Difficult Merits*

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Abstract

Ample evidence supports that people, on average, find performance-based inequality fair and purely luck-based inequality unfair. Performance, however, depends on several factors that are not equally under one's control. This raises the question of where people draw the line between factors within and outside one's control. In an experiment with a tedious real-effort task, I study how a transparent, exogenously imposed inequality in task difficulty affects the redistribution of performance-based income. A significant share of participants – both as spectators and as stakeholders – compensates those with harder tasks in their redistributive decisions. However, the majority of participants still accept performance-based inequality, regardless of the unequal opportunities. In another experiment, participants have equal task difficulty, but I inform them about inequality in individual productivity – measured in a separate part of the experiment – which might be partly outside the individual's control. I find that none of the participants compensate for productivity differences, suggesting that it is a factor for which they hold each other fully accountable.

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1 Introduction

The level of redistribution in a society correlates with the sources of inequality its members tolerate. Experimental and empirical evidence shows that people, on average, prefer to reduce inequalities that arise from factors outside one's control (Konow, 2000; Fong, 2001; Alesina and Angeletos, 2005). In a situation where luck and merit can both determine income, this means that most people want to reduce inequality due to pure luck but keep the inequality based on merit (Cappelen et al., 2007, 2010; Almås et al., 2010, 2020; Durante et al., 2014). This body of research equates merit by performance in a task and infers attitudes toward merit-based differences from attitudes toward performance differences. An important reality of life, however, is that achieving a given level of performance is transparently more difficult and, consequently, takes more effort for some than for others. For example, a student who has a quiet room for studying can, in the same amount of time, do her homework more successfully than a student who is crammed into a small corner with her siblings running around.[1] At an even more basic level, a student more talented in a subject can do more exercises in a given time than a less talented one.[2] We know little about what people consider as merit in these cases: the final performance or simply the exerted effort. Do they still find rewarding performance fair despite unequal opportunities due to external or internal factors?

I address this question in an experiment that first studies how people redistribute performance-based inequality when there are unequal exogenous difficulties in the task participants have to do. Then, to understand better where people draw the line between factors to compensate and factors to hold each other responsible for, I study redistribution in situations with unequal productivity due to internal factors. The variation of external difficulties I introduce is similar to studying in different home environments: I randomly assign easier or harder tasks to subjects, which induces external variation in performance in a given time. Unequal productivity is similar to the two students with different abilities: some subjects may be less productive than others, either due to exerting different levels of effort during the same work period or due to differing abilities in the task. Variance in productivity then results in variation in performance within a period. I find that subjects treat the two factors very differently: they redistribute income towards the person with more difficult tasks but do not redistribute to the one with lower productivity. These results suggest that subjects, at least on average, treat a clearly exogenous factor affecting performance as something people should not be held responsible for. However, even though it also has exogenous components, they hold

[1] It is well established that the home environment plays a significant role in the development of cognitive and non-cognitive skills, and affects later life outcomes as well (Bradley et al., 2000; Mott, 2004; Falk et al., 2021).

[2] Some also regard talent as a result of lucky circumstances (Rawls, 1971; Littler, 2017).

each other fully responsible for their productivity.

I describe the experimental design in Section 2. I run two experiments to test how people incorporate the two factors into their redistribution decisions. Both experiments have a production and a redistribution stage, and in the production stage, participants perform a simple letter encryption task Benndorf et al. (2018). In the *Exogenous difficulty experiment (ED)*, I randomly assign easy, medium or hard tasks to subjects, while in the *Productivity experiment (PR)*, everyone has similar, medium-difficulty tasks. I first measure participants' absolute difficulty or absolute productivity – the number of tasks they can do within a minute when asked to solve ten tasks as fast as possible. Based on this measure, I classify participants into productivity levels (low, medium, high) in PR, analogously to the difficulty levels (easy, medium, hard) in ED. Next, participants work on the task for 15 minutes and receive ten experimental tokens per task completed. In the redistribution stage, they choose how to redistribute the joint income of a randomly formed pair. They are informed about the performance and the difficulty or productivity level (depending on the experiment) of both participants in the pair. They make decisions in either a *spectator* or a *stakeholder* role: Spectators redistribute the income of two subjects as an outside observer, while stakeholders redistribute their and another subject's joint income.

Section 3 presents descriptive statistics about both stages. In ED, both the absolute difficulty and performance within 15 minutes decrease in task difficulty. Similarly, low-productivity participants perform significantly worse during the 15 minutes than medium- and high-productivity participants in PR. Though both factors affect performance, subjects only compensate for external difficulties through their redistributive decisions. In ED, spectators and stakeholders redistribute around five percent of the total income to participants with more difficult tasks within the pair. In the case of equal difficulties, there is no redistribution on average.[3] In contrast, neither spectators nor stakeholders compensate the participant with lower productivity in PR: the average redistribution is zero at both equal and unequal productivity levels.

Section 4 explores the results in a reduced-form regression framework. In this section, I also investigate heterogeneities in stakeholders' decisions depending on their advantaged or disadvantaged status in the pair. The results in ED are in line with the literature finding self-serving redistributive decisions among stakeholders (Rodriguez-Lara and Moreno-Garrido, 2012; Eisenkopf et al., 2013; Deffains et al., 2016; Fehr and Vollmann, 2022). Although all stakeholders redistribute income towards themselves, those with more difficult tasks take an extra amount as compensation for their

[3]There is no redistribution to a *randomly chosen participant* within the pair when difficulties are equal. There is, however, redistribution on average *to the participant with lower performance* because a fraction of participants follow the egalitarian principle and want to reduce inequality regardless of its source.

disadvantage. In contrast, those with easier tasks in a pair do not compensate the other participant. They take as much as stakeholders in equal-difficulty pairs as if their performance only resulted from hard work. Interestingly, lower productivity in PR does not serve as a justification for stakeholders to compensate themselves. On the other hand, high-productivity stakeholders take more than other stakeholders, suggesting that they believe their high productivity deserves extra reward on top of what they get for their performance. In PR, I also examine whether spectators' treatment of productivity differences depends on their general fairness views. Those who think it is entirely unfair if talent determines income inequality do compensate the low-productivity participant in the pair. However, most people regard talent as a fair source of inequality, and there is no compensation from their side, hence the average zero compensation.

Finally, in Section 5, to uncover the heterogeneity in individual fairness preferences behind the average decisions, I structurally estimate the shares of different fairness views among spectators and stakeholders (following Mollerstrom et al. 2015 and Andre 2024). I build on the model of fairness views in Almås et al. (2010) that distinguishes between libertarian, egalitarian and meritocratic views. I extend the model to include those compensating first for inequality in external difficulties in ED. I find that the majority (55 percent) hold a performance-meritocratic view, i.e., accepting performance-based inequality regardless of potential differences in external difficulties. However, there is a large share of both spectators and stakeholders (25 and 29 percent) that compensate for external difficulties. Then, I estimate the shares of performance-meritocrats, egalitarians and those who compensate for productivity differences in PR.[4] The structural results support the reduced-form ones by showing a zero share of those compensating for productivity differences. The share of egalitarians, who always equalize the payoffs no matter the source of the inequality, is similar in both experiments to those found in the literature (13-20 percent).

This paper contributes to the literature addressing the factors people hold each other responsible for. The existing literature finds a substantial prevalence of the meritocratic fairness view: many people find inequalities based on merit – or in the experimental papers, performance – and personal choices fair, but inequalities due to pure luck unfair (see a review in Cappelen et al., 2020a). However, luck usually operates in more subtle ways. Even if someone advances through their performance, performance is often shaped by inequalities in external factors, such as incentives, external circumstances, educational opportunities, or internal ones, like talent or productivity. Compensating for unequal external factors aligns with procedural fairness (Trautmann, 2022), but

[4]Since I address the two factors separately, I can only identify if someone compensates for either exogenous difficulty or low productivity. In reality, someone may compensate for both or only one, but I cannot observe behavior toward both factors simultaneously.

compensating for unequal productivity is not as straightforward. People generally find performance-based inequality fair when it comes from productivity or some specific knowledge (Cappelen et al., 2010; Eisenkopf et al., 2013; Durante et al., 2014). Productivity naturally depends on effort, but it can also depend on prior access to information, practice of the task, or innate talent – factors that are also heavily influenced by luck and circumstances (Rawls, 1971; Eisenkopf et al., 2013). Bartling et al. (2025) look at why people accept talent-based inequality even if talent is outside one's control, and their results suggest the reason might be that people have to act upon their talent for it to bear fruit.

A few experimental papers address the role of external circumstances in performance. Andre (2024) and Cappelen et al. (2024) find on US and Scandinavian samples that spectators find performance-based rewards fair even with unequal incentives. A significant share, however, cares about unequal incentives once they learn how participants would have performed under equal incentives. Instead of unequal incentives, Bhattacharya and Mollerstrom (2023) introduce unequal opportunities to work. They find that spectators redistribute less when the higher earner worker was also given more time to work than when the high and low earners do not differ in their assigned working time. In Dong et al. (2022), workers either receive unequal education before the quiz determining their income or face quizzes of different lengths, affecting the total number of possible correct answers. They find that spectators redistribute more toward the disadvantaged worker in both treatments compared to the equal opportunities benchmark but less compared to when outcomes are purely luck-based. Eisenkopf et al. (2013) also study situations where participants have unequal education opportunities before a quiz determining their income. They find that participants treat unequal opportunities similarly to luck when they have a long time to study the questions beforehand. With only a short learning time, educated and uneducated participants differ significantly in whether they attribute their performance to luck or skill and, accordingly, in their redistribution decisions. Preuss et al. (2024) compare luck-based outcomes to those affected by lucky opportunities, where workers' performance might receive an unequal multiplier. They also find that redistribution is significantly lower with lucky opportunities than with lucky outcomes. In two related survey experiments, Fehr et al. (2022) find that while people understand the role of parental background in later life success, they find inequalities induced by parental influence entirely fair when it comes to redistributive decisions.

I add to these papers first by studying another type of unequal opportunity: similar to disturbing external circumstances while working that make the task at hand more difficult, some participants are assigned easier while others harder tasks, but ultimately, the reward goes for their performance

measured by the number of tasks done. By measuring the absolute difficulty at the beginning and displaying it during the redistributive decisions, participants can see exactly how difficult the task was for the pair and, thus, have a sense of how much effort they must have exerted to achieve their performance. Providing this information allows me to separate whether participants reward each other for their effort or performance with both the reduced-form and the structural estimations.

The second contribution of this paper is the attempt to distinguish between productivity and effort behind performance. Cappelen et al. (2010) define participants' effort choice as their chosen working time and their productivity as the number of tasks done per minute of the working time. They find that only a small, non-significant share of participants hold others responsible for their choice of working time but not for their productivity. Schildberg-Hörisch et al. (2023) use a similar measure of productivity to mine: they measure how many tasks people can do when given only a short time, arguing that people in experiments tend to exert maximum effort in short time frames (see e.g., Araujo et al., 2016; Gächter et al., 2016). They use this measure to see whether participants view an affirmative action policy favoring low-productivity individuals as fair. Their results show that all other affirmative action policies studied (favoring those facing discrimination and those who choose a shorter working time) are perceived as fairer. Moreover, affirmative action favoring low-productivity individuals and no affirmative action are viewed as equally fair. Pogliano (2024) takes a different approach and uses a mathematical task in which innate talent plays a role. He then provides an information treatment, telling spectators about the large or small role of genetics in math performance. In contrast to the previous findings, he finds that those spectators who learned that genetics play a major role in workers' performance redistribute significantly more towards the less productive worker than those who learned about a minor role of genetics.

I add to these papers by separately measuring productivity and performance and calling participants' attention to productivity differences during redistributive decisions. While productivity can both stem from effort and ability, I argue that because productivity was measured in a short time (as in Schildberg-Hörisch et al., 2023), it is affected less by effort on average than production, where participants had to work for 15 minutes, and could get distracted or tired.[5] Separating these two measures and showing participants the productivity levels and absolute productivity allows them to better gauge how much effort each participant in the pair must have exerted for a particular performance.

Finally, the papers mentioned above look at either spectator decisions, without own payoffs at stake, or stakeholder decisions, where participants' decisions may directly impact their payoffs. I

[5] Araujo et al. (2016) argue that participants in their experiment might not have responded to increasing incentives with increasing effort because they might have already exerted maximal effort over the short time frame (two minutes).

contribute to these papers by comparing the decisions made in the two roles in the same experiment and same task. According to the theory described in Cappelen et al. (2020a), stakeholders act on the same fairness views as spectators. The papers documenting self-serving redistributive decisions (e.g., Eisenkopf et al., 2013; Deffains et al., 2016) suggest otherwise. My results show that, on average, stakeholders' and spectators' behavior towards the two factors are similar. However, when looking at redistributive decisions depending on one's advantage or disadvantage, the treatment of unequal external difficulties and productivity is very different. This result limits the extent of possible compensating policies, as people might agree on compensating external circumstances, but not at their own expense.

2 Experimental design

I run two experiments to study whether people compensate for external difficulties and productivity differences. The Exogenous Difficulty (ED) experiment studies if participants accept performance-based inequality if there is a transparent and exogenous inequality in opportunities. In the Productivity experiment (PR), participants have equal opportunities regarding the factors the experimenter can vary. However, participants naturally differ in their productivity in the experimental task, either because of innate talent in some aspects of the task, or because they can or choose to work harder, or both. PR aims to measure participants' productivity and call their attention to potential differences in it to see if they reconsider the fairness of performance-based inequality when productivity might differ for reasons not entirely in the control of the individuals. Both experiments have the same structure and consist of two stages: production and redistribution. I describe the two stages below.

2.1 Production

2.1.1 Measuring absolute difficulty and productivity

In ED, three levels of task difficulty are assigned randomly to participants at the beginning of the experiment. At the beginning, participants are asked to do ten tasks as fast as possible to measure the absolute difficulty of the three levels, i.e., how fast each task can be done on average. In PR, every participant has medium-level task difficulty. However, they are also asked to do ten tasks at the beginning as fast as possible to obtain an individual productivity measure. To have a similar measure of relative productivity to relative difficulty, I sort participants based on how fast they completed the ten tasks and assign them a low, medium, and high productivity label based on their

productivity tercile.

The task participants have to do in the experiment is a letter encryption task first used by Erkal et al. (2011), then developed further by Benndorf et al. (2018). See an example in Figure 2.1. The task consists of encrypting letter combinations to numbers, where the letter-number pairs and the order of the pairs in the encryption key are randomized between each correctly solved task. Benndorf et al. (2018) find that this double randomization minimizes learning in the task compared to other real-effort tasks used in experiments. The little scope for learning ensures that unequal learning abilities do not affect performance in the task, which is important for how I measure productivity. In ED, the three difficulty levels are two-letter, three-letter and four-letter tasks. In PR, everyone has three-letter tasks.

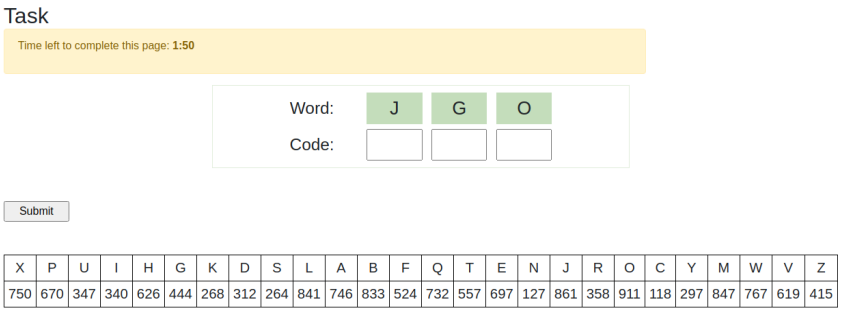


Figure 2.1: Example (three-letter) task

Note: Benndorf et al. (2018) task. In the example task, the letter J corresponds to the number 861, G to 444, and O to 911, so the participant has to enter these three numbers into the boxes.

The productivity measure I use is similar to the one used in Schildberg-Hörisch et al. (2023), however, the measure in my experiment is not incentivized. How fast participants can solve ten tasks can capture how much effort they exert into this part and their ability in the task. Even though the letter encryption task is simple and does not require specific skills, those who type faster, have better short-term memory or can find patterns on the screen faster can be better at it. Therefore, part of the measure captures an ability that, at the time of the experiment, participants cannot influence. However, even though I asked them to do the tasks as fast as possible, some participants might not have exerted maximal effort, so the measure partly also captures effort or willingness to work. I discuss the productivity measure in more detail in Appendix Section A.4.

2.1.2 Production

After measuring absolute difficulties (in ED) and productivity (in PR) in both experiments, participants get to the production part, where they complete tasks for a piece rate of ten experimental

tokens for 15 minutes. In ED, everyone works on tasks of their own difficulty level, while in PR, everyone works on three-letter tasks.[6] The number of tasks participants complete within 15 minutes is their production.

2.2 Redistribution

The redistribution stage is the stage of interest in this experiment. Participants within ED and PR are randomly assigned into pairs and decide on redistributing the joint income earned through production. Every participant is either a *spectator* or a *stakeholder*, where spectators redistribute the income of another pair of subjects, and stakeholders redistribute income within their pair.[7] Spectator decisions show what participants find objectively fair in a given situation, while stakeholder decisions also involve selfishness concerns since their monetary gains are at stake (Cappelen et al., 2020a).

Participants make redistributive decisions knowing all the details of how the incomes emerged. They know the production of both participants in the pair, the difficulty levels and absolute difficulties in ED, and productivity levels and absolute productivity in PR. Absolute difficulty and absolute productivity is shown as the average number of tasks participants could do within a minute at the particular task difficulty (ED) and productivity (PR) level. See an example decision screen in Figure 2.2. In the example decision, Participant 1 completed 32 tasks during 15 minutes, and Participant 2 completed 67. Both participants had medium-difficulty (three-letter) tasks, and the 4.8 tasks/minute in brackets means that participants who had three-letter tasks could do 4.8 tasks per minute on average when asked to do ten tasks as fast as possible.

To elicit participants' redistributive preferences for different sources of inequality, they make ten decisions about ten different pairs. I study compensation for the disadvantaged participant – i.e., the one with harder tasks or lower productivity – by comparing decisions made over pairs where the difficulty or productivity levels are equal (Figure 2.2) to those where they are unequal (Figure 2.3). Those participants who find performance-based inequality fair leave the income distribution unchanged in both situations. Those who wish to eliminate all inequalities equalize the incomes in both situations. However, those who want to compensate the disadvantaged participant for unequal opportunities leave the incomes unchanged if the difficulty or productivity levels are equal but redistribute income to the disadvantaged participant if they are unequal.

[6] On average, One three-letter task takes 10-15 seconds to complete.

[7] The randomization occurs at the pair level, so each pair is either a spectator or a stakeholder pair.

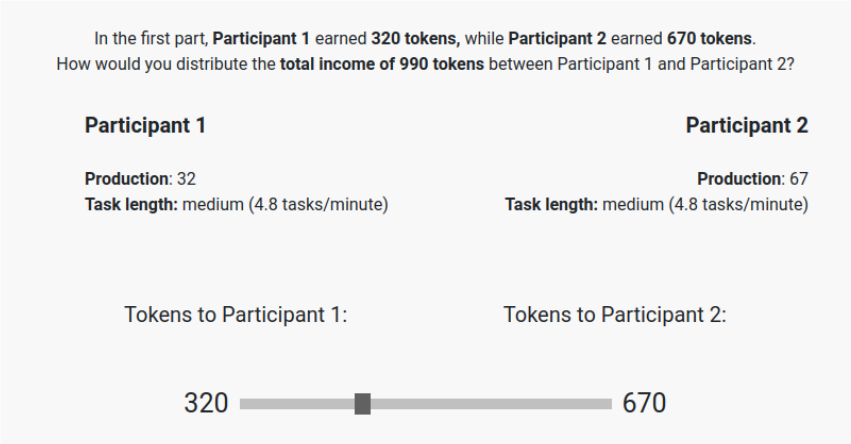


Figure 2.2: Example decision screen: equal difficulty levels

Note: Example spectator decision screen in the Exogenous difficulty experiment. In the experiment, task difficulty was called 'task length'. In stakeholder decisions, the decision-maker's data was presented under 'You'. Spectators and stakeholders in the Productivity experiment saw 'ability group' instead of 'task length' on the screen, with labels 'low', 'medium' and 'high' instead of 'long', 'medium' and 'short'.

