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The fairness of inequality due to risk and effort choices

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Abstract

Three determining factors for economic inequality are self-chosen effort, self-chosen risk, and external circumstances. The fairness people assign to inequalities due to effort and external circumstances is widely studied. Insights on the fairness of inequalities due to self-chosen effort and self-chosen risk, however, are lacking. I study a novel experimental setting where inequality is due to a choice over effort-provision and a choice over risk-taking. While the resulting inequality is mostly seen as fair, around 10% of third-party redistribution decisions are in line with a fairness norm that only considers the choice over effort.

Keywords: Inequality, Fairness, Risk-taking
JEL Codes: C91, D63, D91

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1 Introduction

Against the backdrop of increasing wealth inequalities (Saez and Zucman 2016), the distinction between the part of a person's wealth that is due to effort and the part of a person's wealth that is due to risk-taking has gained relevance. While a large share of the wealth of the wealthy is due to capital gains, capital gains are taxed at a lower rate than labour income or not taxed at all if the gains are not realized (Piketty et al. 2018; Saez and Zucman 2019). In response to such facts, capital gains have become a main topic in the debate on inequality, most notably through the works of Piketty (2013) and Saez and Zucman (2019) and left-wing parties call for political responses such as higher capital gains taxation.[1] While capital gains also comprise gains from physical assets such as real estate, gains from stock market activity and thus from risk-taking are especially salient as a way to become wealthy or to increase existing wealth.

The discussion on the unfairness of inequality due to gains from stock market activity often centers around the aspect of unequal opportunities: while everybody is free to invest money in the stock market, due to their higher liquidity and ability to bear risks, wealthier people can participate in more profitable financial gambles (Piketty 2013). Furthermore, the wealth invested can be perceived as undeserved in the first place e.g. if acquired through inheritance. In this case, the perceived unfairness of the investment-generated inequality is related to different choice options for the rich and the poor. The central element of choice for distributive justice also features in the theory of "luck egalitarianism" (Cohen 1989) that deems as unfair inequalities for which people cannot be held responsible. Following this line of thinking in economics and philosophy, inequalities due to a choice over effort and a choice over risk-taking should be seen as fair.

However, the focus on unequal opportunities overlooks another likely determinant of the perceived unfairness of inequality: the antagonism between "idle money" and "hard work". Even if everyone can choose their effort and risk exposure freely, choices in the two domains might bear a different moral relevance: Roemer and Trannoy (2016) argue that while risk-taking is only costly, effort is costly *and* difficult at the same time.[2] Alesina and Giuliano (2011) define as effort "all activities that require 'pain' or a utility cost for the individuals"

1. At the time of writing, in June 2021, Joe Biden has just proposed to increase taxes on the rich, inter alia through increasing taxes on capital gains to finance his *"American Family Plan"*. The proposal can be found under `https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/28/fact-sheet-the-american-families-plan/` Retrieved 28.06.21. Also see `https://taxfoundation.org/2020-capital-gains-proposals/`, retrieved 28.06.21 and `https://www.nytimes.com/2020/03/04/business/2020-democrats-tax.html`, retrieved 28.06.21.

2. The distinction between the "difficulty" and "cost" of actions in Roemer and Trannoy (2016) is based on Cohen (1989). In the example of Cohen (1989), handing someone a check is costly but not difficult. Taking someone for a long distance on your bike is difficult but not costly if you like this kind of endeavor.

and as luck "all those factors that deliver income to the individuals without any pain or loss of utility to obtain it". They then hypothesize that people grant more entitlement to gains from a tiring job than to gains from gambling, even though both are outcomes of voluntary choices. The distinction between gains from effort and gains from risk-taking also resonates with the debate about which activities create value. Publicly prominent scholars like Noam Chomsky and Mariana Mazzucato denounce a growing financialization of the economy, with the core of business being financial operations instead of production (Chomsky 2017; Mazzucato 2018). Likewise, the philosopher Michael Sandel calls for a financial gains tax as a normative statement to discourage in his view unproductive economic activity (Sandel 2020).

To the best of my knowledge, no study so far has investigated self-chosen effort and self-chosen risk in combination. Empirical evidence on the perceived fairness of inequality through self-chosen effort and self-chosen risk is thus lacking. The existing observational studies on the fairness of inequality (e.g. Fong 2001; Alesina and La Ferrara 2005; Oorschot 2006; Alesina and Giuliano 2011) can only address the distinction between inequality due to self-chosen effort and inequality due to exogeneously imposed circumstances and within this realm focus on meritocratic beliefs rather than on fairness views.[3] The existing experimental literature so far only focused on the distinction between factors within or out of a person's control, looking at for effort and risk separately. For both domains, the evidence shows that holding people accountable for self-chosen but not for exogenously imposed factors is frequently endorsed as a redistributive principle (see e.g. Konow 2000; Cappelen et al. 2007; Krawczyk 2010 for effort and Trhal and Radermacher 2009; Cappelen et al. 2013; Cettolin and Tausch 2015.[4] Suggestive evidence for a special moral relevance assigned to effort provision comes from Cappelen et al. (2017): The authors find that when a prize is assigned based on luck, on merit or on a combination of both, in the combination treatment uninvolved third parties in their redistribution decision assign more weight to merit than their behaviour in the pure luck and pure merit scenarios would suggest. However, given that in their design no active risk-choice exists, a comparison between the moral relevance of choices over effort and of choices over risk cannot be made.

In this study, I investigate whether people assign different moral relevance to choices over effort-provision and choices over risk-taking. I introduce a novel experimental setting where so-called "workers" make a choice over the amount of effort they want to provide as well as

3. It is not possible to distinguish between the choice domains of effort and risk, as the two dimensions are not disentangled in the questions available in the surveys. E.g. a frequently analysed question in the World Values Survey, "Hard work brings success", is a categorical variable (on a scale from 1 to 10) that is the answer to the question: "In the long run, hard work usually brings a better life" (1) versus "Hard work does not generally bring success; it is more a matter of luck and connections".

4. Also see Adams (1965), Walster et al. (1973), and Frohlich et al. (2004) for questionnaire studies from social psychology on the importance of effort exerted for the judgment of the fairness of an inequality.

a choice over the risk associated with the return to effort. The initial payoff for each worker is determined by these two choices. An impartial third party, the so-called "spectator", then has the opportunity to redistribute the earnings between the two workers according to what they deem a fair division. The spectators' redistributive decision does not influence their own pay-off, such that they can implement what they perceive as fair, unconfounded by considerations of self-interest.

