Difficult Merits*

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Abstract

Empirical and experimental evidence shows that the average person finds performance-based income inequality fair. Observers are often aware, however, that achieving a particular performance was not equally easy for everyone. I study in an experiment how known unequal difficulties affect redistributive decisions. Participants redistribute income earned through performance within pairs, knowing the difficulty of the task within the pair. I consider two kinds of difficulties: external circumstances and individual ability. I find that participants compensate a disadvantaged person if the disadvantage is due to external circumstances, but not if it is due to individual ability. This is true for both when they redistribute between themselves and another subject and when they redistribute between two other subjects. Nevertheless, when involved, participants choose allocations that benefit them the most: disadvantaged subjects compensate themselves for external difficulties, while advantaged subjects accept the performance-based income allocation. A structural estimation reveals that 25-29 percent of participants take external difficulties into account in their decisions, while the rest of them leave the performance-based inequality unchanged or redistribute to equality.

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1 Introduction

One important determinant of the level of income redistribution in a society is the preferences of its members. These preferences are shaped by what sources of inequality people accept, and what kinds of inequalities they want to reduce. Experimental and empirical evidence shows that people on average prefer to reduce inequalities if they arised from factors that they cannot control (Konow, 2000; Fong, 2001; Alesina and Angeletos, 2005). In a situation when luck and merit could also determine incomes, this means that most people want to reduce inequalities if they arise from pure luck, but not if they reflect differences in merit (Cappelen et al., 2007, 2010; Almås et al., 2010, 2020; Durante et al., 2014). In this body of research, merit is proxied by performance in a task, and attitudes toward merit-based differences are inferred from attitudes toward performance differences. An important reality of life, however, is that achieving a given level of performance is transparently more difficult for some than for others. A student who has her own quiet room for studying and is not constantly interrupted by family members, for example, can in the same amount of time prepare better for her upcoming exam than a student who is crammed into a small corner with her siblings running around.[1] At an even more basic level, a student who is more gifted in the subject can learn more in the same amount of time.[2] The existing literature does not study the implications of individuals' knowledge about such advantages for redistributive decisions.

In this paper, I study, in an experimental setting, the extent to which people reduce income inequality that reflects differences in performance in a task, but performance was partly determined by unequal difficulties. I distinguish between two types of difficulties. The first type of difficulty is analogous to the example of studying under different home environments: I randomly assign subjects easier or harder tasks, which induces external variation in how long it takes to achieve a given performance. The second type of difficulty is analogous to talent in the study example: subjects may arrive at the same task with different abilities, also resulting in variation in the time a particular performance takes. While arguably both kinds

[1] It is actually well established that 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 regard talent as a result of lucky circumstances, too (Rawls, 1971; Littler, 2017).

of difficulties are outside one's control at the time of the experiment, I find that subjects treat them very differently: they compensate the person with externally harder tasks, but they leave the inequality due to differences in internal ability unchanged.

I look at how people react to the two kinds of difficulties separately in two experiments of similar structure. The experiments have a production stage and a redistribution stage. In the production stage, participants do a series of simple but tedious letter encryption tasks that take 10-15 seconds each to complete. In the *Task length experiment*, subjects are randomly assigned long, medium-length or short tasks, while in the *Ability experiment*, everyone has medium-length tasks. In both experiments, I first obtain a measure of how much time a task takes for each participant by asking them to do ten tasks as fast as they can. Then I create three difficulty levels: in the Task length experiment, the difficulties are the external lengths; long, medium and short. In the Ability experiment, I sort participants based on how fast they did the ten tasks into low, medium, and high ability terciles. To obtain a measure of the actual difficulty of the task at each level, I calculate the average number of tasks participants at that level could do in one minute. Next, participants work on the task for 15 minutes. The income they receive is based on the number of tasks they complete within the 15 minutes. Unequal difficulties indeed induce unequal production levels: participants with short tasks complete on average twice as many tasks in 15 minutes than those with long tasks, and those with high ability 1.5 times as many as those with low ability.

In the second stage, subjects within an experiment make several redistribution decisions over the joint income of pairs. They receive information about the performance and the difficulty level of both participants in the pair. Subjects make decisions in either of two roles: *spectators* distribute the income of pairs of other subjects as an outside observer, while *stakeholders* distribute the joint income of themselves and a series of other subjects. I compare decisions made in situations with unequal difficulties to situations with equal difficulties.

The results show that subjects treat the two difficulties differently. In decision situations with unequal difficulty in the Task length experiment, spectators redistribute 5.5, and stakeholders 5 percentage points of the total income – equivalent to 36 and 28 percent of the initial income difference – to the participant with longer tasks in the pair. In contrast, in the Ability experiment, neither spectators nor stakeholders compensate the participant

with lower ability. A significant share of the decisions equalizes the incomes regardless of the situation in both experiments, while another large share always leaves the performance-based inequality unchanged.

I also investigate whether stakeholders' decisions in situations with unequal difficulty depend on whether they are advantaged or disadvantaged in the situation. I find that, though all stakeholders redistribute income towards themselves, in the Task length experiment, disadvantaged stakeholders within the pair give themselves an 8.2 percentage points higher income than in situations with equally long tasks. Controlling for their share of the total production in the pair, they still take 2.5-4.7 percentage points more than stakeholders in equal difficulty situations. Advantaged stakeholders in a pair, on the other hand, do not compensate disadvantaged ones and do not take less than their performance-based income share. This suggests that disadvantaged stakeholders treat unequal circumstances similarly as spectators, but advantaged stakeholders do not care about unequal circumstances and reward themselves as though their performance was the result of hard work only. In the Ability experiment, though stakeholders do not compensate participants with lower ability, stakeholders with higher ability in a situation behave in the opposite way: they allocate higher incomes to themselves. This result is entirely due to stakeholders classified as high ability behaving excessively selfishly: they redistribute 7.3-9.2 percentage points more of the total income to themselves on average than stakeholders with lower ability.

Finally, to discover the heterogeneity in individual fairness preferences behind the average decisions, I structurally estimate the shares of different fairness views among spectators and stakeholders separately (based on Mollerstrom et al., 2015; Andre, 2021). I build on the model of Almås et al. (2010), and extend it to my richer setting. The fairness views in their model are the libertarian, the egalitarian, and the meritocratic views. People who hold the libertarian view accept income inequalities even if they arised from pure luck. People with the egalitarian view do not accept any inequality and always wish to redistribute to equality. People with the meritocratic view – whom I will call *performance meritocrats* – accept inequalities due to performance, but equalize incomes that arised from pure luck. I introduce two new types whom I call *compensating meritocrats*. They reward performance but compensate the participant who had more difficulties: circumstance-compensating meritocrats compensate for external sources of difficulties in redistribution, while the ability-compensating

meritocrats also compensate for difficulties due to lower ability.

Using a maximum likelihood estimation to estimate the shares of fairness views, I find that 29 percent of spectators can be classified as circumstance-compensating meritocrats. 55 percent of the spectators are performance meritocrats who leave the performance-based inequality unchanged. The rest of the subjects, 15 percent, hold the egalitarian view, and redistribute the income in all cases to equality. Furthermore, in the Ability experiment, I find that none of the spectators can be classified as ability-compensating meritocrats. Although calling spectators' attention to ability differences in the task could have induced more egalitarian allocation choices, I find similar shares of the egalitarian fairness view in the two experiments. This shows a remarkable consistency in spectators' behavior across the experiments.

The results of the maximum likelihood estimation for stakeholders are similar, though the point estimates of the shares of egalitarians and circumstance-compensating meritocrats are slightly different. 55 percent of stakekholders hold the performance-meritocratic view, while the share of egalitarians is 21 percent. There is a large share of stakeholders, 25 percent, who are circumstance-compensating meritocrats. The share of ability-compensating meritocrats is a non-significant 5 percent. 7 percent of stakeholders in the Task length experiment and 6.5 percent in the Ability experiment redistributed all the tokens almost always to themselves, so it is impossible to categorize them into any fairness type. Excluding these stakeholders from the analysis, the estimated shares are 60 percent performance meritocrats, 17-23 percent egalitarians, 18 percent circumstance-compensating meritocrats and a non-significant 2 percent ability-compensating meritocrats.

My results from the spectator decisions shed new light on what people hold each other responsible for. The existing literature finds a strong presence of the meritocratic fairness view. Namely, people do not change the income distribution much if the participant with higher performance earned higher reward, no matter how big part of the final income was actually a result of performance differences as opposed to luck (Cappelen et al., 2017), or that individuals had different incentives to perform well (Andre, 2021). Andre (2021) in fact finds that 26 percent of the subjects do care about unequal incentives once they learn how workers would have performed in a counterfactual state with equal incentives. However, they simply reward performance when the counterfactual is unknown. I find that, even without

knowing the counterfactual performance, if people learn that the tasks were simply more difficult for some than for others due to external circumstances, many of them compensate for these unequal circumstances.

Regarding unequal ability, previous literature finds that people usually find inequalities based on performance in a task requiring specific abilities or knowledge fair (Eisenkopf et al., 2013; Durante et al., 2014; Cappelen et al., 2010). Ability, however, also depends on previous access to information, practice of the particular task, or simply, innate talent (Rawls, 1971; Eisenkopf et al., 2013). Eisenkopf et al. (2013) study situations where participants had unequal access to education before a quiz that determined income. Participants treat unequal incomes because of unequal opportunities similarly to pure luck-based inequality, especially when they had a longer time to study the questions beforehand. What is interesting is that baseline knowledge of the quiz answers also depends on previous learning opportunities outside the experiment, but participants did not redistribute pure performance-based inequality. What I contribute to these findings it that I call participants' attention to unequal ability in the experimental task, that can have several sources, but what at the time of the experiment participants cannot influence. However, framing ability differences as something that makes one's job more difficult than another's does not have any effect on redistributive decisions.

Finally, my stakeholder results contribute to the literature on the choice of self-serving fairness principles. Though Cappelen et al. (2007) model selfishess and fairness views as orthogonal parts of the utility function, and do not find differential observed fairness views by the situation of the stakeholder, other papers do find a self-serving choice of fairness principles (Rodriguez-Lara and Moreno-Garrido, 2012; Eisenkopf et al., 2013; Deffains et al., 2016; Fehr and Vollmann, 2020). Deffains et al. (2016) and Fehr and Vollmann (2020) randomly assign more or less difficult tasks to subjects who do not know which task they got, and look at redistributive decisions depending on own success. They find that successful participants prefer less redistribution between other subjects (Deffains et al., 2016) and between themselves and an unsuccessful subject (Fehr and Vollmann, 2020) than unsuccessful ones. Uncertainty about the source of own success therefore leads to polarization in the views on redistribution. I find that polarization can happen even with full information about own and others' external circumstances.

In the next section I explain the experimental design in detail. In Section 3 I first show

how unequal external and internal difficulties affected production, then I show descriptive statistics of the redistribution decisions. Section 4 presents a reduced-form analysis of the average spectator and stakeholder decisions, supported by a heterogeneity analysis. Section 5 first introduces the model on which I base the structural analysis, and then presents the structural analysis and results. In Section 6 I discuss the results and conclude.

2 Experimental design

I separately study whether people compensate for worse external circumstances and for low ability by running two parallel experiments. The Task length experiment addresses external difficulties, and the Ability experiment ability differences. Both have the same structure: there is a Production stage and a Redistribution stage. The main stage with respect to the question of this paper is the second stage, where participants make redistributive decisions. However, as the question is how participants redistribute in different situations according to the source of inequality and whether the decision-maker was involved in that situation or not, we need a Production stage to create these situations. I explain the two stages separately below, highlighting the differences between the Task length and the Ability experiments.

2.1 Production

In the first stage, participants work on a simple task. The task is a letter encryption task developed by Benndorf et al. (2018) and looks like the example shown in Figure 1. Participants have to encrypt 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. The little scope for learning minimizes the effect of differential learning abilities on performance in the task, which is crucial for the way I separate difficulty of the task and effort made during production. First, I measure how difficult the tasks are for participants by asking them to do ten tasks as fast as they can.[3] Then they work on the task for 15 minutes, and receive ten experimental tokens for each correctly solved task within the 15 minutes. From this stage I obtain two measures: (1) the individual production of each participant,

[3]One three-letter task takes around 10-15 seconds to complete.

which is the number of tasks they completed within the 15 minutes, and (2) how difficult the task is for participants on average at each difficulty level. I explain the difficulty levels below.

2.1.1 Task length experiment

In the Task length experiment, to create external variation in the difficulty of the task, I randomly assign participants a task length: they face two, three or four-letter tasks. Therefore, there are three levels of difficulty, and the measure of the *actual difficulty* of the task is the average number of tasks participants with a particular task length could do within a minute when asked to do ten tasks as fast as they could.

2.1.2 Ability experiment

In the Ability experiment, every participant works on three-letter tasks. The task is quite simple and does not require specific skills. Still, if someone types faster, have better short-term memory, or can find patterns on the screen faster, she can be better in it. To have a difficulty measure similar to that in the Task length experiment, I sort participants based on how fast they completed the ten tasks, and assign three ability levels – low, medium and high – to the slowest, medium, and fastest tercile. Therefore there are three difficulty levels here, as well, and the difficulty of the task at each level is the average tasks/minute participants can complete within the particular tercile.

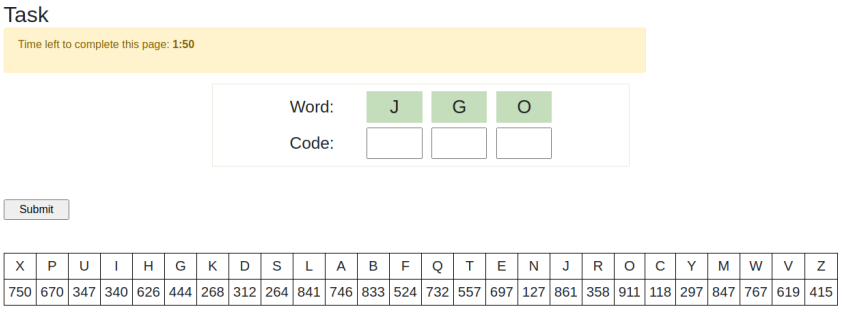


Figure 1: Example (three-letter) task

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.

2.2 Redistribution

This is the key stage of interest. Participants within an experiment are randomly assigned into pairs and make redistributive decisions over the income earned in the first stage. 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 own pair. Participants make the redistributive decisions knowing all details of how the incomes emerged. They know the production of both participants, as well as the difficulty levels with the corresponding actual difficulty. Figure 2 shows an example decision screen. The identification of redistribution towards the participant with more – external or internal – difficulties comes from comparing situations where the difficulty levels were equal to situations where they were unequal. To observe participans' decisions in different situations, they make ten decisions in total, over the joint income of ten different pairs. Those participants who do not wish to redistribute performance-based inequality act similarly in these two situations. Those who wish to eliminate all inequalities redistribute to equality in both situations. Those, however, who want to compensate the participant with a more difficult job, will not redistribute the income in situations where the difficulty levels are equal, but they will redistribute income to the participant with a higher difficulty level when the difficulties are unequal.