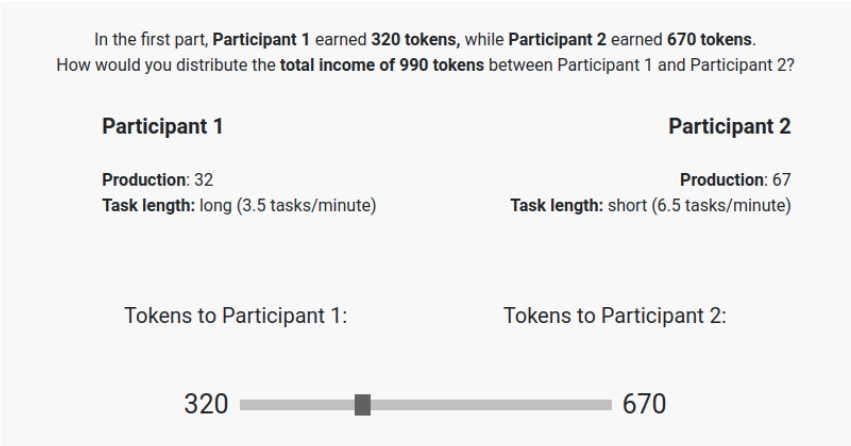


Figure 2.3: Example decision screen: unequal difficulty levels

Note: Example spectator decision screen in the Exogenous difficulty experiment. In the experiment, task difficulty was called 'task length'. In stakeholder decisions, the decision-maker's data was presented under 'You'. Spectators and stakeholders in the Productivity experiment saw 'ability group' instead of 'task length' on the screen, with labels 'low', 'medium' and 'high' instead of 'long', 'medium' and 'short'.

2.3 Technical details

The experiment ran online in three sessions between 1-9 December 2021, with 100-250 participants per session. I recruited participants on Prolific and coded the experiment using oTree (Chen et al., 2016). The experimental design, the hypotheses, and the main empirical analyses were pre-registered in the AEA RCT Registry (Drucker, 2021). Appendix Section A.11 presents all experimental

instructions the participants received. I recruited participants currently living in the United States (see Appendix Table A.2.1 for demographic data of the participants). They earned about 8.5 USD on average in total.

The two stages – production and redistribution – took place on two consecutive days and took together around 35 minutes to complete. Participants did the Production stage on the first day; the next day, they could return to complete the Redistribution stage between 6 AM and midnight. Separating the two stages allowed subjects not to have to sit in front of the computer simultaneously, excluding attrition due to having to wait for other subjects' moves. On the other hand, it introduced attrition between the two stages. There were 594 participants in the production stage and 500 in the redistribution stage, meaning there was a 16 percent attrition between the two days. However, not returning to the second stage did not correlate with any experimental feature or demographic characteristic (see Appendix Table A.3.1).

Participants learned at the beginning of the production stage that their income from this stage (except for the show-up fee) would not be their final income, but it might change according to their or other participants' decisions in the Redistribution stage. I followed the literature (e.g., Durante et al., 2014; Rey-Biel et al., 2018; Cappelen et al., 2022) in not revealing further details about the redistribution stage until they arrived at that stage to minimize the effect of knowing about a possible redistribution on production.[8] Participants in ED did not learn about other task difficulties than theirs until the redistribution stage, so the effect of unequal difficulties on effort would be negligible.[9] Before consenting to participate, participants completed a comprehension check to ensure they understood the experiment and the payment structure.

At the beginning of the redistribution stage, participants learned about their task performance in the first stage. This was also when they learned about other possible task difficulties in ED and the assignment into productivity levels in PR. Here, I explained that other participants might have had an easier or harder job than them due to their task difficulty or productivity levels (see the exact wording in Appendix Section A.11). Then, participants made redistributive decisions using the strategy method: They made ten decisions corresponding to ten random pairs from the first stage, but only one was the actual pair assigned to the participant. Participants knew this but did not know which pair was the true one. Two participants made a redistribution decision for each pair – either the spectators assigned to that pair or the participants constituting the pair as stakeholders. At the end of the experiment, one decision out of the two was chosen randomly and

[8]Erkal et al. (2011) find that knowledge about subsequent redistribution induces more selfish participants to self-select to high-income ranks by exerting high effort and then choosing much less redistribution than other participants.

[9]Indeed, the number of individual letters encrypted did not differ significantly across the three difficulty levels.

implemented. I converted the experimental tokens to British Pounds (at 250 tokens = £1), the currency in which Prolific participants are paid.

At the end of the experiment, participants completed a survey about how hard they worked on different parts of the experiment, how fair they found different sources of inequality (questions from Cappelen et al., 2022), and their views regarding how changeable talent and ability are (based on Dweck, 2006). Appendix Figure A.1.1 shows the exact survey questions.

3 Descriptive statistics

3.1 Production stage

3.1.1 Exogenous difficulty experiment

The first column of Table 3.1 shows the average number of tasks participants could do within a minute (absolute difficulty) at each task difficulty level in ED when asked to do ten tasks as fast as possible. The second column shows the average production within 15 minutes for these groups. On average, subjects with hard tasks could do 3.5 tasks within a minute, while subjects with easy tasks did 6.5 tasks when working as fast as possible ($p < 0.001$). The exogenous difficulties induced considerable variation in production as well. The mean production of participants with easy tasks was twice as large as that of participants with hard tasks in 15 minutes (96.0 vs. 47.6, $p < 0.001$). The pairwise differences in absolute difficulty and production between medium-level tasks and the other two levels are also significant at $p < 0.001$.

Difficulty level	Absolute difficulty	Production
Hard	3.5	47.6
Medium	4.7	68.4
Easy	6.5	96.0

Table 3.1: Difficulty and production by difficulty level

Note: Absolute difficulty is the number of tasks participants could do on average per minute when asked to do ten tasks as fast as possible. Production is the number of tasks participants completed on average in 15 minutes in the incentivized production part. The difficulty levels are determined by the exogenous task length. Hard = four-letter tasks, medium = three-letter tasks, easy = two-letter tasks.

3.1.2 Productivity experiment

In PR, every subject had three-letter tasks, so the first part of the experiment aimed to elicit productivity differences within the same task among the participants. The first column of Table 3.2 shows the average number of tasks participants could do within a minute (absolute productivity) when asked to do ten tasks as fast as possible at each productivity level (low, medium, high). Participants with high productivity are the third who solved ten tasks the fastest. Medium-productivity subjects are in the medium tercile, and low-productivity are in the slowest tercile. Since the groups are three terciles of the productivity distribution, the relative productivities are naturally different from each other. However, the three productivity levels also differ significantly in their production in 15 minutes (column 2). High-productivity participants completed 1.5 times as many tasks as low-productivity participants in the production part (83.0 vs. 55.8, $p < 0.001$). Differences in effort may drive a large share of these differences. However, controlling for self-reported effort, one's productivity level still has predictive power for production, suggesting that ability in the task also played a role in the variance in production (see Appendix Table A.4.1).[10]

Productivity level	Absolute productivity	Production
Low	3.7	55.8
Medium	4.7	69.4
High	6.0	83.0

Table 3.2: Productivity and production by productivity level

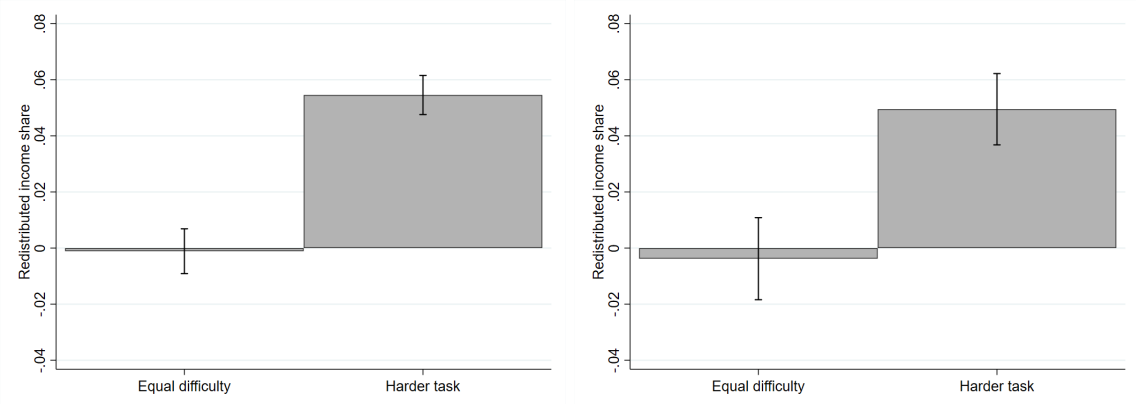
Note: Absolute productivity is the number of tasks participants could do on average per minute when asked to do ten tasks as fast as possible. Production is the number of tasks participants completed on average in 15 minutes in the incentivized production part. Productivity levels are determined by how fast participants solved the ten tasks when asked to work as fast as possible.

3.2 Redistribution stage

The paper's central question is whether people find performance-based inequality fair with a transparent inequality in opportunities or compensate disadvantaged participants in their redistributive decisions. Figures 3.1a and 3.1b show the average redistributive decisions in ED by spectators and stakeholders separately. The bars in the figures show the redistributed income share (allocated income share minus initial income share) to a randomly chosen participant in the case of equal

[10] See Appendix Tables A.5.1 and A.5.2 for the distributions of tasks per minute and production in both experiments.

difficulties within the pair and to the disadvantaged participant in the case of unequal difficulties.[11] Both spectators and stakeholders compensate the disadvantaged participant by redistributing a significant share of the total income to her: Subjects with harder tasks within a pair receive a 5.5 percentage points higher income than their production share from spectators and a five percentage points higher income from stakeholders. This compensation increases the disadvantaged participants' share in the total income from 39 percent to 44 percent in both groups. There is, therefore, a significant compensation for exogenous difficulties, though participants, on average, do not fully equalize the payoffs.



(a) Spectators (b) Stakeholders

Figure 3.1: Compensation for exogenous difficulties

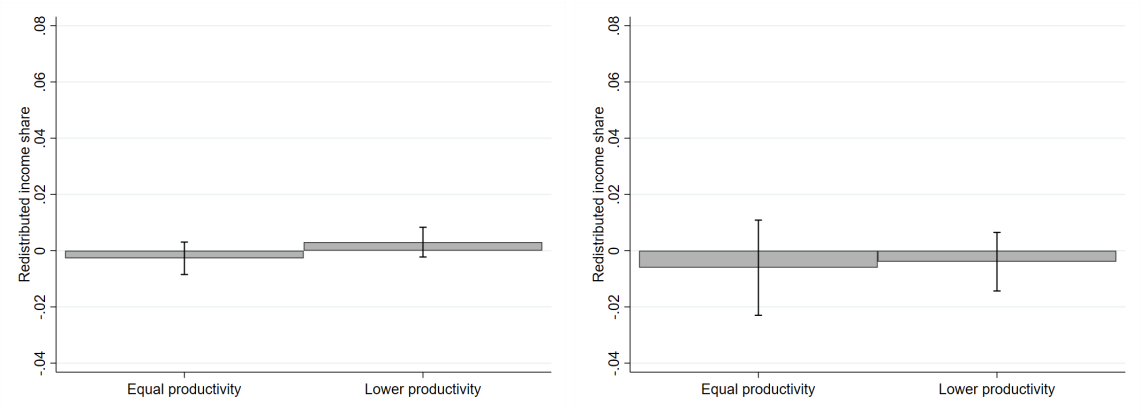
Note: Redistributive decisions in ED. The figures show the redistributed income share (allocated income share minus production share) to a randomly chosen participant in the pair in the case of equal difficulty levels and to the disadvantaged participant in the case of unequal difficulty levels. The spikes indicate 95 percent confidence intervals.

Figures 3.2a and 3.2b show the average redistributive decisions in PR. Here, there are no differences in exogenous difficulty controllable by the experimenter. However, participants still differ in their productivity in the same task, and, if being reminded about these differences, they might consider some compensation towards their less productive peers. Figures 3.2a and 3.2b suggest this is not the case: neither spectators nor stakeholders compensate the participant with lower productivity within the pair. The pre-redistribution income share of the less productive participants is 44 percent, which is exactly the share of income disadvantaged participants in ED receive from both spectators and stakeholders. In PR, the final income share is also 44 percent, suggesting neither stakeholders nor spectators find it fair to compensate less productive participants further.

In the next section, I explore the redistributive decisions in a reduced-form regression framework

[11] For stakeholders, the allocation decision shown can either be the allocation to self or to the other participant. Appendix Figure A.6.1b shows the allocations to self.

to see if the results are robust to different specifications. Then, I study stakeholder decisions in both ED and PR depending on advantaged or disadvantaged status to uncover heterogeneities in their decisions.



(a) Spectators (b) Stakeholders

Figure 3.2: Compensation for productivity differences

Note: Redistributive decisions in PR. The figures show the redistributed income share (allocated income share minus production share) to a randomly chosen participant in the pair in the case of equal productivity levels and to the disadvantaged participant in the case of unequal productivity levels. The spikes indicate 95 percent confidence intervals.

4 Reduced-form analysis

4.1 Compensation for exogenous difficulties

I first look at the decisions of spectators and stakeholders in ED. The specification below compares the redistributed income share (allocated income share minus production share) to the participant who had more difficult tasks within the pair to that of a randomly chosen participant in pairs with equal difficulty levels. Henceforth, I call the selected participant Participant 1 or P1 and the other participant P2.

$$r_{1,i,p} = \alpha_0 + \alpha_1(\theta_1 < \theta_2)_p + \alpha_2 \cdot x_{1,sh,p} + \beta X_i + \epsilon_{i,p}, \tag{1}$$

where $r_{1,i,p}$ is the share of income spectator or stakeholder i redistributes to P1. θ_j is the absolute difficulty (number of tasks per minute at Pj-s difficulty level) of participant j in the pair, so $\theta_1 < \theta_2$ means P1 had more difficult tasks than P2. $x_{1,sh,p}$ is the production share of P1 in pair p, while X_i are demographic characteristics of spectator or stakeholder i.

The first four columns of Table 4.1 show the results for spectators in ED. The first column only

adds a session fixed effect as control. Spectators, on average, redistribute 5.7 percentage points more to P1 if she had harder tasks. Column 2 controls for the production share of the participant to see if, comparing two participants with equal production shares, spectators still compensate the one with harder tasks. Controlling for the production share, spectators still redistribute 3.9 percentage points more to P1 than in the case of equal difficulties. Column 3 adds basic demographic controls of the spectator: age, gender, whether the spectator was born in the US, and whether she has US nationality.[12] Column 4 adds spectator fixed effects to control for any individual-specific allocation behavior that does not depend on the production share or relative difficulties. The coefficient on more difficult tasks remains large and significant in columns 3 and 4 as well.

The last four columns in Table 4.1 cover stakeholder decisions in ED. Column 5 shows that, on average, stakeholders also redistribute 5.2 percentage points more to the participant with more difficult tasks compared to the equal difficulties scenario. However, this result is not robust to controlling for the production share (column 6) of P1, demographics of the decision-making stakeholder (column 7) and stakeholder fixed effects (column 8). The redistribution is still positive but much lower and non-significant. This result suggests that there may be heterogeneities in how stakeholders treat unequal difficulties depending on whether they are advantaged or disadvantaged. I explore these heterogeneities in Section 4.1.1.

4.1.1 Self-serving redistribution by stakeholders in ED

Previous literature has shown that when uncertain whether luck – exogenous task difficulty – or effort determines success in performance, successful and unsuccessful participants attribute it to different factors and choose redistribution levels accordingly. (Deffains et al., 2016; Fehr and Vollmann, 2022). Table 4.2 shows that, even with full information about the sources of income, stakeholders with more and less difficult tasks treat inequality in exogenous difficulties differently and choose allocations that benefit them the most. Stakeholders in pairs where they are disadvantaged always redistribute more to themselves than in situations with equal task difficulties. In contrast, when advantaged, they do not redistribute less to themselves than in equal difficulty scenarios once we control for production share. Controlling for production share, disadvantaged stakeholders compensate themselves to a similar extent as spectators compensate them. It is the advantaged stakeholders who behave differently from spectators by ignoring unequal difficulties entirely.

[12]Student status and employment status were also available in the Prolific database. However, there was a larger share of missing values in these variables, as these data had expired for some participants by the time of the experiment. Appendix Tables A.7.1 and A.7.2 show that the results are robust to including only participants with complete demographic data.

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal difficulty level								
More difficult tasks	0.0570***	0.0393***	0.0406***	0.0446***	0.0524***	0.0132	0.0138	0.0135
	(0.0072)	(0.0064)	(0.0064)	(0.0074)	(0.0138)	(0.0170)	(0.0172)	(0.0160)
Constant	-0.0056	0.0743***	0.0825***	0.0764***	0.0151	0.1877***	0.2201***	0.1451***
	(0.0093)	(0.0172)	(0.0206)	(0.0134)	(0.0213)	(0.0473)	(0.0514)	(0.0394)
Observations	1210	1210	1210	1210	1250	1250	1250	1250
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.1: Spectator and stakeholder decisions in ED

Note: The outcome variable is the redistributed income share to P1 in a pair in ED by spectators (columns 1-4) and stakeholders (5-8). Columns 1 and 5 only control for whether P1 had more difficult tasks than P2 or they had equally difficult tasks and for session fixed effects. Columns 2-4 and 6-8 also control for P1's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, and whether she has US nationality. Columns 4 and 8 add spectator or stakeholder fixed effects.

The self-compensation in disadvantageous situations remains even when including participant fixed effects (column 4). This result suggests that the magnitude of self-compensation depends on the relative difficulty within the pair and not the absolute one. Indeed, as Appendix Table A.9.1 shows, stakeholders with hard tasks do not give themselves significantly more than those with medium or easy tasks once controlling for the production share. These results indicate that higher difficulties alone do not induce stakeholders to behave differently. What matters is the type of the situation: stakeholders with more difficult tasks take more when they have a justification – a disadvantaged position –, and stakeholders with relatively easier tasks keep more despite a transparent inequality in difficulty levels.

4.2 Compensation for productivity differences

Table 4.3 presents the results for spectator and stakeholder decisions in PR. We saw in Figures 3.2a and 3.2b that neither spectators nor stakeholders find it fair to compensate participants with lower productivity on average. The first four columns of Table 4.3 show that for spectators, this null result is robust to controlling for the production share of the participant (column 2), demographic variables of the spectator (column 3) or spectator fixed effects (column 4). The last four

	Redistributed income share to self			
	(1)	(2)	(3)	(4)
Situation, ref. equally difficult tasks				
Stakeholder had harder tasks	0.0828***	0.0476**	0.0454**	0.0252***
	(0.0206)	(0.0201)	(0.0194)	(0.0082)
Stakeholder had easier tasks	-0.0214*	0.0154	0.0138	0.0005
	(0.0129)	(0.0161)	(0.0160)	(0.0086)
Constant	0.0300	0.1961***	0.2408***	0.2104***
	(0.0213)	(0.0371)	(0.0702)	(0.0251)
Observations	1250	1250	1250	1250
Share in total production	no	yes	yes	yes
Participant fixed effect	no	no	no	yes
Demographic controls	no	no	yes	no
Session fixed effect	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.2: Stakeholders' decisions in ED by relative difficulty within the pair

Note: The outcome variable is the income share stakeholders in ED redistribute to themselves. Column 1 controls for whether the stakeholder had easier or harder tasks than her partner in the pair (the baseline is equally difficult tasks). Columns 2-4 also control for the production share of the stakeholder. Column 3 includes demographic controls: age, gender, whether the stakeholder was born in the US, and whether she has US nationality. Column 4 adds stakeholder fixed effects.

columns show the results for stakeholders. Like spectators, stakeholders do not redistribute income to participants with lower productivity.[13] However, after controlling for production share (column 6), demographics (column 7), and stakeholder fixed effects (column 8), the coefficient on lower productivity becomes large and negative, though insignificant. Instead of compensating for lower productivity, stakeholders seem even to punish disadvantaged participants, though the lack of significance suggests heterogeneities behind the treatment of productivity differences. Section 4.2.1 explores heterogeneities in stakeholders' decisions in PR by their relative productivity within the pair, and Section 4.2.2 looks at heterogeneities in spectators' decisions in PR depending on their general fairness views.

[13] Appendix Section A.7 presents four further robustness checks for both ED and PR: using the *share of the original income difference redistributed* as an outcome, only including *participants at the extremes*, so pairs with hard and easy tasks or high and low productivity, using the share of income redistributed *to the participant with lower production* instead of a randomly chosen participant, and using the *change of inequality* (final income Gini minus production Gini) as the outcome. Though some of these outcomes measure different things from the main outcome, the results all lead to the same conclusion: Participants compensate the ones with more exogenous difficulties but do not compensate the ones with lower productivity.