I investigate the prevalence of three types of redistribution norms: no redistribution ("NR" hereafter) and outcome-egalitarian redistribution ("EGA" hereafter) and redistribution proportional to effort ("EFF" hereafter). NR is consistent with the idea that the spectator regards inequalities that are the result of choices as fair.EGA is consistent with the idea that the spectator disregards the factors that create an inequality and only focuses on the final outcome equality. EFF is consistent with the idea that the spectator assigns moral relevance only to the choice over effort-provision and thus redistributes proportionally to the worker's effort choice. This novel fairness norm thus lies between purely procedural and purely outcome-based fairness norms. To analyse the prevalence of the three fairness norms, the I classify spectators according to a loss-function that increases quadratically from the ideal distribution under the respective norm.

As a further question, I investigate whether the risk-taker's loss due to bad luck is more likely to be compensated and their gain due to good luck more likely to be credited to them if they chose high instead of low effort.In the US, there often seems to be an entrepreneurial conception of risk-taking that is implicitly assumed when inequalities on the basis of effort and risk-taking are proclaimed as fair.[5] Risk-taking is seen as a necessary part of innovation, growth and wealth. Likewise, hard work and the belief in its importance for the acquisition of wealth is a cornerstone of American ideology (Kluegel and Smith 1986). While no study so far has..., there exists suggestive evidence that spectators sometimes redistribute according to the "type" that is indicated by the participants' risk choice (Cappelen et al. 2013; Mollerstrom et al. 2015). In the present context, I thus hypothesize that a risk-taker who is also hard-working will be perceived as more worthy of compensation or credit than an idle risk-taker.

The results of the experiment can be summarized as follows: in 72% of the decisions, the spectators do not redistribute at all. The classification of fairness norms yield the following

5. For example, Bradbury and Triest (2016) state that, "Increased inequality may result from increased risk taking and entrepreneurship in an environment of rapid technological change, with some entrepreneurs producing better, or just luckier, innovations than others, and reaping greater rewards. It may also result from increased disparities in work effort, with more industrious individuals earning higher incomes as a result of their greater effort. In both these cases, one could argue convincingly that the increase in inequality is justified and that no remedial changes in public policy are needed".

shared: 76% of the decisions are best approximated by NR, 14% by a EGA and 10% by EFF. The results show that, in line with previous literature, inequality that is due to choice is often acceptable. At the same time, the experiment clearly shows that the relevance of choice is not unanimously endorsed, and that effort indeed matters: in a non-negligible share of the decisions people seem to base their redistributive decision on the effort- but not on the risk choice. I do not find evidence that spectators show a favourable treatment of the high-effort risk-takers. High-effort risk-takers are neither more likely to keep the gains if they are lucky, nor more likely to be compensated if they are unlucky.

The experiment points to the existence of a purely effort-related fairness intuition that disregards choices in other domains. This finding shows that the distinction between self-chosen or exogenously imposed actions is too narrow to understand people's fairness views with respect to inequality. The choice domain is also relevant and should be included in the bigger picture when investigating the fairness of inequality. The experiment also contributes to the dialogue between normative philosophical theories and empirical work (Miller 1992; Güth and Kliemt 2010; Gaertner and Schokkaert 2012). The evidence on a distinction between choices over risk-taking and choices over effort-provision points out areas where consistent patterns in lay people's fairness intuitions might arise that are not yet included in the theoretical framework.

2 Experimental design

I use an impartial spectator design to elicit fairness views. Initially, each participant is assigned to the role of "worker" or "spectator". The experiment consists of two phases: a production phase and a redistribution phase. In the production phase, workers gain points based on the choices they make along the dimensions of effort and risk-taking. Workers are then put into pairs of two. In the redistribution phase, spectators can redistribute points between the two workers. The spectators' payment are not affected by their redistributive decisions, such that they can implement their fairness norm free from self-interest. Only the decisions of the spectators are relevant for the analysis. The worker production phase merely serves to make the decision of the spectators meaningful in the sense that it has a real effect on the earnings of other participants.

The workers receive a fixed payment for completing the study irrespective of the points they gained and a bonus that depends on the decisions of the spectators. They are told that they might receive a bonus that will be influenced by the choices they make during the study, but that these choices do not deterministically determine their bonus. They do not learn about the specific procedure for assigning the bonus before the experiment in order to

prevent strategic considerations arising from team production.

2.1 Worker production phase

The main feature of the production phase is that the workers choose both the effort level they want to provide and whether they want a safe or risky wage. Workers work on a real effort task (counting zeros) and exert either high effort (15 tables), medium effort (10 tables) or low effort (5 tables). Worker i's earnings, $x(i)$, are given by $\alpha(i) \times e(i)$, where α is the wage and e is the number of tables chosen. The wage is either safe or risky. The safe wage, α_S, equals 100 experimental points. The risky wage is a lottery between a low wage, $\alpha_L = 70$ experimental points, and a high wage, $\alpha_H = 130$ experimental points, each occurring with a probability of 50%.

The parameterization of the lottery is such that the expected value of the lottery equals the safe alternative. Choosing a risky wage hence does not offer efficiency gains and presents a "pure" choice to gamble. However, the same lottery outcome is applied to all tables such that workers do face the real opportunity of earning substantially less or more by choosing the lottery.[6] Workers first choose whether their wage is safe or risky. They then choose their effort level after having completed one trial table. [7] The workers receive feedback on their lottery outcome at the end of the survey.

2.2 Redistribution phase

After all worker decisions have been made and their risk has realized, workers are put into random pairs of two. The points of the two workers are put in a joint account. The total amount to be distributed in any given distributional situation is thus given by $t(i,j) = x(i) + x(j)$, where $x(i)$ are the points of worker i and where $x(j)$ are the points of worker j.

Theoretically, 46 different combinations of effort and risk choices are possible. Given my research interest, I am only interested in a subset of the possible combinations that allow me to study first, fairness views on inequalities due to *different* choices over risk and effort, and second, a differential treatment of low- and high-effort risk-takers. I thus focus on four combinations that allow me to study these questions in the most parsimonious way possible.

In the four combinations of interest, the choices of one player are constant across all

6. 52.25% of the workers chose to do 5 tables, 12.8% chose to do 10 tables and 34.95% of the workers chose to do 15 tables. With respect to the wage, 22.49% of the workers chose the lottery and 77.51% of the workers chose the safe wage.

