alternative 1. (Throw of a die)			
		– Performance reduction of 25% (if applicable)			
		– Revelation of relevant decisions, contributions to the group account and private payoffs.			
		– Contribution to the group account according to the number of correctly counted tables:			
		• 150 points: top 50% in a session (after reduction)			
		• 50 points: the remaining participants			
		Bargaining about the Distribution of the group account (Ultimatum Game)			
Stage 4		– Each group member makes a distribution proposal.			
		– Each group member states a minimum demand.			
		– One proposal is selected randomly.			
		– If the selected proposal exceeds the demand of the other player, it is implemented.			
		– Otherwise the group account is eliminated.			
		Questionnaire, Payment, Subjects leave the laboratory.			

The two treatments with unequal incentives differ with respect to the economic consequences of the decision. In the *Loss Treatment* the subjects had to decide whether they were ready to give up the 100 points in their private account in order to avoid a 25% cut in the number of correctly counted tables. The alternative was to keep the 100 points and accept the 25% cut in performance. In the *Gain Treatment* the subjects had to decide whether they were ready to give up a potential increase in the private account in order to avoid the 25% cut in the number of correctly counted tables.

The alternative was to gain another 1100 points in the private account with a probability of 10% and accept the 25% cut in performance.

In both Unequal Incentives Treatments the decision was relevant for exactly one of the two group members. The other group member kept the full performance and 100 points in the private account. A die decided about whose decision was the relevant one. In the Gain Treatment a ten-sided die also determined whether a person received 1100 points if she had decided to have her performance cut by 25% and if that decision became relevant. In both treatments subjects received information about whose decision was relevant and its result. They also learned about the size of the private account of the other group member.

In both treatments subjects maximize their own payoff and aggregate payments if they accept the cut of 25% of the correctly counted tabels. In the Gain Treatment I opted for a lottery because a pre-defined gain would have restricted a comparison across treatments. With the lottery, the focus is on those 90% of the deciders who followed the incentives but have 100 points in their private account nevertheless. The prize of 1100 points (rather than 1000) accounts for some potential moderate degree of risk aversion among the subjects.

2.3 Discussion of the design

At this point it is worthwhile to emphasize three key characteristics of the experimental design. First the reader may consider the real effort task as unnecessarily cumbersome. However, in comparison to monetary investments the choice of a real effort task actually simplifies the analysis of the subsequent distribution decisions. It is the strictly dominant strategy of a person (in monetary terms) to count as many tables as possible. In the negotiation stage people also do not have to take any differences in monetary investments into account. Moreover, subjects decide about their effort in the production phase before any role assignment. Hence it is unlikely that the results will show any differences in pre-reduction performance across the treatments and role.[6]

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[6] Note that in all situations with distorted performance it was unclear whether the 25% reduction had been pivotal for a subject to be a high or low contributor. Hence the participants had an incentive to provide effort even in this context.

Abeler et al. (2011, p. 473) describe the advantages of counting zeros: it "does not require any prior knowledge, performance is easily measurable, and there is little learning possibility; at the same time, the task is boring and pointless, and we can thus be confident that the task entailed a positive cost of effort for subjects." Since this task is (psychologically) costly and implies no intrinsic value for the subjects or the experimenter it enforces a sense of entitlement regarding the distribution of the group account.

Second, the incentives for a reduced contribution to the group account are very strong in the treatments with unequal incentives. I chose these extreme values because it should be a clearly reasonable and indeed dominant strategy to follow the incentives. Reducing the performance is also efficient at the group level. Hence it is not unreasonable to act in this way.

Third, the minimum demand in the ultimatum game measures what a subject perceives to be her own minimum entitlement. The ultimatum game also provides for measure of conflict between the group members. Conflicts occur when the minimum demand of one group member is incompatible with distribution offer of the other member.

Regarding the procedural details I conducted 26 sessions with a total of 722 subjects. All sessions took place between June 2012 and December 2013 at the Lakelab at the University of Konstanz. Subjects were students from the University of Konstanz who were recruited with the software "ORSEE" (Greiner, 2004). The experiments were computerized with the software "z-Tree" (Fischbacher, 2007). Each subject participated in one of the treatments only. They received written instructions and comprehension questions that had to be answered correctly before the experiment could start. An English translation of the instructions is included in Appendix A of this paper. The sessions lasted approximately 60 minutes. All subjects received their payment privately at the end of their session.

2.4 Relevant treatment comparisons

Comparison of demands

The groups in the experimental treatments can differ with respect to the private earnings, contribution patterns and the size of the group account. Regarding the last criterion, we can obtain groups with a group account of 100 points (if each group member contributes 50 points), 200 points (if one group member contributes 50 points and the other 150 points), and 300 points (if each group member contributes 150 points).

The groups with heterogeneous contributions are at the focus of this study. The potential variation between these groups is enormous even though the size of the group account is 200 points in all these groups. In the Unequal Opportunities Treatment we can observe the following group types. Either the group member with worse opportunities (i.e. the one with a cut in performance) contributes 50 points, while the other group member contributes 150 points. Alternatively the group member with worse opportunities contributes 150 points, while the other group member provides 50 points. Of course I expect the first group type to occur more frequently because the opportunities are assigned randomly.

In the Unequal Incentives Treatments the variation of potential group types is larger. There is exactly one person in each group for whom the incentivized decision regarding the private account and the performance reduction is relevant. This person can follow the incentives (in which case I call her a *follower*) or she can leave the performance untouched at the expense of her private account (in which case I call her a *non-follower*). Ignoring the ex-post irrelevant choices of the other group members we obtain eight different group types in the Unequal Incentive Treatments. However, most groups are likely to have the following characteristics: The follower contributes 50 points, the other group member 150 points. The follower has 100 points in her private account. The incentives are strong, so most people will follow the incentives. Because the followers are disadvantaged they are more likely to contribute less to the group account than the other group member. Because people in the Gain Treatment win an

additional 1100 points with a probability of 10% only, most followers will have 100 points in their private account when they enter the ultimatum game.

In summary the following groups with 200 points in their group account provide for the most prominent and interesting treatment comparison:

1. Equal Opportunities Treatment: All groups with asymmetric contributions
2. Unequal Incentives (Gain): All groups in which a follower with 100 points in her private account contributes 50 points, while the other group member contributes 150 points.
3. Unequal Incentives (Loss): All groups in which a follower with 100 points in her private account contributes 50 points, while the other group member contributes 150 points.
4. Unequal Opportunities: All groups in which the group member with worse opportunities contributes 50 points, the other group member 150 points.

Given these subgroups two aspects can determine treatment differences. The behavior of the subjects may change or we observe a selection process into the different subsamples within the treatments. The result section will disentangle these different processes.

Comparison of offers

For the assessment of fairness preferences the offers in an ultimatum game typically do not provide clean information because strategic considerations about what the other player is ready to accept also influence the choice of offer. However, the design of this experiment allows for some comparisons in the Gain and Loss Treatments. In these treatments we can compare the offers of those people whose own decisions regarding following the incentives have turned out to be irrelevant. Since these hypothetical followers and nonfollowers obtained randomly allocated group members with the same observable characteristics, their beliefs should not differ if one assumes common knowledge about rational agents. Hence, any difference in offers between followers and nonfollowers is due to different fairness preferences.