2.3 Technical details

The experiment took place between 1-9 December, 2021, in three sessions, with 100-250 participants per session. It was entirely online, on Prolific, and I used the oTree software for coding (Chen et al., 2016). The experimental design, the hypotheses, and the main empirical analysis were pre-registered in the AEA RCT Registry (Drucker, 2021). Appendix Section A.8 present all experimental instructions the participants received.

The two stages – Production and Redistribution – were on two consecutive days, and took together around 35 minutes to complete. Participants did the Production stage on the first day, and the next day they could come back to do the Redistribution stage anytime between 6 AM and midnight. Separating the two stages enabled subjects not having to sit in front of the computer at the same time, excluding attrition due to having to wait for other subjects' move. It also reduced the potential effect of exhaustion after or emotions evoked by

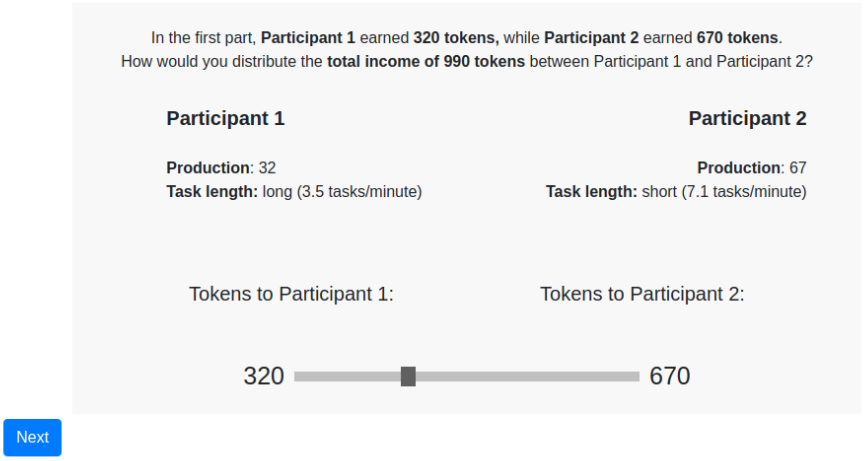


Figure 2: Example of a redistribution decision screen

Note: This is an example spectator decision screen in the Task length experiment. At stakeholder decisions, decision-makers' own data was presented under the title 'You'. Spectators and stakeholders in the Ability experiment saw 'ability group' instead of 'task length' on the screen, with labels 'low', 'medium', and 'high' instead of 'long', 'medium', 'short'. The participant with lower production in the pair was always on the left-hand side, under the name Participant 1, and the high-performer participant was Participant 2.

the Production stage on redistributive decisions. On the other hand, it introduced attrition between the two stages. In the Production stage there were 302 participants in the Task length experiment, and 292 participants in the Ability experiment. 500 of these participants completed the Redistribution stage, which means a 16 percent attrition compared to the first part. However, not coming back to the second stage did not correlate with either any feature of the experiment or any demographic characteristic (see Appendix Table A.1).

Participants at the beginning of the Production stage learned that their income from this stage (except for the show-up fee) will 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.[4] Participants in the Task length experiment also did not know about other task lengths until the Redistribution stage, so that

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

the effects of unequal circumstances on effort would be negligible.[5]

At the Redistribution stage, every participant made ten decisions, of which only one had a chance to be implemented. Participants knew this but did not know which one is the true pair. Every pair of participants made a decision for the same pair – for the same other pair as spectators or for their own pair as stakeholders. At the end of the experiment, one decision out of the two made for that pair was chosen randomly and implemented. I converted the experimental tokens to British Pounds, which is the currency participants are paid in on Prolific.

At the end of the experiment participants completed a survey about how hard they worked on different parts of the experiment, how fair they find 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 shows the exact survey questions.

2.4 Participants

I recruited participants currently living in the United States. They earned about 8.5 USD on average in total. The participants are not representative to the US population, so I present their demographic characteristics compared to the US population in Table 1. The average age in the sample is 35 years, and the median is 33, which is lower than the median age in the U.S, 38.5. There is a larger share of females in my sample than in 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 the 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).

[5]Indeed, the actual number of letters encrypted did not differ significantly across the three task length levels.

	Mean	SD	N	Pop. 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 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 my sample, the minimum age is 18. *Median age is presented in the US population instead of the mean age.

3 Descriptive statistics

3.1 Production

Table 2 shows the mean difficulty of the task at each difficulty level for both experiments. People with long tasks or low ability are indicated as the Low tasks/min level, with medium tasks length or ability as Medium tasks/min, and with short tasks or high ability as High tasks/min. The exogenous task length induced higher variation in the tasks/minute than people's own abilities. Still, the differences across levels are large: high-ability participants could do on average 1.62 times more tasks within a minute than low-ability ones, while participants with short tasks could do 1.86 times more than those with long tasks. The means at the Medium tasks/min level are the same (4.74 tasks) across the experiments, since there were three-letter tasks at both levels. Two-letter tasks allowed people to do more tasks within a minute than high ability in three-letter tasks (6.54 vs 6.00 , $p = 0.000$), and four-letter tasks slightly less than low ability in three-letter tasks (3.49 vs 3.72, $p = 0.000$).

Level	Task length experiment	Ability experiment
Low tasks/min	3.489	3.715
Medium tasks/min	4.744	4.737
High tasks/min	6.539	6.001

Table 2: Mean tasks/minute by difficulty level in each experiment

Note: Each cell shows the number of tasks people at a difficulty level are able to do on average within a minute when asked to do ten tasks as fast as they can. In the Task length experiment, the levels are determined by the assigned task length – the Low tasks/min level includes participants with four-letter tasks, the High tasks/min level participants with two-letter tasks. In the Ability experiment, the levels are the terciles of the distribution of how fast participants could solve the ten tasks. The Low tasks/min level refers to participants in the slowest tercile, and the High tasks/min level to participants in the fastest tercile.

Table 3 reveals that the differences in difficulty of the task across levels translate to differences in production, too. The variance of production was also higher in the Task length experiment than in the Ability experiment, however, the ability-induced differences are still large and significant. In the Task length experiment the mean production of participants with long tasks was 47.6 tasks, with medium tasks 68.4, and with short tasks 96.1. The means in the Ability experiment are 55.8 tasks for the low ability level, 69.4 tasks for the medium, and 83 for the high ability level.

Level	Task length experiment	Ability experiment
Low tasks/min	47.61	55.79
Medium tasks/min	68.38	69.41
High tasks/min	96.06	82.97

Table 3: Mean production by difficulty level in each experiment

Note: Each cell shows the number of tasks people at a difficulty level completed within 15 minutes. In the Task length experiment, the levels are determined by their exogenously assigned task length – the Low tasks/min level includes participants with long tasks, the High tasks/min level participants with short tasks. In the Ability experiment, the levels are the terciles of the distribution of how fast participants could solve the ten tasks. The Low tasks/min level refers to participants in the lowest tercile, and the High tasks/min level to participants in the highest tercile.

3.1.1 Validity of the ability measure

In the ability experiment, my measure of ability is how fast people do ten tasks when asked to do them as fast as they can. The idea is that if participants exert maximal effort in this part, the remaining differences in their speed can only come from their current ability in the task. For the ability measure to work we need participants to believe it actually reflects ability. The measure has two main threats of identification. First, even if participants believe that everyone exerted maximal effort in this part, how fast they do the task might correlate with other characteristics – age or occupation – that, when making the redistributive decisions, participants might have in mind. If they think, for example, that people with characteristics that corrate with low measuresd ability are poorer, and in need of more money, they could redistribute more to low-ability subjects because of these beliefs, and not to compensate them for their difficulties in the task. Second, since I did not provide monetary incentives at this part, some participants might not have exerted maximal effort, so the ability measure can partially reflect effort as well. This is only problematic if participants do believe that the measure reflects effort instead of ability when considering how to redistribute the income in the second stage. In this section and in Section 4.2.2 I address these threats of identification.

Table 4 shows how the time taken for the ten tasks in the Ability experiment correlates with demographic characteristics. Subjects at the average age (35 years) who are full-time employed take about two minutes for the ten tasks. Each additional year of age adds about half a second to the time taken. Part-time workers and currently unemployed participants also take more time by 18 and 24 seconds, respectively. There is no difference in the time taken by gender, student status, or by whether someone was born in the US. The measure therefore correlates with some characteristics which participants might have had in mind when making the redistributive decisions. However, since there was no redistribution towards participants with lower ability, it is unlikely that subjects connected the ability measure with how much in need of money people with these characteristics were.

The other concern is that the ability measure could also reflect effort, as how fast people can perform ten tasks naturally depends on how hard they try. I tried to minimize the differences in the effort people put in doing the ten tasks in both experiments by asking them to do them as fast as they can, and by emphasizing that their performance will provide important information about how fast these tasks can be done. There was also a time limit on

	Time taken for the ten tasks in seconds
Age	0.535***
	(0.191)
Female	0.0132
	(4.254)
Currently studying	-2.158
	(5.056)
Born in the US	1.689
	(4.877)
Employment status, ref.: Full-time employed	
Due to start a new job within the next month	-6.719
	(11.76)
Not in paid work (e.g. homemaker', 'retired or disabled)	8.031
	(6.639)
Other	7.798
	(8.059)
Part-Time	17.71***
	(5.781)
Unemployed (and job seeking)	24.41***
	(5.727)
Constant	120.8***
	(5.213)
Observations	225

Standard errors in parentheses

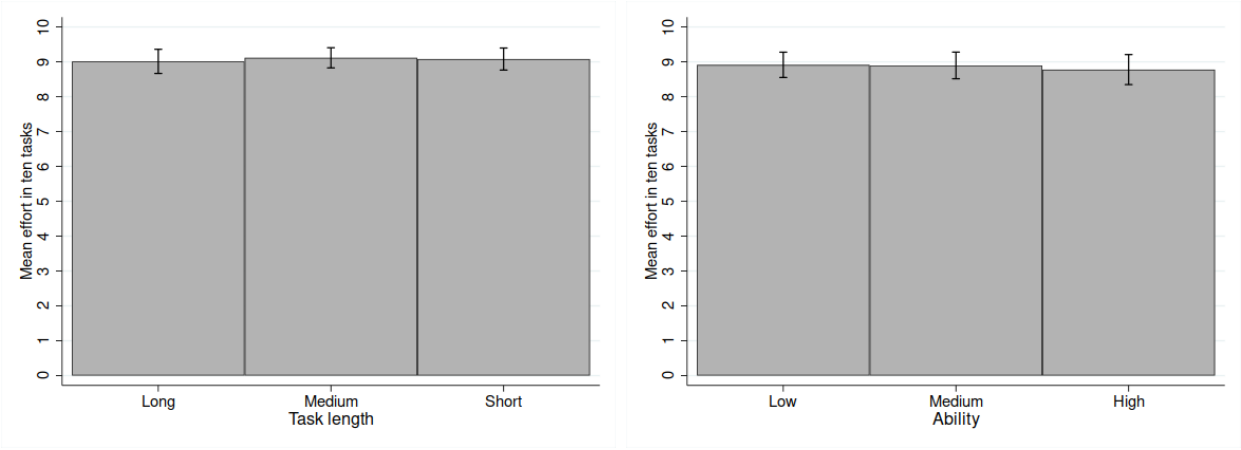
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Time taken for the ten tasks in the Ability experiment

Note: The table presents how the time participants took for the ten tasks when asked to do them as fast as they could depends on demographic characteristics. Time is measured in seconds. Age is demeaned.

this part, and participants were informed that they would be excluded from the experiment if they did not finish the ten tasks within the time limit (see the exact instructions in the Appendix). Concerning their effort level, at the end of the experiment, participants had to rate on a zero to ten scale how hard they worked on each part (ten tasks and production) of the first stage. Figure 3 shows the average self-reported effort levels exerted on doing the ten tasks in the Task length experiment and the Ability experiment. The mean effort levels do not differ significantly by either task length or ability levels, which suggests that participants on average indeed exerted high effort in this part. Self-reported effort in the production part affected production significantly, but controlling for effort, own ability still

had a large effect on how much participants could produce (see Appendix Figures A.3a and A.3b and Appendix Table A.2 for more detail).



(a) Task length experiment

(b) Ability experiment

Figure 3: Mean self-reported effort level by difficulty level

Note: The figures show the means of the self-reported effort levels of participants when doing ten asks as fast as they can, by difficulty level. The lines show 95 percent confidence intervals.

The potential problem with self-reported effort is that participants could report in a distorted way. It might be the case that participants that I categorize as low ability actually exerted low effort while doing the ten tasks but they reported high effort at the end instead. Since the survey came at the end of the experiment, so after I revealed their ability level, if participants had wanted to distort their reported effort, they would have been likely to distort it downwards, so that they do not have to feel bad about having low ability in the task (along the lines of motivated beliefs as in Bénabou and Tirole, 2016). It is therefore plausible that participants reported effort levels truthfully, and most of them did exert high effort or at least they truly believed that they exerted high effort in this part.