7. This information structure is more likely to reflect situations in the real world, where effort choices e.g. in terms of a career path or money earned that can be invested in gambles have to be made and only afterwards learn whether you have been lucky or unlucky.

combinations while the risk and effort choices of the other player differ. Table 1 gives an overview of the four combinations of interest. The safe-player always chooses a safe wage and medium effort. The risk-taker always chooses a risky wage. The risk-taker is either lucky or unlucky. Furthermore, the risk-taker chooses either high or low effort. I will refer to the situations where the lucky risk-taker chose high or low effort as "LuHi" and "LuLo" respectively and to the situations where the unlucky risk-taker chose high or low effort as "UnHi" and "UnLo" respectively.

Table 1: The four situations of interest

Situation	Safe-player			Risk-taker		
	e	α	x	e	α	x
LuHi	10	100	1000	15	130	1950
LuLo	10	100	1000	5	130	650
UnHi	10	100	1000	15	70	1050
UnLo	10	100	1000	5	70	350

Notes: The table shows the four situations of interest. The variable α is the wage and e is the number of tables chosen. The variable x equals the initial points allocated to the respective player.

Spectators are asked to split the points between the two workers according to what they perceive to be a fair division. Redistributive decisions are elicited within-subject such that each spectator makes a decision for all four combinations of interest.[8] I employ a modified strategy-method (see Kube and Traxler 2011) to ensure that each spectator makes decisions for all combinations of interest: In a first step, each spectator is randomly matched to one real pair of workers. If the choice combination of the real pair is one of the four combinations of interest, the missing three combinations are added to the actual combination. The spectator thus makes four redistributive decisions, where the real combination is shown to the spectators last as it might stand out from the combinations of interest. If the choice combination of the real pair is not one of the combinations of interest, all four combinations of interest are added to the actual combination. The spectator thus makes five redistributive decisions. In both cases, the spectator does not know which of the pairs is the real pair.

When making their decision, spectators have full information: they know the workers' wage and effort choices, whether the risk-taker received a low or a high wage and the resulting

8. The within-subject design is used to highlight the difference between the high- and low-effort worker and to initiate moral thinking on the part of the spectators about this difference (see Gaertner and Schokkaert 2012, for a discussion on within- and between-subject design in distributive justice research).

number of points per worker. They also know how the situation was explained to the workers and that the workers knew their lottery outcome.[9] Each real pair of workers is matched to four spectators. After all redistribution decisions have been made, one of the four spectators is selected and their decision for the real pair is implemented.

After making their redistributive decisions, spectators fill out a non-incentivized questionnaire asking for a short statement on why they chose as they did, questions on their attitudes towards different taxation policies, reasons for wealth in their society, how concerned they were about fairness in their decision and their hypothetical choices as workers.

3 Experimental procedures and data

Participants for both parts of the experiment were recruited from the online labour market Amazon Mechanical Turk (MTurk). Data for 289 workers was collected in February 2019. Workers were then randomly matched in pairs, giving rise to 26 different combinations of real distributional situations. Workers received a flat payment of \$2.00 and a bonus that depended on their choices and the choices of the spectators.[10] The data for the spectators was collected in different waves for the different real choice combinations in February and March 2019. Spectators received a flat payment of \$1.50.[11]

Overall, 581 spectators took part in the experiment. Of these spectators, 567 answered all questions that were posed in the study. Of those four were excluded because of suspect comments in the open-ended question, such that 563 spectators were considered for further analysis. The mean age of the spectators was 35.49 ($SD = 9.85$, $min = 18$, $max = 79$). 41% were female. 61% completed higher education that is a college degree, master degree, doctoral degree, or professional degree (Juris Doctor and Doctor of Medicine). The mean score for the political orientation score was 4.24, with 1 = liberal left and 9 = conservative right. The instructions for the workers as well as for the spectators can be found in Appendix C.

9. The fact that the workers receive feedback on their lottery outcome might increase the workers' entitlement in the eyes of the spectators and discourage redistribution. However, the experimental situation in this regard closely resembles the situation in the real world where there is the feeling of entitlement to one's earnings before taxation.

10. As there was an uneven number of workers who successfully completed the study, one worker was randomly chosen who received the flat payment and the dollar amount that resulted from their choices.

11. Due to communication problems between Amazon Mechanical Turk and TurkPrime, some spectators' responses were only registered later, leading to a total number of spectators that exceeds the number needed for the number of pairs present. For the situations in which this was the case, it was randomly decided which of the spectators' answers were considered for the worker-spectator matching.

4 Is inequality perceived as unfair?

To see, as a first step, whether inequality due to choices over effort and risk is perceived as unfair at all I look at the overall occurrence of redistribution, irrespective of the amount redistributed. If we take all situations together, in a vast majority of the choices (72%) spectators did not redistribute at all. Figure 2 shows that in all single situations not distributing remains the most frequent choice.[12] The first main insight is therefore that for a majority of the decisions, neither overall outcome inequality between the workers nor the fact that the outcomes are arrived at by factors that lie in different domains was relevant.

While a majority of the spectators do not perceive the inequality to be unfair, around 28% of the spectators redistribute at least some share of the points. What level of inequality is implemented in case of redistribution and is the level of inequality implemented consistent with a purely outcome-based fairness view? Two answer this question, I measure inequality with the the Gini coefficient

$$Gini(i,j) = \frac{|x(i) - x(j)|}{t} \in [0,1], \tag{1}$$

where $x(i)$ are the points allocated to the player with a higher amount of points prior to the redistribution, $x(j)$ are the points allocated to the player with the lower amount of points and t is the total amount of points that can be allocated. The Gini coefficient equals zero if both players have exactly the same amount of points and one if one player has the full amount of points and the other player nothing.

[FIGURE 1 ABOUT HERE]

Figure 1 shows the Gini coefficient of the initial distribution of points and the average Gini coefficient of the distributions where redistribution took place. If redistribution choices were purely outcome-based, we would expect the average Gini coefficient where redistribution took place not to differ between the situations. For example, if redistributive choices always involved implementing an equal split, the Gini coefficient would be zero in all four situations. Instead, we see that the distribution implemented differs between the situations. The redistribution thus does not seem to be purely outcome-based but rather is also likely driven by the factors that created the inequality.

12. In 36 cases, spectators seemed to want to allocate according to the initial allocation but reversed the numbers. These entries were recoded for the analysis. Not recoding these choices does not change the results in any substantial way.