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal productivity level								
Lower productivity	0.0059	-0.0004	0.0001	0.0016	0.0022	-0.0287	-0.0296	-0.0276
	(0.0050)	(0.0046)	(0.0044)	(0.0050)	(0.0146)	(0.0180)	(0.0179)	(0.0213)
Constant	-0.0058	0.0461*	0.0135	0.0422*	-0.0018	0.2540**	0.2010**	0.2140**
	(0.0099)	(0.0274)	(0.0331)	(0.0229)	(0.0146)	(0.0985)	(0.0991)	(0.0922)
Observations	1170	1170	1170	1170	1210	1210	1210	1210
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.3: Spectator and stakeholder decisions in PR

Note: The outcome variable is the redistributed income share to P1 in a pair in PR by spectators (columns 1-4) and stakeholders (5-8). Columns 1 and 5 only control for whether P1 had lower productivity than P2 or they had an equal productivity level and for session fixed effects. Columns 2-4 and 6-8 also control for P1's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, and whether she has US nationality. Columns 4 and 8 add spectator or stakeholder fixed effects.

4.2.1 Self-serving redistribution by stakeholders in PR

Table 4.4 explores stakeholders' decisions depending on their relative productivity in the pair in PR. Unlike more difficult tasks, lower productivity within the pair did not serve as a reason for stakeholders to compensate themselves. In contrast, when controlling for production shares, stakeholders with higher productivity redistribute significantly more to themselves than stakeholders in other situations. This difference becomes insignificant when including participant fixed effects, suggesting that participants classified as high productivity might behave differently from participants with low productivity in this task. Indeed, as Appendix Table A.9.2 shows, the asymmetric treatment of situations with unequal productivity comes exclusively from high-productivity stakeholders, who redistribute 8-9 percentage points more to themselves than other stakeholders.

High-productivity participants may be inherently more selfish than lower-productivity ones. However, it is also possible that classification as high-productivity[14] induced more selfish choices. Since the cutoffs between productivity levels differ slightly across the three sessions, we can study whether participants with similar tasks per minute near the cutoffs between medium and high

[14]In the experiment, productivity was called 'ability'.

productivity levels redistribute differently, depending on how I classified them.[15] Running the same regression on this very small sample (25 participants), the coefficient on high productivity is still large and significant (0.064, $p < 0.01$ with non-clustered standard errors). This suggests that classification to the high-productivity group indeed induced selfish choices, though I cannot exclude that high-productivity participants are generally more selfish as well.

	Redistributed income share to self			
	(1)	(2)	(3)	(4)
Situation, ref. equal productivity				
Stakeholder had lower productivity	-0.0043	-0.0323	-0.0279	0.0056
	(0.0184)	(0.0233)	(0.0214)	(0.0074)
Stakeholder had higher productivity	0.0018	0.0326**	0.0298**	0.0120
	(0.0155)	(0.0153)	(0.0143)	(0.0096)
Constant	0.0424*	0.2990***	0.4112***	0.1407***
	(0.0253)	(0.0955)	(0.1015)	(0.0265)
Observations	1210	1210	1210	1210
Share in total production	no	yes	yes	yes
Participant fixed effect	no	no	no	yes
Demographic controls	no	no	yes	no
Session fixed effect	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.4: Stakeholders' decisions by own relative productivity

Note: The outcome variable is the income share stakeholders in PR redistribute to themselves. Column 1 controls for whether the stakeholder had lower or higher productivity than her partner in the pair (the baseline is equal productivity). Columns 2-4 also control for the production share of the stakeholder. Column 3 includes demographic controls: age, gender, whether the stakeholder was born in the US, and whether she has US nationality. Column 4 adds stakeholder fixed effects.

4.2.2 Heterogeneous treatment of productivity by spectators' fairness views

Participants may differ in how they think about productivity: some might think it is more related to inherent talent and ability and, therefore, fixed, so one should not be held responsible for it. Others may believe that it is a result of current and past efforts, and as such, it is malleable and entirely under participants' control. While the former participants might want to compensate those with lower productivity in the pair, the latter ones would not want to. Participants completed a survey at the end of the experiment to elicit their views on fairness and the malleability of talent and productivity. They had to rate on a zero to ten scale how strongly they agreed with statements.

[15] This comparison was not pre-registered.

The first statements ask how fair they find different sources of inequality (talent, effort and luck, from Cappelen et al., 2019). Two additional questions are proxies for how malleable people think talent and productivity are (growth mindset questions based on Dweck, 2006). In this section, I look at the redistributive decisions of spectators in PR depending on their level of agreement with the following three statements:

1. "I find it fair if talent determines income inequality."

2. "The harder I work on something, the better I will be at it."

3. "Talent in an area is something about me that I cannot change very much."[16]

Appendix Figures A.8.2, A.8.4 and A.8.5 show the distribution of the ratings of participants. On average, participants find it relatively fair if talent determines income inequality (mean = 6.76, median = 7). They find talent somewhat less fair than hard work as a determinant of income inequality (mean = 7.38, median = 8) and much fairer than luck (mean = 2.68, median = 2), consistent with the findings of Cappelen et al. (2022). Most participants agree that the harder they work on something, the better they become at it (mean = 8.1, median = 8). At the same time, the opinions vary greatly about talent being something that cannot change (mean = 4.63, median = 5).[17] My hypotheses were that people who find it rather unfair if talent determines income inequality will compensate the person with lower productivity, as part of productivity is how talented the person is in the task. Also, those who think hard work can make them better at something might regard productivity as a result of past and current efforts and not compensate for it. In contrast, those who think talent cannot be changed would compensate for low productivity because they might believe productivity is not under one's control.

Table 4.5 presents spectators' redistribution towards the lower-productivity participant depending on views about talent and productivity. There are indeed differences in the decisions by different views. Column 1 shows the average (non-)compensation for low productivity among spectators. According to Column 2, however, those who disagree with talent being a fair source of income inequality redistribute a 2.5 percentage points higher income to the lower-productivity participant. Each one-point increase in agreement decreases the compensation by 0.3 percentage points. Column

[16]The last two questions were not pre-registered, and I only added them to the second and third sessions, so this part of the analysis is rather exploratory.

[17]The distributions of spectators' answers are similar across productivity levels (see Appendix figures A.8.6-A.8.8). If anything, high-productivity spectators seem to agree more, on average, with talent being a fair source of inequality than medium-productivity ones (6.88 vs. 5.51, $p = .049$). The difference between low- and high-productivity spectators' average opinions is insignificant (6.44 vs. 6.88, $p = .441$).

3 shows that the more a spectator agrees that hard work makes her better at something, the less redistribution she chooses on average. This behavior aligns with the view that productivity results from effort, so performance-based income inequality is fair. However, there is no difference in the choices depending on whether productivity levels within the pair are equal or unequal. Finally, the more spectators agree with talent being malleable (Column 4), the more they give to the lower-productivity participant, in contrast to what I expected. However, this relationship is weak: only significant at the ten percent level.[18]

[18] Appendix Table A.9.3 shows the compensation for lower productivity by the level of agreement with the other two fairness questions (hard work and luck). Participants who disagree entirely with luck being a fair source of inequality redistribute 1.26 percentage points more to the participant with lower productivity, and the redistribution decreases with increasing agreement (though the interaction is not significant). There is no relationship between the fairness views on hard work and compensation for low productivity.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal productivity levels				
Lower productivity	0.0059	0.0249**	-0.0364	-0.0156
	(0.0050)	(0.0125)	(0.0357)	(0.0110)
Finds fair if talent determines income inequality		0.0003		
		(0.0011)		
Lower productivity × Finds fair if talent determines income inequality		-0.0030**		
		(0.0014)		
Hard work makes me better at something			-0.0041**	
			(0.0021)	
Lower productivity × Hard work makes me better at something			0.0045	
			(0.0040)	
Talent in an area is something I can change				-0.0013
				(0.0010)
Lower productivity × Talent in an area is something I can change				0.0030*
				(0.0017)
Constant	-0.0058	-0.0080	0.0363*	0.0085
	(0.0099)	(0.0119)	(0.0196)	(0.0082)
Observations	1170	1170	950	950
Participant fixed effect	no	no	no	no
Demographic controls	no	no	no	no
Session fixed effect	yes	yes	yes	yes

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.5: Spectators' decisions by views on talent and productivity

Note: The outcome variable is the redistributed income share to P1 by spectators in PR. Column 1 shows the average redistribution. Column 2 adds agreement with "I find it fair if talent determines income inequality." Column 3 adds agreement with "The harder I work on something, the better I will be at it." Column 4 adds agreement with "Talent in an area is something about me I *can* change." The scale is reversed here compared to the original question for an easier interpretation. Agreement with the statements is on a 0-10 scale. The last two questions were only added to Sessions 2 and 3, hence the fewer observations in the last two columns.

5 Structural analysis

We saw that spectators and stakeholders, on average, compensate in their decisions for more difficult tasks but not for lower productivity. However, this average behavior masks very different individual preferences. The literature on fairness and inequality shows that people hold heterogeneous fairness views that they consistently act on – at least as spectators – in their choices (see a review in Cappelen et al., 2020a). In this section, I structurally estimate the shares of different fairness views among the participants.

I use the model of fairness preferences by Almås et al. (2010), applied to my setting, for the structural analysis. According to the model, a spectator with fairness preference type k finds the following allocation of joint income Y fair:

$$t_1^k(\mathbf{x},\, \theta) = \frac{f^k(x_1, \theta_1)}{f^k(x_1, \theta_1) + f^k(x_2, \theta_2)} Y(\mathbf{x}(\theta)) \tag{2}$$

Here $t_1^k(\mathbf{x},\, \theta)$ is the number of tokens a spectator with fairness preference type k finds fair to give to Participant 1 in the pair – in my analysis, a randomly selected participant of the pair.[19] $f^k(x_i, \theta_i)$ is a function that shows how a spectator with fairness preference k values the contribution of participant i. x_i is the production level of participant i, and θ_i is the average tasks per minute at the difficulty or productivity level of participant i.

The most common fairness views in the literature that can be distinguished in my sample are the following:

- *Performance-meritocratic:* does not redistribute performance-based inequality.[20]

$$t_1^{PM}(\mathbf{x},\, \theta) = \frac{x_1}{x_1 + x_2} Y \tag{3}$$

- *Egalitarian:* always redistributes to equality.

$$t_1^{E}(\mathbf{x},\, \theta) = \frac{1}{2} Y \tag{4}$$

Participants with the performance-meritocratic fairness view find inequalities based on performance fair, so they leave the performance-based inequality unchanged. Participants with the egalitarian

[19] Alternatively to a random participant from the pair, I could have used the share given to the participant with lower initial income (as in e.g., Almås et al., 2020). Since the allocations within a pair are symmetric, we can choose either definition without loss of generality.

[20] This view is usually called the meritocratic view, but I want to distinguish it from the compensating view, which is also partly meritocratic.

fairness view find any sources of inequality unfair, so they will redistribute to equality in all situations. A third common fairness view is the *libertarian* view, which finds all inequalities, even those coming from pure luck, fair. In the current design, since there is no pure luck component in the income, people with this view make identical decisions to those with the performance-meritocratic view. I made this simplification because I was interested in deviations from the performance-meritocratic allocations.

To test if there are people who consistently follow a different rule by compensating for harder tasks or lower productivity, I introduce a fourth (in the sample, third) fairness view:

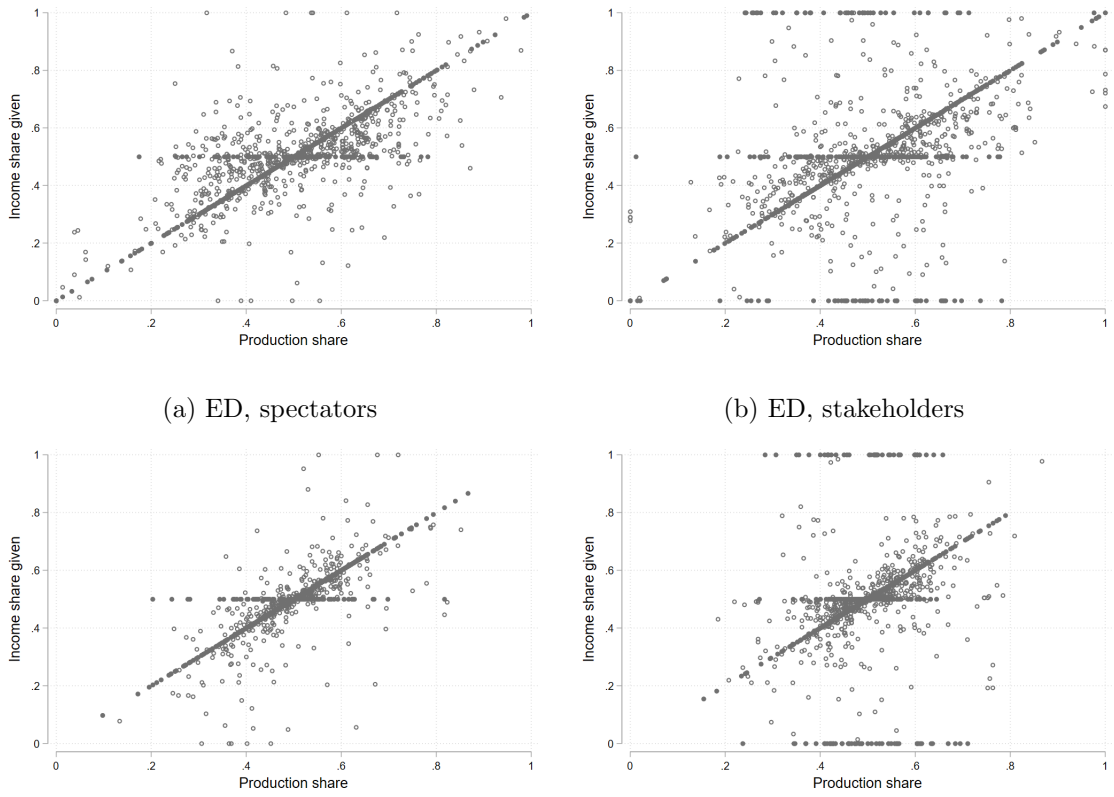
- *Compensating meritocratic:* Compensates for exogenous difficulty or productivity differences.

$$t_1^{CM}(\mathbf{x},\, \theta) = \frac{x_1/\theta_1}{x_1/\theta_1 + x_2/\theta_2} Y \tag{5}$$

People with this fairness view want to reward performance but also want to compensate those who had a disadvantage in performance. I capture such preferences by assuming that the fair allocation is based on the production weighted by the person's absolute difficulty or productivity (x_i/θ_i). This assumption is a starting point for separating compensation from purely performance-meritocratic decisions, but I also test other functional forms in Appendix Section A.10.3.

If we look at redistributive decisions separately, they indeed show significant heterogeneity. Figure 5.1 presents the decisions of spectators and stakeholders in each experiment. The decisions are plotted as the share of the total income allocated to a randomly chosen participant in the pair against the same participant's share in the total production of the pair. In the spectator figures, we can clearly distinguish two types of allocations: the egalitarian ones that equalize the income between the two participants and the performance-meritocratic ones that distribute the income proportional to the production share. A third type of decision is also salient in the stakeholder figures: distributing all or none of the total income to the random participant. Since the randomly chosen participant is either the decision-maker stakeholder or her counterpart, these decisions are, in fact, the ones where the stakeholder allocated all tokens to herself (see Appendix Figures A.10.1a and A.10.1b for decisions expressed as a share of income given to self).

However, a significant portion of decisions is outside these clearly defined shares, which, in the stakeholder figures, may only indicate partly selfish stakeholders giving slightly more to themselves than half or than their production share. However, in the spectator figures, these allocations suggest that some participants might follow rules other than the egalitarian or the performance-meritocratic ones. It is also visible that the allocations in PR are less spread out and less different from the performance-meritocratic, egalitarian and entirely selfish allocations than in ED.



(a) ED, spectators

(b) ED, stakeholders

(c) PR, spectators

(d) PR, stakeholders

Figure 5.1: Production share and allocated income share

Note: The figures show the share of tokens allocated to a randomly chosen participant in the pair by spectators and stakeholders, plotted against the share of the same participant in the total production of the pair. The upper two figures show spectator and stakeholder decisions in ED and the lower two in PR. One point indicates one decision. Filled circles indicate the decision types previously identified in the literature: performance-meritocratic, egalitarian and purely selfish.

I run structural estimations separately for the two experiments. In ED, I can distinguish between performance-meritocratic, egalitarian and difficulty-compensating fairness views, where the latter refers to spectators and stakeholders who want to compensate the participant with exogenously more difficult tasks. In ED, however, I cannot observe those who would also like to compensate for low productivity. These participants, if there are any, are most likely to be included in the difficulty-compensating group, as we can expect that if they find inequality in productivity unfair, they must also find inequality in exogenous difficulty unfair. In PR, I can distinguish between performance-meritocratic, egalitarian and productivity-compensating fairness views. Here, those who would compensate participants for exogenous difficulties but not for productivity differences behave similarly to participants with a performance-meritocratic view and are classified into this view. Those who would compensate for both exogenous difficulties and low productivity, if any,

are classified as productivity-compensating meritocrats. I present the results of the structural estimation in the following section with the above-mentioned limitations in mind.

5.1 Results

Tables 5.1a and 5.1b show the results of the structural estimation for ED. Even with transparent inequalities in task difficulty, 55 percent of spectators and stakeholders hold a performance-meritocratic view and leave the performance-based inequality unchanged.[21] 15 percent of spectators and 21 percent of stakeholders hold the egalitarian view and always redistribute to equality. However, a large share, 29 percent of the spectators and 25 percent of the stakeholders can be classified as difficulty-compensating meritocrats, who compensate the participant with more difficult tasks.[22]

	Estimate	Std. error
σ	112.813	2.284
λ_{PM}	0.553	0.047
λ_E	0.152	0.034
λ_{DCM}	0.294	0.046

(a) Spectators

	Estimate	Std. error
σ	220.357	4.445
β	15.816	1.279
λ_{PM}	0.546	0.069
λ_E	0.206	0.049
λ_{DCM}	0.248	0.073

(b) Stakeholders

Table 5.1: Structural estimation results in ED

Note: Results in the Exogenous difficulty experiment. σ is the standard deviation of the response error, λ_{PM} is the estimated share of performance meritocrats, λ_E is the share of egalitarians and λ_{DCM} are the shares of difficulty-compensating meritocrats. β is the average weight stakeholders put on fairness compared to their monetary gain. Parameters estimated in R using the `stats4` package. The parameters are estimated with unconstrained optimization and transformed within the likelihood function. Standard errors are calculated using the delta method.

Tables 5.2a and 5.2b show the results for PR. The structural results support the reduced-form ones by showing that 87 percent of spectators and 81 percent of stakeholders accept performance-based inequality. 13 percent of spectators and 14 percent of stakeholders hold egalitarian views, and a precisely estimated zero percent of spectators and a non-significant 5 percent of stakeholders are compensating for productivity differences. Since productivity differences alone induce lower variance in production than the exogenous task difficulty, there was less scope for compensating for low productivity without fully equalizing the incomes. Therefore, making productivity differences

[21] Stakeholders have selfishness concerns in their choices, so performance-meritocratic stakeholders do redistribute some income to themselves on average, but they do not take more or less depending on the relative difficulties in the pair.

[22] The tables also show the estimated standard deviation of the response error of spectators, σ. To put the response error in context, the average tokens earned were around 720 in ED and 700 in PR.

salient could have induced more egalitarian decisions among the subjects. However, this was not the case: the shares of participants with the egalitarian view are similar across the two experiments.

	Estimate	Std. error
σ	82.905	1.716
λ_{PM}	0.871	0.032
λ_E	0.129	0.032
λ_{PCM}	0.000	0.004

(a) Spectators

	Estimate	Std. error
σ	193.13	3.941
β	22.196	2.041
λ_{PM}	0.807	0.052
λ_E	0.139	0.047
λ_{PCM}	0.053	0.036

(b) Stakeholders

Table 5.2: Structural estimation results in PR

Note: Results in the Productivity experiment. σ is the standard deviation of the response error, λ_{PM} is the estimated share of performance meritocrats, λ_E is the share of egalitarians and λ_{PCM} are the shares of productivity-compensating meritocrats. β is the average weight stakeholders put on fairness compared to their monetary gain. Parameters estimated in R using the `stats4` package. The parameters are estimated with unconstrained optimization and transformed within the likelihood function. Standard errors are calculated using the delta method.