As we already saw in Table 4, older people, part-time workers and currently unemployed participants were slower in the task than the rest of the participants. For older people this most likely reflects ability, as they might have less practice in typing or might have worse vision, and even with high effort they are slower in this task than younger participants. For unemployed and part-time-employed participants, the case is more mixed. They might also be less skilled but it is also possible that they did exert lower effort in the ten tasks part, since that part was not incentivized with monetary incentives. Appendix Table A.3 further

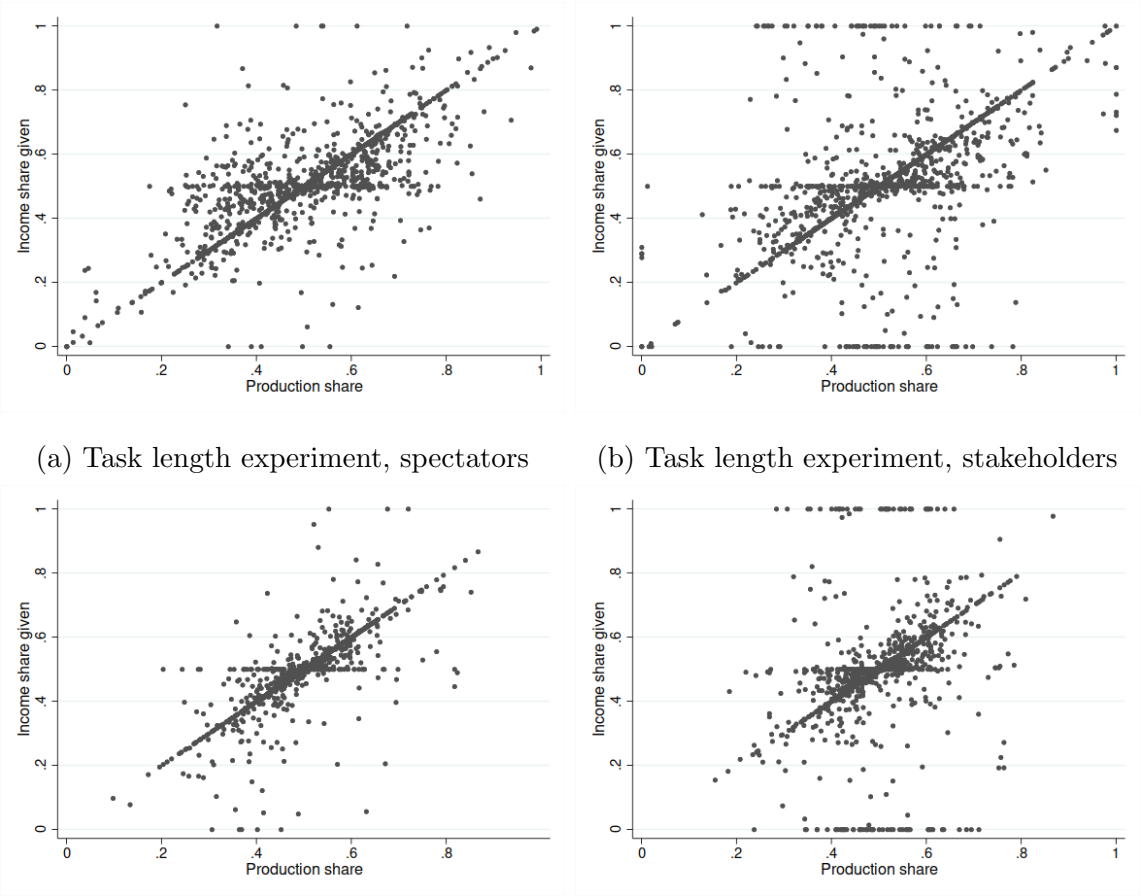
explores the possible role of effort in the ability measure. Unemployed participants actually reported significantly lower effort levels in the ten tasks part than other participants, and part-time workers as well, although that difference is only significant on the ten percent level. The self-reported effort level of these two groups in the production part does not differ from that of other participants. Comparing their potential production – the predicted production had they completed the same number of tasks per minute during production as in the ten tasks part – to their actual production, they also speed up significantly. Therefore, it is unfortunately likely that those participants for whom the payment for the experiment was more important did exert less effort in the ten tasks stage and more in the production stage. This is a threat to identification if these participants also regarded the ability measure as a measure of effort when making redistributive decisions. As robustness checks for the reduced-form results, I will look at the results separately for participants in more or less need of the money, proxied by their employment status.

3.2 Redistribution

First I look at the redistribution choices irrespective of the relative difficulty situation within the pair. Figure 4 shows the share of tokens allocated to a randomly chosen participant in the pair by spectators and by stakeholders, compared to the same participant's share of the total production in the pair.[6] In the spectator figures two types of allocations can be clearly distinguished: the egalitarian ones – giving half of the tokens to both participants – and the performance-meritocratic ones – giving a share of tokens equal to the production share. In the stakeholder figures a third type of decision is also salient: giving all or none of the income to the random participant. Since the randomly chosen participant is either the decision-maker stakeholder or the other participant, these decisions are actually the ones where the stakeholder allocated all tokens to herself (see Appendix Figures A.4a and A.4b for decisions expressed as share of income given to self). A significant portion of decisions is, however, outside these clearly defined shares, which, in the stakeholder figures, might only indicate partly selfish stakeholders giving a little more to themselves than half or than

[6] 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.

their production share. However, in the spectator figures these allocations suggest that some participants might follow other rules than those of the egalitarian or the performance-meritocratic fairness views. It is also visible that the allocations in the Ability experiment are less spread out and less different from the performance-meritocratic, egalitarian, and fully selfish allocations than in the Task length experiment.



(a) Task length experiment, spectators

(b) Task length experiment, stakeholders

(c) Ability experiment, spectators

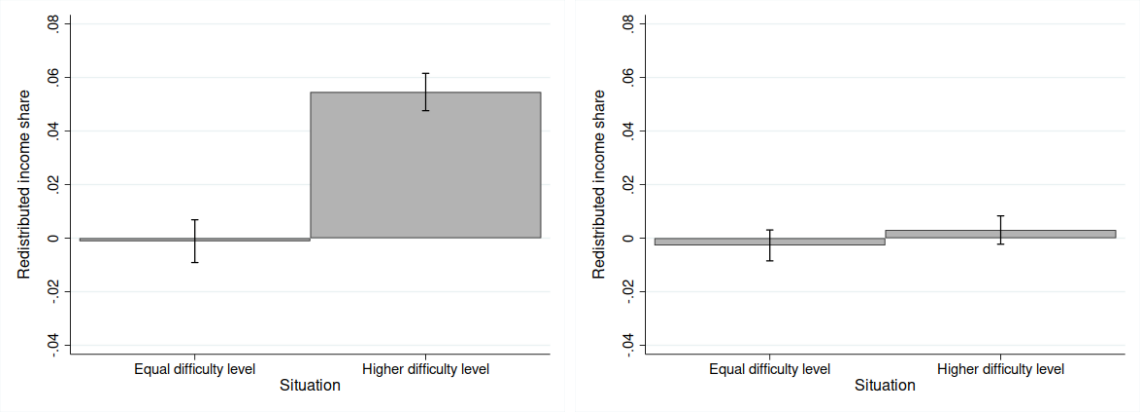
(d) Ability experiment, stakeholders

Figure 4: 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 by stakeholders, plotted against the production share of the same participant. The upper two figures show the spectator and stakeholder decisions in the Task length experiment, and the lower two in the Ability experiment. One point indicates one decision.

The main question of the paper is how relative difficulties within the pair affect the allocation decisions. Figure 5 shows the redistributed income share to a random participant in the pair in two situations: with equal difficulty levels and with unequal difficulty levels. Appendix Figures A.5-A.8 show the distributions of production shares and allocated income

shares in all situations separately. In the Task length experiment, as shown in Figure 5a, participants who had longer tasks within the pair receive a 5.5 percentage points higher income than their production share, while in decisions with equal difficulty levels there is no redistribution on average. In contrast, in the Ability experiment, as shown in Figure 5b, we see no such compensation for differences in ability: participants on average do not get more or less than their production share. Even though the differences in production across difficulty levels were lower in the Ability experiment than in the Task length experiment, there would still have been scope for compensation. The average production share of the participant with longer tasks in the Task length experiment is 0.39, while the average production share of the participant with lower ability in the Ability experiment is 0.43. The average allocated income share to these participants is 0.44 in both experiments, which suggests that participants want to reduce inequalities but consistently just until the level that is determined by ability and effort.



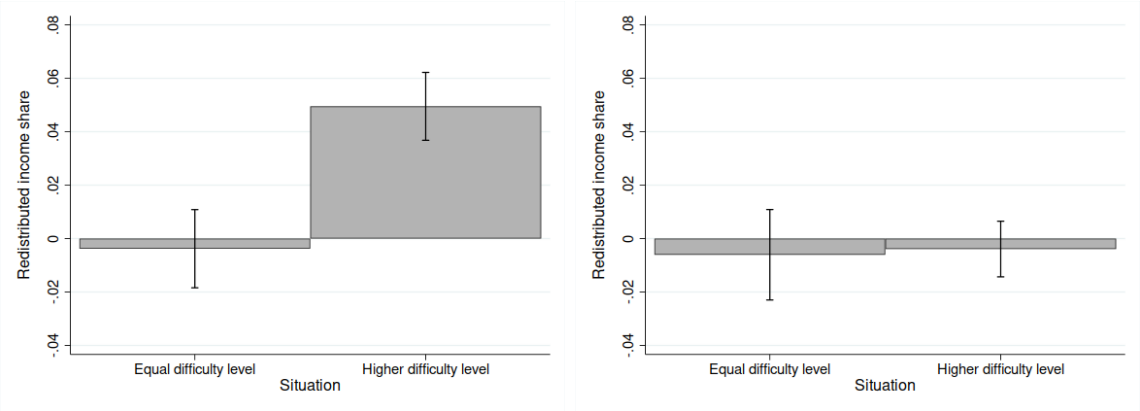
(a) Task length experiment (b) Ability experiment

Figure 5: Redistributed income share by situation (spectator decisions)

Note: The figures show the redistributed income share (allocated income share minus production share) to a randomly chosen participant in the pair in two situations: with equal difficulty levels and with unequal difficulty levels. The decisions are made by spectators. The bars show 95 percent confidence intervals.

Figure 6 shows the redistributed income share to a randomly chosen participant by stakeholders in the same two situations: with equal and with unequal difficulties. Here as well the random participant is either the decision-maker stakeholder or the other participant in the pair. The average redistribution among stakeholders is similar to that of spectators: stakeholders redistribute 5 percent of the total income to the participant with longer tasks, and

there is no significant redistribution with equal difficulty levels (Figure 6a). In the Ability experiment, just like with spectators, there is no redistribution on average in either situation (Figure 6b). In the next section, I first explore these relationships in a reduced-form regression framework, to see if the results are robust to different specifications. Then I study heterogeneities in the effect of unequal difficulties on redistribution across stakeholders by own situation.



(a) Task length experiment

(b) Ability experiment

Figure 6: Redistributed income share by situation (stakeholder decisions)

Note: The figures show the redistributed income share (allocated income share minus production share) to a randomly chosen participant in the pair in two situations: with equal difficulty levels and with unequal difficulty levels. The decisions are made by stakeholders. The bars show 95 percent confidence intervals.

4 Reduced-form analysis

4.1 Average compensation for difficulties

I first look at the redistribution to the participant in the pair who had a higher difficulty level compared to situations with equal difficulty levels in both experiments. For both spectators and stakeholders the outcome variable is the redistributed income share – allocated income share minus production share – to a participant in the pair who is either the disadvantaged participant or a randomly chosen equally advantaged participant (Participant 1 or P1 henceforth). I estimate the following equation:

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

$r_{1,i,p}$ is the share of tokens spectator or stakeholder i redistributes to Participant 1. θ_i is the average number of tasks participants with the difficulty level of i could do within a minute, so $\theta_1 < \theta_2$ denote the cases where P1 had a higher difficulty level than P2. $x_{sh,1,p}$ is the production share of P1 in pair p.

Table 5 shows the results of this regression in the Task length experiment. Spectators on average redistribute 5.7 percent of the total income to the participant with longer tasks in the pair. Column 2 controls for the production share of the participant to see if comparing two pairs with equal production shares, they redistribute more in the pair where one participant had a higher difficulty level than the other. Column 3 adds basic demographic controls: age, gender, whether the spectator was born in the US, and whether she has US nationality.[7] Column 4 adds participant fixed effects, to control for any individual-specific allocation behavior that does not depend on the production share or relative difficulties. We can see in columns 2 to 4 that the higher the production share of the participant, the less excess income she receives on top of her production share. However, the effects of relative difficulties remain: at a given production share, spectators redistribute a 3.9-4.5 percentage points higher income to the participant with longer tasks.

Table 6 shows the result of the same regression in the Ability experiment. Unequal difficulties do not matter in the decisions of spectators in the Ability experiment, either on average, or when controlling for production share. In general, spectators seem to condition their allocation decisions much more strongly on production share and less on any other factors, since there is no significant redistribution in either situation from the performance-based income allocation. The higher the production share, the less excess income participants receive from spectators, similarly to the Task length experiment. Referring to the discussion in Section 3.1.1, while the ability measure correlates with age and labor market status, subjects do not compensate for lower ability at all in their redistributive decisions. Since there is no compensation whatsoever, it is unlikely that they thought about people with

[7]Student status and employment status were also available in the Prolific database. However, there is a larger share of missing values in these variables, as for some participants these data had expired by the time of the experiment. Appendix Tables A.4-A.7 show the reduced-form results on the sample of participants from whom I have all demographic data.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.0570***	0.0393***	0.0406***	0.0446***
	(0.00724)	(0.00639)	(0.00638)	(0.00741)
Production share		-0.152***	-0.150***	-0.162***
		(0.0303)	(0.0296)	(0.0302)
Constant	-0.00564	0.0743***	0.0825***	0.0764***
	(0.00930)	(0.0172)	(0.0206)	(0.0134)
Observations	1210	1210	1210	1210
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 participant level. Clustered standard errors in parentheses.

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

Table 5: Spectator decisions in the Task length experiment

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by spectators in the Task length experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant (same as Figure 5a). Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, and whether she has US nationality. Column 4 adds participant fixed effects.

these characteristics as being in higher need for money. It is possible that some spectators want to compensate low-ability participants while others think these participants just did not exert high effort and actually take money from them. I will explore such potential heterogeneities in Section 4.2.

Table 7 looks at how stakeholders in the Task length experiment redistribute income situations of unequal difficulties. Column 1 shows that on average, stakeholders also redistribute about 5.3 percent of the total income to P1 if she had a higher difficulty level. However, this result is not robust to controlling for the production share of this participant. The redistribution is still positive, but much lower and non-significant. This result suggests that there might be heterogeneities in how stakeholders treat the unequal difficulties depending on which end of the unequal difficulties they are on. I will explore these heterogeneities in Section 4.3.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.00594	-0.000446	0.0000890	0.00164
	(0.00498)	(0.00457)	(0.00441)	(0.00501)
Production share		-0.106**	-0.106**	-0.0922*
		(0.0480)	(0.0484)	(0.0477)
Constant	-0.00585	0.0461*	0.0135	0.0422*
	(0.00994)	(0.0274)	(0.0331)	(0.0229)
Observations	1170	1170	1170	1170
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 participant level. Clustered standard errors in parentheses.

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

Table 6: Spectator decisions in the Ability experiment

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by spectators in the Ability experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant (same as Figure 5b). Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, and whether she has US nationality. Column 4 adds participant fixed effects.

Finally, Table 8 shows the results for stakeholders in the Ability experiment. Similarly to spectator decisions, stakeholders do not redistribute income to the participant with lower abiltiy either. Instead, they also seem to leave the performance-based inequality unchanged.[8] If anything, the coefficients on higher difficulties are negative (but non-significant), as if stakeholders redistributed towards the higher ability participant instead of compensating the lower ability one. The next section explores potential heterogeneities in how participants viewed the ability measure, and Section 4.3 looks at heterogeneities in how stakeholders –

[8]Appendix Tables A.8-A.11 look at redistribution as the share of the original income difference to address the concern that differences in production across ability levels were lower than across task lengths. The results for spectators are similar: they redistribute 40-50 percent of the original income difference to the disadvantaged participant in the Task length experiment, while the coefficients are low and insignificant in the Ability experiment. The redistribution towards the disadvantaged participant by stakeholders is insignificant in both experiments, though the magnitudes are still large in the Task length experiment.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.0524***	0.0132	0.0138	0.0135
	(0.0138)	(0.0170)	(0.0172)	(0.0160)
Production share		-0.322***	-0.318***	-0.282***
		(0.0756)	(0.0766)	(0.0758)
Constant	0.0151	0.188***	0.220***	0.145***
	(0.0213)	(0.0473)	(0.0514)	(0.0394)
Observations	1250	1250	1250	1250
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 participant level. Clustered standard errors in parentheses.