4.1 Which norms are consistent with redistribution choices?

What could be the fairness norms underlying those redistribution decisions? Are there people who believe that choices over effort carry more moral relevance than choices over risk? To investigate these questions, I evaluate three different fairness norms, NR, EGA and EFF.

Under NR, spectators do not redistribute between the two workers at all. The spectator might regard all inequalities arising from choices as fair irrespective of the domain in which the choice was made.[13] Under EGA, spectators split the total amount to be distributed such that the two workers receive the same amount of points. Thus no distinction between choices over effort and choices over risk is drawn. Under EFF, spectators redistribute the points proportionally to the effort chosen by the two workers. They thus disregard the workers' choices over the riskiness of the return to effort. This norm could be motivated by assigning higher moral relevance to the choice over effort provision than to the choice over risk.

Conceptual framework for fairness norms The following equations determine the fair allocation of points to the player who chose the safe wage and medium effort under the different fairness norms. The player's effort, here the number of tables, is denoted by e, the number of points per table is denoted by α and the subscripts S and R indicate the safe-player and the risk-taker respectively.

$$F^{NR} = e_S \times \alpha_S \tag{2}$$

$$F^{EGA} = \frac{e_S \times \alpha_S + e_R \times \alpha_R}{2} \tag{3}$$

$$F^{EFF} = \frac{e_S}{e_S + e_R} \times (e_S \times \alpha_S + e_R \times \alpha_R) \tag{4}$$

Table 2 shows the fair allocation of points that results from these fairness norms for the different situations.

Choice classification As a next step, I classify the individual choices based on their consistency with the three fairness norms. To classify the choices, I employ the model of Cappelen et al. 2013 in which the psychological costs of deviating from once preferred fairness norm increase quadratically with the difference between the point prediction of the fairness norm and the implemented allocation. The utility loss to be minimized is hence given by

13. Such thinking would be consistent with the philosophical positions of luck egalitarianism (Cohen 1989) and libertarianism (Nozick 1974).

Table 2: Fair allocation of points under the different fairness norms

	LuHi	LuLo	UnHi	UnLo
	$t = 2950$	$t = 1650$	$t = 2050$	$t = 1350$
F^{NR}	1000	1000	1000	1000
F^{EGA}	1475	825	1025	675
F^{EFF}	1180	1100	820	900

Notes: The table shows the fair allocation of points to the safe-player for the three fairness norms in the four situations of interest. The value t equals the maximal amount that can be allocated.

$$V(i) = -\frac{(x_S(i) - F^k)^2}{t}, \tag{5}$$

where $x_S(i)$ are the points allocated to the safe player, F^k is the fair allocation under the respective fairness norm k and t is the total amount of points that can be allocated.

For each of the fairness norms, I calculate the utility loss induced by the spectator's choice. I then assign as consistent fairness norm the fairness norm where the utility loss is minimized. I find that for 75.75% of the choices, the loss is minimized for NR, for 13.85% of the choices for EGA and for 10.39% of the choices for EFF.Hence, while NR is clearly the most frequent norm, EGA and EFF are consistent with a substantial share of the choices and to a fairly similar degree.[14]

[FIGURE 3 ABOUT HERE]

Evidence for the three fairness norms in the open-ended question The answers to the open-ended question provide further evidence that, while acceptance of choice is the dominant fairness notion, the amount of work a person chose is also a salient concept. I did not ask participants to comment on every redistributive decision separately. Their comments can thus refer to any of the four or five decisions they made. However, the participants had the chance to name as many motives for their decisions as they wished. The answers were

14. 79.62% of the choices meet exactly the fair allocation of points under the respective fairness norm. Of those, 90.41% redistribute exactly according to NR, 6.47% redistribute exactly according to EGA and 3.12% redistribute exactly according to EFF.

classified independently by two student assistants who were given a list of motives that was created after my own reading of the comments. They could add categories if needed (see Brown and Clarke 2006).

Of the 563 spectators, 468 are classified as referring to in their first or second to motives consistent with NR, EGA or EFF by both classifiers. Of those, 293 spectators (62.60%) refer to the workers' own responsibility for the outcome or acceptance of results due to luck, 152 (32.48%) refer to effort-related motives and only 23 (4.91%) refer to outcome-egalitarian motives.[15] The answers to the open-ended question thus provide further evidence that, while acceptance of choice is the dominant fairness notion, effort as displayed in the amount of work a person chose is also a salient consideration for almost a third of all spectators. Examples of the answers given can be found in Appendix B.

4.2 Are high-effort and low-effort risk-takers treated differently?

Next, I investigate whether risk-takers are treated differently if they chose high instead of low effort. I hypothesize that a risk-taker's good luck is perceived as more just when they chose high effort than when they chose low effort. In the same vein, I hypothesize that a risk-taker's bad luck is perceived as more just when they chose low effort than when they chose high effort. For the analysis, I only look at whether redistribution between the risk-taker and the safe-player took place, irrespective of the amount redistributed.

Panel (a) of Figure 4 shows the share of spectator decisions that redistributed points from the lucky risk-taker to the safe-player. If the high-effort risk-taker were treated more favourably, we would expect that points are less often taken away from the high-effort risk-taker than from the low-effort risk-taker.

[FIGURE 4 ABOUT HERE]

The opposite is true: points are more often taken away from the high-effort risk-taker than from the low-effort risk-taker (137 versus 55 out of 563 decisions). A Fisher exact test shows that the difference is highly statistically significant ($p < 0.001$).

Panel (b) of Figure 4 shows the share of spectator decisions that redistributed points from the safe-player to the unlucky risk-taker.If the the high-effort risk-taker were treated more favourably, we would expect that more often points are given to the high-effort risk-

15. The low share of comments related to outcome equality is surprising given the share of decisions that are consistent with this norm. This might just reflect, however, that people found it less noteworthy to talk about egalitarian redistribution or that the way in which they expressed their thinking could not easily be interpreted as egalitarian.

taker than to the low-effort risk-taker. Again, the opposite is true: points are more often redistributed from the safe-player to the low-effort risk-taker than to the high-effort risk-taker (126 versus 80 out of 563 decisions). A Fisher exact test shows that the difference is highly statistically significant ($p < 0.001$).

The results are confirmed by a logistic regression controlling for individual fixed effects (see Table A1 in Appendix A). A favourable treatment of the high-effort risk-taker in comparison to the low-effort risk-taker thus cannot be observed. I will propose some possible explanations for why I do not find a favourable treatment of the high-effort risk-takers in the discussion.