3 Behavioral predictions

3.1 Effort, luck and minimum demands

The predictions focus on the differences in minimum demands across treatments in case of unequal contributions. In every treatment a *homo oeconomicus* will set her minimum demand to 0 points and accept every offer. However, it is well known that social preferences affect the minimum demand. Yet outcome-oriented models of social preferences like Fehr and Schmidt (1999) or Bolton and Ockenfels (2000) do not predict any aggregate differences in demands, neither between high and low contributors nor across the treatments. High and low contributors have the same bargaining position and the size of the private account does not differ across the relevant comparison groups.

Cox et al. (2007) explain behavior in the ultimatum game and other two player extensive form games with an emotional response to how luck and effort have affected income. In the linear specification of their model, the utility function of a player i is

$$U_i = m + \theta(r,s)y$$

The variable m denotes the payoff of player i, while y captures the payoff of the other player ("*my*" and "your" payoff, respectively). The emotional state θ is a function of the reciprocity motive r and status s, with $\frac{\partial \theta}{\partial r} > 0$ and $\frac{\partial \theta}{\partial s} > 0$. Cox et al. (2007, footnote 3 on page 23) explicitly motivate the reciprocity motive with the notion of 'moral property rights' (Gächter and Riedl, 2005) and Konow's (2000) concept of accountability. In the context of this experiment the s captures the status *difference* between high and low contributors. This difference increase in the impact of effort rather than luck on individual contributions to group account.

In line with Cox et al. (2007, p 33), I use the following specification for the emotional state of the person who makes the minimum demand:

$$\theta = m - sm_0^{Effort} - (1-s)m_0^{Luck}$$

with $0 \leq s \leq 1$. Hence, the receiver's emotional state depends on the difference between the offer of the proposer (m) and what the receiver considers as her entitlement $\left(m_0 = sm_0^{Effort} + (1-s)m_0^{Luck}\right)$. This entitlement depends on the source of income (Effort or Luck) and the status difference between the distributor and the

receiver. Hence if the perceived entitlement is above the offer, θ becomes negative. If θ becomes sufficiently small, the receiver will reject the offer. Note that for high contributors $m_0^{Effort} > m_0^{Luck}$ holds, while low contributors have the following order of perceived entitlements $m_0^{Effort} < m_0^{Luck}$

In the Equal Opportunities (EO) Treatment high (low) contributors fully earn their high (low) position. Hence, we can normalize $s(EO) = 1$ in this treatment. In the Unequal Opportunities Treatment (UO), luck partially determined the contributions to the group account, such that $s(EO) > s(UO) > 0$ holds. In fact, the Unequal Opportunities Treatment provides the setting in which luck has the largest impact on the individual contribution. Hence, the order of status implies the following predictions.

H1 (Minimum Demands in the Benchmark Treatments):

a) *In all treatments high contributors make higher claims than low contributors.*
b) *Low contributors in the Equal Opportunities Treatment make lower claims than low contributors in the Unequal Opportunities Treatment.*

3.2 Effort and luck in treatments with unequal incentives

The predictions for the Gain and Loss Treatments focus at first on the decision about whether to follow the randomly assigned incentives. This response to incentives provides information about the perceived status differences (variable s) between high and low contributors in these treatments. If all people follow the incentives and suffer from a subsequent reduction in performance, they did not have much of a choice. In such a context, unequal incentives are in fact unequal opportunities.

In both treatments (Gain and Loss) it is clearly payoff maximizing to reduce the performance. Such a decision also increases the aggregate welfare of the group even if it decreases the expected size of the group account. Regarding all participants in a session it is also the efficient decision because the aggregate value of all group accounts in a session is fixed. However, theories of inequity aversion like Fehr and Schmidt

(1999) provide a qualification to this argument. In the Loss Treatment a reduction in performance avoids inequality in the private accounts of the negotiation partners. In the Gain Treatment people induce potential inequality in private accounts if they follow the incentives. Hence some inequity averse people will not follow the incentives in this treatment.

H2 (Response to Incentives):

   a) *Most subjects in the Gain and Loss Treatment will reduce their performance.*
   b) *In the Gain Treatment the share of people who choose to reduce their performance is lower than in the Loss Treatment.*

The pursuit of incentives provides a straight-forward way of assessing the relative status of high and low contributors in the Gain (G) and Loss (L) Treatments. According to this criterion the impact of luck increases in the number of people who follow the randomly assigned incentives. It determines to which extent people perceive unequal incentives as unequal or equal opportunities Hence, I obtain the following relative status differences across the treatments:

$$1 = s(EO) > s(G) > s(L) \geq s(UO)$$

H3: Minimum demands of low *contributors in both Unequal Incentive Treatments are higher than in the Equal Opportunities Treatment. They are ordered as follows across the treatments:*

$$\text{Equal Opportunities} < \text{Gain} < \text{Loss} \leq \text{Unequal Opportunities.}$$

As mentioned in the introduction, not all measures of distributive justice allow for such differentiated appreciation of status. Konow's (2000) accountability criterion would capture all differences in contributions in the Unequal Incentives Treatments as endogenous outcomes since both high and low contributors had the same opportunities

to contribute. With this perspective, the order of minimum demands of low contributors would be as follows:

Equal Opportunities = Gain = Loss < Unequal Opportunities

4   Results

I present the results in the following order. At first I test the hypotheses with the data from the experiment. Then the paper has a closer look at whether the key treatment differences in the relevant subsamples derive from changes in behavior or self-selection of subjects into the different subsamples. Afterwards I look at differences in offers. Appendix C contains tables about claims in case of equal contributions. They show no systematic differences across treatments and subsamples.

4.1 Task Performance and Incentive Impact

Table 2 documents the average performance of subjects in the different treatments. As expected, Wilcoxon rank-sum tests reveal no significant differences between the treatments. The table also shows the effectiveness of the different incentive schemes. After production all subjects in the treatments with unequal incentives had to decide whether they accepted a cut in their performance in order to get a potential gain or avoid a loss on their private account. Most people followed the incentives. However, while 89% accepted that cut in the Loss Treatment only 67% did so in the Gain Treatment. According to the Fisher Exact test this difference is significant ($p < .01$). These results support Hypotheses 2a and 2b.

Table 2: Average performance and incentive impact across the treatments

		Equal Opportunities	Unequal Incentives (Gain)	Unequal Incentives (Loss)	Unequal Opportunities
Number of correctly counted tables	Mean (st. dev.)	14.21 (4.91)	14.09 (4.71)	13.64 (5.27)	14.42 (5.11)
	Median	14	13	14	15
Followers*		n.a.	185	147	n.a.
N		140	276	166	140

* Followers are subjects who decide in line with the incentives.

Result 1 (Response to Incentives):

a) Most subjects in the Gain and Loss Treatment reduce their performance.

b) In the Gain Treatment the share of people who choose to reduce their performance is lower than in the Loss Treatment.

4.2 Bargaining Behavior

The large share of people in the Gain Treatment who did not follow the incentives required a substantially larger subject pool in this treatment. First of all it required more subjects to get sufficient data for the treatment comparison. Furthermore more data was necessary to investigate how the reaction to the incentives affected the decisions of the group members. These choices affect the number of comparable observations that have been defined in section 2.4. Table 3 shows the number of all groups and the number of the comparable groups (bold letters). Appendix B provides a detailed summary of all subsamples in each treatment.