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

Table 7: Stakeholder decisions in the Task length experiment

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by stakeholders in the Task length experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant (same as Figure 6a). Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, and whether she has US nationality. Column 4 adds participant fixed effects.

both in the Task length experiment and in the Ability experiment – treat unequal difficulty levels depending on their situation.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.00224	-0.0287	-0.0296	-0.0276
	(0.0146)	(0.0180)	(0.0179)	(0.0213)
Production share		-0.515***	-0.505**	-0.434**
		(0.196)	(0.194)	(0.177)
Constant	-0.00182	0.254**	0.201**	0.214**
	(0.0146)	(0.0985)	(0.0991)	(0.0922)
Observations	1210	1210	1210	1210
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 participant level. Clustered standard errors in parentheses.

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

Table 8: Stakeholder decisions in the Ability experiment

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by stakeholders in the Ability experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant (same as Figure 6b). Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, and whether she has US nationality. Column 4 adds participant fixed effects.

4.2 Heterogeneous treatment of ability

First I look at whether spectators' redistributive choices in the Ability experiment differ according to how they think about ability generally. Then I present analysis about how spectators with and without full-time employment – who exerted different levels of effort in the ten tasks part, so might have looked at the ability measure in different ways – treated the ability measure.

4.2.1 Correlations with views on ability

At the end of the experiment participants rated on a zero to ten scale how much they agree with three statements about talent and ability. The first question is part of three questions regarding how fair they find different sources of inequality (from Cappelen et al., 2019). The second and third questions are proxies for how malleable people think talent and ability is (growth mindset questions based on Dweck, 2006). These statements were

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 can't change very much."

Appendix Figures A.10, A.12 and A.13 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).[9] Most participants agree with the statement that the harder they work on something, the better they become at it (mean = 8.1, median = 8), while the opinions vary significantly about talent being something that cannot change very much (mean = 4.63, median = 5).[10] My hypotheses were that people who find it rather unfair if talent determines income inequality will compensate the person with lower ability. Also, those who think hard work can make them better in something might regard ability as a result of past efforts, and do not compensate for it. In contrast, those who do not agree with this statement and those

[9]They find talent less fair than if hard work determines income inequality (mean = 7.38, median = 8), and much more fair than if luck determines income inequality (mean = 2.68, median = 2). These results are consistent with those found in Cappelen et al. (2022).

[10]The two growth mindset 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.

who think talent cannot be changed compensate for low ability because they think it is fixed and therefore not under one's control.

Table 9 presents the results on redistribution in light of unequal difficulties separately for people with different views on talent and ability. There are indeed some differences in the decisions of people with different views. Those who do not find it fair at all if talent determines income inequality redistribute 2.5 percent of the tokens to the participant with lower ability, while each one point increase in how much they agree decreases the compensation by 0.3 percentage points. Since most participants find it rather fair if talent determines income inequality (see Appendix Figure A.10), the compensating decisions of these participants do not appear in the average results.

Regarding the questions on how changeable talent and ability are, the more a spectator agrees with the statement that hard work makes her better in something, the less redistribution she chooses on average, which is in line with thinking that ability is a result of past efforts, and so the performance-based income inequality is fair. However, there is no difference in the choices depending on whether the ability levels are equal or unequal. Those who completely disagree with the statement give 3.6 percentage points less to the lower ability participant, in line with the expectations, but the coefficient is insignificant. Finally, if someone thinks that talent is malleable, she redistributes 1.5 percent of the income to the participant with lower ability, and the more she agrees with talent being fixed, the less she redistributes, which is in contrast to what I expected. It is possible that those who think talent is malleable compensated the low-ability participant as a kind of incentive to improve her abilities in the task, while those who thought ability fixed did not think any incentives were necessary.

These results show that there are heterogeneities in how participants view ability and therefore in whether they compensate the participant with lower ability in the pair. However, the number of those who make compensating decisions is so low that the average results cannot reflect these views. The results also suggest that although some participants might have regarded the ability measure as measuring effort, most of them still thought about the ability measure as measuring ability, and made decisions that align with their views on ability and talent.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.00594	0.0249**	-0.0364	0.0149*
	(0.00498)	(0.0125)	(0.0357)	(0.00833)
Finds fair if talent determines income inequality		0.000297		
		(0.00106)		
Higher difficulty level × Finds fair if talent determines income inequality		-0.00302**		
		(0.00143)		
Hard work makes me better in something			-0.00415**	
			(0.00205)	
Higher difficulty level × Hard work makes me better in something			0.00447	
			(0.00402)	
Talent in an area is something I cannot change				0.00132
				(0.00105)
Higher difficulty level × Talent in an area is something I cannot change				-0.00304*
				(0.00166)
Constant	-0.00585	-0.00796	0.0363*	-0.00469
	(0.00994)	(0.0119)	(0.0196)	(0.00480)
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 participant level. Clustered standard errors in parentheses.

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

Table 9: Spectator decision correlations with views on ability

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by spectators in the Ability experiment. Column 1 shows the average compensation in among the spectators. Column 2 shows the compensation interacted with how fair the spectator finds if talent determines income inequality. Column 3 interacts compensation with how much she agrees with hard work making someone better in something. Column 4 interacts compensation with how much she agrees with talent being fixed. The last two questions were only added to Sessions 2 and 3, so the number of observations is lower in the last two colums.

4.2.2 Correlations with employment status

We saw in Section 3.1.1 that part-time workers and currently unemployed participants were more likely to exert lower effort in the ten task part than other participants, since there were no monetary incentives in this part. Therefore I split the sample to participants with and without full-time employment to look at whether they made different redistributive decisions in the Ability experiment. Participants without full-time employment might think about the

ability measure as something measuring effort and ignore it, while participants with fulltime employment might regard it in fact as a measure of ability, and compensate low-ability participants. Unfortunately, employment status is missing for 25 percent of the sample; in most cases because the data they provided had expired by the time of the experiment, and in a few cases because participants revoked their consent to provide these data to the researcher. Therefore I can only do the estimation on the 75 percent for employment data is non-missing, but I also compare the results to the decisions of the participants with missing employment data.

Table 10 show the results of this comparison. I merge those who have full-time employment with those who are due to start a new job within the next month, because they also have good employment prospects.[11] The non-employed category includes part-time employed and unemployed people, those not in paid work, and non-employed for other, non-specified reasons. There is no difference between the redistribution choices of employed and non-employed participants, so those participants who exerted high effort in the ten task part, so might have believed others exerted high effort, as well, do not compensate for low ability either. Neither do participants with missing data. Based on these results, it is possible that some participants regarded the ability measure as another measure of effort but did not care about it and rewarded only production. However, if a large share of participants had thought about the ability measure as measuring effort, we should see redistribution towards the *higher ability* participant, because spectators think she exerted higher effort. Nevertheless, there is no such redistribution. Most participants were therefore likely to have thought about it as indeed a measure of ability, but did not feel that they should compensate for differences in it.

4.3 Self-servingness in stakeholder decisions

Previous literature has shown that when there is uncertainty about whether luck – more or less difficult tasks – or effort determined success, successful and unsuccessful participants attribute their success to different factors and choose redistribution levels accordingly. (Deffains et al., 2016; Fehr and Vollmann, 2020). Even with full information, as in the setting of this paper, participants with high and low difficulty levels might treat the difficulties differently and

[11] The latter category only includes two percent of the sample.

	Redistributed income share		
	(1)	(2)	(3)
	Employed	Non-employed	Missing data
Situation, ref. equal difficulty levels			
Higher difficulty level	-0.00118	0.00818	0.0107
	(0.00701)	(0.00600)	(0.0112)
Constant	0.0138	-0.0145**	-0.00854
	(0.00971)	(0.00675)	(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 10: Spectator decision correlations with employment status

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by spectators in the Ability experiment. 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 numbers of observations.

choose allocations that benefit them the most. To test for these asymmetries, next I look at the redistributive decisions of stakeholders in both experiments expressed as the income redistributed towards themselves in situations with unequal difficulty.

Table 11 reveals that there are indeed differences among stakeholders in the Task length experiment in how they treat unequal difficulty situations. Stakeholders who had longer tasks in the pair always redistribute a more to themselves than in situations with equal task lengths. In contrast, stakeholders with shorter tasks do not redistribute less to themselves. What we can also see is that, controlling for the production share, disadvantaged stakeholders compensate themselves to a similar extent as spectators compensate them. Therefore, what is most likely the case is that stakeholders in advantaged situations behave in a meritocratic way and prefer to leave the performance-based allocation unchanged, while in disadvantaged situations they recognize the role of unequal circumstances in production differences, and compensate themselves for their difficulties.

	Excess income share to self			
	(1)	(2)	(3)	(4)
Situation, ref. equally long tasks				
P had longer tasks	0.0828***	0.0476**	0.0454**	0.0252***
	(0.0206)	(0.0201)	(0.0194)	(0.00824)
P had shorter tasks	-0.0214*	0.0154	0.0138	0.000523
	(0.0129)	(0.0161)	(0.0160)	(0.00861)
Production share		-0.336***	-0.349***	-0.307***
		(0.0674)	(0.0667)	(0.0514)
Constant	0.0300	0.196***	0.241***	0.210***
	(0.0213)	(0.0371)	(0.0702)	(0.0251)
Observations	1250	1250	1250	1250
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 participant level. Clustered standard errors in parentheses.

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

Table 11: Stakeholders' redistribution by own situation in the Task length experiment

Note: The outcome variable is the excess income share given to themselves in a pair on top of production share by stakeholders in the Task length experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks, equally long tasks or shorter tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the stakeholder was born in the US, and whether she has US nationality. Column 4 adds participant fixed effects.

Table 12 shows that the asymmetric behavior in unequal difficulty situations does not come from different behavior of stakeholders with long tasks or short tasks. Though stakeholders with long tasks take a 7.8 percentage points higher income on average than stakeholders with medium and short tasks – who do not redistribute to themselves significantly –, these differences become insignificant once we control for the production share. These results show that own circumstances alone do not induce stakeholders to behave differently. What matters is the type of the situation: stakeholders with long tasks take more when they have a justification – a disadvantaged position –, and stakeholders with short tasks keep more in spite of the transparent inequality in the difficulty levels.

Table 13 explores stakeholder decisions depending on own situation in the Ability exper-

	Excess income share to self		
	(1)	(2)	(3)
Own difficulty level, ref. medium-length tasks			
Long tasks	0.0786**	0.0448	0.0420
	(0.0353)	(0.0378)	(0.0357)
Short tasks	-0.00292	0.0222	0.0178
	(0.0297)	(0.0268)	(0.0265)
Production share		-0.354***	-0.363***
		(0.0668)	(0.0664)
Constant	0.0277	0.205***	0.240***
	(0.0256)	(0.0471)	(0.0732)
Observations	1250	1250	1250
Participant fixed effect	no	no	no
Demographic controls	no	no	yes
Session fixed effect	yes	yes	yes

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

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

Table 12: Stakeholders' redistribution by own task length

Note: The outcome variable is the excess income share given to themselves in a pair on top of production share by stakeholders in the Task length experiment. Column 1 controls only for the whether the participant had long, short, or medium-length tasks. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the stakeholder was born in the US, and whether she has US nationality. Column 4 adds participant fixed effects.

iment. Interestingly, though there are no differences in redistribution across situations on average, controlling for production shares, stakeholders with higher ability in the situation seem to redistribute a significantly higher income to themselves than stakeholders in other situations. This difference becomes insignificant when including participant fixed effects, suggesting that participants with higher ability might be different from participants in lower ability in this task.

Indeed, as Table 14 shows, the asymmetric treatment of unequal ability situations comes from high ability stakeholders redistributing much more to themselves than other stakeholders. In contrast to longer tasks, lower ability within the pair did not serve as a reason for stakeholders to compensate themselves. On the other hand, high-ability stakeholders behave excessively selfishly, and take almost ten percentage points more of the total income than

	Excess income share to self			
	(1)	(2)	(3)	(4)
Situation, ref. equal ability				
P had lower ability	-0.00430	-0.0323	-0.0279	0.00563
	(0.0184)	(0.0233)	(0.0214)	(0.00736)
P had higher ability	0.00183	0.0326**	0.0298**	0.0120
	(0.0155)	(0.0153)	(0.0143)	(0.00964)
Production share		-0.504***	-0.495***	-0.195***
		(0.173)	(0.153)	(0.0508)
Constant	0.0424*	0.299***	0.411***	0.141***
	(0.0253)	(0.0955)	(0.102)	(0.0265)
Observations	1210	1210	1210	1210
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 participant level. Clustered standard errors in parentheses.

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

Table 13: Stakeholders' redistribution by own situation in the Ability experiment

Note: The outcome variable is the excess income share given to themselves in a pair on top of production share by stakeholders in the Ability experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had lower ability, equal ability level or higher ability than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the stakeholder was born in the US, and whether she has US nationality. Column 4 adds participant fixed effects.

stakeholders with lower ability levels. Since this ten percentage points is on top of their production share, they seem to feel that because they could do these tasks faster, they receive an even higher income. It is also possible that the participants who have high ability in this task are also more selfish. Because the cutoffs between the ability levels differ a little across the three sessions that I ran, I can look at whether participants with similar individual tasks per minute measures on the border between medium and high ability redistribute differently depending on whether they fall into the medium or the high ability category.[12] Running the same regression on this very small sample (25 participants), the coefficient on high ability is still high and significant (0.064, $p < 0.01$ with non-clustered standard errors). This shows

[12]This comparison was not pre-registered.

that just classifying participants as high ability did induce selfish choices, though I cannot exclude that high-ability participants are in general more selfish as well.

	Excess income share to self		
	(1)	(2)	(3)
Own difficulty level, ref. medium ability			
Low ability	0.0408*	0.0145	0.0314
	(0.0231)	(0.0234)	(0.0239)
High ability	0.0734**	0.0875***	0.0923***
	(0.0314)	(0.0323)	(0.0310)
Production share		-0.456***	-0.440***
		(0.155)	(0.134)
Constant	0.0124	0.248***	0.357***
	(0.0220)	(0.0782)	(0.0815)
Observations	1210	1210	1210
Participant fixed effect	no	no	no
Demographic controls	no	no	yes
Session fixed effect	yes	yes	yes

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

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

Table 14: Stakeholders' redistribution by own ability

Note: The outcome variable is the excess income share given to themselves in a pair on top of production share by stakeholders in the Ability experiment. Column 1 controls only for the whether the participant had low, medium or high ability. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the stakeholder was born in the US, and whether she has US nationality. Column 4 adds participant fixed effects.

4.3.1 Comparison to spectator decisions by own difficulty level

Finally, I look at whether spectator decisions differ by own difficulty level or the asymmetric treatment of unequal difficulties only occurs in stakeholder decisions where own income is at stake. One could expect that own difficulty level does not affect spectator decisions, or if it does, it does so in a way that spectators with long tasks sympathize more with participants with long tasks, and redistribute towards them to a higher extent than spectators with short

tasks.[13] The results in Table 15 show the exact opposite: while spectators with medium-length tasks redistribute on average 7 percent of the total income to the disadvantaged participant, and spectators with short tasks even 1.8 percentage points more, spectators with long tasks redistribute 2.8 percentage points less. The difference between spectators with short or medium tasks and those with long tasks remain significant in all specifications. The compensation that spectators with long tasks give is still significant on the five percent level, but it is significantly lower than that of the other spectators. This result is in contrast to the finding of egocentric norm adoption in Neuber (2021), where spectators chose allocations that would have benefited themselves had they been in the same situation.