5 Discussion

Financial gambling and investment as well as the appropriate political reactions thereto are vibrantly discussed topics within the broader debate on inequality. An important but often neglected argument in the debate is the antagonism between "idle money" and "hard work", reflected in choices over risk-taking and choices over effort-provision. This study contributes to the debate by investigating redistributive decisions in a novel experimental setting where inequality is due to both choices over effort and choices over risk-taking. The main contribution of the study is to point to the existence of a purely effort-related fairness norm that redistributes in a manner proportional to the effort chosen and disregards the chosen risk: In my sample, 10.93% of the decisions are classified as consistent with a norm that distributes proportionally to the effort chosen. In fact, the share of decisions consistent with this norm is similar to the share of decisions following an outcome-egalitarian norm, which lies at 13.85%.

The study thus provides the first evidence for a fairness norm that to date has received no attention in the empirical economic literature. The presence of a purely effort-based fairness norm shows that the distinction between factors within or out of individual control is insufficiently refined to understand fairness intuitions regarding inequality. Among factors within the control of the individual, different domains have to be distinguished to really understand how people think about inequality. In the context of the debate on rising inequality and the role of capital gains, the study suggests that at least in some cases people might support taxation of capital gains even when equal opportunities to take risks exist. However, the design of the study is too abstract and narrow to explain moral motivations on complex policy issues.

While effort choices seem to play a role in shaping spectators' judgments, many do not react at all to observed inequalities: in 72% of the spectators' choices no redistribution takes

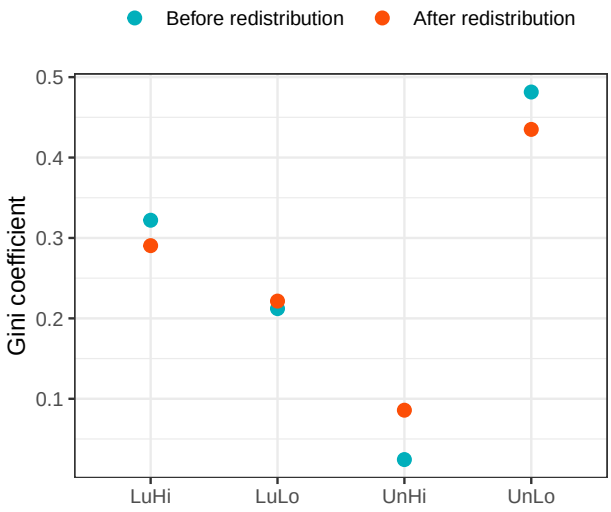
place at all. A likely reason for the low frequency of redistribution is that the value of (non-interference with) individual freedom is deeply engrained in American culture (Kluegel and Smith 1986). Indeed, Cappelen et al. (2020) find that in a US sample, participants hold others accountable for their choices even when these choices do not meet basic criteria of free choice. Almås et al. (2020) show that Americans more often follow a libertarian and less often an outcome-egalitarian norm than Norwegians.

I do not find that high-effort risk-takers are granted their gains or compensated for for their losses more often than low-effort risk-takers. This is remarkable given the importance of hard work in American ideology (Kluegel and Smith 1986). Three explanations come to mind: first, the above mentioned valuation of free choice might have trumped any other existing fairness considerations. Second, alongside the American dream that believes in hard work, there also exists, according to Cullen (2004), a Hollywood-inspired "dream of the coast" that advocates an effortless route to fame and fulfillment. Reaping the benefits of risk-taking without having worked hard might thus be judged fair. Third, the low-effort risk-takers might in absolute terms have exerted enough effort to not be perceived as lazy.

This study is only a first step and more empirical research is needed to increase our understanding of the moral relevance of different choice domains in general and the interplay between risk-taking and effort provision specifically. In my design, the high-effort worker always gains more than the low-effort worker, no matter the risk-decision. Would people assign more moral relevance to effort provision if respecting the risk decision would entail reversing this order? How is the distribution of fairness norms in countries where individual freedom is less ideologically loaded? Last, is risk-taking perceived as something that is more feasible for richer individuals and to what degree does differential access to risk-taking shape its moral relevance in comparison to effort-provision? Given that gains from risk-taking are of increasing importance for economic inequality and for the political debate on how to respond to it, further investigation of these blind spots is a worthwhile endeavour.

6 Figures

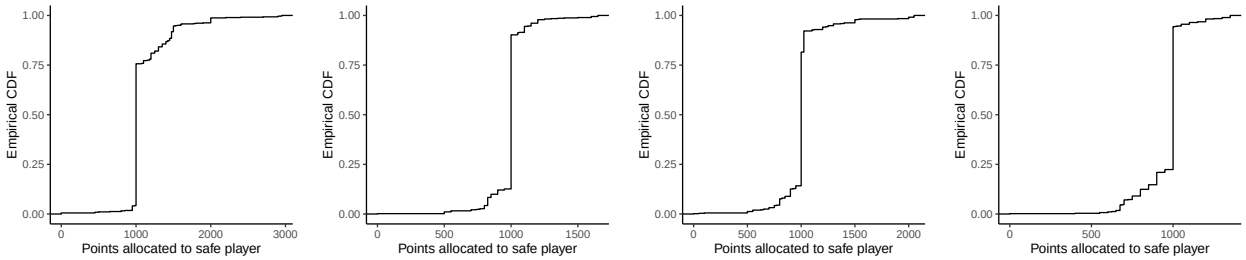
Figure 1: Gini coefficients before and after redistribution



Notes: The figure shows the average Gini coefficient for the four situations of interest for the subsample of choices in which redistribution took place.