The parameter β shows stakeholders' average weight on fairness compared to their monetary gain. On average, they place a considerable weight on fairness. However, 7 percent of the stakeholders in ED and 6.5 percent in PR took all the money in at least eight of their ten decisions. It is, therefore, impossible to categorize them into any fairness type. Appendix Tables A.10.3a and A.10.3b show the estimates excluding these participants. In this not entirely selfish sample, the standard deviation of the response error is much smaller in both experiments, closer to the spectator estimates. The estimated share of difficulty-compensating meritocrats is slightly lower, 18 percent, in line with the finding that only disadvantaged stakeholders compensated themselves. The share of performance meritocrats is 60 percent and of egalitarians 17-23 percent. The share of productivity-compensating meritocrats is virtually zero.

These results are consistent with the shares found in the literature while also identifying the new, difficulty-compensating meritocratic types. Andre (2024), studying redistribution among workers with unequal incentives, finds in a sample representative to the US population 37 percent actual choice meritocrats, 23 percent libertarians, 14 percent egalitarians and 26 percent comparable choice meritocrats. The latter group redistributes income proportionately to participants' counterfactual production with equal incentives. In contrast, actual choice meritocrats leave the performance-based inequality unchanged no matter what the workers would have done with equal incentives. The share of actual choice meritocrats and libertarians together is roughly the same as the estimated share of performance meritocrats in my sample. This is consistent with the fact that performance meritocrats

and libertarians make identical decisions in my setting. The shares of comparable choice meritocrats in Andre (2024) and difficulty-compensating meritocrats in my sample are also similar. Both groups aim to compensate people for factors that affect their performance but are outside their control. The estimated shares are also consistent with those found for the US sample in Almås et al. (2020).

6 Conclusion

In an online experiment with 500 participants from the United States, I studied if people redistribute performance-based income in situations with transparent inequality in exogenous difficulties. Then, moving further, I asked if they redistribute performance-based income without exogenously imposed inequality in difficulties but with more information about differences in participants' productivity. These differences could stem from their ability in the task or exerted effort. I found that both spectators and stakeholders compensated those with exogenously harder tasks, however, productivity differences did not induce any compensation. There were heterogeneities in stakeholders' decisions depending on whether they were advantaged or disadvantaged: those with harder tasks compensated themselves, while those with easier tasks did not compensate them and behaved as if performance was only determined by hard work. In contrast, stakeholders with high productivity redistributed even more to themselves and behaved more selfishly than other stakeholders, while low productivity did not justify taking more from the joint income.

Although the core idea of meritocracy is that people should not be held responsible for factors outside their control, only for their choices, these are often not clearly separable. Circumstances influence choices or even limit them – as in the experiment, participants with longer tasks could not choose to do as many tasks as participants with shorter tasks. Andre (2024) finds that even though circumstances influence choices, spectators disregard unequal circumstances and hold the workers fully responsible for their choices. My results show that when circumstances so transparently limit choices, a large share of people realize their effect on outcomes and redistribute accordingly. However, participants did not think about productivity differences the same way. This could stem from either thinking that productivity mainly depends on effort or from accepting that ability in the task also plays a role, but thinking that it is so inherent to the person that we should not compensate for differences in it.

These results have important implications. When the person deciding about the income distribution is not one of the income recipients, such as a teacher rewarding students or a manager rewarding workers, learning more about external difficulties might help them make more aligned decisions with what they find fair. Without this information, they can only base their choices on

observed performance, which is heavily influenced by external factors. However, if students or workers had to decide on their own reward, those with unequal difficulties or productivity would make conflicting decisions, even with similar fairness views and complete information about pre-existing inequalities.

The results of this paper lead to various potential directions for further research. First, it is worth exploring tasks in which productivity depends more on luck – such as a task involving sports, musical talent, or a specific mathematical ability – and see if people find it fair to compensate for productivity differences in such tasks. Second, people's views on external difficulties and productivity might be intertwined. For example, people may prefer more redistribution towards someone with disadvantageous circumstances if she exhibits high talent in something simultaneously. Furthermore, sometimes, external circumstances are less transparent than in my experiment. It would be interesting to see how spectators redistribute with uncertainty about the role of difficulties and effort in performance. Cappelen et al. (2022) find among US and Norwegian participants that in situations where earnings could result from pure luck or performance, those with the meritocratic view make more egalitarian redistribution decisions. Since I could identify a share of participants who compensate for external difficulties, it would be worth studying if they make more meritocratic or more egalitarian decisions when the role of difficulties versus effort is uncertain. Finally, people in the United States hold more libertarian and less egalitarian views than Norwegians (Almås et al., 2020). These views align with higher redistribution in Norway than in the US. It would be interesting to look at whether the shares of difficulty-compensating and productivity-compensating meritocrats are also higher in countries with higher redistribution levels than I found among US participants.

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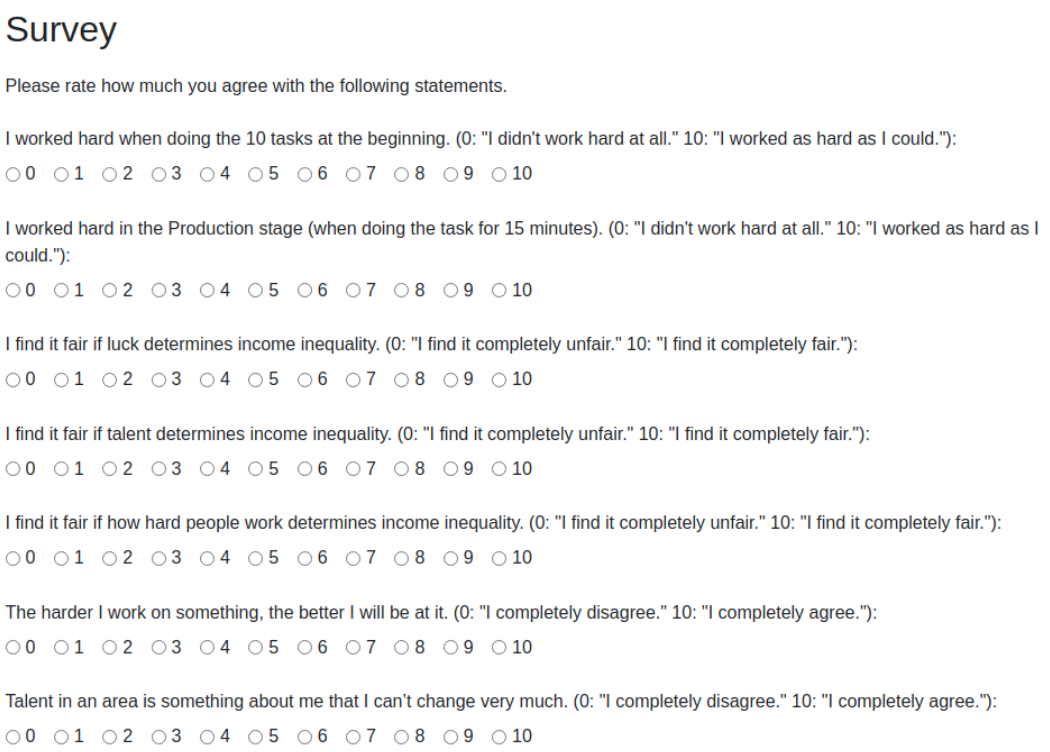
A Online Appendix

A.1 Survey



Survey

Please rate how much you agree with the following statements.

I worked hard when doing the 10 tasks at the beginning. (0: "I didn't work hard at all." 10: "I worked as hard as I could."):

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10

I worked hard in the Production stage (when doing the task for 15 minutes). (0: "I didn't work hard at all." 10: "I worked as hard as I could."):

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10

I find it fair if luck determines income inequality. (0: "I find it completely unfair." 10: "I find it completely fair."):

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10

I find it fair if talent determines income inequality. (0: "I find it completely unfair." 10: "I find it completely fair."):

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10

I find it fair if how hard people work determines income inequality. (0: "I find it completely unfair." 10: "I find it completely fair."):

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10

The harder I work on something, the better I will be at it. (0: "I completely disagree." 10: "I completely agree."):

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10

Talent in an area is something about me that I can't change very much. (0: "I completely disagree." 10: "I completely agree."):

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8 ○ 9 ○ 10

Figure A.1.1: Screenshot of the survey at the end of the experiment

A.2 Participants

The participants are not a representative sample of the US population, so I present their demographic characteristics compared to the US population in Table A.2.1. The average age in the sample is 35 years, and the median is 33, which is lower than the median age in the US, 38.5. The sample has a larger share of females than the population (56 percent vs. 51 percent). There is a higher share of immigrants (80 percent born in the US vs. 85 percent in the population). There are more students among the participants than in the US population (31 percent vs. 10 percent among 18-year-olds or above). The share of employed people is similar to the population (62 vs. 61 percent), but the shares of unemployed and out of the labor force are different (16 vs. 3 percent and 20 vs. 36 percent, respectively).

	Mean	SD	N	US Mean
Age	34.93	(13.10)	585	38.50*
Female	0.56	(0.50)	589	0.51
Born in the US	0.80	(0.40)	582	0.85
Currently studying	0.31	(0.46)	484	0.10
Employment status				
Employed (part-time or full-time) or about to start employment	0.62	(0.49)	458	0.61
Unemployed	0.16	(0.37)	458	0.03
Not in labor force	0.20	(0.40)	458	0.36

Table A.2.1: Demographic characteristics of participants

Note: Demographic characteristics of the participants. Participants give these data and other background information to Prolific upon registration to the platform. The data presented here were available for the researcher to download. Some participants revoked their consent for the researcher to see the data, or the data expired by the time of the experiment, hence the varying number of observations across the rows. Source of the US population statistics: United States Census data, 2019 (https://data.census.gov/cedsci/). The labor market status data from the Census covers people aged 16 or above, while in the sample, the minimum age is 18. *Median age is presented in the US population instead of the mean age.

A.3 Attrition

	Did not come back	Did not come back
Low tasks/minute	-0.0410	0.0188
	(0.0535)	(0.0627)
High tasks/minute	-0.0488	-0.0492
	(0.0535)	(0.0603)
Exogenous difficulty	-0.0468	-0.0375
experiment	(0.0519)	(0.0590)
Low tasks/minute ×	-0.0200	-0.0707
Exogenous difficulty experiment	(0.0744)	(0.0862)
High tasks/minute ×	0.0953	0.0773
Exogenous difficulty experiment	(0.0736)	(0.0847)
Production	-0.00121	-0.000728
	(0.000756)	(0.000968)
Age		-0.000461
		(0.00165)
Female		0.00901
		(0.0380)
Currently studying		-0.00319
		(0.0445)
Employment status		
Full-Time		-0.140
		(0.122)
Not in paid work (e.g.		-0.201
homemaker', 'retired or disabled)		(0.130)
Other		-0.191
		(0.132)
Part-Time		-0.138
		(0.124)
Unemployed (and job seeking)		-0.147
		(0.126)
Constant	0.198***	0.328***
	(0.0373)	(0.127)
Observations	594	451

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.3.1: Attrition from the production to the redistribution stage

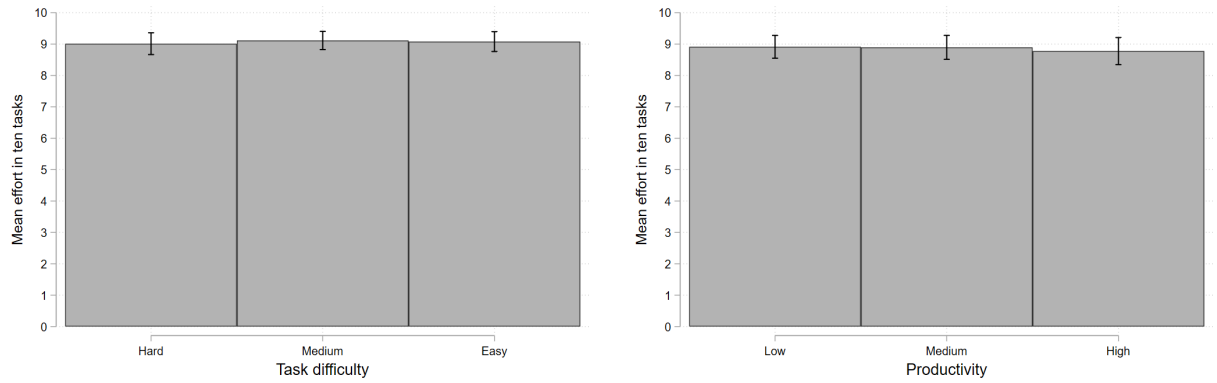
Note: The table shows the effect of features of the experiment and own performance on attrition from the production to the redistribution stage. The baseline category in the groups is the medium tasks per minute group in the Productivity experiment. Age and production are demeaned. The second column controls for demographic variables. The number of observations is lower in the second column because demographic data was not available for all participants.

A.4 Productivity measure

In the Productivity experiment, productivity is measured by how fast people do ten tasks when asked to do them as fast as possible. If we can believe that participants really do it as fast as possible and exert maximal effort, then the variation in how fast they do the ten tasks (and consequently, the variation in their absolute productivity – the number of tasks they can do within a minute) only stem from their ability in the task. This ability can mean how fast they can type, how well they can remember numbers, or how easily they can find patterns on the screen. However, since this measure was not incentivized (unlike the similar measure in Schildberg-Hörisch et al., 2023), it is possible that not all participants exerted maximal effort, even though they were asked to do so. The productivity measure is, therefore, a mixture of ability in the task and effort exerted in this part of the experiment. In this section, I study heterogeneity in productivity and show that it is likely that both ability and effort played a role.

A.4.1 Self-reported effort level

At the end of the experiment, I asked participants to rate on a zero to ten scale how hard they worked on each part (ten tasks as fast as possible and working for 15 minutes) of the production stage. Figure A.4.1 shows the average self-reported effort levels exerted in the ten tasks in ED and PR. The mean effort level in both experiments is around 9 out of 10, and it does not differ significantly by difficulty and productivity level. Based on these figures, participants classified as low-productivity exerted the same level of effort on average as participants classified as high-productivity.



(a) Exogenous difficulty experiment

(b) Productivity experiment

Figure A.4.1: Mean self-reported effort in ten tasks

Note: The figures show the means of the self-reported effort levels of participants when doing ten asks as fast as they can in ED by difficulty level and in PR by productivity level. The spikes show 95 percent confidence intervals.

Table A.4.1 also suggests that productivity classification and effort are not perfectly correlated. The outcome variables are production within 15 minutes in ED (column 1) and in PR (column 2). Both regressions control for level classification (hard, medium, and easy tasks or low, medium, and high productivity) and self-reported effort in the ten tasks and production parts. The participants' difficulty or productivity levels significantly affect production, but self-reported effort in the production part also has a highly significant explanatory power. Effort in the ten tasks part correlates negatively with production, but the relationship is insignificant in ED and only marginally significant in PR.

	Exogenous difficulty experiment	Productivity experiment
	Production	Production
Low tasks/minute	-20.55***	-13.06***
	(3.369)	(2.028)
High tasks/minute	27.39***	14.26***
	(3.283)	(2.016)
Worked hard on production	5.019***	4.285***
	(1.185)	(0.589)
Worked hard on 10 tasks	-1.056	-1.214*
	(1.161)	(0.551)
Constant	68.73***	69.80***
	(2.331)	(1.455)
Observations	257	243

Standard errors in parentheses

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

Table A.4.1: Production by difficulty/productivity level and self-reported effort

Note: The table shows the effect of own difficulty/productivity level on production, including controls for self-reported effort in both parts. Effort level is measured on a 0 to 10 scale. Both effort variables are demeaned. Low tasks/minute refers to the high difficulty (in ED) and the low productivity (in PR) group, while high tasks/minute refers to the low difficulty (in ED) and high productivity (in PR) group. The reference category in both columns is the medium difficulty/productivity level. The constant, therefore, shows the production at the medium levels with average effort in both parts.

A.4.2 Demographics

Table A.4.2 explores the relationship of demographic variables with the time taken for ten tasks (column 1), the self-reported effort in the ten tasks (column 2), the self-reported effort in production (column 3) and the production minus potential production (column 4). Here, potential production

is 15 times the absolute productivity of the participant (tasks per minute in the ten tasks part), i.e., the potential production of the participant assuming she exerts the same effort level in the production part as in the ten tasks part. Figure A.4.2 shows the distribution of this measure in PR. The fact that the distribution has a significant portion on the right from zero shows that a large share of participants exerted higher effort in the production than when asked to exert maximum effort. 49.6 percent of participants had a higher production than 15 times the absolute productivity, but only 20.5 percent were outside a 5-task range around 0. Furthermore, the mean of the production minus potential production is negative and significantly different from zero (-2.96, $p < 0.001$).

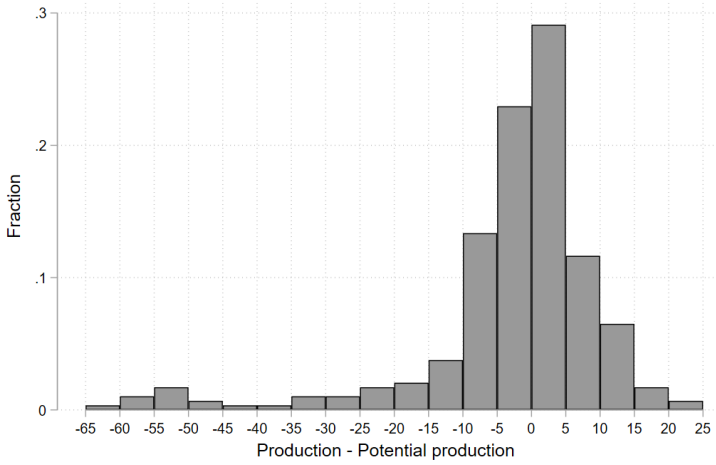


Figure A.4.2: Production minus potential production in PR

Note: The figure shows the distribution of participants' production minus potential production in PR, where potential production is 15 times the individual absolute productivity (tasks per minute done in the ten tasks part).

Column 1 of Table A.4.2 shows that subjects of the average age (35 years) who are full-time employed took about two minutes for the ten tasks, and each additional year of age added about half a second to the time taken. Part-time workers and currently unemployed participants also took more time by 19-20 seconds. There was no difference in the time taken by gender, student status, or whether someone was born in the US. Older people might have taken more time due to less practice in typing or worse vision, so even with high effort, they might be slower in this task than younger participants. However, unemployed and part-time employed participants might have taken more time due to lower typing skills, but it is also possible they exerted less effort on the ten tasks since there were no monetary incentives. As Column 2 shows, both unemployed and part-time employed participants reported lower effort levels than full-time employed ones in the ten tasks part, supporting the hypothesis that they might have cared less about this part due to the lack of monetary incentives. In contrast, Column 3 shows that they exerted a similar effort

level to the other participants during the production. Comparing their actual production to the potential production, unemployed and part-time-employed participants also sped up significantly. Therefore, it is highly likely that those participants who needed the payment from the experiment more exerted less effort in the ten tasks stage and more effort in the production stage.

	Time 10 tasks	Effort in 10tasks	Effort in production	Prod. - pot.prod.
Age	0.454**	0.0213	0.0105	-0.0261
	(0.192)	(0.0139)	(0.0123)	(0.0865)
Female	0.737	0.141	0.0685	0.718
	(4.207)	(0.304)	(0.269)	(1.894)
Currently studying	3.564	0.671*	-0.153	-6.233***
	(5.147)	(0.372)	(0.329)	(2.317)
Born in the US	0.0478	-0.437	-0.715**	-3.373
	(4.609)	(0.333)	(0.295)	(2.075)
Employment status, ref.: Full-time employed				
Due to start a new job within the next month	-12.21	-1.279	-1.048	-6.898
	(13.98)	(1.010)	(0.894)	(6.295)
Not in paid work (e.g. homemaker', 'retired or disabled)	8.874	0.0794	0.0752	4.951*
	(6.434)	(0.465)	(0.411)	(2.897)
Other	5.150	-0.265	0.337	4.926
	(7.993)	(0.577)	(0.511)	(3.599)
Part-Time	19.03***	-0.728*	-0.129	4.927*
	(5.716)	(0.413)	(0.365)	(2.574)
Unemployed (and job seeking)	19.91***	-0.950**	-0.263	6.319**
	(5.760)	(0.416)	(0.368)	(2.593)
Constant	118.1***	9.179***	9.613***	-0.788
	(4.864)	(0.351)	(0.311)	(2.190)
Observations	186	186	186	186

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.4.2: Exploring effort and productivity

Note: The table explores the role of effort in productivity in PR. The first column shows the correlation of individual characteristics with the time taken for the ten tasks (in seconds). The second column shows the correlates of characteristics with the self-reported effort level in the ten tasks part. The third column looks at the self-reported effort level in the production part. The dependent variable in the fourth column is the difference between actual and potential production, where potential production is 15 times the individual absolute productivity (tasks per minute done in the ten tasks part).