Finally, Table 16 reveals that there is no such difference in the treatment of unequal difficulties among spectators in the Ability experiment. Spectators at all ability levels behave similarly: they do not redistribute to the participant with lower ability in the pair. Spectators who had low ability redistribute around one percentage point more to the lower-ability participant, but the coefficient is insignificant. It seems that receiving information about own ability level only affected stakeholder decisions, and the selfishness of high-ability participants do not interact in any way with the allocations they find fair for others.

[13] This part of the analysis was not pre-registered either but I wanted to contrast asymmetries in stakeholder decisions with spectator decisions.

	Redistributed income share		
	(1)	(2)	(3)
Situation, ref. equal difficulty levels			
Higher difficulty level	0.0695***	0.0527***	0.0527***
	(0.0116)	(0.0110)	(0.0107)
Spectator had long tasks	0.00725	0.00923	0.00480
	(0.00614)	(0.00571)	(0.00675)
Spectator had short tasks	0.0178*	0.0170**	0.0125
	(0.00903)	(0.00855)	(0.0103)
Spectator had long tasks × Higher difficulty level	-0.0274*	-0.0308**	-0.0307**
	(0.0153)	(0.0147)	(0.0146)
Spectator had short tasks × Higher difficulty level	-0.00994	-0.00967	-0.00561
	(0.0195)	(0.0191)	(0.0192)
Production share		-0.154***	-0.152***
		(0.0305)	(0.0298)
Constant	-0.0134	0.0671***	0.0791***
	(0.00941)	(0.0173)	(0.0207)
Observations	1210	1210	1210
Participant fixed effect	no	no	no
Demographic controls	no	no	yes
Session fixed effect	yes	yes	yes

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

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

Table 15: Spectators' redistribution by own task length

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by spectators in the Task length experiment. Column 1 controls for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant, and the task length of the decision-maker spectator. Columns 2-3 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, and whether she has US nationality.

	Redistributed income share		
	(1)	(2)	(3)
Situation, ref. equal difficulty levels			
Higher difficulty level	0.00289	-0.00349	-0.00537
	(0.00751)	(0.00756)	(0.00754)
Spectator has low ability	-0.0104	-0.0111	-0.0133
	(0.00846)	(0.00826)	(0.00853)
Spectator had high ability	-0.00845	-0.00807	-0.00997
	(0.00852)	(0.00824)	(0.00844)
Spectator has low ability × Higher difficulty level	0.00992	0.0105	0.0131
	(0.00892)	(0.00882)	(0.00894)
Spectator had high ability × Higher difficulty level	-0.00103	-0.00154	0.00249
	(0.0128)	(0.0126)	(0.0121)
Production share		-0.106**	-0.106**
		(0.0476)	(0.0481)
Constant	0.00106	0.0534*	0.0226
	(0.0111)	(0.0286)	(0.0344)
Observations	1170	1170	1170
Participant fixed effect	no	no	no
Demographic controls	no	no	yes
Session fixed effect	yes	yes	yes

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

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

Table 16: Spectators' redistribution by own ability

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by spectators in the Ability experiment. Column 1 controls for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant, and the task length of the decision-maker spectator. Columns 2-3 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, and whether she has US nationality.

5 Structural analysis

In the previous section we saw how spectators and stakeholders behave on average. However, the previous literature shows that people hold heterogeneous, clearly distinguishable fairness views that they try to consistently act on – at least as spectators – in their choices (Cappelen et al., 2020a). In this section I estimate the shares of different fairness views among the participants. First, I introduce the model of fairness preferences by Almås et al. (2010), that allows to identify fairness preference types in the sample. Then, I present a structural estimation of these fairness preference types for both spectators and stakeholders (based on Mollerstrom et al., 2015; Andre, 2021).

5.1 Descriptive model

5.1.1 Fairness views

I use the model of fairness preferences by Almås et al. (2010), applied to my setting, as the base 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 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 in the pair. $f^k(x_i, \theta_i)$ 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 number of tasks the ability or task length group participant i belongs to can perform within a minute.

The most common types of fairness preferences that are distinguished in the literature and can be found in my setting are the following:

- *Performance-meritocratic:* does not redistribute performance-based inequality

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

- *Egalitarian:* always redistributes to equality

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

Participants with performance-meritocratic fairness preferences find inequalities based on performance fair, so they do not redistribute the original, performance-based inequality. Participants with the egalitarian fairness view do not accept any kinds of inequality, 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 my design, since there is no pure luck component in the income, people with this view make identical decisions to the those with the performance-meritocratic view. I made this simplification to better be able to look at deviations from the meritocratic allocations. To test if there are people who follow a different rule by compensating for difficulties, I introduce a fourth fairness view:

- *Compensating meritocrat*

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

People with this fairness view want to reward production, but they also want to compensate those for whom producing was more difficult. While other functional forms are possible, I capture such preferences by assuming that the fair allocation is based on the difficulty-weighted production of the person (x_i/θ_i). This assumption is a starting point for separating compensation from purely meritocratic decisions. This functional form though may be wrong, which can lead to a biased estimation of the shares. Looking at the actual decisions in the Task length experiment that were not purely 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.[14] Appendix Figure A.14 shows the distribution of the difference between actual compensation from the weighted-performance-based one in these decisions. Though the difference between actual and predicted compensation is not high, assuming this functional form can lead to an underestimation of the share of compensating meritocrats.

I distinguish between two types of compensating meritocrats: circumstance-compensating meritocrats compensate for unequal external circumstances, while ability-compensating meritocrats also compensate for unequal ability. I can estimate the share of the first type in the Task length experiment, and of the second type in the Ability experiment.

[14]This is a very strict comparison as it classifies every meritocratic or egalitarian decision made with some error as neither of these types.

5.1.2 Utility maximization of spectators and stakeholders

We assume that both spectators and stakeholders hold one of these fairness views, but their optimization problems in a redistributive decision are different. The utility maximization of spectators is the following (from Cappelen et al., 2010, 2020b):

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

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^{fair,t_i} is what she finds fair to allocate given her fairness preferences. Since spectators do not have any monetary gain from the decision, they simply choose the allocation that aligns with their fairness preferences. The optimal spectator decision is therefore:

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

Stakeholders, on the other hand, consider both their own monetary gain and the fairness of the allocation. 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 to herself in the decision, while $t_{own}^{k_j}$ is the tokens she finds fair to give if she has a fairness preference type k. β_j is the weight she puts on fairness relative to her own income. Therefore, the optimal stakeholder decision is:

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

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

5.2 Structural analysis

Based on the model described above, I use a maximum likelihood estimation to estimate the shares of fairness views among spectators and stakeholders separately. The fact that everyone made multiple decisions in different situations makes classifying participants into separate fairness preference types possible.

5.2.1 Spectators

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 $\epsilon_{i,p} \sim N(0, \sigma^2)$. The total likelihood of a participant given that she is of type k is therefore

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

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

$$L_i = \lambda_M \cdot L_i(M) + \lambda_E \cdot L_i(E) + \lambda_C \cdot L_i(C) \tag{12}$$

λ_M denotes the share of performance meritocrats, λ_E the egalitarians, and λ_C the compensating meritocrats. The total log likelihood the estimation maximizes is therefore

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

The parameters to estimate are the standard deviation of the response error, σ, and the shares of the types, λ_M, λ_E and λ_C.

Table 17a shows the results for the Task length experiment. 55 percent of participants hold a performance-meritocratic view and do not redistribute performance-based inequality. 15 percent hold an egalitarian view and redistribute always to equality. 29 percent of the participants, however, can be classified as circumstance-compensating meritocrats, who compensate the participant with worse external circumstances. Table 17b shows the results for the Ability experiment. Here, 87 percent of the participants leave the performance-based income distribution unchanged, and 13 percent redistribute to equality. The estimated share of ability-compensating meritocrats is zero. Since in the Ability experiment differences in production were lower than those in the Task length treatment, there was less scope for compensating for low ability without fully equalizing the incomes. However, making ability differences explicit could have induced more egalitarian decisions among the subjects. This was not the case: the shares of participants the egalitarian view are similar across the two experiments.

	Estimate	Std. error
σ	112.813	2.284
λ_M	0.553	0.047
λ_E	0.152	0.034
λ_C	0.294	0.046

(a) Task length experiment

	Estimate	Std. error
σ	82.905	1.715
λ_M	0.871	0.032
λ_E	0.129	0.032
λ_C	0.000	0.004

(b) Ability experiment

Table 17: Structural estimation results – Spectators

Note: Spectator results. σ is the standard deviation of the response error, λ_M is the estimated share of meritocrats, λ_E is the share of egalitarians, and λ_C is the share of compensating meritocrats (compensating for external difficulties in the Task length experiment and compensating for low ability in the Ability experiment). Parameters estimated in R using the `stats4` package. Standard errors are calculated with the delta method.

5.2.2 Stakeholders

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 are the same as the spectator equations 12 - 13. Tables 18a-18b present the results for both experiments. The estimated shares are similar to the spectator shares: 55 percent of stakeholders hold the performance-meritocratic view, and do not redistribute performance-based inequality. 25 percent are circumstance-compensating meritocrats, while 20 percent are egalitarians. The point estimate for the share of ability-compensating meritocrats is positive, 5 percent, but it is not significant on any common significance level. In both experiments, participants place a large weight on fairness compared to their own monetary gain. However, 7 percent of the stakeholders in the Task length experiment and 6.5 percent in the Ability

experiment took all the money in at least 8 of their 10 decisions. It is therefore impossible to categorize them into any fairness type. Appendix Tables A.12a and A.12b show the estimates excluding these participants. The standard deviation of the response error is much smaller in both experiments, closer to the spectator estimates. The estimated share of circumstance-compensating meritocrats is a bit lower, 18 percent, which is in line with finding that only disadvantaged stakeholders compensated themselves. The share of performance meritocrats is 60 percent and of egalitarians 17-23 percent. The share of ability-compensating meritocrats is virtually zero.

	Estimate	Std. error
σ	220.357	4.445
β	15.816	1.279
λ_M	0.546	0.069
λ_E	0.206	0.049
λ_C	0.248	0.073

(a) Task length experiment

	Estimate	Std. error
σ	193.13	3.941
β	22.196	2.041
λ_M	0.807	0.052
λ_E	0.139	0.047
λ_C	0.053	0.036

(b) Ability experiment

Table 18: Structural estimation results – Stakeholders

Stakeholder results. σ is the standard deviation of the response error, β is the average weight stakeholders put on fairness, λ_M is the estimated share of meritocrats, λ_E is the share of egalitarians, and λ_C is the share of compensating meritocrats (compensating for external difficulties in the Task length experiment and compensating for low ability in the Ability experiment). Parameters estimated in R using the `stats4` package. Standard errors are calculated with the delta method.

The structural estimates support the reduced-form results. Combining the estimates from the two experiments, a consistent picture of the subject population's fairness views emerges. Namely, a slight majority, 55%, holds a performance-meritocratic view that conditions deservingness on performance, no matter the difficulty. $12-15\%$ are egalitarians, who, at least in small-scale one-time settings as this one, prefer to equalize allocations. These two types have been identified in the previous literature. Furthermore, however, 29% of the subjects compensate for external circumstances. This type has not been identified in the literature before, as these people were classified as meritocrats in existing work.

My results are consistent with the shares found in the literature. Andre (2021), looking at 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 the income in proportion to participants' counterfactual production with equal incentives, while actual choice meritocrats leave the performance-based inequality unchanged no matter what the participants would have done with equal incentives. The share of actual choice meritocrats and libertarians together are roughly the same as the estimated share of performance meritocrats in my sample, which is consistent with the fact that performance meritocrats and libertarians make identical decisions in my setting. The share of comparable choice meritocrats in Andre (2021) and compensating meritocrats in my sample is also similar, and both of these groups are trying to find some compensation for factors that affect people's performance but they cannot influence them. The estimated shares are also consistent with those found for the US sample in Almås et al. (2020).

6 Conclusion

Previous literature has shown that most people find income inequalities due to differences in performance fair. An important reality of life is, however, that achieving a particular performance is not equally difficult for everyone. In an experiment with 500 participants from the United States I looked at whether people redistribute income earned through performance in situations with known unequal difficulties in the task. I looked at two kinds of difficulties in two separate experiments: differences in external circumstances (Task length experiment) and differences in internal ability (Ability experiment). I found that participants on average redistribute towards the disadvantaged person if the disadvantage is due to external circumstances, but leave the inequality unchanged when the disadvantage is due to lower ability in the task.

Participants as spectators – deciding about other people's income – acted fairly consistently in their compensating behavior. A structural estimation revealed that 29 percent of the spectators hold a circumstance-compensating meritocratic fairness view – one that rewards performance but compensates the disadvantaged participant if the disadvantage is due to external circumstances. The estimated share of ability-compensating meritocrats was zero. The rest of the spectators were either performance meritocrats (55 percent), who leave

the performance-based inequality unchanged, or egalitarians (13-15 percent), who always redistribute to equality regardless of differences in performance or difficulty.

In contrast to spectators, stakeholders – who made decisions over their own income – acted differently depending on their situation in both experiments. In situations with unequal external difficulties stakeholders with more difficult tasks compensated themselves while those with less difficult tasks did not compensate their partners. While there was no redistribution in either direction in the Ability experiment among spectators, stakeholders I classified as high-ability rewarded themselves excessively. They may have felt that because they could do the tasks faster, they deserve an even higher reward. These results fit the strand of literature about self-serving redistribution principles (Rodriguez-Lara and Moreno-Garrido, 2012; Eisenkopf et al., 2013; Deffains et al., 2016; Fehr and Vollmann, 2020) and show that participants behave differently when they have monetary gains from the decision. This difference cannot be explained by uncertainty about other participants' difficulties and effort because in the experiment everything was known.

Although the core idea of meritocracy is that people should not be held responsible for their circumstances, only for their choices, often these are not clearly separable. Circumstances influence choices or even limit them – as in my experiment participants with longer tasks were unable to choose to do as many tasks as participants with shorter tasks. Andre (2021) finds that even though circumstances influence choices, spectators disregard unequal circumstances and hold the workers fully responsible for their choices under unequal circumstances. My result shows that when circumstances so transparently limit choices, a large share of people do realize their effect on outcomes and redistribute accordingly.