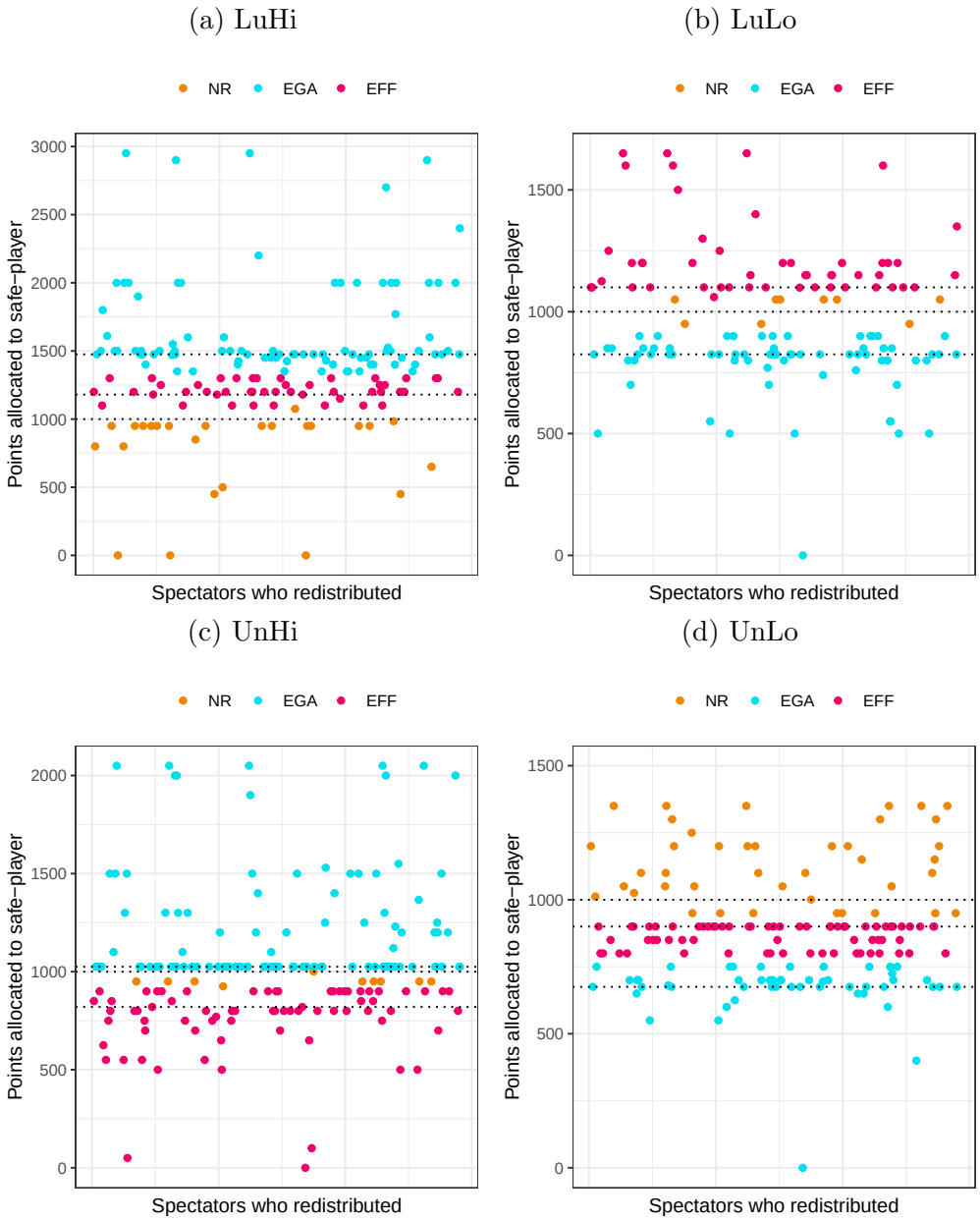
Figure 2: Redistribution choices in the four situations of interest

(a) LuHi (b) LuLo (c) UnHi (d) UnLo



Notes: The figure shows the empirical cumulative density function of the points allocated to the safe-player. The amount of points that could be distributed to the safe-player differ between the situations. For all situations, an allocation of 1000 points means that the spectator did not redistribute at all.

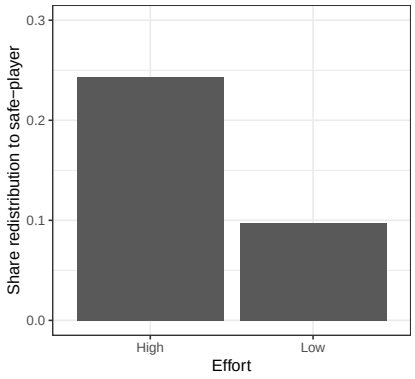
Figure 3: Norm classification of redistribution choices



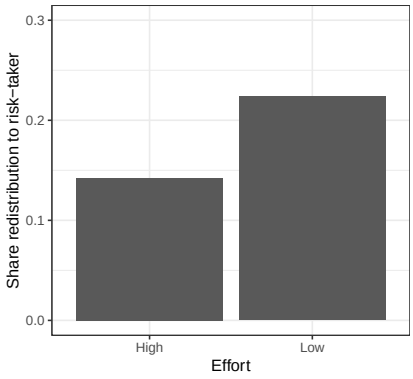
Notes: The figure shows the points allocated to the safe-player for all choices where redistribution took place. The lines show the fair allocation of points under the respective fairness norm. The colours indicate the classification of the respective choice.

Figure 4: Redistribution between risk-taker and safe-player

(a) Risk-taker lucky



(b) Risk-taker unlucky



Notes: The figure shows the redistribution between the risk-taker and the safe-player. Panel (a) shows the share of the spectators' choices where points are redistributed from the lucky risk-taker to the safe-player. Panel (b) shows the share of the spectators' choices where points are redistributed from the safe-player to the unlucky risk-taker.

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Appendix

A Additional tables

Table A1: Effect of effort on redistribution

	Dependent variable:	
	(1) Lucky: Taken	*(2) Unlucky: Comp*
Effort:low	-0.15^{***}	0.08^{***}
	(0.02)	(0.01)
Fixed effects?	Yes	Yes
Observations	1,126	1,126

Notes: Standard errors in parentheses, where * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The table shows average marginal effect from logistic regressions. In model (1) the dependent variable is a dummy equal to 1 if points where redistributed from the lucky risk-taker to the safe player and 0 otherwise. In model (2) the dependent variable is a dummy equal to 1 if points where redistributed from the safe player to the unlucky risk-taker and 0 otherwise. Eff:low is a dummy equal to 1 if the risk-taker exerted low effort and 0 if she exerted high effort.

B Examples open-ended questions

Comments classified as choice-related

"Everyone made their own choices in the task, as such they received points in accordance with the risks they chose and the amount of work they decided to do."

"I felt those who gambled and won or lost deserved their outcome with the rest of the points determined by performance. I didn't think it would be fair to adjust outcomes."

"If they performed poorly or decided to risk losing the lottery, they should be punished for it. They understood the potential consequences, so that's how I chose."

Comments classified as equality-related

"I think it would be fair to split the points, since everyone will be equally happy that way."

"I thought that each participant should get the same payout regardless of their input. I thought that some people may have more difficulty with the task than others."

"I just wanted to make sure everyone was even and nothing was unfair."

Comments classified as effort-related

"I was focused on rewarding whoever did better work."