Table 3: Number of (Relevant) Groups in the Different Treatments

	Equal Opportunities	Unequal Incentives (Gain)	Unequal Incentives (Loss)	Unequal Opportunities
Group account 200 points	**34**	72	47	40
Subsamples — Disadvantaged member contributes 50 points	--	--	--	**33**
Subsamples — Follower contributes 50 points. The follower has 100 points in her private account.	--	**31**	**31**	
Group account 300 points	18	33	18	15
Group account 100 points	18	33	18	15

The bold numbers show those groups that constitute the samples for the relevant treatment comparisons. Followers are subjects who decide in line with the incentives. Appendix B provides detailed information about subsample in the different treatments.

The hypotheses focus on the different claims in case of unequal contributions (i.e one group member contributes 50 points, the other 150). For the comparisons I study the above mentioned relevant subsamples (in bold letters) and report p-values from two-sided Wilcoxon rank-sum tests.

Table 4 shows the minimum demands of the relevant low and high contributors. Overall the results confirm that neither selfish preferences nor inequity aversion explain the claims appropriately. I find strong support for the entitlement hypothesis H1 as high contributors make stronger claims than low contributors. The differences in minimum claims between high and low contributors are highly significant in all treatments (all p-values < .001) even though high and low contributors have (in theory) equal bargaining power. The difference between the minimum claims of high contributors across the treatments is somewhat smaller and they vary stronger than the claims of low contributors. They do not differ across the treatments (all p-values > .5). Status differences are not so important for high contributors if they get at least 50% group account. Regarding the low contributors in the benchmark treatments the claims are ordered as predicted in Hypothesis 1b. They are at the lowest in the Equal Opportunities

Treatment, while the Unequal Opportunities Treatment provides for the highest claims. The difference between these two benchmarks is significant (p = .011).

Result 2 (Minimum Demands in the Benchmark Treatments):

a) *In all treatments high contributors make higher claims than low contributors.*

b) *Low contributors in the Equal Opportunities Treatment make lower claims than low contributors in the Unequal Opportunities Treatment.*

Table 4: Minimum Demands in Case of Unequal Contributions.

	Equal Opportunities	Unequal Incentives (Gain)	Unequal Incentives (Loss)	Unequal Opportunities
All Low Contributors	**54.08**	59.46	58.09	62.73
	(15.59)	(20.44)	(19.69	(20.26)
Relevant Subsample	---	**56.16**	**60.65**	**64.67**
		(20.51)	**(16.21)**	**(21.48)**
All High Contributors	**101.03**	102.63	100.40	99.23
	(28.65)	(25.13)	(25.98)	(28.90)
Relevant Subsample	---	**95.48**	**99.97**	**99.06**
		(28.85)	**(21.80)**	**(25.96)**

The bold numbers show those groups that constitute the key samples for our treatment comparisons. Standard deviations are in parentheses. Followers are subjects who decide in line with the incentives.

In the Gain Treatment low contributors do not consider unequal incentives as unequal opportunities (p = .049). Their claims are close to those in the Equal Opportunities Treatment which is not in line with Hypothesis 3. In the Loss Treatment the average minimum demands of low contributors differ from those in Equal Opportunities Treatment (p = .055) but not from the ones in the Unequal Opportunities Treatment (p = .287). Given the seemingly large differences in mean average demands this last result seems surprising and I disentangle it in more detail below.

Result 3: Minimum demands of low contributors in both Unequal Incentive Treatments do not differ from those in the Equal Opportunities Treatment. They are ordered as follows across the treatments:
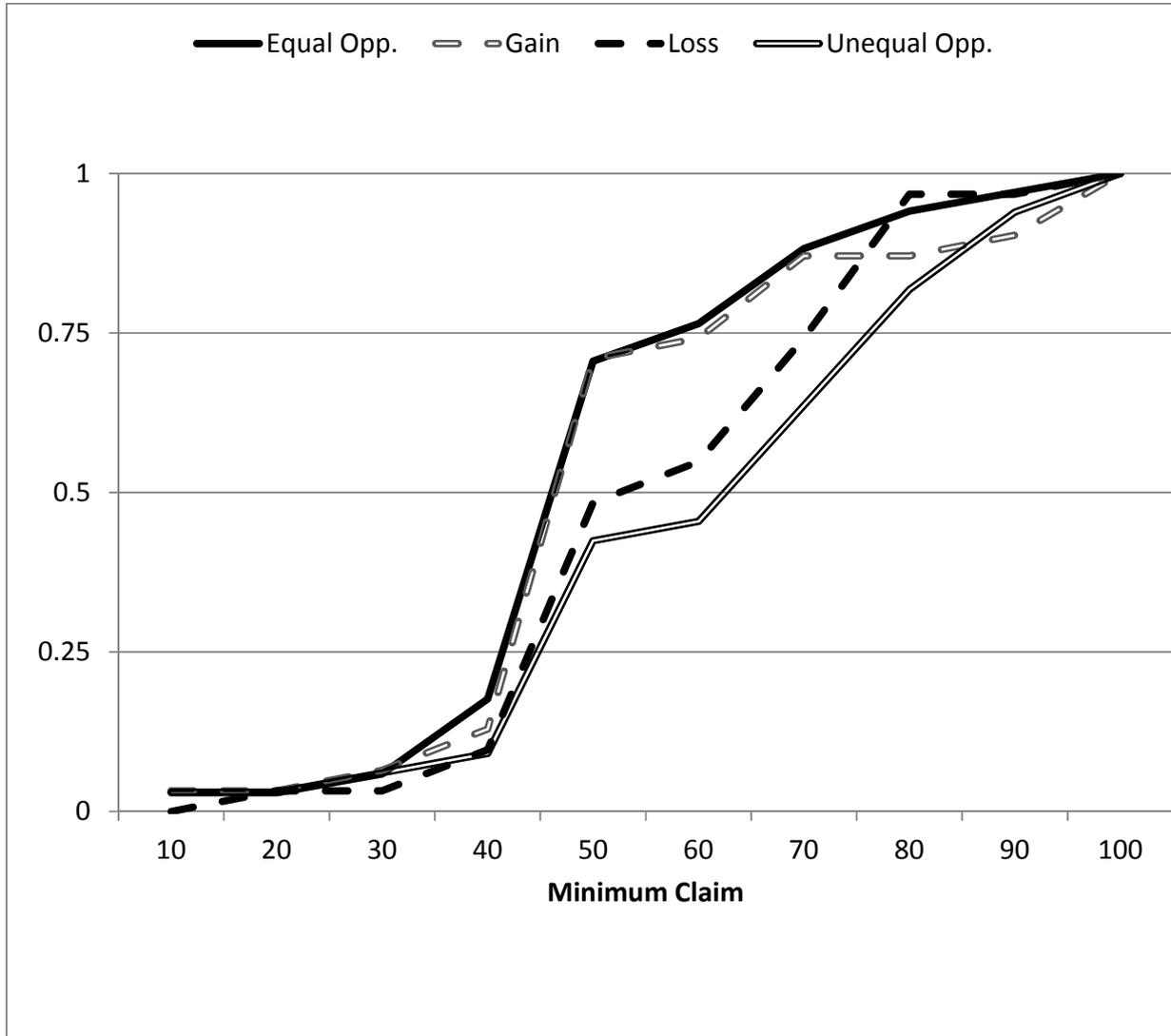
Equal Opportunities ≤ Gain ≤ Loss ≤ Unequal Opportunities,

with Gain < Unequal Opportunities and Equal Opportunities < Loss

The relatively large variation of claims within each treatment in Table 4 already suggests that people differ with respect to their perceived entitlements. Such a heterogeneity is also well known in the literature (Cappelen et al., 2007). We explore how this heterogeneity affects the treatment differences. Figure 1 shows the cumulative distribution of minimum claims of the relevant low contributors. Claims smaller or equal to 50 points are essentially meritocratic and do not take differences in status into account. Only claims larger than 50 points do so.