Unfortunately, I do not know how participants interpreted the productivity information; I can only observe their redistributive decisions. To check if unemployed and part-time employed participants made different decisions from other participants, I split the sample in PR into participants with and without full-time employment. Table A.4.3 shows the results of this comparison.[23] There

[23]The full-time employed category includes those with full-time employment and those due to start a new job within

is no difference between the redistribution choices of employed and non-employed participants: neither group compensates for low productivity. Employment status is missing for 25 percent of the sample, so I also compare the results to participants' decisions with missing employment data. Like participants with available employment data, these participants do not compensate for low productivity either. In conclusion, participants who made less effort in the ten tasks part than others do not make different decisions from those who exerted high effort; however, unfortunately, we do not know more about the reasons behind their lack of compensation.

	Redistributed income share		
	(1)	(2)	(3)
	Employed	Non-employed	Missing data
Situation, ref. equal difficulty levels			
Lower productivity	-0.0012	0.0082	0.0107
	(0.0070)	(0.0060)	(0.0112)
Constant	0.0138	-0.0145**	-0.0085
	(0.0097)	(0.0067)	(0.0270)
Observations	430	540	220
Participant fixed effect	no	no	no
Demographic controls	no	no	no
Session fixed effect	yes	yes	yes

Standard errors in parentheses.

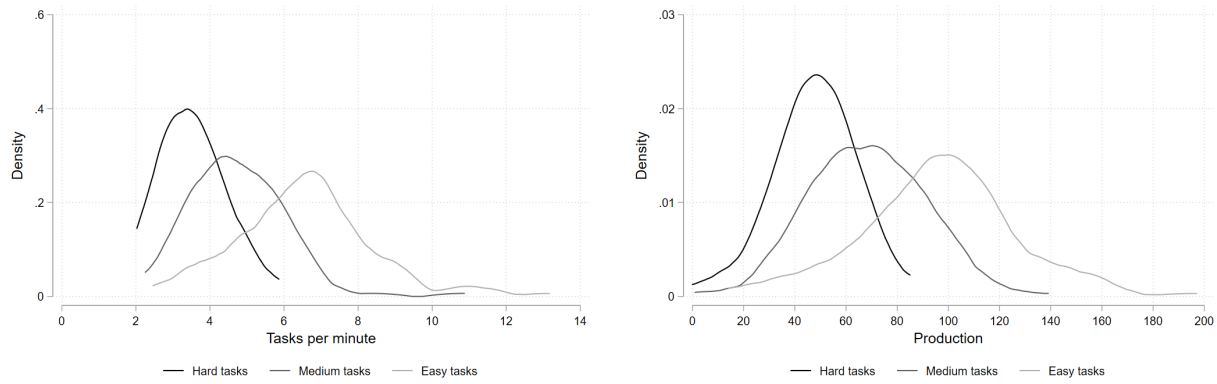
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.4.3: Spectator decision correlations with employment status

Note: The outcome variable is the excess income share given to a randomly chosen participant in a pair on top of her production share by spectators in PR. Column 1 shows the redistribution among those participants who have full-time employment or are about to start working. Column 2 includes participants who are part-time employed, unemployed, not in paid work, or other non-employed. Column 3 includes those whose employment data are missing. Standard errors are not clustered due to the low number of subjects in each column.

the next month because they also have good employment prospects. The latter category only includes two percent of the sample. The non-employed category includes part-time employed and unemployed people, those not in paid work, and non-employed for other, non-specified reasons.

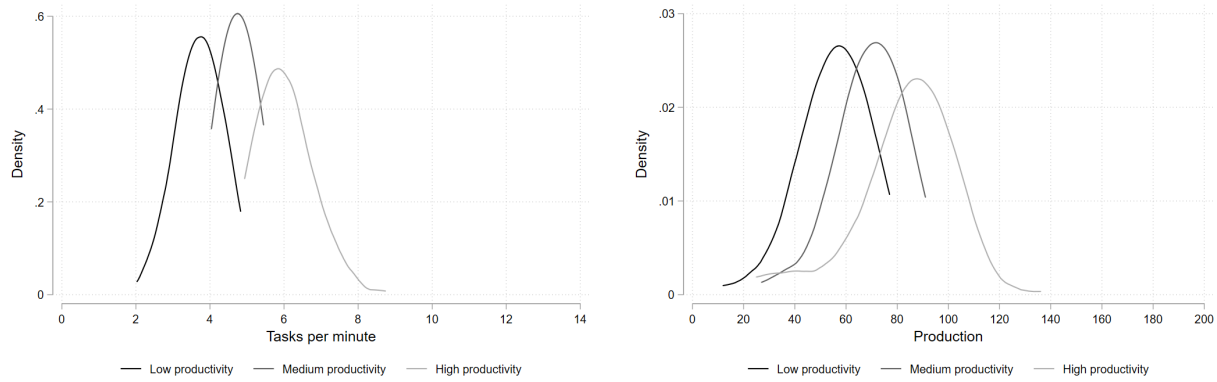
A.5 Descriptive statistics: Production



(a) Absolute difficulty (b) Production

Figure A.5.1: Distribution of absolute difficulty and production in ED

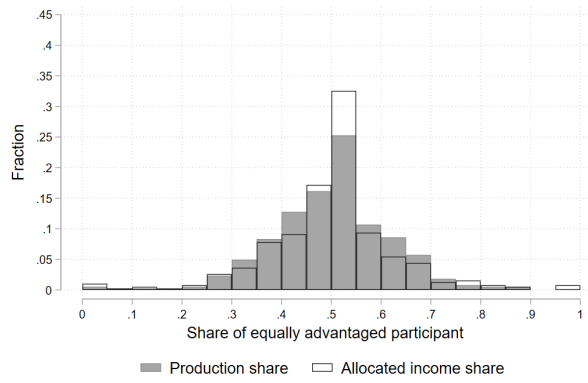
Note: The figures show the distribution of individual absolute difficulties (task per minute) and production by difficulty level (hard, medium, easy tasks.



(a) Exogenous difficulty experiment (b) Productivity experiment

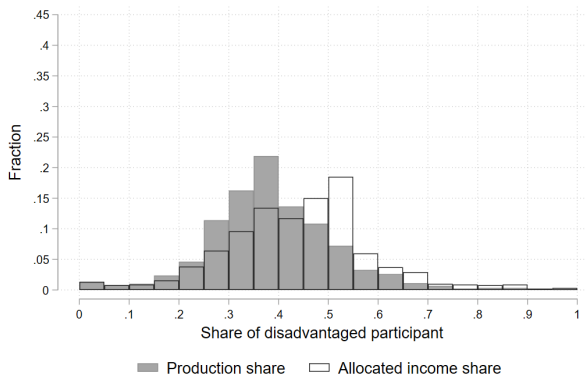
Figure A.5.2: Distribution of absolute productivity and production in PR

Note: The figures show the distribution of individual absolute productivities (tasks per minute) and production by productivity level (low, medium, high). The productivity levels are defined based on the absolute productivities within a session by dividing the distribution into three terciles. The cutoffs between the terciles are slightly different across sessions, hence the overlap in the absolute productivity distributions by productivity level.



(a) Equal difficulty levels within pair

0.50 vs 0.50 (p=0.715)

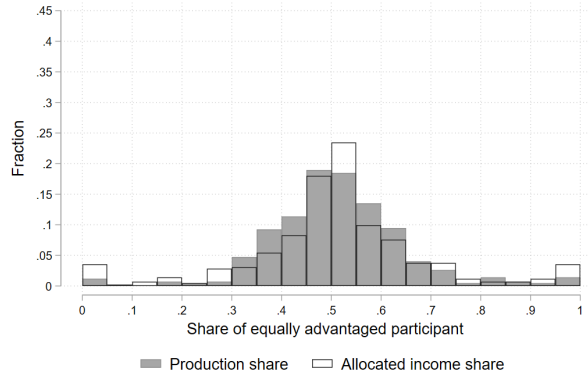


(b) Harder tasks within pair

0.39 vs 0.44 (p=0.000)

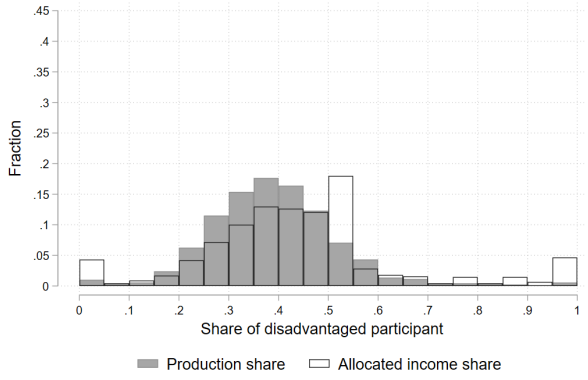
Figure A.5.3: Production share and allocated income share in ED, spectators

Note: The figures show the distribution of the production share within the pair and the income share allocated by spectators in ED. The first panel shows the distribution of shares of a randomly chosen participant in the pair with equal difficulty levels. The second panel shows the distribution of the shares of the disadvantaged participant within the pair in case of unequal difficulties. The numbers show the mean production share vs. the mean allocated income share.



(a) Equal difficulty levels within pair

0.50 vs 0.50 (p=0.319)

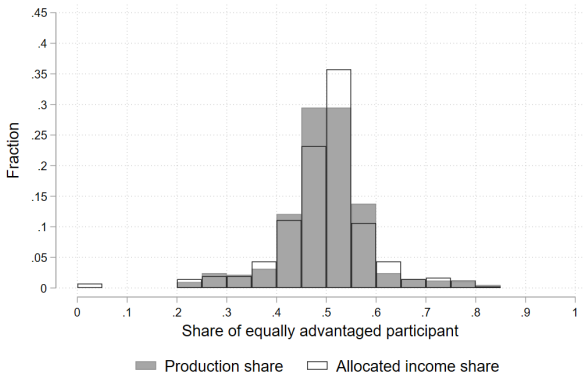


(b) Harder tasks within pair

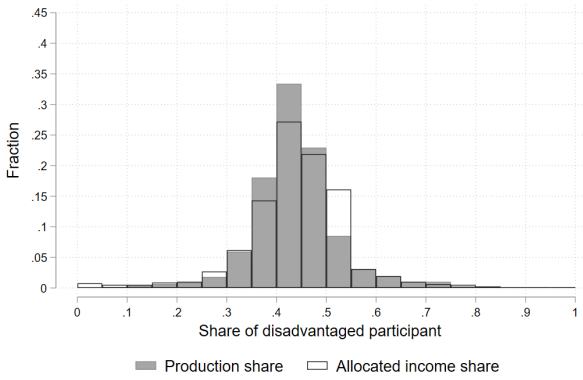
0.39 vs 0.44 (p=0.001)

Figure A.5.4: Production share and allocated income share in ED, stakeholders

Note: The figures show the distribution of the production share within the pair and the income share allocated by stakeholders in ED. The first panel shows the distribution of shares of a randomly chosen participant in the pair with equal difficulty levels. The second panel shows the distribution of the shares of the disadvantaged participant within the pair in case of unequal difficulties. The numbers show the mean production share vs. the mean allocated income share.



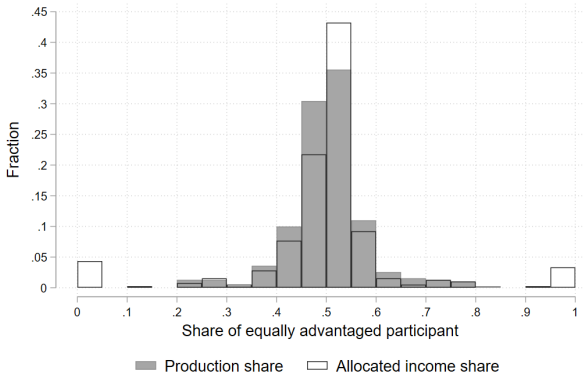
(a) Equal productivity levels within pair
0.49 vs 0.50 (p=0.393)



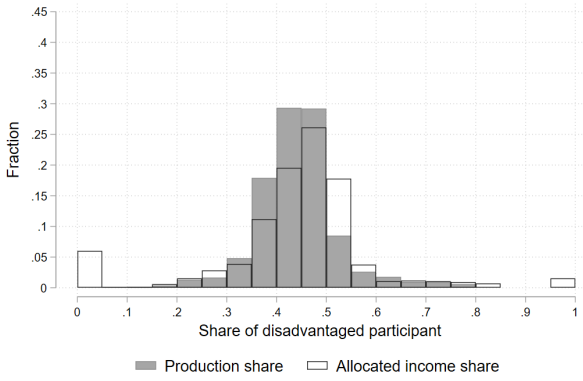
(b) Lower productivity level within pair
0.43 vs 0.44 (p=0.504)

Figure A.5.5: Production share and allocated income share in PR, spectators

Note: The figures show the distribution of the production share within the pair and the income share allocated by spectators in PR. The first panel shows the distribution of shares of a randomly chosen participant in the pair with equal productivity levels. The second panel shows the distribution of the shares of the disadvantaged participant within the pair in case of unequal productivity. The numbers show the mean production share vs. the mean allocated income share.



(a) Equal productivity levels within pair
0.50 vs 0.51 (p=0.289)

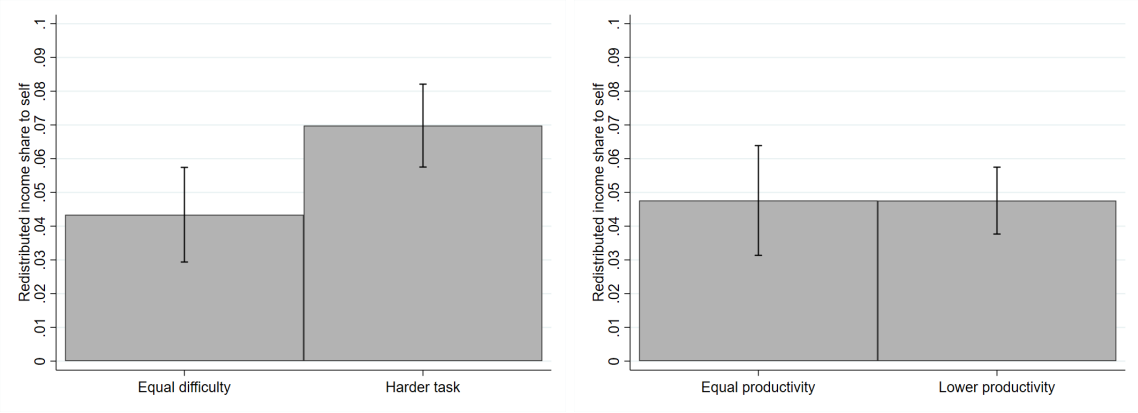


(b) Lower productivity level within pair
0.44 vs 0.44 (p=0.759)

Figure A.5.6: Production share and allocated income share in PR, stakeholders

Note: The figures show the distribution of the production share within the pair and the income share allocated by stakeholders in PR. The first panel shows the distribution of shares of a randomly chosen participant in the pair with equal productivity levels. The second panel shows the distribution of the shares of the disadvantaged participant within the pair in case of unequal productivity. The numbers show the mean production share vs. the mean allocated income share.

A.6 Descriptive statistics: Redistribution



(a) Exogenous difficulty experiment

(b) Productivity experiment

Figure A.6.1: Redistributed income share to self by stakeholders

Note: Redistributive decisions in ED and PR. The figures show the redistributed income share (allocated income share minus production share) by stakeholders to themselves in the case of equal difficulty/productivity within their pair and in the case of them having harder tasks or lower productivity within the pair. The spikes indicate 95 percent confidence intervals.

A.7 Robustness checks of reduced-form results

A.7.1 Sample with all demographic controls

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal difficulty level								
More difficult tasks	0.0554***	0.0397***	0.0408***	0.0450***	0.0632***	0.0351*	0.0350*	0.0283
	(0.0082)	(0.0072)	(0.0072)	(0.0083)	(0.0168)	(0.0187)	(0.0188)	(0.0179)
Constant	-0.0055	0.0658***	0.0799***	0.0685***	0.0126	0.1390***	0.2221***	0.1110***
	(0.0098)	(0.0190)	(0.0233)	(0.0142)	(0.0262)	(0.0484)	(0.0649)	(0.0303)
Observations	980	980	980	980	960	960	960	960
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.1: Spectator and stakeholder decisions in ED (all demographic controls)

Note: The outcome variable is the redistributed income share to P1 in a pair in ED by spectators (columns 1-4) and stakeholders (5-8). Columns 1 and 5 only control for whether P1 had more difficult tasks than P2 or they had equally difficult tasks and for session fixed effects. Columns 2-4 and 6-8 also control for P1's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, whether she has US nationality, labor market status and student status. Columns 4 and 8 add spectator and stakeholder fixed effects. The sample only includes those participants for whom all demographic data were available.

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal productivity level								
Lower productivity	0.0044	-0.0031	-0.0018	-0.0007	-0.0032	-0.0247	-0.0254	-0.0303
	(0.0060)	(0.0051)	(0.0049)	(0.0058)	(0.0184)	(0.0250)	(0.0248)	(0.0300)
Constant	-0.0049	0.0528*	0.0064	0.0494*	-0.0008	0.1639	0.0965	0.1826
	(0.0104)	(0.0293)	(0.0353)	(0.0251)	(0.0177)	(0.1059)	(0.1094)	(0.1260)
Observations	960	960	960	960	880	880	880	880
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.2: Spectator and stakeholder decisions in PR (all demographic controls)

Note: The outcome variable is the redistributed income share to P1 in a pair in PR by spectators (columns 1-4) and stakeholders (5-8). Columns 1 and 5 only control for whether P1 had lower productivity than P2 or they had an equal productivity level and for session fixed effects. Columns 2-4 and 6-8 also control for P1's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, whether she has US nationality, labor market status and student status. Columns 4 and 8 add spectator and stakeholder fixed effects. The sample only includes those participants for whom all demographic data were available.

A.7.2 Share of original income difference redistributed

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal difficulty level								
More difficult tasks	0.4173***	0.4819***	0.4849***	0.5021***	0.2475	0.2224	0.2189	0.2225
	(0.0923)	(0.1232)	(0.1224)	(0.1273)	(0.2889)	(0.3704)	(0.3659)	(0.3002)
Constant	-0.0222	-0.3124	-0.1498	-0.2415	0.1447	0.2544	1.2197	-0.0909
	(0.0942)	(0.2276)	(0.1478)	(0.1858)	(0.2385)	(0.6321)	(0.7627)	(0.4470)
Observations	1200	1200	1200	1200	1242	1242	1242	1242
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.3: Spectator and stakeholder decisions in ED (share of income diff. redistributed)

Note: The outcome variable is the share of the original income difference redistributed to P1 in a pair by spectators (columns 1-4) and stakeholders (columns 5-8) in ED. Columns 1 and 5 only control for whether P1 had more difficult tasks than P2 or they had equally difficult tasks and for session fixed effects. Columns 2-4 and 6-8 also control for P1's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, and whether she has US nationality. Columns 4 and 8 add spectator and stakeholder fixed effects.

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal productivity level								
Lower productivity	0.0349	0.0148	0.0201	0.0312	-0.2133	-0.3502	-0.3642	-0.3031
	(0.0822)	(0.0928)	(0.0915)	(0.1013)	(0.2610)	(0.2992)	(0.3037)	(0.3157)
Constant	-0.0895	0.0724	-0.2214	0.0527	0.1447	1.2703*	0.6704	1.5039
	(0.1083)	(0.2075)	(0.2195)	(0.1948)	(0.2725)	(0.6807)	(0.6670)	(1.0052)
Observations	1149	1149	1149	1149	1189	1189	1189	1189
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.4: Spectator and stakeholder decisions in PR (share of income diff. redistributed)

Note: The outcome variable is the share of the original income difference redistributed to P1 in a pair by spectators (columns 1-4) and stakeholders (columns 5-8) in PR. Columns 1 and 5 only control for whether P1 had lower productivity than P2 or they had an equal productivity level and for session fixed effects. Columns 2-4 and 6-8 also control for P1's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, and whether she has US nationality. Columns 4 and 8 add spectator/stakeholder fixed effects.