"I chose to reward the person who did the most tables in order to be fair. They did more work and spent more time and should be compensated."

"I gave more benefit to the players who chose to complete more tables. They worked harder, therefore I feel they deserved a larger cut whether or not they won the lottery etc."

C Instructions

The following section provides the instructions and the questionnaire that were given to the spectators.

Redistribution instructions

Role: In a previous study on this platform, participants worked on a simple task we gave them and earned points depending on the choices they made. The details of the study will be explained as you move on.

For now, it is important for you to know that these participants were randomly and anonymously put together in pairs of two. You will be randomly assigned to one of those pairs. Your task is to state which division of the points you consider to be fair.

Your choices hence do not influence your own payoff but will influence the payoff of the two other participants.

You will see a series of situations where you have to allocate points. One of the situations that you will see was in fact the situation that the participants experienced. With 25 percent probability your decision in that situation will determine these participants' payoff (with 75 percent probability it is determined by another participant, but it is never determined by anyone in the pair).

Description setting workers: What did the other participants do? Participants in the other study were faced with two main choices, how much to work on a task and whether to receive a fixed amount of points per task solved or participate in a lottery. They were told that additionally to a flat payment they might receive a bonus that will be influenced by their choices. Their main task was to count zeros in a series of tables. The figure below shows an example of their work screen.

[screen counting 0s task]

They had to indicate the number of zeros using the slider. If their input was wrong, they had to wait 30 seconds before they could try again. They had three trials per table. If they did not give the correct answer within these three trials, their participation in the study was over.

Crucially, after having done one try-out table, participants had the free choice of whether to solve 5, 10 or 15 tables.

Counting 0s trial: In order to get a feeling for the work that participants in the other study did, we would like you to now solve one table yourself. If you are not successful within three trials, your participation in this study is over and you are not eligible for payment.

[Counting 0s task and feedback on performance.]

Wage info workers: Points mode: Additionally to the amount of tables they wanted to solve, participants also had the choice whether they wanted to receive a fixed amount of points per table solved or participate in a lottery. More specifically, the choice they faced was the following:

- Option A: Receive 100 points per table
- Option B: Receive 70 points per table with a fifty percent probability or receive 130 points per table with a fifty percent probability.

Note that in case a participant chose option B, whatever amount of points is randomly drawn is the amount of points he receives per table throughout the study, i.e. for all tables solved. He only learned about which amount of points was drawn for him at the end of the study.

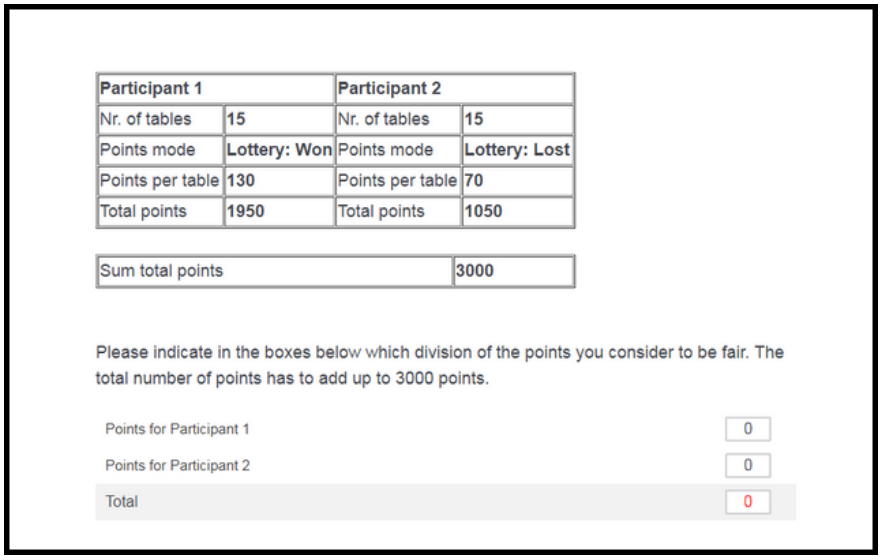
Bonus Info: Bonus payment: The amount of points they scored in this study were translated into Dollar such that: 100 points = \$0.10. The participants in the other study were not told any details about this study nor that such a study will exist. They knew, however, that the amount of points they score will not be automatically translated into their personal payoff.

[Control questions]

Introduction allocation: The picture below shows you how your decision screen will look like.

As you can see, you are provided with information regarding the numbers of tables the participants solved, whether they received a fixed amount of points per table or participated in the lottery and, in case that they chose the lottery, whether they were lucky or unlucky. In

Example screen redistribution decision



Participant 1		Participant 2	
Nr. of tables	15	Nr. of tables	15
Points mode	**Lottery: Won**	Points mode	**Lottery: Lost**
Points per table	130	Points per table	70
Total points	1950	Total points	1050

Sum total points	3000

Please indicate in the boxes below which division of the points you consider to be fair. The total number of points has to add up to 3000 points.

Points for Participant 1	0
Points for Participant 2	0
Total	0

the boxes below you are asked to indicate the division of points that you consider to be fair. All the cases you will see are cases where the participants successfully solved all tables.

You will now be asked to make a series of allocation decisions. Please take these decisions seriously as the earnings of other participants on this platform might depend on them. When you are finished with the first decision, continue to the next one until you have completed making all distribution decisions.

[In case that real situation not one of the for above, participants saw a fifth decision screen.]

Screen redistribution decision Lucky

Participant 1		Participant 2	
Nr. of tables	**10**	Nr. of tables	**15**
Points mode	**Fixed**	Points mode	**Lottery: Won**
Points per table	**100**	Points per table	**130**
Total points	**1000**	Total points	**1950**

Sum total points	**2950**

Please indicate in the boxes below which division of the points you consider to be fair.
The total number of points has to add up to 2950 points.