Interestingly, participants did not think about ability differences the same way. Although ability in this task can also be regarded as a consequence of better prior circumstances, participants held each other responsible for differences in their performance due to unequal ability. Perhaps they thought, as their survey answers about ability in general suggest, that ability is a consequence of past efforts, therefore it should not be compensated for. Another factor pushing towards zero compensation could be that the way I measured ability – asking participants to do ten tasks as fast as they can – might have had threats to identification. Although the self-reported effort levels of participants were high and they did not correlate with the ability level I assigned to participants, it is still possible that participants thought

others did not exert maximal effort in the part measuring ability. I argue that if participants regarded the ability measure as measuring effort, we should have seen redistribution in the other direction: towards the participant with higher measured ability. However, we see no redistribution at all. Still, it would be worth replicating the Ability experiment with a task in which ability can be better separated from effort.

All in all, it seems that a significant share of people, as long as they are not involved, realize that circumstances have an effect on outcomes, and try to mitigate these effects. In situations where the person deciding about the distribution of income is not one of the recipients of the income, such as a teacher rewarding students or a manager rewarding workers, revealing external circumstances might help some decision-makers make more aligned decisions with what they find fair. Without this information they can only base their choices on observed performance. However, if workers had to decide on their reward themselves, or even if people could decide about the tax level in their country directly, people with unequal circumstances would come into conflict with each other even with full information about each other's circumstances.

The results of this paper lead to various interesting directions of further research. First, it is worth exploring whether people also hold each other responsible for ability differences in tasks in which innate talent matters to a higher extent, so in tasks where ability is arguably more exogenous. Furthermore, in many cases difficulties are not so transparent, though decision-makers usually have some information about them. It would be worth studying how spectators redistribute in situations with uncertainty about the role of difficulties and effort in performance. Cappelen et al. (2022) find with US and Norwegian participants that in situations with uncertainty, when earnings could result from pure luck or performance, those with meritocratic views make more egalitarian redistribution decisions. Since I could identify a share of participants who compensate for external difficulties, it would be interesting to look at whether they make more meritocratic or more egalitarian decisions when the role of difficulties and effort are uncertain. Finally, people in the United States hold more libertarian and less egalitarian views than Norwegians (Almås et al., 2020). It would be worth looking at whether the share of circumstance-compensating meritocrats and of ability-compensating meritocrats are also higher in countries with higher redistribution levels.

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A Appendix

A.1 Design

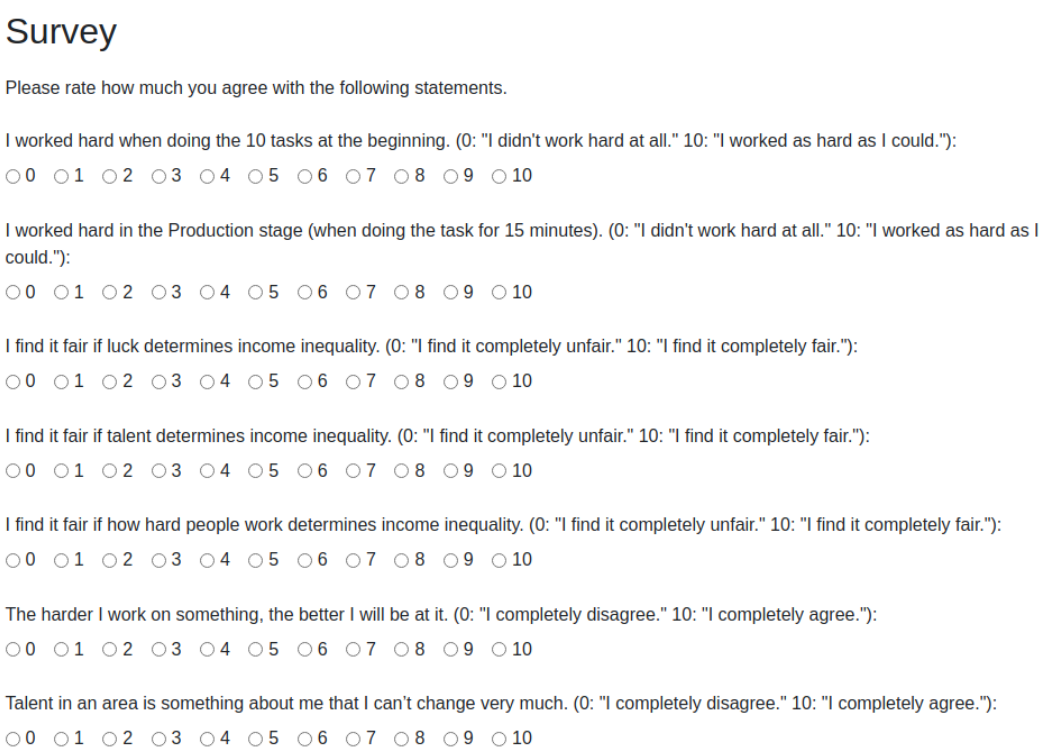


Figure A.1: Screenshot of the survey at the end of the experiment

A.2 Attrition

	Did not come back	Did not come back
Low tasks/min	-0.0410	0.0188
	(0.0535)	(0.0627)
High tasks/min	-0.0488	-0.0492
	(0.0535)	(0.0603)
Task length	-0.0468	-0.0375
experiment	(0.0519)	(0.0590)
Low tasks/min	-0.0200	-0.0707
× Task length experiment	(0.0744)	(0.0862)
High tasks/min	0.0953	0.0773
× Task length 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		-0.201
(e.g. homemaker', 'retired or disabled)		(0.130)
Other		-0.191
		(0.132)
Part-Time		-0.138
		(0.124)
Unemployed (and job		-0.147
seeking)		(0.126)
Constant	0.198***	0.328***
	(0.0373)	(0.127)
Observations	594	451

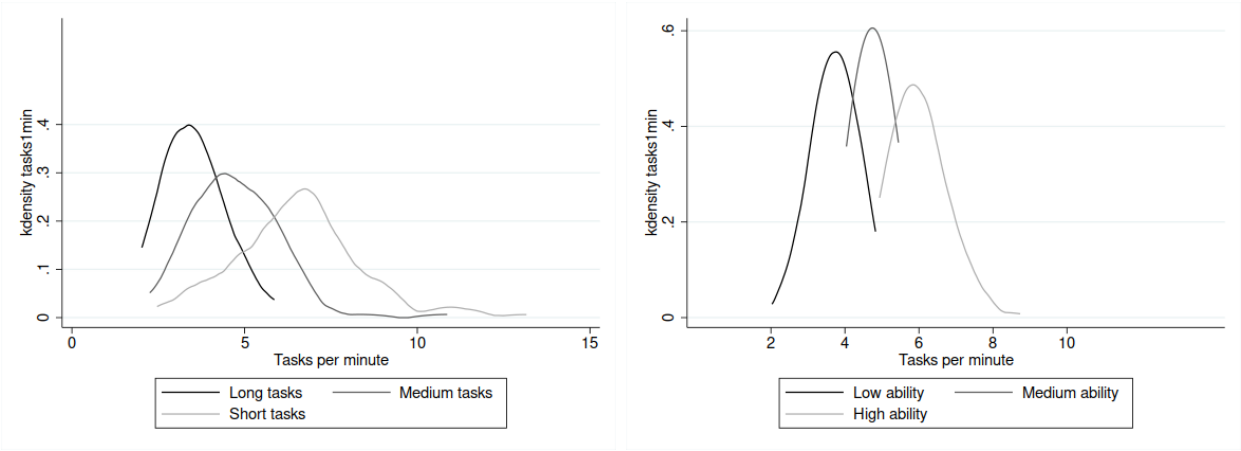
Standard errors in parentheses

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

Table A.1: Attrition from first to second part

Note: The table shows the effect of features of the experiment and own performance on attrition from the Production to the Redistribution part. The baseline category in the groups is the medium tasks/minute group in the Ability treatment. Age and production is demeaned. In the second column, demographic variables are also included as controls. The number of observations is lower in the second column because demographic data was not available for all participants.

A.3 Distribution of tasks/minute by difficulty level



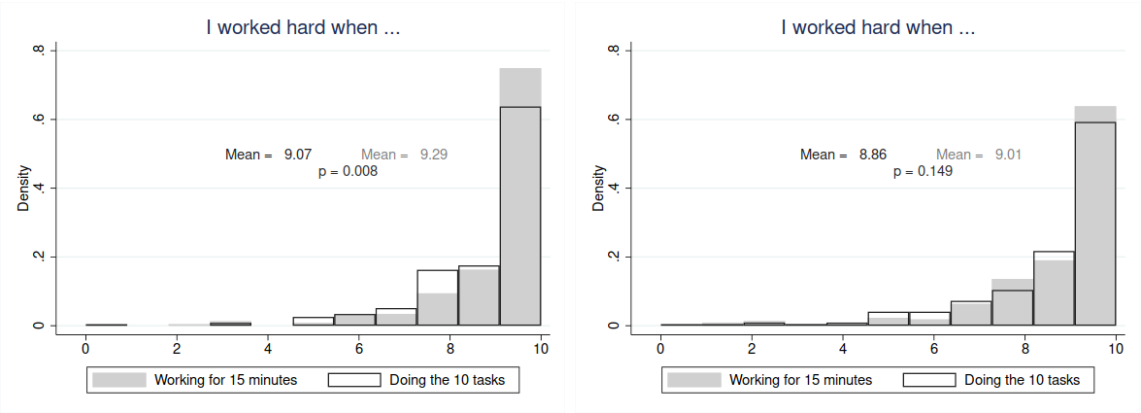
(a) Task length experiment

(b) Ability experiment

Figure A.2: Distribution of tasks/minute by difficulty level

Note: The figures show the distribution of the individual tasks/minute measures by task length and ability levels. The task length levels are long, medium and short tasks, and the ability levels are terciles of the tasks/minute measure – low, medium and high ability. There is overlap in the distributions in the Ability experiment because the thresholds between the groups differ across the three sessions.

A.4 Production



(a) Task length experiment (b) Ability experiment

Figure A.3: Self-reported effort level in each part of the first stage

Note: The figures show the distribution of self-reported level of effort in the Production stage during production (15 minutes of work) and when having to do ten tasks as fast as they can. Participants had to indicate on a 0 to 10 scale how much they agree with the statement "I worked hard when ...".

	Task length experiment	Ability experiment
	Production	Production
Low tasks/min	-20.55***	-13.06***
	(3.369)	(2.028)
High tasks/min	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.2: Production by difficulty level and self-reported effort

Note: The table shows the effect of own task length / ability 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. The reference category in the levels in both columns is the medium task length / medium ability level. The constant therefore shows the production of the medium tasks/min levels with average effort level in both parts.

	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

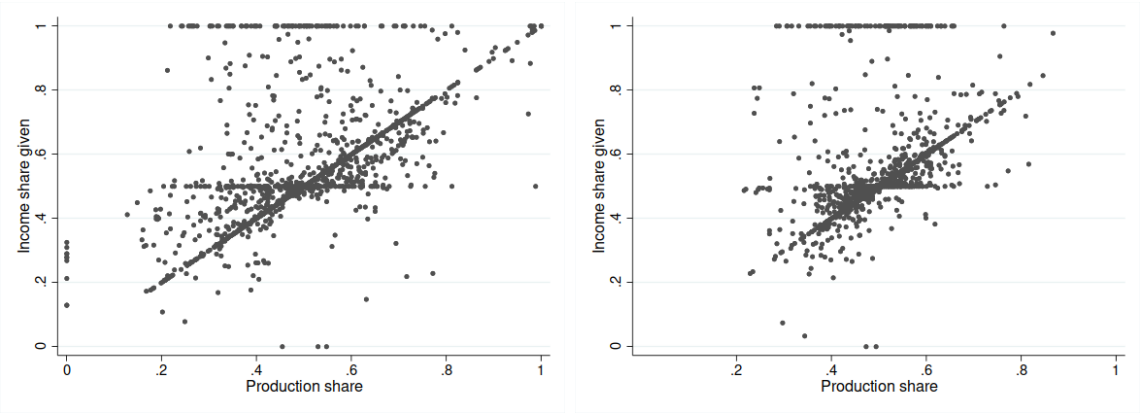
Standard errors in parentheses

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

Table A.3: Exploring effort and ability

The table explores the role of effort in the ability measure in the Ability experiment. The first column shows the correlates of individual characteristics with the time taken for the ten tasks. 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 tasks/minute measure from the ten tasks part.

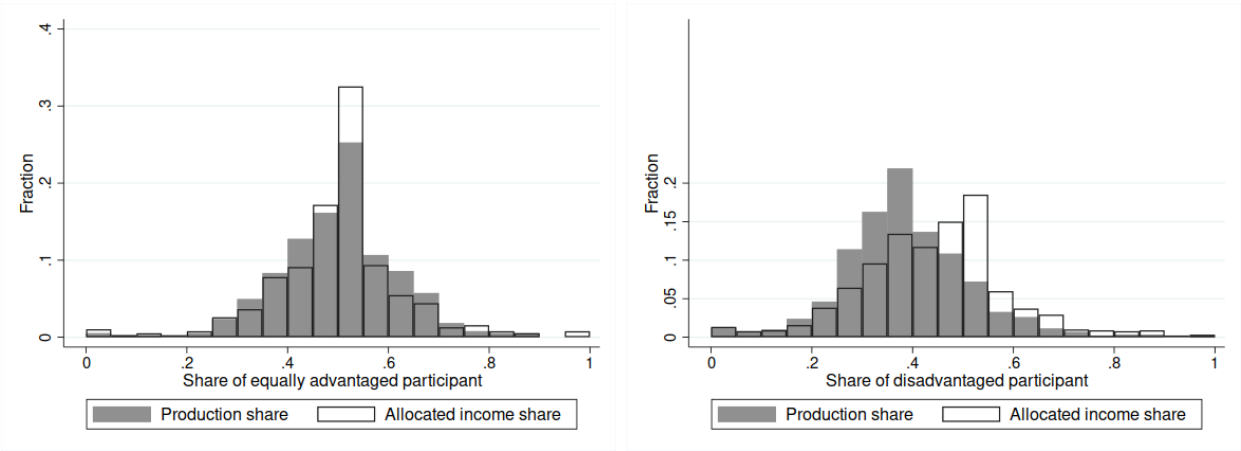
A.5 Redistribution



(a) Stakeholders, Task length experiment (b) Stakeholders, Ability experiment

Figure A.4: 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 same participant. One point indicates one decision.