Figure 1 reveals that the treatment differences are not stronger because at least 40% of low contributors accept meritocratic distributions in any treatment. Hence, our status-based theoretical framework can explain the behavior of 60% of the subjects in the Unequal Opportunities and Incentive Treatments at most. Given that some people also apply rather strict egalitarian claims even in the case of equal opportunities the scope for treatment effects is rather small. In the Equal Opportunities Treatment the share of meritocratic claims is much higher than in the Unequal Opportunities Treatment. (70.5% vs. 42.4%; p < .02 according to the Fischer-Exact Test). In the Gain Treatment 70.9% make meritocratic claims. Hence the random assignment of potential gains induces virtually no one to consider status differences. At the same time, only 48.4% of the low contributors in the Loss Treatment make meritocratic claims. Hence, more than 20% of low contributors take status into account once the incentives are not about potential gains any more.

Figure 1:

Cumulative distribution of minimum claims of low contributors across the treatments

The figure also provides some information about the differences between the Loss Treatment and the Unequal Opportunities Treatment. The above mentioned insignificant test results regarding the differences in minimum claims of low contributors mainly derive from the fact that the share of meritocratic claims is about the same in both treatments (48.4% vs. 42.4%). However, the non-meritocratic demands (all demand > 50 points) differ to some extent. They are, on average, 73.75 points in the Loss Treatment (16 observations) and 79.68 points in the Unequal Opportunities

Treatment (19 observations). The difference is significant at the 10% level (p = .092) and indicates that even in the Loss Treatment low contributors do not consider unequal incentives entirely as unequal opportunities.[7]

4.3 Selection Effects or Change in Behavior

In this subsection I study whether the treatment differences in the minimum demands of low contributors derived from selection effects or behavioral changes. In the Unequal Opportunities Treatment some high performers became low contributors because of the randomly assigned reduction in performance. Without this handicap some low performers would have been high contributors. A behavioral effect of the treatment implies that the difference in claims occurred because handicap induced disadvantaged people to increase their claim. A selection effect implies that slightly more productive guys make higher claims than the less productive. In this case the treatment difference in minimum demands derives from the fact that the low contributors are more productive in the Unequal Opportunities Treatment. Hence, any empirical support for the selection effect rests on the idea that minimum claims increase in the undistorted productivity of the person.

The results documented in Table 5 do not provide support for such a selection effect. Model 1 in this table shows how minimum claims of high and low contributors (above and below median performers) depend on their performance in their real effort task. The relevant coefficient is actually insignificantly negative. Model 2 distinguishes within the high and low contributors. The 2nd and 3rd quartile show those subjects whose contributions could have been altered in the Unequal Opportunities Treatment. Even within these subgroups the actual impact of performance on claims is effectively zero. Hence, the differences in Treatments do not derive from productivity dependent selection effects.

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[7] All other treatment comparisons in minimum demands differentiated for meritocratic and non-meritocratic claims turn out as insignificant.

Table 5: OLS Estimation on the impact of task performance on minimum claims of high and low contributors in the Equal Opportunities Treatment.

	Model 1	Model 2
Performance	-1.049	1.657
	(0.853)	(3.400)
3rd Quartile (Performance ≥ 10)		-4.861
		(43.556))
Perfomance × 3rd Quartile		-.958
		(4.477)
2nd Quartile / Above Median	41.360*	49.973
	(24.476)	(102.820)
Perfomance × Above Median	0.757	-3.389
	(1.504)	(5.477)
1st Quartile (Performance ≥ 10)		67.746
		(74.387)
Perfomance × 1st Quartile		-2.275
		(4.476)
Constant	65.040***	47.486**
	(9.857)	(22.609)
N	68	68
R^2	.512	.524

Significance levels: *** < .01, ** < .05, * < .1;

Now I focus on whether the treatment differences in minimum demands of low contributors between Unequal Opportunities Treatment and the Gain Treatment derive from selection effects or changes in behavior. Such a selection effect would support the intuitive claim that minimum demands in the Gain Treatment are lower because people who follow the incentives are more ready to accept inequality than those who do not follow.

This reasoning requires that people who do not follow the incentives make particularly high minimum demands. To test whether this is correct it is helpful to recall that these subjects in the Gain Treatment are comparable to low contributors from the Equal Opportunities Treatment. They kept their full performance and 100 points in their

private account. However, in case of the investigated selection effect they should have made much higher minimum demands.

Table 6 shows that this is not the case. The minimum demand of these low-contribution non-followers does not differ from those in the Equal Opportunities Treatment. Nor does it differ from low contributors in the Gain Treatment who chose to reduce their performance (all p-values > .37). Hence these results imply that treatment differences in the minimum demands of low contributors between the Gain Treatment and Unequal Opportunities Treatment derive from behavioral changes rather than selection effects.

Result 4: Self-selection effects do not explain the treatment differences in minimum demands of low contributors.

Table 6: Minimum demands of low contributors in the Gain Treatment in case of unequal contributions, differentiated for followers and non-followers

	Equal Opportunities Treatment	Unequal Incentives (Gain)	
		Follower	Non-follower
Demand	54.08	56.16	55.71
(St. Dev)	(15.59)	(20.51)	(19.10)
N	34	31	14

4.4 An analysis of offers and rejection rates

Now the focus shifts to the offers. Table 7 shows the distribution offers of high and low contributors in the different treatments. In all treatments low contributors make significantly higher offers than high contributors (all p-values < .001). The offers in the two benchmark treatments (Equal and Unequal Opportunities Treatments) do not differ significantly across the treatments. This holds for offers of both high and low contributors (p = .110 and .112, respectively).

High contributors in the Loss Treatment make the most generous offers. These offers are significantly higher than the respective offers in the Equal Opportunities Treatments (p = .017). Hence, these high contributors either expect higher minimum claims than actually occurred or they think that unequal incentives in this context allow for a more egalitarian distribution. Meanwhile, low contributors in the Loss Treatment also make the highest offers. They are significantly higher than in the Unequal Opportunities Treatment and the Gain Treatment (p = .018 and .075, respectively). These offers therefore do not reflect the responsibility argument at all. The table also includes the rejections rates of offers, i.e. the number of offers below the minimum demand of the other group member. Here the treatments show no significant differences in bargaining failure.

Table 7: Distribution offers and negotiation failure in case of unequal contributions.

		Equal Opportunities Treatment	Unequal Incentives (Gain)	Unequal Incentives (Loss)	Unequal Opportunities
All High Contributors	Offer (St. Dev)	**77.94** **(18.35)**	82.306 (19.675)	87.47 (22.25)	82.63 (17.36)
	Rejections / N	**3/34**	12/72	6/47	5/40
Relevant Subsamples	Offer (St. Dev)	--	**79.84** **(21.075)**	**88.58** **(23.08)**	**84.09** **(16.93)**
	Rejections / N	--	**4/31**	**5/31**	**4/33**
All Low Contributors	Offer (St. Dev)	**125.88** **(29.06)**	119.236 (28.920)	131.28 (20.04)	113.78 (31.42)
	Rejections / N	**7/34**	19/72	5/47	9/40
Relevant Subsamples	Offer (St. Dev)	--	**125** **(28.255)**	**129.84** **(19.85)**	**114.42** **(28.56)**
	Rejections / N	--	**6/31**	**4/31**	**5/33**

The bold numbers show those groups that constitute the key samples for our treatment comparisons. Followers are subjects who decide in line with the incentives.