Points for Participant 1	0
Points for Participant 2	0
Total	0

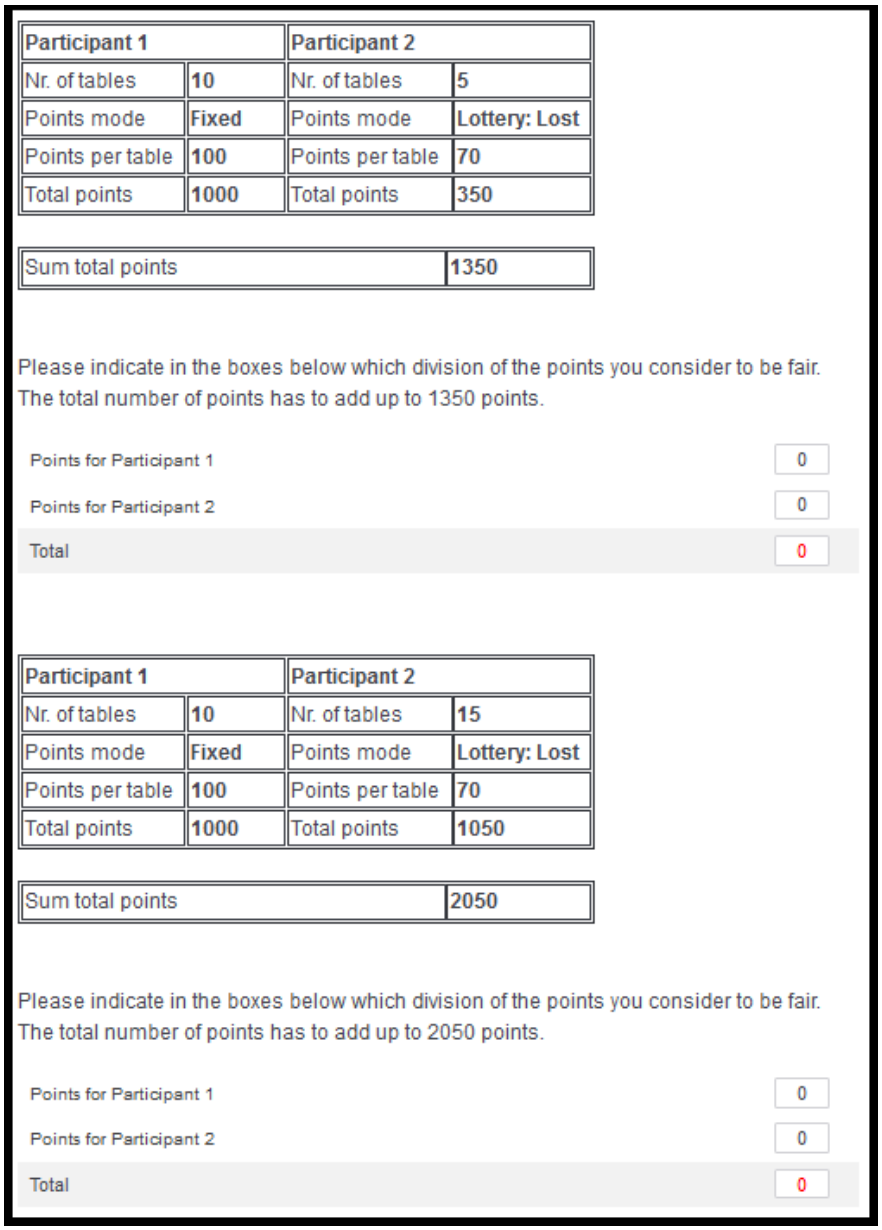
Participant 1		Participant 2	
Nr. of tables	**10**	Nr. of tables	**5**
Points mode	**Fixed**	Points mode	**Lottery: Won**
Points per table	**100**	Points per table	**130**
Total points	**1000**	Total points	**650**

Sum total points	**1650**

Please indicate in the boxes below which division of the points you consider to be fair.
The total number of points has to add up to 1650 points.

Points for Participant 1	0
Points for Participant 2	0
Total	0

Screen redistribution decision Unlucky



Participant 1		Participant 2	
Nr. of tables	10	Nr. of tables	5
Points mode	Fixed	Points mode	Lottery: Lost
Points per table	100	Points per table	70
Total points	1000	Total points	350

Sum total points	1350

Please indicate in the boxes below which division of the points you consider to be fair.
The total number of points has to add up to 1350 points.

Points for Participant 1	0
Points for Participant 2	0
Total	0

Participant 1		Participant 2	
Nr. of tables	10	Nr. of tables	15
Points mode	Fixed	Points mode	Lottery: Lost
Points per table	100	Points per table	70
Total points	1000	Total points	1050

Sum total points	2050

Please indicate in the boxes below which division of the points you consider to be fair.
The total number of points has to add up to 2050 points.

Points for Participant 1	0
Points for Participant 2	0
Total	0

Post Hoc Questionnaire

Intro: Now, we would like you to answer a few follow-up questions. You can skip any question that you don't know how to answer.

Fairness: When making the decision about how to split the earnings between the two other participants, how concerned were you about making a fair decision? [Slider from 1: "*Not at all concerned*" to 10: "*Very concerned about fairness*"]

Risk: Would you say that you are a person who generally tries to take very little risk or who takes a lot of risk? [Slider from 1: "*Take very little risk*" to 10: "*Take a lot of risk*"]

Open question: In a few sentences, could you explain why you chose the way you did? [Open text entry]

Hypothetical effort: Imagine that you would have participated in the study you were now making choices on. Please tell us how you would have chosen in that study. I would have chosen to solve the following amount of tables: [5 \ 10 \ 15]

Hypothetical risk: I would have taken the following option with respect to the amount of points per table solved: [Option A: Receive 100 points per table \ Option B: Receive 80 points per table with a fifty percent probability or receive 160 points per table with a fifty percent probability.]

Reasons for wealth: In your opinion, how important are the following factors for acquiring wealth in your country [Effort; Talent; Luck; Risk-taking]? [Slider from 1: "*Not at all important*" to 10: "*Very important*"]

Taxation attitudes: Now we would like to ask you some questions about your attitudes towards taxation.

Progressive vs flat taxation: Is a tax system where the tax rate increases as income increases more or less fair than a tax system where the tax rate is the same for all income levels? [Slider from 1: "*Much less fair*" to 10: "*Much more fair*"]

Progressive vs regressive taxation: Is a tax system where the tax rate increases as income in-

creases more or less fair than a tax system where the tax rate decreases as income increases? [Slider from 1: "*Much less fair*" to 10: "*Much more fair*"]

Flat vs regressive taxation: Is a tax system where the tax rate is the same for all income levels more or less fair than a tax system where the tax rate decreases as income increases? [Slider from 1: "*Much less fair*" to 10: "*Much more fair*"]

Estate tax: The estate tax is a tax on the transfer of wealth from a deceased person to her heirs. This tax applies only to individuals with wealth above a certain threshold. On a scale from 1 to 5, how would you rate your support for the estate tax, where 1 means do not support at all and 5 means strongly support? [1 to 5]

[Demographic questions]

[End of survey and compensation code]