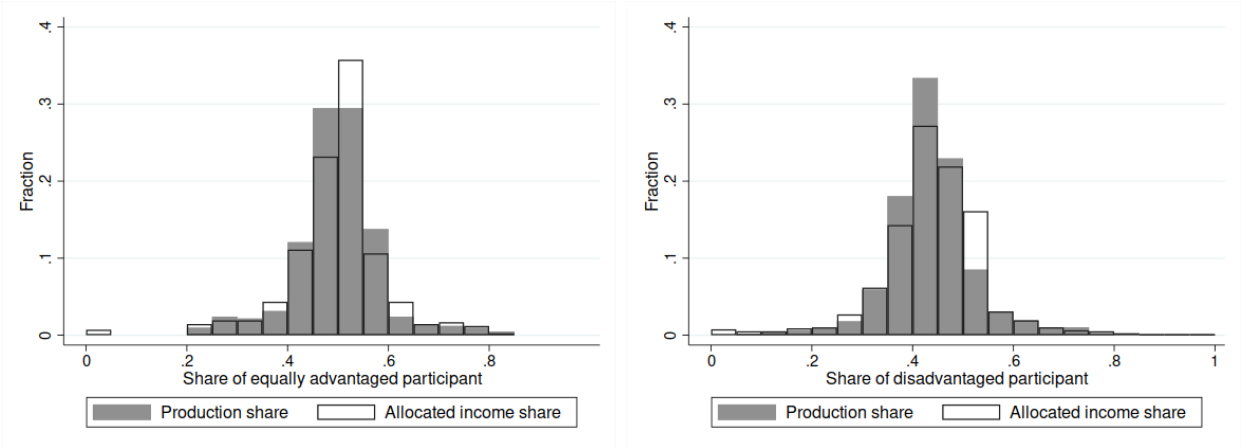


(a) Equal task length within pair
0.50 vs 0.50 (p=0.715)

(b) Longer tasks within pair
0.39 vs 0.44 (p=0.000)

Figure A.5: Distribution of shares among spectators in the Task length experiment

Note: The figures show the distribution of the production share within the pair and the income share allocated by spectators in the Task length experiment. 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 task length within pair

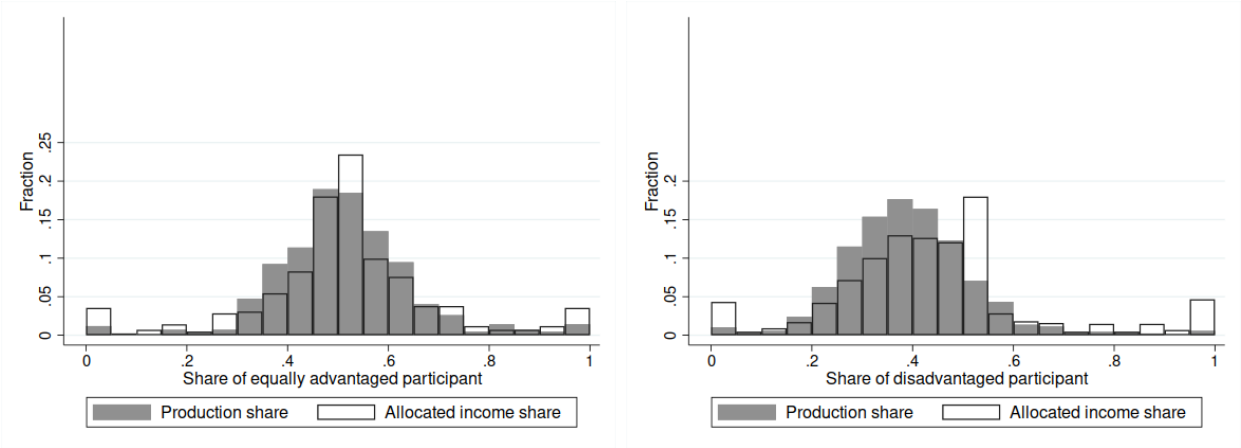
0.49 vs 0.50 (p=0.393)

(b) Longer tasks within pair

0.43 vs 0.44 (p=0.504)

Figure A.6: Distribution of shares among spectators in the Ability experiment

Note: The figures show the distribution of the production share within the pair and the income share allocated by spectators in the Ability experiment. 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 task length within pair

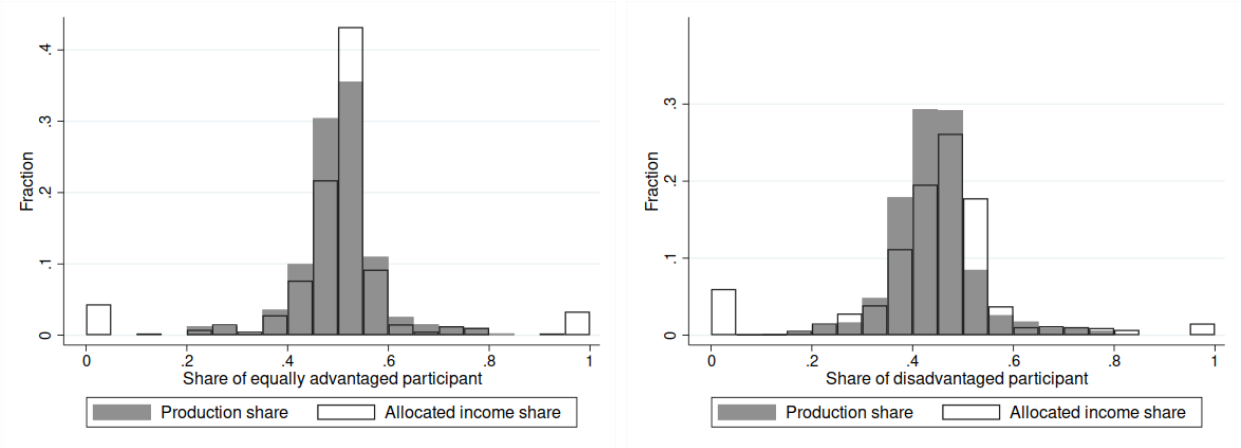
0.50 vs 0.50 (p=0.319)

(b) Longer tasks within pair

0.39 vs 0.44 (p=0.001)

Figure A.7: Distribution of shares among stakeholders in the Task length experiment

Note: The figures show the distribution of the production share within the pair and the income share allocated by stakeholders in the Task length experiment. 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 task length within pair

0.50 vs 0.51 (p=0.289)

(b) Longer tasks within pair

0.44 vs 0.44 (p=0.759)

Figure A.8: Distribution of shares among spectators in the Task length experiment

Note: The figures show the distribution of the production share within the pair and the income share allocated by stakeholders in the Ability experiment. 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.6 Robustness checks of reduced-form results

A.6.1 Sample with all demographic controls

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.0554***	0.0397***	0.0412***	0.0450***
	(0.00823)	(0.00725)	(0.00736)	(0.00833)
Production share		-0.137***	-0.135***	-0.145***
		(0.0334)	(0.0321)	(0.0329)
Constant	-0.00550	0.0658***	0.0490	0.0685***
	(0.00979)	(0.0190)	(0.0300)	(0.0142)
Observations	980	980	980	980
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 participant level. Clustered standard errors in parentheses.

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

Table A.4: Spectator decisions in the task length experiment

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by spectators in the Task length experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, whether she has US nationality, student status, and employment status. Column 4 adds participant fixed effects.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.00445	-0.00312	-0.00219	-0.000696
	(0.00604)	(0.00509)	(0.00496)	(0.00584)
Production share		-0.116**	-0.112**	-0.108**
		(0.0508)	(0.0514)	(0.0528)
Constant	-0.00489	0.0528*	-0.00505	0.0494*
	(0.0104)	(0.0293)	(0.0333)	(0.0251)
Observations	960	960	960	960
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 participant level. Clustered standard errors in parentheses.

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

Table A.5: Spectator decisions in the Ability experiment

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by spectators in the Ability experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, whether she has US nationality, student status, and employment status. Column 4 adds participant fixed effects.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.0632***	0.0351*	0.0390**	0.0283
	(0.0168)	(0.0187)	(0.0189)	(0.0179)
Production share		-0.237***	-0.209***	-0.211***
		(0.0749)	(0.0715)	(0.0573)
Constant	0.0126	0.139***	0.221***	0.111***
	(0.0262)	(0.0484)	(0.0700)	(0.0303)
Observations	960	960	960	960
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 participant level. Clustered standard errors in parentheses.

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

Table A.6: Stakeholder decisions in the Task length experiment

Note: Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by stakeholders in the Task length experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, whether she has US nationality, student status, and employment status. Column 4 adds participant fixed effects.

	Redistributed income share			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	-0.00322	-0.0247	-0.0292	-0.0303
	(0.0184)	(0.0250)	(0.0262)	(0.0300)
Production share		-0.331	-0.348*	-0.363
		(0.204)	(0.203)	(0.238)
Constant	-0.000751	0.164	0.167	0.183
	(0.0177)	(0.106)	(0.116)	(0.126)
Observations	880	880	880	880
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 participant level. Clustered standard errors in parentheses.

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

Table A.7: Stakeholder decisions in the Ability experiment

Note: The outcome variable is the excess income share given to one participant (Participant 1) in a pair on top of her production share by stakeholders in the Ability experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US, whether she has US nationality, student status, and employment status. Column 4 adds participant fixed effects.

A.6.2 Share of original income difference redistributed

	Share of original income difference redistributed			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.417***	0.482***	0.485***	0.502***
	(0.0923)	(0.123)	(0.122)	(0.127)
Production share		0.553	0.552	0.317
		(0.351)	(0.340)	(0.262)
Constant	-0.0222	-0.312	-0.150	-0.242
	(0.0942)	(0.228)	(0.148)	(0.186)
Observations	1200	1200	1200	1200
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 participant level. Clustered standard errors in parentheses.

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

Table A.8: Spectator decisions in the Task length experiment

Note: The outcome variable is the share of the original income difference redistributed to one participant (Participant 1) in a pair on top of her production share by spectators in the Task length experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US and whether she has US nationality. Column 4 adds participant fixed effects.

	Share of original income difference redistributed			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.0349	0.0148	0.0201	0.0312
	(0.0822)	(0.0928)	(0.0915)	(0.101)
Production share		-0.329	-0.330	-0.204
		(0.258)	(0.265)	(0.303)
Constant	-0.0895	0.0724	-0.221	0.0527
	(0.108)	(0.208)	(0.219)	(0.195)
Observations	1149	1149	1149	1149
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 participant level. Clustered standard errors in parentheses.

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

Table A.9: Spectator decisions in the Ability experiment

Note: The outcome variable is the share of the original income difference redistributed to one participant (Participant 1) in a pair on top of her production share by spectators in the Ability experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US and whether she has US nationality. Column 4 adds participant fixed effects.

	Share of original income difference redistributed			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.247	0.222	0.219	0.223
	(0.289)	(0.370)	(0.366)	(0.300)
Production share		-0.205	-0.0761	0.314
		(0.883)	(0.919)	(0.706)
Constant	0.145	0.254	1.220	-0.0909
	(0.239)	(0.632)	(0.763)	(0.447)
Observations	1242	1242	1242	1242
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 participant level. Clustered standard errors in parentheses.

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

Table A.10: Stakeholder decisions in the Task length experiment

Note: The outcome variable is the share of the original income difference redistributed to one participant (Participant 1) in a pair on top of her production share by stakeholders in the Task length experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US and whether she has US nationality. Column 4 adds participant fixed effects.

	Share of original income difference redistributed			
	(1)	(2)	(3)	(4)
Situation, ref. equal difficulty levels				
Higher difficulty level	0.0349	0.0148	0.0201	0.0312
	(0.0822)	(0.0928)	(0.0915)	(0.101)
Production share		-0.329	-0.330	-0.204
		(0.258)	(0.265)	(0.303)
Constant	-0.0895	0.0724	-0.221	0.0527
	(0.108)	(0.208)	(0.219)	(0.195)
Observations	1149	1149	1149	1149
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 participant level. Clustered standard errors in parentheses.

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

Table A.11: Stakeholder decisions in the Ability experiment

Note: The outcome variable is the share of the original income difference redistributed to one participant (Participant 1) in a pair on top of her production share by stakeholders in the Ability experiment. Column 1 controls only for the situation of the participant receiving the income – whether she had longer tasks or equally long tasks than the other participant. Columns 2-4 also control for the production share of Participant 1. Column 3 includes demographic controls: age, gender, whether the spectator was born in the US and whether she has US nationality. Column 4 adds participant fixed effects.

A.6.3 Survey answers

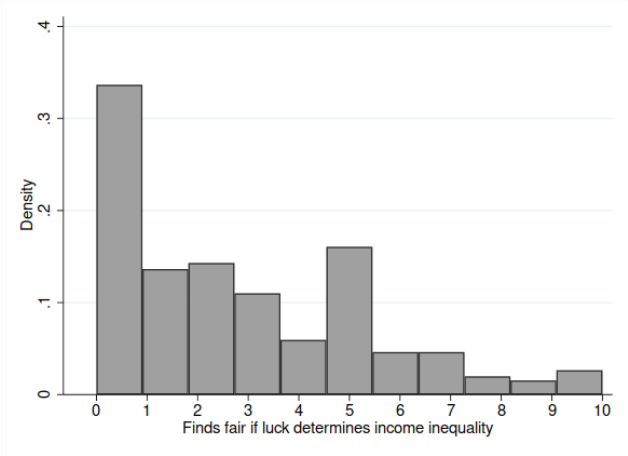


Figure A.9: Distribution of answers to fairness question – luck

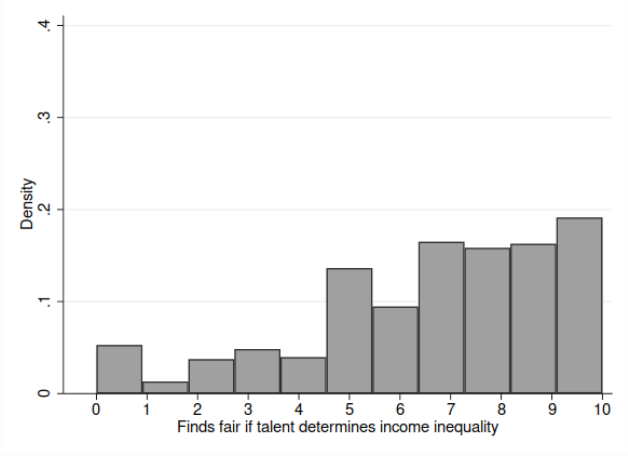


Figure A.10: Distribution of answers to fairness question – talent

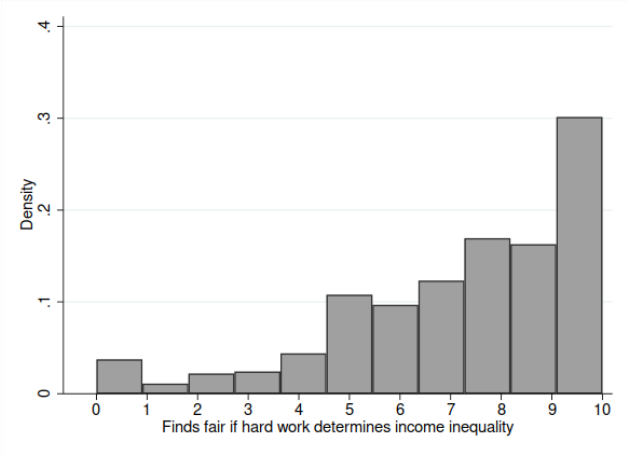


Figure A.11: Distribution of answers to fairness question – hard work

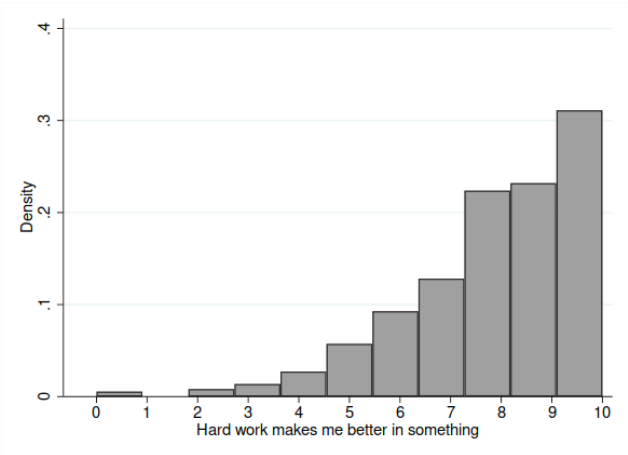


Figure A.12: Distribution of answers to growth mindset question – hard work makes me better