In line with the predictions, the first result in subsection 4.1 showed that a relatively small but substantial share of subjects in the Gain Treatment did not follow the incentives. Hence, some high contributors met low contributors who followed the incentives while others met low contributors who did not. The assignment was random. Moreover, we also know how the high contributors would have responded to the incentives if they had been affected by them.

The upper part of Table 8 shows that high contributors made a more generous offer if the other person did not follow the incentives. The difference is significant for a comparison with the Equal Opportunities Treatment ($p < .017$). Since these specific low contributors had exactly the same opportunities this difference is not in line with status

considerations as in Cox et al. (2007) but reflect differences in perceived kindness as in Levine (1998) or Falk and Fischbacher (2006). The lower part of Table 8 provides an interesting qualification here. It reveals that differences in offers strongly depend on the (ex-post hypothetical) choices of the high contributor and her own fairness considerations here. If the high contributor did not choose to follow the incentives the offers do not differentiate. However, high contributors who followed the incentives provide a particularly generous offer for low contributors who behaved differently ($p = .026$). This difference in offers suggests that only followers attach a normative dimension to the (non-)pursuit of incentives while non-followers just have a somewhat higher general propensity for generosity.

Result 4: Offers of High Contributors in the Gain Treatment do not take considerations of unequal opportunities into account.

Table 8: Distribution offers and Negotiation Failure of High Contributors in the Gain Treatment in case of unequal contributions, differentiated for followers and non-followers among high and low contributors

	Equal Opportunities Treatment	Unequal Incentives (Gain) Low contributor is a	
		Follower	**Non-follower**
Offer (St. Dev)	77.94 (18.35)	79.84 (21.08)	90.79 (16.44)
Rejections / N	3 / 34	4 / 31	2 / 14

		High contributor is a		High contributor is a	
		Follower	**Non-follower**	**Follower**	**Non-follower**
Offer (St. Dev)		75.75 (21.48)	87.27 (19.02)	95.13 (14.20)	85 (18.71)
Rejections / N		3 / 20	1 / 11	1 / 8	1 / 6

5   Summary and conclusion

This paper has investigated whether people consider the random allocation of incentives and the resulting differences in contributions to a group account as unequal opportunities. The results show that this is not the case in situations in which the pursuit of incentives gives people an opportunity to become better off than the other group member. If following incentives avoids becoming worse off than the other group member some people with these incentives become more egalitarian.

The results have implications for our understanding of distributive justice. They suggest that people emphasize the possibility to choose rather strongly. If people decide to contribute less to a common pool their perceived entitlement decreases even if the decision has been efficient. The results are therefore more in line with a rather narrow interpretation of Konow's accountability criterion which implies that people are strictly accountable for the consequences of their decisions (Konow, 2000). Few people apply the reasonability criterion of Roemer (1998) which claims that people should not be accountable for making decisions that most people would consider as appropriate in the given context. The results contrast with the observation in Eisenkopf et al. (2013) who found out that the randomly determined access to performance enhancing education (rather than incentives in this paper) induced relatively uneducated people to perceive outcome as a matter of luck.

Since the results did not reveal significant differences in bargaining failure across the treatments they indicate that group members with different incentives and contributions do not disagree strongly about appropriate distributions. More specifically rather few people make offers that violate the perceived minimum entitlements of the other group member. Since unequal incentives in groups are often unavoidable the results suggest that people can resolve the underlying distribution problems rather amiably.

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Appendix A: Experimental Instructions (Translated from German)

A1: Equal Opportunities Treatment

Welcome to this economic experiment. Your earnings in this experiment depend on your decisions and the decisions of other participants. Hence, it is important that you read these instructions carefully. If you have any questions please contact us before the actual experiment starts.

During the experiment, it is forbidden to talk with the other participants. We will exclude you from this experiment and any payment if you violate this rule. During the experiment we use points instead of euros. We calculate all your earnings in points and exchange them into Euros at the end of the experiment. The exchange rate is

<div align="center">

100 points = 6 euro

</div>

At the end of the experiment, we will pay you all your points in cash. We will explain the precise procedure of the experiment on the following pages.

<div align="center">

Summary

</div>

All participants are divided into groups of two persons. The experiment has two phases. It starts with a production phase. Your performance in this production phase influences your contribution to a group account. You share the group account with the other group member. Independent of your performance in the production phase you also receive points on your private account. In the second phase, the bargaining phase, you bargain with the other participant about the distribution of the group account. The group account will be distributed according to the outcome of the bargaining process. Your private account and your share of the group account determine your final payment at the end of the experiment.

Production phase

The production phase lasts for 15 minutes. During that time you see a table on the screen. The table contains 10 rows with 15 ciphers each. The ciphers are either 0 or 1. It is your task to count the number of zeros in the table correctly, write it in the input box and click the OK-button. If the number is correct, you see a new table. If it is incorrect you see a new table as well.

Earnings for the group account

The number of correctly counted tables influences your contribution to the group account. We compare you with all participants in this session. We rank all participants according to the number of correctly counted tables. The 50% top performers get 150 points into their group account. The remaining participants get 50 points into their group account. In case of equal performance the computer decides randomly about the rank order. Note that the other participant in your group contributes to the group account in the same way. We also rank this participant according to the number of correctly counted tables. Depending on the rank this participants contributes either 50 or 150 points to the group account.

Earnings for the Private account.

Every participant gets 100 points into the private account in any case. You receive the points from you private account at the end of the experiment.

Example: Participants A and B are in one group. Participant A counted two tables correctly, participant B eight. Now assume that 5 tables are necessary to be among the better half of the participants. In this case, A contributes 50 points to the group account and B 150 points. Overall, 200 points are in the group account. Participants A and B bargain in the subsequent bargaining phase about the distribution of the group account (see below).

Bargaining Phase

You get the following information ahead of the bargaining:

- Number of points on your private account.
- Number of points in the private account of the other group member.
- Contribution of each group member to the group account.

The bargaining phase is about the distribution of the points in the group account between you and the other group member. The bargaining phase proceeds as follows. Each group member makes an offer and states a minimum demand. The proposal is about the distribution of the points in the group account. The minimum demand determines how many points a participant wants to get at least.

Periode		
1 von 1		Verbleibende Zeit [sec]: 21

Sie sind in Rolle   B

PRIVATKONTO

Der andere Teilnehmer hat folgenden Punktestand auf dem Privatkonto: 100
Ihr Punktestand auf dem Privatkonto: 100

GRUPPENKONTO

Das Gruppenkonto beträgt: 200
Der Teilnehmer B hat beigetragen: 150
Sie haben beigetragen   50

MINDESTFORDERUNG

Wie viele Punkte möchten Sie vom Gruppenkonto mindestens bekommen?

AUFTEILUNGSVORSCHLAG

Wie viele Punkte möchten Sie Teilnehmer B vom Gruppenkonto zukommen lassen?

OK

Afterwards a lottery decides whose offer and whose minimum demand becomes relevant. The comparison of the relevant offer and the relevant minimum demand determines the outcome of the bargaining. If the offer is larger or equal to the minimum demand the two group members agree and the offer is implemented. Otherwise the members do not agree, the group account is dissolved and all points in the account are lost.

Example 1: There are 100 points in the group account. A contributed 50 points and B contributed 50 points.