A.7.3 Only including pairs at the extreme

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal difficulty level								
More difficult tasks	0.0819***	0.0665***	0.0677***	0.0690***	0.0783***	0.0326	0.0378	0.0493
	(0.0109)	(0.0108)	(0.0107)	(0.0135)	(0.0219)	(0.0289)	(0.0298)	(0.0332)
Constant	-0.0052	0.0480**	0.0512*	0.0573***	0.0247	0.1581***	0.1967***	0.0731
	(0.0116)	(0.0223)	(0.0270)	(0.0194)	(0.0298)	(0.0595)	(0.0608)	(0.0527)
Observations	506	506	506	506	519	519	519	519
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.5: Spectator and stakeholder decisions in ED (only high and low difficulty)

Note: The sample only includes pairs with a high- and a low-difficulty participant or two high- or two low-difficulty ones. The outcome variable is the redistributed income share to P1 in a pair in ED by spectators (columns 1-4) and stakeholders (5-8). Columns 1 and 5 only control for whether P1 had more difficult tasks than P2 or they had equally difficult tasks and for session fixed effects. Columns 2-4 and 6-8 also control for P1's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, whether she has US nationality, labor market status and student status. Columns 4 and 8 add spectator and stakeholder fixed effects. The sample only includes those participants for whom all demographic data were available.

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal productivity level								
Lower productivity	0.0064	-0.0029	-0.0015	-0.0078	0.0152	-0.0535	-0.0588	-0.0539
	(0.0083)	(0.0071)	(0.0068)	(0.0073)	(0.0267)	(0.0421)	(0.0413)	(0.0480)
Constant	-0.0041	0.0482*	0.0059	0.0658***	0.0030	0.3765**	0.3338**	0.3296*
	(0.0109)	(0.0255)	(0.0334)	(0.0248)	(0.0173)	(0.1569)	(0.1485)	(0.1680)
Observations	542	542	542	542	512	512	512	512
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.6: Spectator and stakeholder decisions in PR (only high and low productivity)

Note: The sample only includes pairs with a high- and a low-productivity participant or two high- or two low-productivity ones. The outcome variable is the redistributed income share to P1 in a pair in PR by spectators (columns 1-4) and stakeholders (5-8). Columns 1 and 5 only control for whether P1 had lower productivity than P2 or they had an equal productivity level and for session fixed effects. Columns 2-4 and 6-8 also control for P1's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, whether she has US nationality, labor market status and student status. Columns 4 and 8 add spectator and stakeholder fixed effects. The sample only includes those participants for whom all demographic data were available.

A.7.4 Share of income redistributed to the participant with lower production

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal difficulty level								
Participant had harder tasks	0.0475***	0.0409***	0.0417***	0.0427***	0.0613***	0.0498***	0.0498***	0.0447**
	(0.0066)	(0.0069)	(0.0068)	(0.0073)	(0.0174)	(0.0182)	(0.0182)	(0.0180)
Participant had easier tasks	-0.0291***	-0.0291***	-0.0271***	-0.0175*	0.0582*	0.0594*	0.0593*	-0.0166
	(0.0071)	(0.0072)	(0.0074)	(0.0089)	(0.0307)	(0.0313)	(0.0310)	(0.0266)
Constant	0.0076	0.0505**	0.0485*	0.0700***	0.0179	0.1152***	0.1064*	0.1155***
	(0.0093)	(0.0196)	(0.0249)	(0.0150)	(0.0171)	(0.0355)	(0.0548)	(0.0272)
Observations	1210	1210	1210	1210	1250	1250	1250	1250
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.7: Redistributed income share to participant with lower production in ED

Note: The outcome variable is the redistributed income share to the participant with lower production in the pair in ED by spectators (columns 1-4) and stakeholders (5-8). Columns 1 and 5 only control for whether the participant with lower prorduction had harder tasks, equally difficulty level or easier tasks than her counterpart and for session fixed effects. Columns 2-4 and 6-8 also control for the participant's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, whether she has US nationality, labor market status and student status. Columns 4 and 8 add spectator and stakeholder fixed effects. The sample only includes those participants for whom all demographic data were available.

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal productivity level								
Participant had lower productivity	0.0034	-0.0007	-0.0007	-0.0027	-0.0295	-0.0456*	-0.0454*	-0.0124
	(0.0048)	(0.0044)	(0.0043)	(0.0038)	(0.0215)	(0.0235)	(0.0231)	(0.0162)
Participant had higher productivity	0.0047	0.0032	0.0036	0.0057	0.0155	0.0055	0.0022	-0.0242**
	(0.0066)	(0.0066)	(0.0067)	(0.0080)	(0.0221)	(0.0203)	(0.0202)	(0.0109)
Constant	-0.0010	0.0630**	0.0307	0.0712***	0.0128	0.2879***	0.2481**	0.1165***
	(0.0118)	(0.0306)	(0.0365)	(0.0254)	(0.0212)	(0.0952)	(0.1048)	(0.0310)
Observations	1170	1170	1170	1170	1210	1210	1210	1210
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.8: Redistributed income share to participant with lower production in PR

Note:The outcome variable is the redistributed income share to the participant with lower production in the pair in PR by spectators (columns 1-4) and stakeholders (5-8). Columns 1 and 5 only control for whether the participant with lower prorduction had lower productivity, equal productivity level or higher productivity than her counterpart and for session fixed effects. Columns 2-4 and 6-8 also control for the participant's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, whether she has US nationality, labor market status and student status. Columns 4 and 8 add spectator and stakeholder fixed effects. The sample only includes those participants for whom all demographic data were available.

A.7.5 Change in inequality (Gini of income allocation minus initial Gini)

I calculate the Gini of the income allocation after redistribution by the following formula (after Almås et al., 2025):

$$G_y = \frac{|y_1 - y_2|}{y_1 + y_2},$$

where y_1 and y_2 are the allocated incomes of P1 and P2 in the pair. The Gini of the initial allocation before redistribution is calculated from the productions of the two participants:

$$G_x = \frac{|x_1 - x_2|}{x_1 + x_2},$$

where x_1 and x_2 are the productions of P1 and P2 in the pair. In Tables A.7.9 and A.7.10, the outcome variable is the change in the inequality between the two participants in the pair ($G_y - G_x$), depending on whether the particpant with lower production share had harder tasks, equally difficult tasks or easier tasks (in ED) or lower productivity, equal productivity level or higher productivity (in PR) than her counterpart.

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal difficulty level								
Participant had harder tasks	-0.0562***	-0.0279***	-0.0294***	-0.0270**	-0.0405**	-0.0056	-0.0100	-0.0259*
	(0.0095)	(0.0099)	(0.0099)	(0.0110)	(0.0175)	(0.0186)	(0.0182)	(0.0136)
Participant had easier tasks	0.0507***	0.0507***	0.0492***	0.0442***	0.1055**	0.1022**	0.1030**	0.0484***
	(0.0131)	(0.0135)	(0.0140)	(0.0161)	(0.0502)	(0.0485)	(0.0476)	(0.0178)
Constant	-0.0051	-0.1906***	-0.1557***	-0.2109***	-0.0045	-0.2992***	-0.2666***	-0.1838***
	(0.0131)	(0.0347)	(0.0397)	(0.0315)	(0.0373)	(0.0649)	(0.0949)	(0.0437)
Observations	1210	1210	1210	1210	1250	1250	1250	1250
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.9: Spectator and stakeholder decisions in ED (income Gini minus production Gini)

Note: The outcome variable is the Gini of the final income allocation minus the Gini of the initial allocation in a pair in ED after spectators' decisions (columns 1-4) and stakeholders' decisions (5-8). Columns 1 and 5 only control for whether the participant with lower prorduction share had harder tasks, equally difficulty level or easier tasks than her counterpart and for session fixed effects. Columns 2-4 and 6-8 also control for the participant's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, whether she has US nationality, labor market status and student status. Columns 4 and 8 add spectator and stakeholder fixed effects. The sample only includes those participants for whom all demographic data were available.

	Spectators				Stakeholders			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Situation, ref. equal productivity level								
Participant had lower productivity	-0.0039	0.0032	0.0032	0.0079	-0.0034	0.0070	0.0073	0.0109
	(0.0096)	(0.0090)	(0.0087)	(0.0080)	(0.0185)	(0.0242)	(0.0238)	(0.0093)
Participant had higher productivity	0.0136	0.0162	0.0141	0.0100	0.0013	0.0077	0.0047	0.0291*
	(0.0110)	(0.0109)	(0.0102)	(0.0125)	(0.0414)	(0.0373)	(0.0361)	(0.0160)
Constant	0.0018	-0.1095*	-0.0063	-0.1175***	0.0824*	-0.0957	0.1644	-0.1624***
	(0.0239)	(0.0566)	(0.0648)	(0.0437)	(0.0455)	(0.1330)	(0.1685)	(0.0558)
Observations	1170	1170	1170	1170	1210	1210	1210	1210
Share in total production	no	yes	yes	yes	no	yes	yes	yes
Participant fixed effect	no	no	no	yes	no	no	no	yes
Demographic controls	no	no	yes	no	no	no	yes	no
Session fixed effect	yes	yes	yes	no	yes	yes	yes	no

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.7.10: Spectator and stakeholder decisions in PR (income Gini minus production Gini)

Note:The outcome variable is the Gini of the final income allocation minus the Gini of the initial allocation in a pair in PR after spectators' decisions (columns 1-4) and stakeholders' decisions (5-8). Columns 1 and 5 only control for whether the participant with lower prorduction share had lower productivity, equal productivity level or higher productivity than her counterpart and for session fixed effects. Columns 2-4 and 6-8 also control for the participant's share in the total production. Columns 3 and 7 include demographic controls: age, gender, whether the spectator/stakeholder was born in the US, whether she has US nationality, labor market status and student status. Columns 4 and 8 add spectator and stakeholder fixed effects. The sample only includes those participants for whom all demographic data were available.

A.8 Survey answers

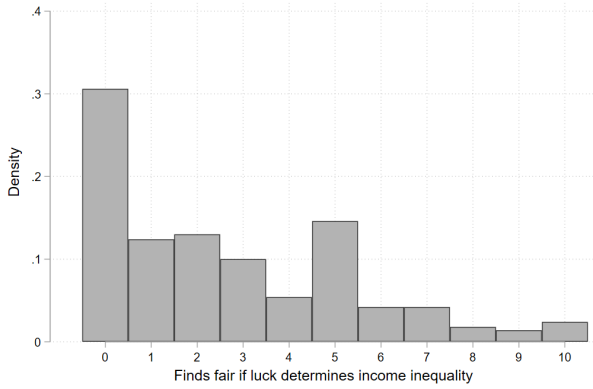


Figure A.8.1: Distribution of answers to fairness question – luck

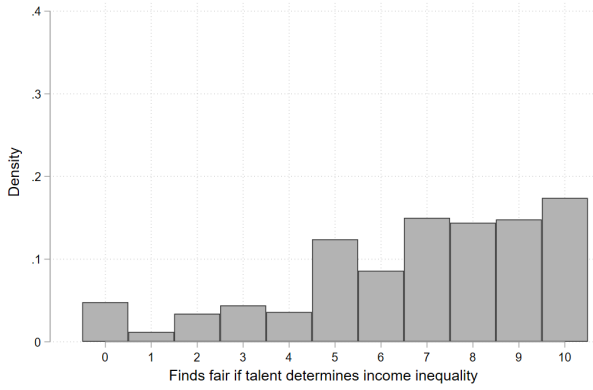


Figure A.8.2: Distribution of answers to fairness question – talent

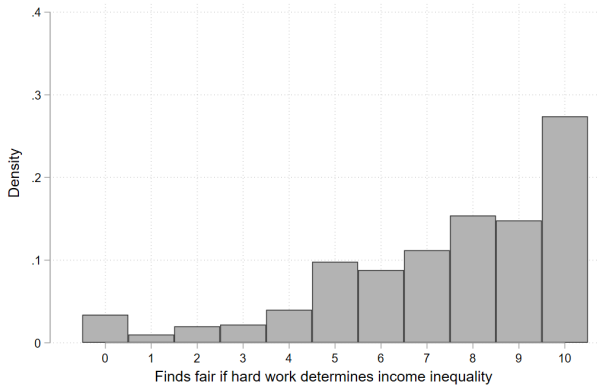


Figure A.8.3: Distribution of answers to fairness question – hard work

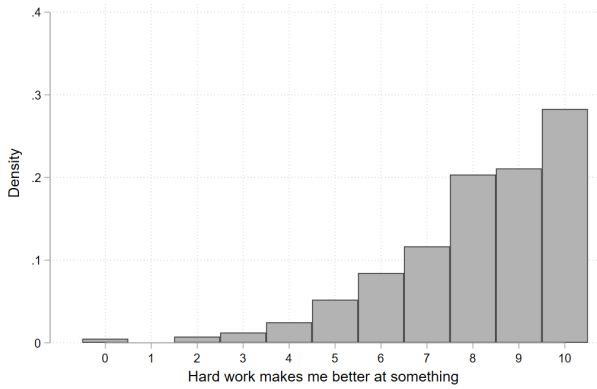


Figure A.8.4: Distribution of answers to growth mindset question – hard work makes me better

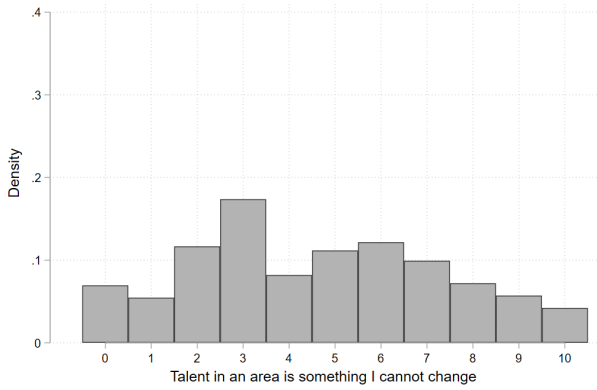


Figure A.8.5: Distribution of answers to growth mindset question – talent cannot change

A.8.1 Survey answers by productivity level

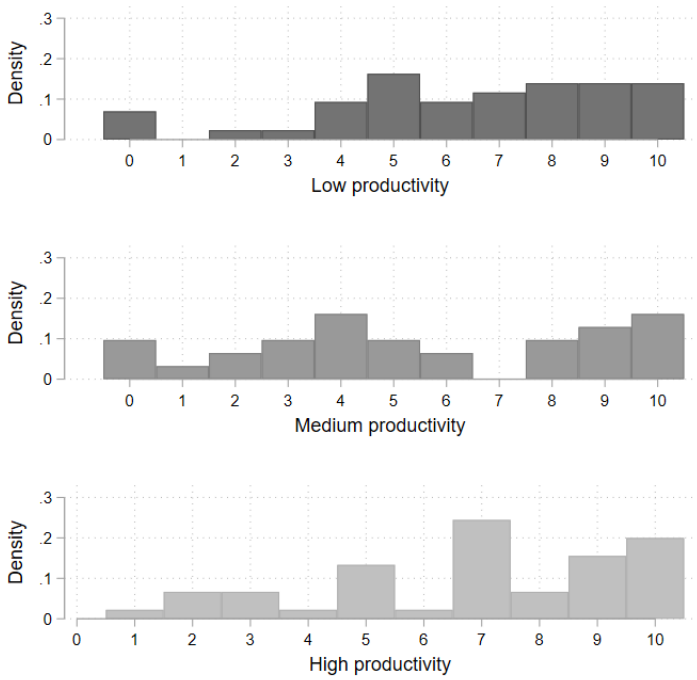


Figure A.8.6: Finds it fair if talent determines inequality (PR, spectators)

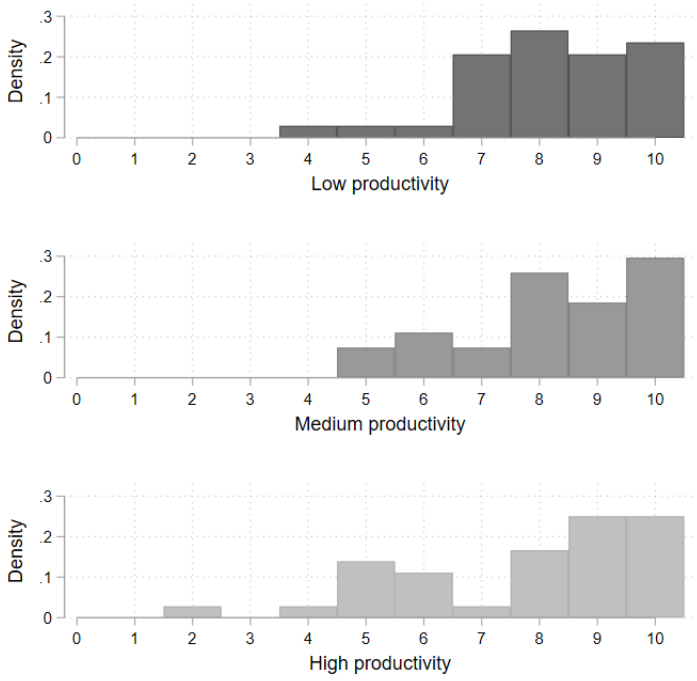


Figure A.8.7: Hard work makes one better at something (PR, spectators)

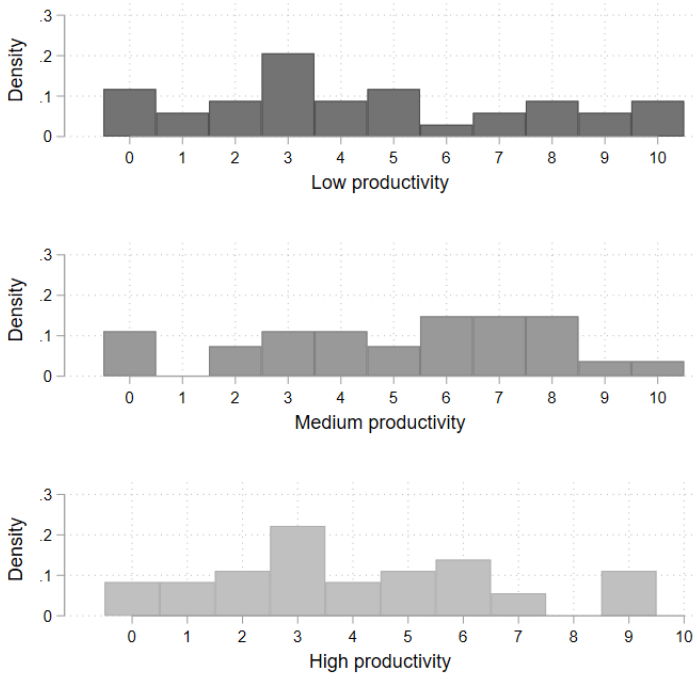


Figure A.8.8: Talent is something one cannot change (PR, spectators)

A.9 Heterogeneity in stakeholder decisions

	Redistributed income share to self		
	(1)	(2)	(3)
Own difficulty level, ref. medium-difficulty tasks			
Hard tasks	0.0786**	0.0448	0.0420
	(0.0353)	(0.0378)	(0.0357)
Easy tasks	-0.0029	0.0222	0.0178
	(0.0297)	(0.0268)	(0.0265)
Constant	0.0277	0.2046***	0.2404***
	(0.0256)	(0.0471)	(0.0732)
Observations	1250	1250	1250
Share in total production	no	yes	yes
Participant fixed effect	no	no	no
Demographic controls	no	no	yes
Session fixed effect	yes	yes	yes

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.9.1: Stakeholders' decisions in ED by own difficulty level

Note: The outcome variable is the excess income share stakeholders in ED redistribute to themselves on top of their production share. Column 1 controls only for whether the stakeholder had hard, medium, or easy tasks. Columns 2-3 also control for the production share of the stakeholder. Column 3 includes demographic controls: age, gender, whether the stakeholder was born in the US, and whether she has US nationality.

	Redistributed income share to self		
	(1)	(2)	(3)
Own productivity level, ref. medium productivity			
Low productivity	0.0408*	0.0145	0.0314
	(0.0231)	(0.0234)	(0.0239)
High productivity	0.0734**	0.0875***	0.0923***
	(0.0314)	(0.0323)	(0.0310)
Constant	0.0124	0.2476***	0.3569***
	(0.0220)	(0.0782)	(0.0815)
Observations	1210	1210	1210
Share in total production	no	yes	yes
Participant fixed effect	no	no	no
Demographic controls	no	no	yes
Session fixed effect	yes	yes	yes

Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.9.2: Stakeholders' redistribution in PR by own productivity

Note: The outcome variable is the excess income share stakeholders in PR redistribute to themselves on top of their production share. Column 1 controls only for the whether the stakeholder had low, medium or high productivity. Columns 2-3 also control for the production share of the stakeholder. Column 3 includes demographic controls: age, gender, whether the stakeholder was born in the US, and whether she has US nationality.