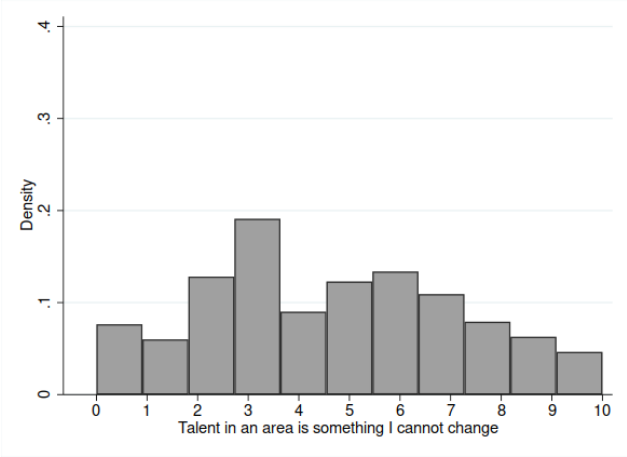
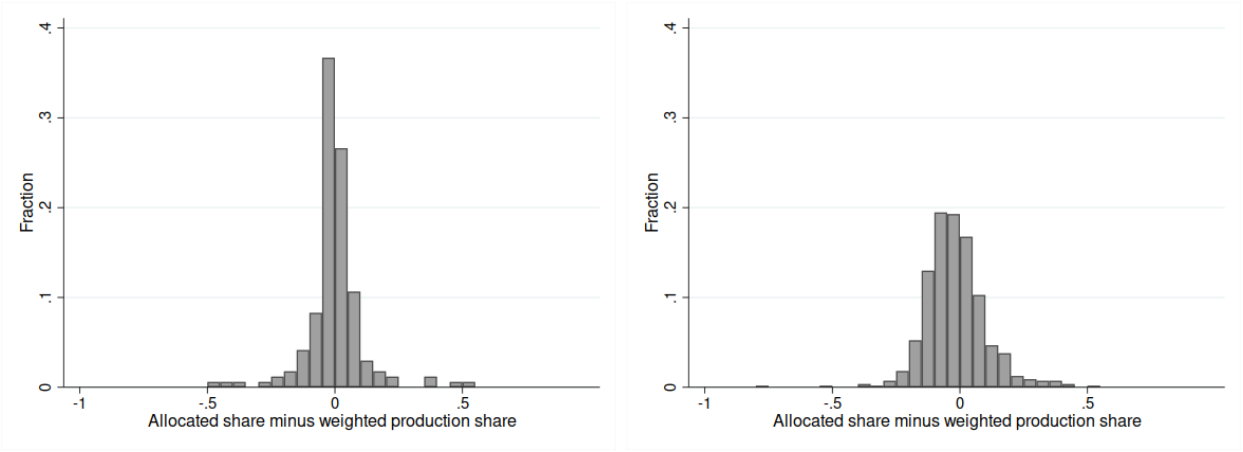


Figure A.13: Distribution of answers to growth mindset question – talent cannot change

A.7 Structural estimation

A.7.1 Testing for the functional form for compensators



(a) Equal difficulty levels

(b) Higher difficulty level

Figure A.14: Allocated income share compared to weighted production share

Note: The histograms show the distribution of redistribution choices compared to those based on the shares of production weighted by the average difficulty of the task for the participant. The sample includes only spectators in the Task length experiment and only those decisions that are not purely 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.

A.7.2 Structural results for not fully selfish participants

	Estimate	Std. error
σ	137.168	2.878
β	45.041	6.662
λ_M	0.593	0.055
λ_E	0.229	0.045
λ_C	0.177	0.050

(a) Task length experiment

	Estimate	Std. error
σ	102.713	2.127
β	57.243	6.233
λ_M	0.809	0.041
λ_E	0.171	0.041
λ_C	0.019	0.018

(b) Ability experiment

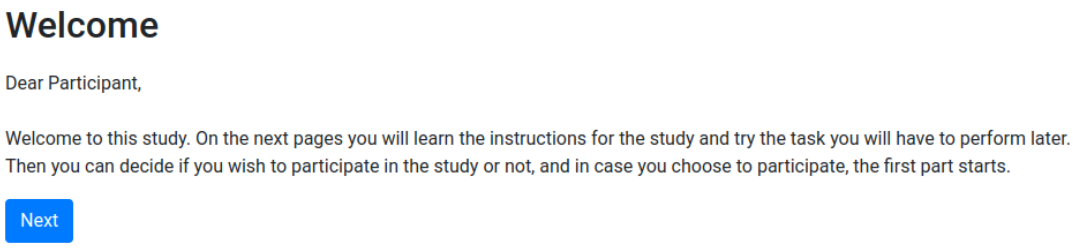
Table A.12: Structural estimation results – Stakeholders excluding fully selfish individuals

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_M is the estimated share of meritocrats, λ_E is the share of egalitarians, and λ_C is the share of compensating meritocrats (compensating for external difficulties in the Task length experiment and compensating for low ability in the Ability experiment). Parameters estimated in R using the `stats4` package. Standard errors are calculated with the delta method.

A.8 Experiment instructions

A.8.1 Production

The example task in the screenshots is a 4-letter task in the Task length experiment, but the Production stage instructions were the same for all participants across treatments.

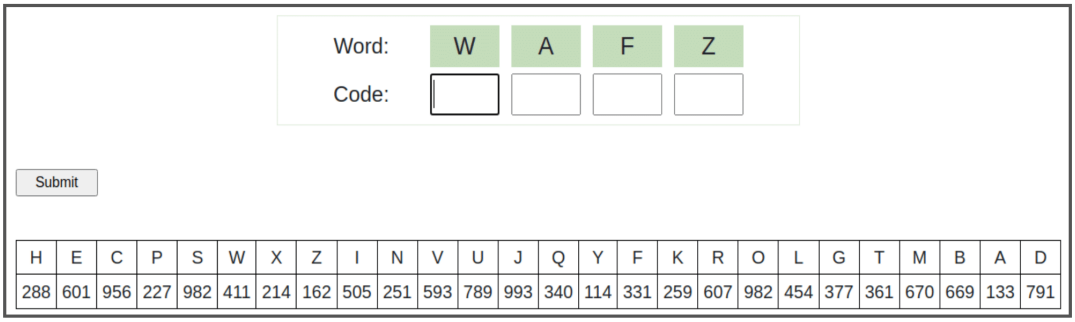


Instructions

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.8.2 Redistribution – Task length experiment, 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.

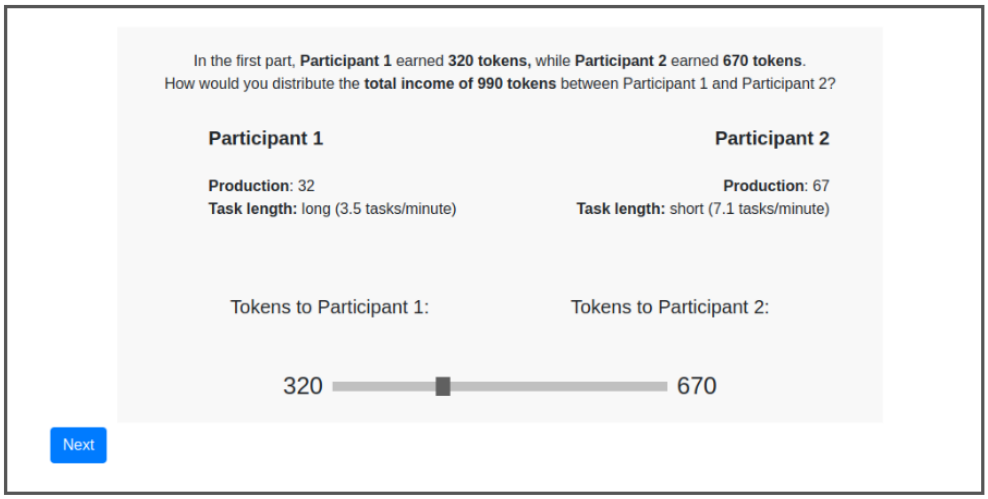
During the first part, you had to work on **3-letter tasks**. However, only about a third of the other participants had 3-letter tasks as well, another **third of participants had to work on 2-letter and the other third on 4-letter tasks**. The task length was **randomly selected** at the beginning of 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.8.3 Redistribution – Task length experiment, 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.

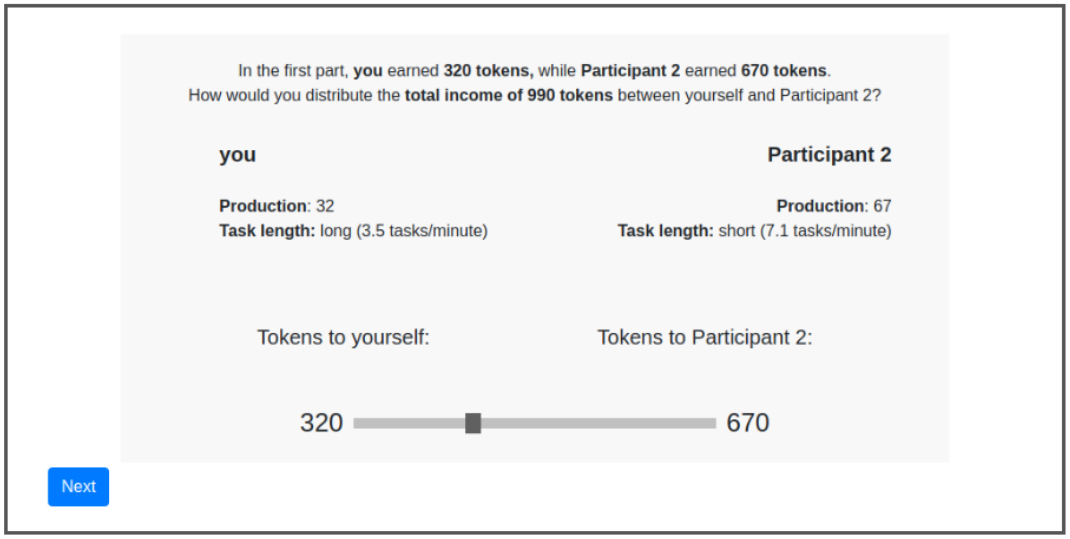
During the first part, you had to work on **4-letter tasks**. However, only about a third of the other participants had 4-letter tasks as well, another **third of participants had to work on 2-letter and the other third on 3-letter tasks**. The task length was **randomly selected** at the beginning of 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.8.4 Redistribution – Ability experiment, spectators

Instructions for Part 2

Your performance and more information about the first part

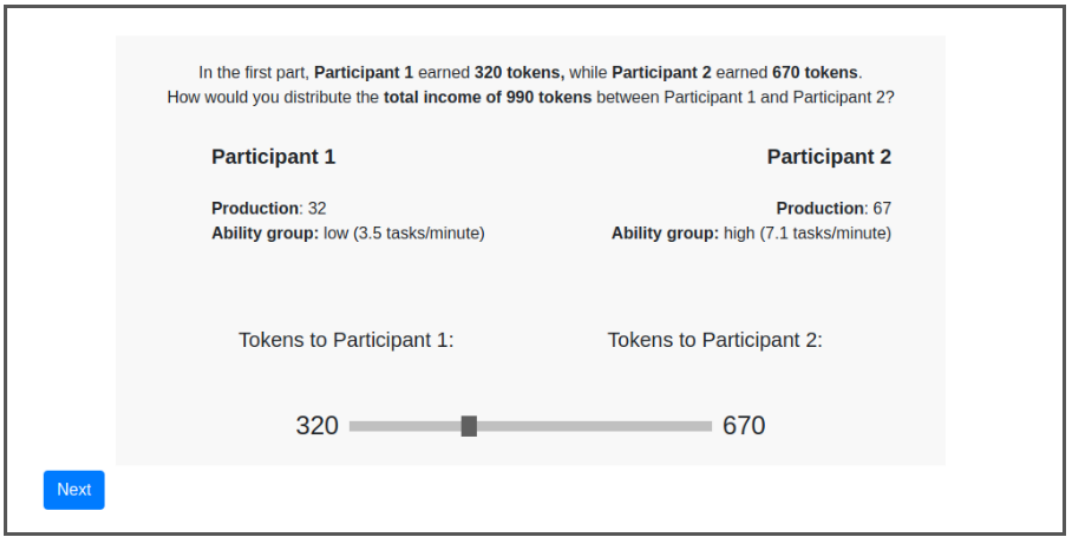
In the first part you performed 45 tasks, therefore your earnings from the first part are 450 tokens.

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.8.5 Redistribution – Ability experiment, stakeholders

Instructions for Part 2

Your performance and more information about the first part

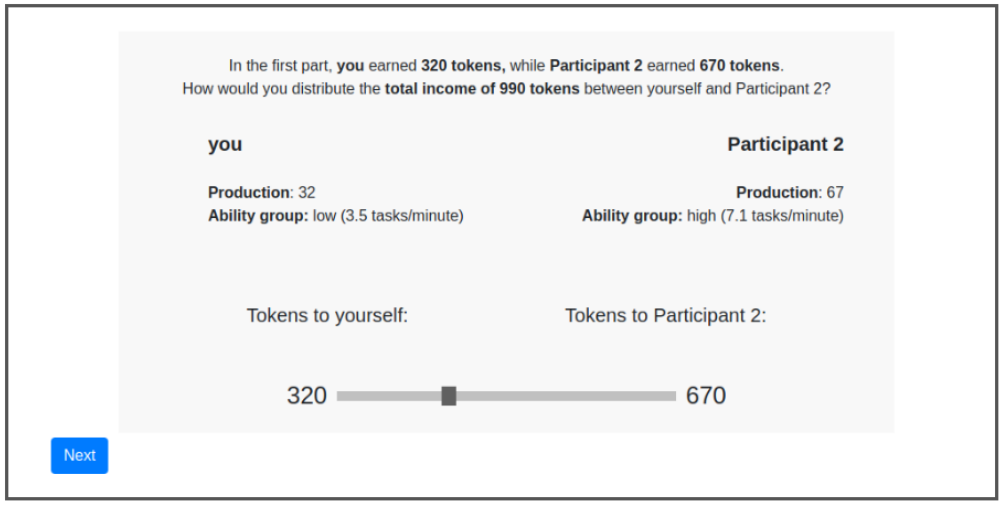
In the first part you performed 45 tasks, therefore your earnings from the first part are 450 tokens.

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