Offer participant A:	20 points for B
Minimum demand participant A:	70 points for herself
Offer participant B:	60 points for A
Minimum demand participant B:	40 points for herself

Now assume that the lottery has decided that A's offer and B's minimum demand are relevant.

A comparison of A's offer and B's minimum demand show that they DO NOT AGREE in this bargaining round. Participant A offered B 20 points out of the 100 points

in the group account. However, B demanded at least 40 points. The experiment ends and neither A nor B get a payment out of the group account.

Example 2: There are 300 points in the group account. A contributed 150 points and B contributed 150 points.

Offer participant A:	120 points for B
Minimum demand participant A:	90 points for herself
Offer participant B:	120 points for A
Minimum demand participant B:	150 points for herself

Now assume that the lottery has decided that B's offer and A's minimum demand are relevant.

A comparison of B's offer and A's minimum demand show that they AGREE in this bargaining round. Participant B offered A 120 points out of the 300 points in the group account. Participant A demanded at least 90 points. The experiment ends. Participant A gets the offered 120 points out of the group account and B the remaining 180 points.

A2: Unequal Opportunities Treatment

Welcome to this economic experiment. Your earnings in this experiment depend on your decisions and the decisions of other participants. Hence, it is important that you read these instructions carefully. If you have any questions please contact us before the actual experiment starts.

During the experiment, it is forbidden to talk with the other participants. We will exclude you from this experiment and any payment if you violate this rule. During the experiment we use points instead of euros. We calculate all your earnings in points and exchange them into Euros at the end of the experiment. The exchange rate is

<div align="center">

100 points = 6 euro

</div>

At the end of the experiment, we will pay you all your points in cash. We will explain the precise procedure of the experiment on the following pages.

Summary

All participants are divided into groups of two persons. The experiment has two phases. It starts with a production phase. Your performance in this production phase influences your contribution to a group account. However the performance of one randomly chosen group member is reduced by 25%. You share the group account with the other group member. Independent of your performance in the production phase you also receive points on your private account. In the second phase, the bargaining phase, you bargain with the other participant about the distribution of the group account. The group account will be distributed according to the outcome of the bargaining process. Your private account and your share of the group account determine your final payment at the end of the experiment.

Production phase

The production phase lasts for 15 minutes. During that time you see a table on the screen. The table contains 10 rows with 15 ciphers each. The ciphers are either 0 or 1. It is your task to count the number of zeros in the table correctly, write it in the input box and click the OK-button. If the number is correct, you see a new table. If it is incorrect you see a new table as well.

Periode		
1 von 1		Verbleibende Zeit [sec]: 895

Sie haben 15 Minuten Zeit, um in dieser Phase die Anzahl der Nullen in Tabellen zu zählen.
Die verbliebene Zeit wird oben rechts angezeigt.

Wenn Sie zu den besten 50% aller Teilnehmer gehören, so tragen Sie 150 Punkte zum Gruppenkonto bei.

Ansonsten tragen Sie 50 Punkte zum Gruppenkonto bei.

Sie erhalten unabhängig der gelösten Anzahl 100 Punkte auf Ihr Privatkonto

```
101011011110100
111000110111001
011110100010100
100010011101111
011110100000011
010110111101110
101010111001010
001001101101100
011011100011101
101010110100100
```

Wie viele Nullen befinden sich in der Tabelle?

OK

Bisher richtig gelöst: 0

Earnings for the group account

The number of correctly counted tables influences your contribution to the group account. However, a die determines one group member who gets a reduction of 25% in the number of correctly calculated tables. Afterwards we compare you with all participants in this session. We rank all participants according to the number of correctly counted tables (after the reduction of 25%). The 50% top performers after the reduction get 150 points into their group account. The remaining participants get 50 points into their group account. In case of equal performance the computer decides randomly about the rank order. Note that the other participant in your group contributes to the group account in the same way. We also rank this participant according to the number of correctly counted tables (after an eventual reduction of 25%). Depending on the rank this participants contributes either 50 or 150 points to the group account.

Hence one of the two group members gets a reduction of 25% in the number of correctly counted tables. This happens before the contributions to the group account are determined. You only learn after the production phase about whose performance will be reduced. A throw of a die determines the lottery outcome-

Earnings for the Private account.

Every participant gets 100 points into the private account in any case. You receive the points from you private account at the end of the experiment.

Example: Participants A and B are in one group. Participant A counted two tables correctly, participant B eight. Now assume that 25% of B's performance have been reduced. Furthermore assume that 7 tables are necessary to be among the better half of the participants. In this case, A contributes 50 points to the group account and B 50 points as well. Without the reduction B would have contributed 150 points. However, the reduction of 25% from 8 to 6 correctly counted implies a contribution of 50 points.

Overall, 100 points are in the group account. Participants A and B bargain in the subsequent bargaining phase about the distribution of the group account (see below).

Bargaining Phase

You get the following information ahead of the bargaining:

- Number of points on your private account.
- Number of points in the private account of the other group member.
- Whether the other person had her performance reduced by 25%.
- Contribution of each group member to the group account.

The bargaining phase is about the distribution of the points in the group account between you and the other group member. The bargaining phase proceeds as follows. Each group member makes an offer and states a minimum demand. The proposal is about the distribution of the points in the group account. The minimum demand determines how many points a participant wants to get at least.

Afterwards a lottery decides whose offer and whose minimum demand becomes relevant. The comparison of the relevant offer and the relevant minimum demand

determines the outcome of the bargaining. If the offer is larger or equal to the minimum demand the two group members agree and the offer is implemented. Otherwise the members do not agree, the group account is dissolved and all points in the account are lost.

Example 1: There are 100 points in the group account. A contributed 50 points and B contributed 50 points.

Offer participant A:	20 points for B
Minimum demand participant A:	70 points for herself
Offer participant B:	60 points for A
Minimum demand participant B:	40 points for herself

Now assume that the lottery has decided that A's offer and B's minimum demand are relevant.

A comparison of A's offer and B's minimum demand show that they DO NOT AGREE in this bargaining round. Participant A offered B 20 points out of the 100 points in the group account. However, B demanded at least 40 points. The experiment ends and neither A nor B get a payment out of the group account.

Example 2: There are 300 points in the group account. A contributed 150 points and B contributed 150 points.

Offer participant A:	120 points for B
Minimum demand participant A:	90 points for herself
Offer participant B:	120 points for A
Minimum demand participant B:	150 points for herself

Now assume that the lottery has decided that B's offer and A's minimum demand are relevant.

A comparison of B's offer and A's minimum demand show that they AGREE in this bargaining round. Participant B offered A 120 points out of the 300 points in the group account. Participant A demanded at least 90 points. The experiment ends. Participant A gets the offered 120 points out of the group account and B the remaining 180 points.

A3: Loss Treatment

Welcome to this economic experiment. Your earnings in this experiment depend on your decisions and the decisions of other participants. Hence, it is important that you read these instructions carefully. If you have any questions please contact us before the actual experiment starts.

During the experiment, it is forbidden to talk with the other participants. We will exclude you from this experiment and any payment if you violate this rule. During the experiment we use points instead of euros. We calculate all your earnings in points and exchange them into Euros at the end of the experiment. The exchange rate is

100 points = 6 euro

At the end of the experiment, we will pay you all your points in cash. We will explain the precise procedure of the experiment on the following pages.