A.9.1 Compensation correlating with fairness views

	Redistributed income share		
	(1)	(2)	(3)
Situation, ref. equal productivity levels			
Lower productivity	0.0059	0.0185	0.0126**
	(0.0050)	(0.0143)	(0.0056)
Finds fair if hard work determines income inequality		-0.0009	
		(0.0010)	
Lower productivity × Finds fair if hard work determines income inequality		-0.0018	
		(0.0017)	
Finds fair if luck determines income inequality			0.0018
			(0.0013)
Lower productivity × Finds fair if luck determines income inequality			-0.0030
			(0.0020)
Constant	-0.0058	-0.0003	-0.0096
	(0.0099)	(0.0122)	(0.0114)
Observations	1170	1170	1170
Participant fixed effect	no	no	no
Demographic controls	no	no	no
Session fixed effect	yes	yes	yes

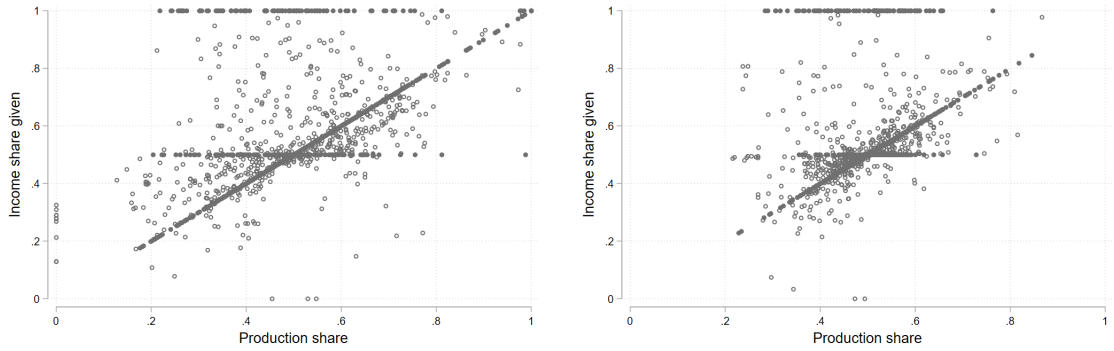
Standard errors are clustered on the participant level. Clustered standard errors in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A.9.3: Spectators' decisions by other fairness views

Note: The outcome variable is the redistributed income share to P1 by spectators in PR. Column 1 shows the average redistribution. Column 2 adds agreement with "I find it fair if hard work determines income inequality". Column 3 adds agreement with "I find it fair if luck determines income inequality". Agreement with the statements is on a 0-10 scale.

A.10 Structural estimation



(a) Stakeholders, ED

(b) Stakeholders, PR

Figure A.10.1: Share allocated to self in the pair

Note: The figures show the share of tokens allocated to a self in the pair by stakeholders, plotted against the production share of the stakeholder. One point indicates one decision.

A.10.1 Utility maximization of spectators and stakeholders

We assume that both spectators and stakeholders hold one of the fairness views described in Section 5, but their optimization problems in redistributive decisions differ. The utility maximization problem of a spectator is the following (from Cappelen et al., 2010, 2020b):

$$U_i(\mathbf{x},\, \theta, k_i) = -\frac{(t_{1,i} - t_1^{k_i})^2}{2Y} \tag{6}$$

Here, $t_{1,i}$ is the decision variable of spectator i – the number of tokens allocated to Participant 1 in the pair, while $t_1^{k_i}$ is what she finds fair to allocate given her fairness view k. Since spectators do not have any monetary gain from the decision, they simply choose the allocation that aligns with their fairness views. The optimal spectator decision is, therefore:

$$t_{1,i}^* = t_1^{k_i} \tag{7}$$

Stakeholders, on the other hand, consider both the fairness of the allocation and their individual monetary gain. Their problem can be written as follows:

$$U_j(\mathbf{x},\, \theta, k_j, \beta_j) = t_{own} - \beta_j \frac{(t_{own,j} - t_{own}^{k_j})^2}{2Y}, \tag{8}$$

Here, $t_{own,j}$ is the number of tokens stakeholder j gives herself in the decision, while $t_{own}^{k_j}$ is the tokens she finds fair to give according to her fairness view k. β_j is her weight on fairness relative to her final income. Therefore, the optimal stakeholder decision is:

$$t_{own,j}^* = t_{own}^{k_j} + \frac{Y}{\beta_j} \tag{9}$$

Stakeholders give themselves the number of tokens they find fair to give and some extra tokens depending on how selfish they are.

A.10.2 Maxmimum likelihood estimation

Based on the model described above, I use a maximum likelihood estimation to estimate the shares of fairness views among spectators and stakeholders separately (following Mollerstrom et al. 2015 and Andre 2024). The fact that every participant made multiple decisions in different situations makes classifying them into separate fairness preference types possible.

I assume that spectators redistribute income to a randomly chosen participant within the pair based on what they find fair with a normally distributed response error:

$$t_{1,i,p} = t_{1,p}^{k_i} + \epsilon_{i,p}, \tag{10}$$

where $\epsilon_{i,p} \sim i.i.d.\, N(0, \sigma^2)$. One participant made ten decisions for ten different random pairs. The total likelihood of a participant given that she is of type k is therefore

$$L_i(k) = \prod_p \phi\left(t_{1,i,p} - t^k_{1,p}\,,\, \sigma\right), \tag{11}$$

where $\phi()$ is the probability density function of the normal distribution, and p denotes a decision made for pair p. The total likelihood of a participant is the weighted sum of the conditional likelihoods given a fairness view weighted by the share of that fairness view among the participants:

$$L_i = \lambda_{PM} \cdot L_i(PM) + \lambda_E \cdot L_i(E) + \lambda_{CM} \cdot L_i(CM) \tag{12}$$

λ_{PM} denotes the share of performance meritocrats, λ_E the egalitarians, and λ_{CM} the compensating meritocrats. Using the independence of the error terms across participants, the total log-likelihood the estimation maximizes is

$$LogL = \sum_i log(L_i) \tag{13}$$

The parameters to estimate are the standard deviation of the response error, σ, and the shares of the types, λ_{PM}, λ_E and λ_{CM}.

I assume a similar choice structure for stakeholders as for spectators. Stakeholders redistribute income to themselves according to what they find fair, plus an extra amount depending on how selfish they are. There is also a normally distributed response error in their decision:

$$t_{own,j,p} = t^{kj}_{own,p} + \frac{1}{\beta} Y_p + \epsilon_{j,p}, \tag{14}$$

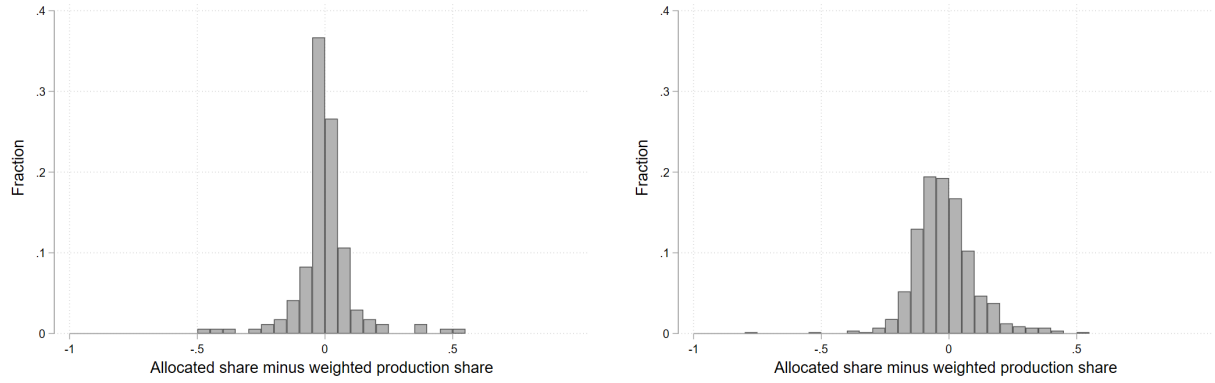
where $\epsilon_{j,p} \sim N(0, \sigma^2)$, Y_p is the total income of pair p, and β is the average weight stakeholders put on fairness. The total likelihood of a stakeholder given that she is of type k is, analogously to spectators,

$$L_j(k) = \prod_p \phi\left(t_{own,j,p} - t^k_{own,p} - \frac{1}{\beta} Y_p\,,\, \sigma\right). \tag{15}$$

The total likelihood of a participant and the total log-likelihood in the sample to maximize is the same as the spectator equations 12 and 13.

A.10.3 Testing other functional forms for compensators

Looking at the actual decisions in ED that were not purely performance-meritocratic or egalitarian, in unequal difficulty situations, the average redistribution is 1.8 percentage points lower than what compensation based on the weighted production share would predict.[24] Figure A.10.2 shows the distribution of the differences between actual compensation and the weighted-performance-based one in these decisions. Though the difference between actual and predicted compensation is low, assuming this functional form can lead to underestimating the share of difficulty-compensating meritocrats.



(a) Equal difficulty levels

(b) Harder tasks

Figure A.10.2: Allocated income share compared to weighted production share

Note: The histograms show the distributions of income allocations compared to those based on the weighted production shares (by the average production potential) of the participant. The sample includes only spectators in ED and only those decisions that are not purely performance-meritocratic or egalitarian. Panel (a) shows allocation decisions made for a random participant with equal difficulty levels, while panel (b) shows allocation decisions made for the participant with a higher difficulty level. A Kolmogorov-Smirnov test rejects that the two distributions are equal.

Tables A.10.1 and A.10.2 show the results of the structural estimation of shares assuming different functional forms for compensators. Each column tests a different power α in the compensating function

$$t_1^{CM}(\mathbf{x},\, \theta) = \frac{x_1 \cdot \theta_1^{\alpha}}{x_1 \cdot \theta_1^{\alpha} + x_2 \cdot \theta_2^{\alpha}} Y.$$

The first column corresponds to the power used in the main structural estimation, $\alpha = -1$. The subsequent columns test $\alpha = -2/3, -1/2$ and $-1/3$. The estimated shares of performance meritocrats and difficulty-compensating meritocrats in ED are sensitive to the functional form definition. However, if we look at the not strictly egalitarian and performance-meritocratic decisions, the mag-

[24] This is a rigorous comparison as it classifies every performance-meritocratic or egalitarian decision made with some error as neither of these types.

nitude of compensation is somewhere between those defined by the first two columns. Therefore, the share of difficulty-compensating meritocrats is between 29 and 36 percent, while the share of performance meritocrats is between 55 and 48 percent. The estimated shares in PR are robust to the definition of the compensating function.

	$\alpha = -1$		$\alpha = -2/3$		$\alpha = -1/2$		$\alpha = -1/3$	
	Estimate	Std. error	Estimate	Std. error	Estimate	Std. error	Estimate	Std. error
σ	112.813	2.284	115.112	2.347	118.041	2.411	121.424	2.472
λ_{PM}	0.553	0.047	0.478	0.053	0.385	0.063	0.140	0.090
λ_E	0.152	0.034	0.165	0.035	0.176	0.036	0.191	0.037
λ_{DCM}	0.294	0.046	0.357	0.053	0.438	0.065	0.669	0.097

Table A.10.1: ED, spectators – different functional forms

Note: The table shows the results of a test for different functional forms for compensators in ED. The functional form for compensators is $(x_1 \cdot \theta_1^\alpha)/(x_1 \cdot \theta_1^\alpha + x_2 \cdot \theta_2^\alpha)$, where x_j is the production and θ_j is the average tasks per minute of participant j. Each column tests a different power α.

	$\alpha = -1$		$\alpha = -2/3$		$\alpha = -1/2$		$\alpha = -1/3$	
	Estimate	Std. error	Estimate	Std. error	Estimate	Std. error	Estimate	Std. error
σ	82.905	1.716	82.906	1.712	82.906	1.711	82.907	1.711
λ_{PM}	0.871	0.032	0.871	0.032	0.871	0.032	0.871	0.032
λ_E	0.129	0.032	0.129	0.032	0.129	0.032	0.129	0.032
λ_{PCM}	0.000	0.004	0.000	0.001	0.000	0.001	0.000	0.001

Table A.10.2: PR, spectators – different functional forms

Note: The table shows the results of a test for different functional forms for compensators in PR. The functional form for compensators is $(x_1 \cdot \theta_1^\alpha)/(x_1 \cdot \theta_1^\alpha + x_2 \cdot \theta_2^\alpha)$, where x_j is the production and θ_j is the average tasks per minute of participant j. Each column tests a different power α.

A.10.4 Structural results for not fully selfish participants

	Estimate	Std. error
σ	137.168	2.878
β	45.041	6.662
λ_{PM}	0.593	0.055
λ_{E}	0.229	0.045
λ_{DCM}	0.177	0.050

(a) ED

	Estimate	Std. error
σ	102.713	2.127
β	57.243	6.233
λ_{PM}	0.809	0.041
λ_{E}	0.171	0.041
λ_{PCM}	0.019	0.018

(b) PR

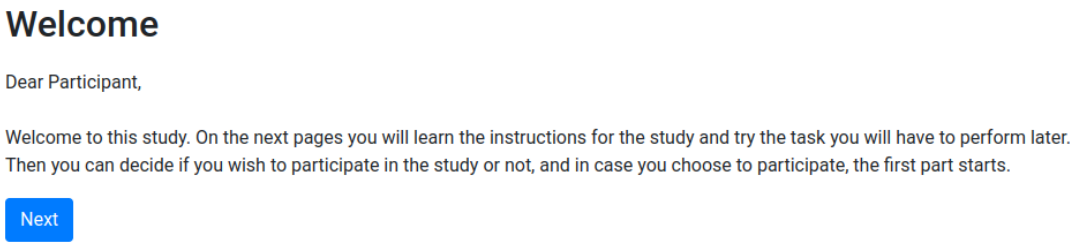
Table A.10.3: Structural estimation results – stakeholders without fully selfish individuals

Note: Stakeholder results excluding participants who took all the money in their decisions. σ is the standard deviation of the response error, β is the average weight stakeholders put on fairness, λ_{PM} is the estimated share of performance meritocrats, λ_{E} is the share of egalitarians, λ_{DCM} is the share of difficulty-compensating meritocrats and λ_{PCM} is the share of productivity-compensating meritocrats. Parameters estimated in R using the `stats4` package. Standard errors are calculated with the delta method.

A.11 Experimental instructions

A.11.1 Production

The example task in the screenshots is a 4-letter task in ED, but the production stage instructions were the same for all participants across treatments.

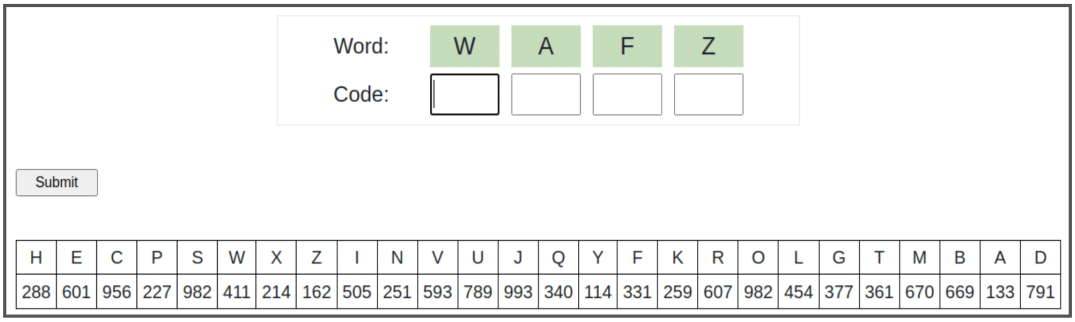


Instructions

This study will take place entirely online, in two parts. If you decide to take part in the study, the first part will start immediately after you give consent to participate. You can complete the second part anytime tomorrow between 6 AM and midnight (Pacific Time). You will receive a **completion bonus of £2.50** for completing the first part, **plus £1.00** if you complete the second part as well. You can earn **additional income** that will depend on your performance in the first part and your decisions or on other participants' decisions in the second part. The average additional income will be **around £3.00.** The first part will take around 25-30 minutes, and the second part around 5-10 minutes to complete.

First part - TODAY

In the first part you will have to do a simple task. In this task you have to encrypt letter combinations (= "words") into numbers, based on the key you see at the bottom of the page. For reference, see **a screenshot of the task** below.



H	E	C	P	S	W	X	Z	I	N	V	U	J	Q	Y	F	K	R	O	L	G	T	M	B	A	D
288	601	956	227	982	411	214	162	505	251	593	789	993	340	114	331	259	607	982	454	377	361	670	669	133	791

In this example the letter "W" corresponds to the number 411, "A" to 133, "F" to 331, and "Z" to 162, so you have to type 411, 133, 331, and 162 into the boxes under the letters, respectively. You can submit your response by clicking the Submit button below the task. If any of the entries are incorrect, the computer will tell you the number of entries that are wrong but not which ones are wrong. Then you will be able to revise your solution. Once the correct numbers are entered, after clicking the Submit button, you will see a new word to encrypt. After each correctly solved task the computer generates a new encryption key, too. The order of the letters in the key is also shuffled between the tasks.

When a new word is generated, **the first box will become active,** so you can start entering the first number. The fastest way to navigate from one box to the next is to use the **tabulator key (Tab)** on your keyboard. From the last box you can navigate to the Submit button directly with the Tab key and hit Enter. The tab key looks like this on your keyboard on PC (1) and on Mac (2 or 3):

(1) (2) (3)

On the next page you can try the task you will do in the experiment. You will be automatically navigated to the following page after completing the task or after 2 minutes.

Next

Try task

Time left to complete this page: **1:50**

Word:	G	A	R	B
Code:				

Submit

D	F	U	P	C	X	O	L	S	Y	M	B	A	H	G	W	R	V	J	I	N	E	Q	Z	K	T
124	227	474	628	521	484	448	672	767	853	598	831	440	631	993	695	562	922	733	303	879	526	735	788	794	220

Reminder: The fastest way to navigate from one box to the next is to use the **tabulator key (Tab)** on your keyboard. From the last box you can navigate to the Submit button directly with the Tab key and hit Enter. The tab key looks like this on your keyboard on PC (1) and on Mac (2 or 3):

(1)

(2)

(3)

Instructions - continued

First part - TODAY

The first part will take around 25-30 minutes to complete and will have **two main stages**. In both stages you will have to perform the same task you just tried. You will receive £2.50 for completing this part.

1. 10 tasks

First, I will ask you to do **10 tasks, as fast as you can,** to measure how quickly you can perform the tasks. Although you do not receive payment for this part in particular, it will serve as **information about how fast these tasks can be done.** It may also affect your additional income (on top of the completion bonuses) determined in the second part. You will have 5 minutes for this part. You will only be able to continue with the study if you **complete the 10 tasks within the 5 minutes.** Before doing the 10 tasks you will be able to practice for 2 minutes.

2. Production

In this part, you will have to **do the task for 15 minutes.** The **number of tasks you correctly completed** within these 15 minutes will be **your production.**

Earnings from the first part

You will earn **10 tokens for each completed task** in the Production stage.

Note that this is **not how much you will eventually earn in addition to the completion bonuses**. Your final additional income may change according to your decisions or other participants' **decisions in the second part**.

Second part - TOMORROW

The second part will take place tomorrow, and you can complete it anytime between 6 AM and midnight (Pacific Time). It will take around 5-10 minutes to complete. You will receive a completion bonus of £1.00 for completing this part. You will receive an **invitation tomorrow via the Prolific emailing system with the link to the second part**. If you complete the first part, when entering the second part the computer will automatically recognize you by your Prolific ID and let you start.

At the beginning of this part, you will be **randomly paired with another participant** who also completed the first part. In this part you will have to make **decisions about the distribution of earnings from the first part** within pairs. Your final additional income, that is on top of the fixed completion bonuses, will therefore depend on your decisions or on other participants' decisions made in the second part. The **completion bonuses** for the first and the second parts **will not be affected in any way by either your or other participants' decisions. The decisions will affect only the additional income you will earn.** The final additional earnings will be converted to British Pounds at the end of the study with **250 tokens = £1.00**. You will receive more detailed instructions about the second part at the beginning of the second part.