Summary

All participants are divided into groups of two persons. The experiment has two phases. It starts with a production phase. Your performance in this production phase influences your contribution to a group account. You share the group account with the other group member. Independent of your performance in the production phase you also receive points on your private account. However one randomly chosen group member has to choose whether to reduce her performance by 25% or empty her private account. In the second phase, the bargaining phase, you bargain with the other participant about the distribution of the group account. The group account will be distributed according to the outcome of the bargaining process. Your private account and your share of the group account determine your final payment at the end of the experiment.

Production phase

The production phase lasts for 15 minutes. During that time you see a table on the screen. The table contains 10 rows with 15 ciphers each. The ciphers are either 0 or 1. It is your task to count the number of zeros in the table correctly, write it in the input box and click the OK-button. If the number is correct, you see a new table. If it is incorrect you see a new table as well.

Sie haben 15 Minuten Zeit, um in dieser Phase die Anzahl der Nullen in Tabellen zu zählen.
Die verbliebene Zeit wird oben rechts angezeigt.

Wenn Sie zu den besten 50% aller Teilnehmer gehören, so tragen Sie 150 Punkte zum Gruppenkonto bei.

Ansonsten tragen Sie 50 Punkte zum Gruppenkonto bei.

Sie erhalten unabhängig von der gelösten Anzahl 100 Punkte auf Ihr Privatkonto

```
1010110111110100
1110001101110010
0111101000010100
1000100111011111
0111101000010011
0101101111101110
1010101110010100
0010011011011000
0110111000111010
1010101101001000
```

Wie viele Nullen befinden sich in der Tabelle?

| |

OK

Bisher richtig gelöst: 0

Earnings for the group account

The number of correctly counted tables influences your contribution to the group account. However, a die determines one group member whose choice for a reduction of 25% in the number of correctly calculated tables becomes relevant. Afterwards we compare you with all participants in this session. We rank all participants according to the number of correctly counted tables (after the potential reduction of 25%). The 50% top performers after the reduction get 150 points into their group account. The remaining participants get 50 points into their group account. In case of equal performance the computer decides randomly about the rank order. Note that the other participant in your group contributes to the group account in the same way. We also rank this participant according to the number of correctly counted tables (after an eventual reduction of 25%). Depending on the rank this participants contributes either 50 or 150 points to the group account.

Earnings for the Private account.

Every participant gets 100 points into the private account in any case. After production phase all participants face the following decision. They can decide whether to reduce

the performance in the production phase 25% or to forego the the 100 point in the private account. The relevant screen is a follows (in German):

Afterwards a die determines for whom the decision has become relevant. Hence one group member faces either a 25% reduction in the number of correctly counted tables or a reduction of 100 points in the private account. This happens before the contributions to the group account are determined. You receive the points from your private account at the end of the experiment.

Example: Participants A and B are in one group. Participant A counted two tables correctly, participant B eight. Now assume that B has decided to keep 100 points in the private account and accept a 25% performance reduction. Furthermore assume that 7 tables are necessary to be among the better half of the participants. In this case, A contributes 50 points to the group account and B 50 points as well. Without the reduction B would have contributed 150 points. However, the reduction of 25% from 8 to 6 correctly counted implies a contribution of 50 points.

Overall, 100 points are in the group account. Participants A and B bargain in the subsequent bargaining phase about the distribution of the group account (see below).

Bargaining Phase

You get the following information ahead of the bargaining:

- Number of points on your private account.
- Number of points in the private account of the other group member.
- Whether the other person has reduced her performance by 25%.
- Contribution of each group member to the group account.

The bargaining phase is about the distribution of the points in the group account between you and the other group member. The bargaining phase proceeds as follows. Each group member makes an offer and states a minimum demand. The proposal is about the distribution of the points in the group account. The minimum demand determines how many points a participant wants to get at least.

Afterwards a lottery decides whose offer and whose minimum demand becomes relevant. The comparison of the relevant offer and the relevant minimum demand determines the outcome of the bargaining. If the offer is larger or equal to the minimum

demand the two group members agree and the offer is implemented. Otherwise the members do not agree, the group account is dissolved and all points in the account are lost.

Example 1: There are 100 points in the group account. A contributed 50 points and B contributed 50 points.

Offer participant A:	20 points for B
Minimum demand participant A:	70 points for herself
Offer participant B:	60 points for A
Minimum demand participant B:	40 points for herself

Now assume that the lottery has decided that A's offer and B's minimum demand are relevant.

A comparison of A's offer and B's minimum demand show that they DO NOT AGREE in this bargaining round. Participant A offered B 20 points out of the 100 points in the group account. However, B demanded at least 40 points. The experiment ends and neither A nor B get a payment out of the group account.

Example 2: There are 300 points in the group account. A contributed 150 points and B contributed 150 points.

Offer participant A:	120 points for B
Minimum demand participant A:	90 points for herself
Offer participant B:	120 points for A
Minimum demand participant B:	150 points for herself

Now assume that the lottery has decided that B's offer and A's minimum demand are relevant.

A comparison of B's offer and A's minimum demand show that they AGREE in this bargaining round. Participant B offered A 120 points out of the 300 points in the group account. Participant A demanded at least 90 points. The experiment ends. Participant A gets the offered 120 points out of the group account and B the remaining 180 points.

A4: Gain Treatment

Welcome to this economic experiment. Your earnings in this experiment depend on your decisions and the decisions of other participants. Hence, it is important that you read these instructions carefully. If you have any questions please contact us before the actual experiment starts.

During the experiment, it is forbidden to talk with the other participants. We will exclude you from this experiment and any payment if you violate this rule. During the experiment we use points instead of euros. We calculate all your earnings in points and exchange them into Euros at the end of the experiment. The exchange rate is

100 points= 6 euro

At the end of the experiment, we will pay you all your points in cash. We will explain the precise procedure of the experiment on the following pages.

Summary

All participants are divided into groups of two persons. The experiment has two phases. It starts with a production phase. Your performance in this production phase influences your contribution to a group account. You share the group account with the other group member. Independent of your performance in the production phase you also receive points on your private account. However one randomly chosen group member has to choose whether to reduce her performance by 25% in order to get an additional 1100 points with 10% probability in the private account. In the second phase, the bargaining phase, you bargain with the other participant about the distribution of the group account. The group account will be distributed according to the outcome of the bargaining process. Your private account and your share of the group account determine your final payment at the end of the experiment.

Production phase

The production phase lasts for 15 minutes. During that time you see a table on the screen. The table contains 10 rows with 15 ciphers each. The ciphers are either 0 or 1. It is your task to count the number of zeros in the table correctly, write it in the input box and click the OK-button. If the number is correct, you see a new table. If it is incorrect you see a new table as well.

Sie haben 15 Minuten Zeit, um in dieser Phase die Anzahl der Nullen in Tabellen zu zählen.
Die verbliebene Zeit wird oben rechts angezeigt.

Wenn Sie zu den besten 50% aller Teilnehmer gehören, so tragen Sie 150 Punkte zum Gruppenkonto bei.

Ansonsten tragen Sie 50 Punkte zum Gruppenkonto bei.

Sie erhalten unabhängig von der gelösten Anzahl 100 Punkte auf Ihr Privatkonto

```
1010110111110100
1110001101111001
0111101000101000
1000100111011111
0111101000010111
0101101111011110
1010101110010100
0010011011011000
0110111000111011
1010101101000100
```

Wie viele Nullen befinden sich in der Tabelle?

OK

Bisher richtig gelöst: 0

Earnings for the group account

The number of correctly counted tables influences your contribution to the group account. However, a die determines one group member whose choice for a reduction of 25% in the number of correctly calculated tables becomes relevant. Afterwards we compare you with all participants in this session. We rank all participants according to the number of correctly counted tables (after the potential reduction of 25%). The 50% top performers after the reduction get 150 points into their group account. The remaining participants get 50 points into their group account. In case of equal performance the computer decides randomly about the rank order. Note that the other participant in your group contributes to the group account in the same way. We also rank this participant according to the number of correctly counted tables (after an eventual reduction of 25%). Depending on the rank this participants contributes either 50 or 150 points to the group account.

Earnings for the Private account.

Every participant gets 100 points into the private account in any case. After production phase all participants face the following decision. They can decide whether to reduce the performance in the production phase 25% in order to get an additional 1100 points

with probability of 10% in their private account. As an alternative you can keep your full performance and the private account as it is. The relevant screen is a follows (in German):

Afterwards a die determines for whom the decision has become relevant. Hence one group member faces either a 25% reduction in the number of correctly counted tables with a potential of 1100 points in the private account (probability 10%) or nothing changes. This happens before the contributions to the group account are determined. You receive the points from your private account at the end of the experiment.

Example: Participants A and B are in one group. Participant A counted two tables correctly, participant B eight. Now assume that B has decided to get the additional 1100 points with probability of 10% in the private account and accept a 25% performance reduction. Furthermore assume that 7 tables are necessary to be among the better half of the participants. In this case, A contributes 50 points to the group account and B 50 points as well. Without the reduction B would have contributed 150 points. However, the reduction of 25% from 8 to 6 correctly counted implies a contribution of 50 points.

Overall, 100 points are in the group account. Participants A and B bargain in the subsequent bargaining phase about the distribution of the group account (see below).

Bargaining Phase

You get the following information ahead of the bargaining:

- Number of points on your private account.
- Number of points in the private account of the other group member.
- Whether the other person has reduced her performance by 25%.
- Contribution of each group member to the group account.

The bargaining phase is about the distribution of the points in the group account between you and the other group member. The bargaining phase proceeds as follows. Each group member makes an offer and states a minimum demand. The proposal is about the distribution of the points in the group account. The minimum demand determines how many points a participant wants to get at least.

Periode

1 von 1

Verbleibende Zeit [sec]: 21

Sie sind in Rolle B

PRIVATKONTO

Der andere Teilnehmer hat folgenden Punktestand auf dem Privatkonto: 100

Ihr Punktestand auf dem Privatkonto: 100

GRUPPENKONTO

Das Gruppenkonto beträgt: 200

Der Teilnehmer B hat beigetragen: 150

Sie haben beigetragen 50

MINDESTFORDERUNG

Wie viele Punkte möchten Sie vom Gruppenkonto mindestens bekommen?

AUFTEILUNGSVORSCHLAG

Wie viele Punkte möchten Sie Teilnehmer B vom Gruppenkonto zukommen lassen?

OK

Afterwards a lottery decides whose offer and whose minimum demand becomes relevant. The comparison of the relevant offer and the relevant minimum demand determines the outcome of the bargaining. If the offer is larger or equal to the minimum demand the two group members agree and the offer is implemented. Otherwise the members do not agree, the group account is dissolved and all points in the account are lost.

Example 1: There are 100 points in the group account. A contributed 50 points and B contributed 50 points.

Offer participant A:	20 points for B
Minimum demand participant A:	70 points for herself
Offer participant B:	60 points for A
Minimum demand participant B:	40 points for herself

Now assume that the lottery has decided that A's offer and B's minimum demand are relevant.

A comparison of A's offer and B's minimum demand show that they DO NOT AGREE in this bargaining round. Participant A offered B 20 points out of the 100 points in the group account. However, B demanded at least 40 points. The experiment ends and neither A nor B get a payment out of the group account.

Example 2: There are 300 points in the group account. A contributed 150 points and B contributed 150 points.

Offer participant A:	120 points for B
Minimum demand participant A:	90 points for herself
Offer participant B:	120 points for A
Minimum demand participant B:	150 points for herself

Now assume that the lottery has decided that B's offer and A's minimum demand are relevant.

A comparison of B's offer and A's minimum demand show that they AGREE in this bargaining round. Participant B offered A 120 points out of the 300 points in the group

account. Participant A demanded at least 90 points. The experiment ends. Participant A gets the offered 120 points out of the group account and B the remaining 180 points.

Appendix B: Subsamples across the treatments

Table B: Number of Groups in the Different Treatments and their Subsamples

	Equal Opportunities	Unequal Incentives (Gain)	Unequal Incentives (Loss)	Unequal Opportunities
Group account 300 points	18	33	18	15
Groups with a follower	--	16	12	--
Groups without a follower	--	17	6	--
Group account 100 points	18	33	18	15
Groups with a follower	--	27	16	--
Groups without a follower	--	6	2	--
Group account 200 points	**34**	72	47	40
Subsamples — Disadvantaged member contributes 50 points	--	--	--	**33**
Disadvantaged member contributes 150 points	--	--	--	7
Follower contributes 50 points. The follower has 100 points in her private account.	--	**31**	**31**	--
Follower contributes 150 points. The follower has 100 points in her private account.	--	10	11	--
Non-Follower contributes 50 points. The non-follower has 0 points in her private account.	--	--	4	--
Non-Follower contributes 150 points. The non-follower has 0 points in her private account.	--	--	1	--

Follower contributes 50 points. The follower has 1200 points in her private account.	--	5	--	--
Follower contributes 150 points. The follower has 1200 points in her private account.	--	1	--	--
Non-Follower contributes 50 points. The non-follower has 100 points in her private account.	--	14	--	--
Non-Follower contributes 150 points. The non-follower has 100 points in her private account.	--	11	--	

The bold numbers show those groups that constitute the key samples for our treatment comparisons.

Followers are subjects who decide in line with the incentives.

Appendix C: Claims in Case of Equal Contributions

This appendix shows the negotiation behavior when both group members make the same contributions (i.e. either 50 points per capita or 150 points per capita). Table C provides the information about the minimum claims of the different participants in these contexts. Non-parametric tests do not reveal any significant difference in claims across treatments or the different types of participants. Similarly, offers and incidences of negotiation failure do not show meaningful differences in these cases (results not reported in this paper). Hence unequal incentives or opportunities do not affect entitlements when both group members make the same effective contribution.

Table C: Minimum Demands in case of equal contributions.

	Equal Opportunities	Unequal Incentives (Gain)	Unequal Incentives (Loss)	Unequal Opportunities
Group Account 300 points				
Average Claims	**117.31**	117.80	114.17	110.37
	(40.92)	(40.21)	(45.82)	(44.90)
Regular	--	**111.97**	**123.89**	**103.4**
		(44.19)	**(36.00)**	**(48.50)**
Changed incentives / opportunities	--	123.63	104.44	**117.33**
		(35.52)	(53.16)	**(41.48)**
Followers	--	**115**	**97.5**	--
		(41.47)	**(55.78)**	
Not followers	--	131.765	118.33	--
		(27.667)	(49.16)	
Group Account 100 points				
Average Claims	**45**	44.39	43.75	41.87
	(10.82)	(12.63)	(18.92)	(13.38)
Regular	--	**43.64**	**42.17**	**41.07**
		(9.86)	**(11.67)**	**(15.88)**
Changed incentives / opportunities	--	45.15	45.33	**42.67**
		(15.03)	(24.42)	**(10.83)**
Followers	--	**42.59**	**44.75**	--
		(13.47)	**(25.93)**	
Not followers	--	56.67	50	--
		(17.51)	(0)	