Payment for the study

You will receive **all payments within 3 days after the second part** via the Prolific payment system. **If you only complete the first part, you will receive £2.50 within 3 days after the corresponding second part.** Due to the interactive nature of the study we will have to wait for all participants' answers to draw the final payments. Because of this, **you will only learn how much you earned in total when you receive your payments for the study.**

On the next page you can test your comprehension of the study and you can decide if you wish to participate. You will see the instructions again under the consent form.

Further Information

This study is conducted by Luca Flora Drucker and financed by Central European University. If you accept to participate in the study, you may still change your mind and quit at any time. However, please note that you only receive the completion bonus for the first part and the completion bonus for the second part and the additional income if you complete the first and the second parts, respectively.

Participation in this study is not associated with any foreseeable risk or benefit. Your answers will be collected confidentially and anonymously (the researcher will not be able to link decisions and participants' identity beyond the Prolific ID provided). At the data analysis stage your Prolific ID will be changed to a random identifying number, and the Prolific IDs will be deleted. In case the results of the study are published, there can be no references to your identity. Data anonymity is guaranteed.

This study received a research ethics approval from the Ethical Research Committee of Central European University.

If you have any questions or concerns regarding this study, please contact me at lucafloradrucker.research@gmail.com.

Next

Comprehension check and consent form

Please answer the following questions before you decide if you wish to participate, to make sure you understand the details of the study. You can see the instructions again at the bottom of this page for reference. If you give an incorrect answer to any of the questions and click the Next button, the computer will notify you that the answer is wrong.

When is the second part of the study?

- ○ Today.
- ○ Tomorrow.
- ○ In two days.

If you only complete the first part, what will be your payment?

- ○ The completion bonus for the first part plus the payment after the number of tasks you do.
- ○ Only the completion bonus for the first part.
- ○ Nothing.

How will you earn additional income on top of the completion bonuses?

- ○ The additional income will be based on the tasks you perform in the production stage, but will be determined by decisions in the second part.
- ○ The number of tasks you perform in the production stage will be your additional income.
- ○ The additional income will entirely be determined by luck.

Consent Form

Do you wish to participate in the study?

- ○ Yes
- ○ No

Next

Practice

Welcome to the study! Thank you for taking part.
Now you can **practice the task for 2 minutes.**

Next

10 tasks

Now please do **10 tasks as fast as you can,** to measure how fast you can solve the tasks. You will have 5 minutes for this part. You have to finish the 10 tasks within the 5 minutes **to be able to continue the study.**

Next

Beginning of production

Thank you for completing the 10 tasks. Next, I will ask you to do the same task for **15 minutes.** The timer starts when you click the Next button on this page. The **number of tasks you do within the 15 minutes will be your production.** You will earn 10 tokens per task correctly done. The resulting amount will be your **income to distribute in the second part.** You will only receive information about your exact production at the beginning of the second part.

Please click on the Next button to proceed.

Next

End of first part

This is the end of the first part. Thank you for participating!

Tomorrow you will receive an invitation to the second part, which will be open between 6 AM and midnight (Pacific Time).

Please click HERE to **go back to Prolific, proving that you completed this part of the study.** Alternatively, you can go back to Prolific, and manually enter the following **completion code:**

A.11.2 Redistribution – ED, spectators

Instructions for Part 2

Your performance and more information about the first part

In the first part you performed 45 tasks, therefore your earnings from the first part are 450 tokens.

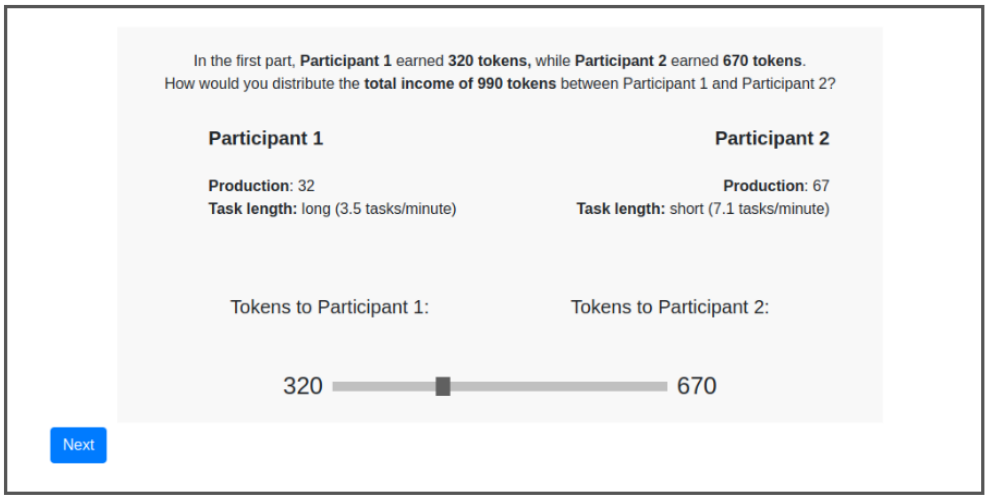
During the first part, you had to work on **3-letter tasks**. However, only about a third of the other participants had 3-letter tasks as well, another **third of participants had to work on 2-letter and the other third on 4-letter tasks**. The task length was **randomly selected** at the beginning of the study for each participant.

At the beginning of the first part, you had to do 10 tasks, as fast as you could. Based on how fast all participants solved the 10 tasks, the computer calculated **how many tasks participants were able to solve within a minute** on average in each task length group. These are **6.2 tasks per minute for 2-letter tasks, 4.5 for 3-letter tasks, and 3.2 for 4-letter tasks**.

Instructions for the second part

For this part, the computer **paired you randomly with another participant** who also completed the first part yesterday. Besides assigning you to another participant, the computer assigned **another pair of participants** from the first part to your group of two. On the following pages, you will have to **decide how to distribute the joint earnings of these two other participants**. Your partner will also make distribution decisions over the joint earnings of these two other participants. Consequently, another pair of participants will distribute your and your partner's earnings.

For making the decisions you will learn both participants' **earnings** and **production** from the first part, and both participants' **task length**. You will also be reminded about **the average number of tasks per minute** participants in the task length group were able to do **when doing the 10 tasks,** so how easy or difficult it was for both participants to solve the tasks. This is an example of the decision screen (the numbers in the screenshot are hypothetical):



When you arrive to the decision page, **you have to click on the slider to reveal the handle.** If you move the handle, you see on the left and the right of the slider the amounts to the first and the second participant that correspond to the current position of the handle. You will be able to move the handle in 5-token increments. Note that if you want to e.g., **increase the payment to the participant on the left**, you have to move the **handle to the right.** This way the number of tokens given to the participant on the left increases, and the number of tokens to the participant on the right decreases. To make a decision, move the handle to the position of the chosen allocation, and click on the Next button.

You will make **10 decisions** in total, of which only **one corresponds to distribution between the actual two participants assigned to you,** and the others correspond to potential other pairings of participants from the first session that did not take place. We cannot tell you which one is the actual decision, so please consider each decision as it were to be implemented at the end of the study.

After the decisions, I will ask you to fill in a short survey and then the study will end.

After every participant finishes the second part, the computer will select **one decision for each pair randomly from the two decisions made for that pair.** That allocation decision will be implemented, so your final payment will be the income given to you in the allocation decision **made by one of the members of another pair.** Income will be converted to British Pounds with 250 tokens = £1.00. You will learn your final payment when you receive all payments through the Prolific payment system, within three days.

By clicking the Next button you will proceed to the decisions.

Next

A.11.3 Redistribution – ED, stakeholders

Instructions for Part 2

Your performance and more information about the first part

In the first part you performed 45 tasks, therefore your earnings from the first part are 450 tokens.

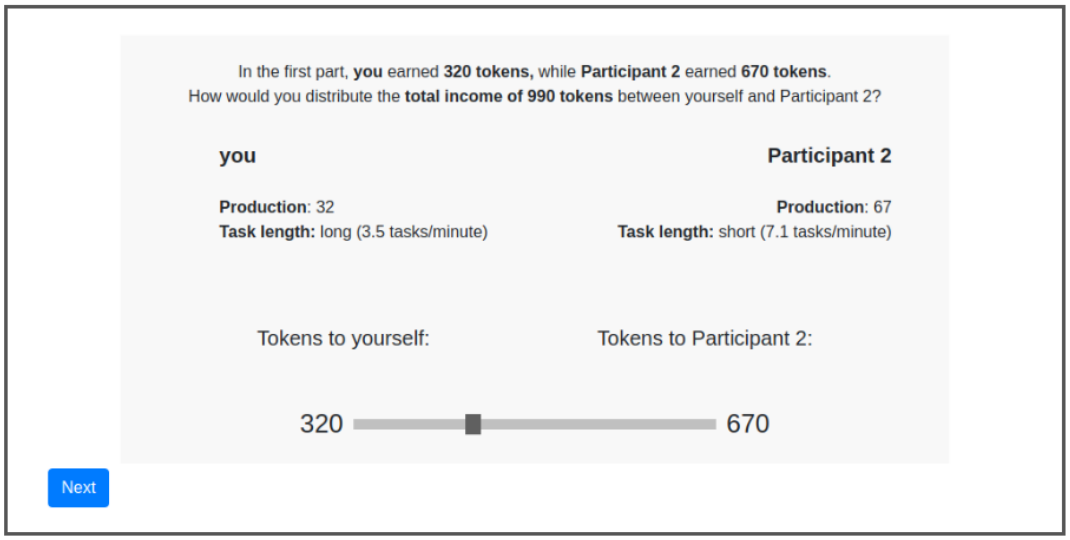
During the first part, you had to work on **4-letter tasks**. However, only about a third of the other participants had 4-letter tasks as well, another **third of participants had to work on 2-letter and the other third on 3-letter tasks**. The task length was **randomly selected** at the beginning of the study for each participant.

At the beginning of the first part, you had to do 10 tasks, as fast as you could. Based on how fast all participants solved the 10 tasks, the computer calculated **how many tasks participants were able to solve within a minute** on average in each task length group. These are **6.2 tasks per minute for 2-letter tasks, 4.5 for 3-letter tasks, and 3.2 for 4-letter tasks**.

Instructions for the second part

For this part, the computer **paired you randomly with another participant** who also completed the first part yesterday. On the following pages, you will have to **decide how to distribute the joint earnings of you and your partner**. Your partner will also make distribution decisions over your joint earnings.

For making the decisions you will learn your partner's **earnings** and **production** from the first part, and your and your partner's **task length**. You will also be reminded about **the average number of tasks per minute** participants in the task length group were able to do **when doing the 10 tasks,** so how easy or difficult it was for you and your partner to solve the tasks. This is an example of the decision screen (the numbers in the screenshot are hypothetical):



When you arrive to the decision page, **you have to click on the slider to reveal the handle.** If you move the handle, you see on the left and the right of the slider the amounts to you and to your partner that correspond to the current position of the handle. You will be able to move the handle in 5-token increments. Note that if you want to e.g., **increase the payment to the participant on the left**, you have to move the **handle to the right.** This way the number of tokens given to the participant on the left increases, and the number of tokens to the participant on the right decreases. To make a decision, move the handle to the position of the chosen allocation, and click on the Next button.

You will make **10 decisions** in total, of which only **one corresponds to distribution between you and your actual partner,** and the others correspond to potential other pairings of participants from the first session that did not take place. We cannot tell you which one is the actual decision, so please consider each decision as it were to be implemented at the end of the study. Note that if in the particular decision you produced less than your partner, your data will be on the **left-hand side**, while if you produced more than your partner, your data will be on the **right-hand side** on the screen.

After the decisions, I will ask you to fill in a short survey and then the study will end.

After every participant finishes the second part, the computer will select **one decision for each pair randomly from the two decisions made for that pair.** That allocation decision will be implemented, so your final payment will be the income given to you in the allocation decision **made by you or your partner.** Income will be converted to British Pounds with 250 tokens = £1.00. You will learn your final payment when you receive all payments through the Prolific payment system, within three days.

By clicking the Next button you will proceed to the decisions.

Next

A.11.4 Redistribution – PR, spectators

Instructions for Part 2

Your performance and more information about the first part

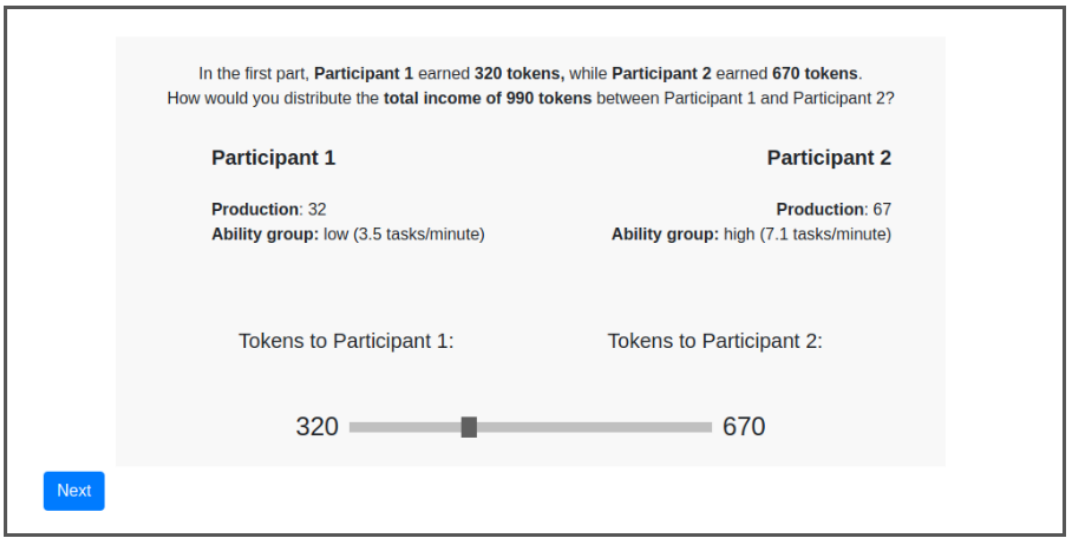
In the first part you performed 45 tasks, therefore your earnings from the first part are 450 tokens.

At the beginning of the first part, you had to do 10 tasks, as fast as you could. Based on how fast all participants solved the 10 tasks, the computer created **three ability groups** that measure **how good participants are in this particular task**. From the time it took for the 10 tasks it also calculated **how many tasks participants were able to solve within a minute** on average in each ability group. These are **3.2 for the low ability group, 4.5 for the medium, and 6.2 for the high ability group.** Based on how fast you solved the 10 tasks, you fell into the third, high ability group in this task.

Instructions for the second part

For this part, the computer **paired you randomly with another participant** who also completed the first part yesterday. Besides assigning you to another participant, the computer assigned **another pair of participants** from the first part to your group of two. On the following pages, you will have to **decide how to distribute the joint earnings of these two other participants**. Your partner will also make distribution decisions over the joint earnings of these two other participants. Consequently, another pair of participants will distribute your and your partner's earnings.

For making the decisions you will learn both participants' **earnings** and **production** from the first part, and both participants' **ability group**. You will also be reminded about **the average number of tasks per minute** participants in the ability group were able to do **when doing the 10 tasks,** so how easy or difficult it was for both participants to solve the tasks. This is an example of the decision screen (the numbers in the screenshot are hypothetical):



When you arrive to the decision page, **you have to click on the slider to reveal the handle.** If you move the handle, you see on the left and the right of the slider the amounts to the first and the second participant that correspond to the current position of the handle. You will be able to move the handle in 5-token increments. Note that if you want to e.g., **increase the payment to the participant on the left**, you have to move the **handle to the right.** This way the number of tokens given to the participant on the left increases, and the number of tokens to the participant on the right decreases. To make a decision, move the handle to the position of the chosen allocation, and click on the Next button.

You will make **10 decisions** in total, of which only **one corresponds to distribution between the actual two participants assigned to you,** and the others correspond to potential other pairings of participants from the first session that did not take place. We cannot tell you which one is the actual decision, so please consider each decision as it were to be implemented at the end of the study.

After the decisions, I will ask you to fill in a short survey and then the study will end.

After every participant finishes the second part, the computer will select **one decision for each pair randomly from the two decisions made for that pair.** That allocation decision will be implemented, so your final payment will be the income given to you in the allocation decision **made by one of the members of another pair.** Income will be converted to British Pounds with 250 tokens = £1.00. You will learn your final payment when you receive all payments through the Prolific payment system, within three days.

By clicking the Next button you will proceed to the decisions.

Next

A.11.5 Redistribution – PR, stakeholders

Instructions for Part 2

Your performance and more information about the first part

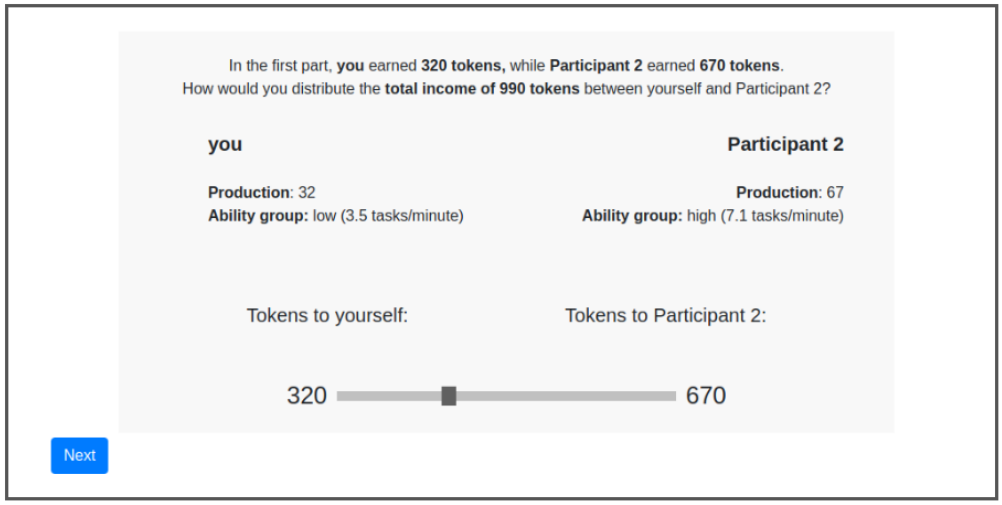
In the first part you performed 45 tasks, therefore your earnings from the first part are 450 tokens.

At the beginning of the first part, you had to do 10 tasks, as fast as you could. Based on how fast all participants solved the 10 tasks, the computer created **three ability groups** that measure **how good participants are in this particular task**. From the time it took for the 10 tasks it also calculated **how many tasks participants were able to solve within a minute** on average in each ability group. These are **3.2 for the low ability group, 4.5 for the medium, and 6.2 for the high ability group.** Based on how fast you solved the 10 tasks, you fell into the third, high ability group in this task.

Instructions for the second part

For this part, the computer **paired you randomly with another participant** who also completed the first part yesterday. On the following pages, you will have to **decide how to distribute the joint earnings of you and your partner**. Your partner will also make distribution decisions over your joint earnings.

For making the decisions you will learn your partner's **earnings** and **production** from the first part, and your and your partner's **ability group**. You will also be reminded about **the average number of tasks per minute** participants in the ability group were able to do **when doing the 10 tasks,** so how easy or difficult it was for you and your partner to solve the tasks. This is an example of the decision screen (the numbers in the screenshot are hypothetical):



When you arrive to the decision page, **you have to click on the slider to reveal the handle.** If you move the handle, you see on the left and the right of the slider the amounts to you and to your partner that correspond to the current position of the handle. You will be able to move the handle in 5-token increments. Note that if you want to e.g., **increase the payment to the participant on the left**, you have to move the **handle to the right.** This way the number of tokens given to the participant on the left increases, and the number of tokens to the participant on the right decreases. To make a decision, move the handle to the position of the chosen allocation, and click on the Next button.

You will make **10 decisions** in total, of which only **one corresponds to distribution between you and your actual partner,** and the others correspond to potential other pairings of participants from the first session that did not take place. We cannot tell you which one is the actual decision, so please consider each decision as it were to be implemented at the end of the study. Note that if in the particular decision you produced less than your partner, your data will be on the **left-hand side**, while if you produced more than your partner, your data will be on the **right-hand side** on the screen.

After the decisions, I will ask you to fill in a short survey and then the study will end.

After every participant finishes the second part, the computer will select **one decision for each pair randomly from the two decisions made for that pair.** That allocation decision will be implemented, so your final payment will be the income given to you in the allocation decision **made by you or your partner.** Income will be converted to British Pounds with 250 tokens = £1.00. You will learn your final payment when you receive all payments through the Prolific payment system, within three days.

By clicking the Next button you will proceed to the decisions.

Next