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Abstract: A long history in economics going back to Adam Smith has argued that people give primacy to merit – rather than luck – in distributive choices. We provide a theoretical framework formalizing the merit primacy effect, and study it in a novel experiment where third-party spectators redistribute from high-earners to low-earners in situations where both merit and luck determine earnings. We identify a strong and consistent merit primacy effect in the spectator behaviour. The results shed new light on inequality acceptance in society, by showing how just a little bit of merit can make people significantly more inequality accepting.

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1 Introduction

People's willingness to accept income inequality depends critically on the source of inequality: people tend to view inequality due to luck as unfair and inequality due to merit as fair (Fong, 2001; Konow, 2000; Cappelen *et al.*, 2007; Almås *et al.*, 2020). The importance of the source of inequality may contribute to explain the striking variation in income inequality and redistributive policies across the developed world, where countries may be in different social equilibria characterized by the extent to which merit or luck determines individual incomes (Alesina and Angeletos, 2005; Bénabou and Tirole, 2006; Piketty, 1995).

Merit and luck considerations may also play an important role in explaining workplace inequality and people's views on the top one percent income earners. A comprehensive empirical study of wage inequality in the US concludes that a growing incidence of performance-pay accounts for 21 percent of the growth in male wage inequality between the late 1970s and early 1990s, where it is argued that "[m]erit pay systems are more likely to be used when workers feel that their evaluations are fair" (Lemieux *et al.* (2009), p. 6). This suggests that people are more accepting of workplace inequality due to merit than to luck. In terms of the top one percent income earners (Atkinson *et al.*, 2011; Mankiw, 2013), some consider these incomes largely to reflect merit and therefore consider them fair, while others argue that luck plays a crucial role in shaping the incomes of the most fortunate and therefore consider them unfair (Ipsos Mori, 2011). In fact, it is argued that few questions more reliably divide conservatives from liberals than the question of how important luck is for individual success (Frank, 2016).

The study of how merit and luck shape people's evaluations has a long history in economics going back to Adam Smith (Smith, 1759), who argued that "the effect of . . . fortune, is . . . to increase our sense of merit or demerit of actions" (p. 141). The idea that fortune or luck may be

downplayed relative to merit in explaining own success has been discussed extensively in economics and psychology (Frank, 2016; Langer, 1975; Langer and Roth, 1975; Davidai and Gilowich, 2016), and it is argued that the meritocratic idea is the dominant ideology or narrative used to justify modern inequality (Piketty, 2020). In the present study, we take a different perspective, by studying whether merit takes prominence when people act as impartial spectators. In particular, we focus on situations where there is complete information about the role of merit and luck in determining outcomes, which rules out that spectator behaviour reflects an attribution error (Charness, 2004; Cappelen *et al.*, 2020a,c). We provide a theoretical framework to formalize the idea of a merit primacy effect, as a positive complementarity between luck and merit in the reward of the high-earner when both determine total earnings.

To study whether people reveal a merit primacy effect in their distributive choices, we conducted a novel experiment where people act as third party spectators. In the experiment, we recruited individuals, *workers*, from an online market place for work to conduct some assignments. We then recruited other individuals, *spectators*, and gave them the opportunity to redistribute earnings between a pair of workers in a situation where one of the workers in the pair had earned all the money. Each third-party spectator was matched with a unique pair of workers. The spectators were randomly assigned to one of four treatments, where the treatments only differed with respect to the importance of merit relative to luck in determining earnings.

In the only-luck treatment and the only-merit treatment, earnings were determined only by luck and only by merit, respectively. These distributive situations serve as a benchmark for making predictions for the spectator choices in the mixed-situations, where both merit and luck determine earnings. We consider two mixed-situations: in the some-merit and mostly-merit treatments, ten percent and ninety percent of earnings were determined by merit, respectively, and the remainder

by luck. This experimental variation in the relative importance of merit and luck allows us to test whether spectators exhibit a merit primacy effect in distributive choices involving both merit and luck.

We identify a large and highly significant merit primacy effect in the reward of the high-earner, and we show that there spectators reward both luck and merit more when both are sources of earnings. As a result, they give close to the same share to the high-earner when merit only accounts for ten percent of the earnings as when merit accounts for all of the earnings, and they give even more to the high-earner when merit accounts for ninety percent of the earnings than when merit accounts for all of the earnings. We show that our findings are robust across subgroups; in all subgroups, we identify a merit primacy effect in the spectator choices.

Our study contributes to the large and growing literature on social preferences. (Almås *et al.*, 2020; Andreoni and Miller, 2002; Balafoutas *et al.*, 2013; Bellemare *et al.*, 2008; Bolton and Ockenfels, 2000; Cappelen *et al.*, 2007, 2010, 2013, 2020b; Cappelen and Tungodden, 2019; Cassar and Klein, 2019; Charness and Rabin, 2002; Durante *et al.*, 2014; Engelmann and Strobel, 2004; Fehr and Schmidt, 1999; Fehr *et al.*, 2008, 2013; Jakiela, 2015; Konow, 1996, 2000; Rodriguez-Lara and Moreno-Garrido, 2012; Rodriguez-Lara, 2016; Mollerstrom *et al.*, 2015). We provide the first study of the merit primacy effect, where we show that there is a strong complementarity between merit and luck in people's fairness considerations. As a result, people are not consistent in how they handle merit and luck in distributive choices. They assign more to the high-earner when merit determines ninety percent of the earnings than when merit determines all the earnings. More generally, our results demonstrate the importance of understanding the systematic biases that people express in their moral choices (Babcock *et al.*, 1995; Cappelen *et al.*, 2020b; Dana *et al.*, 2007; Gee *et al.*, 2017; Konow, 2000; Savani and Rattan, 2012).

The behavioural patterns documented in this paper shed new light on inequality acceptance in society, by showing that the introduction of a little bit of merit goes a long way towards making people as inequality accepting as they would have been if the inequality was determined only by merit. This finding suggests that inequality acceptance critically depends on whether people perceive inequality at least partly to reflect merit, and may be important for understanding the political economy of redistribution and workplace inequality (Alesina and Angeletos, 2005; Alesina and Giuliano, 2011; Alesina *et al.*, 2018; Bénabou and Tirole, 2006; Glaeser and Ponzetto, 2017; Piketty, 1995). It may for example contribute to explain why we accept that luck in family background partly shapes economic inequality; we may assign primacy to the fact that merit also plays a role in determining people's earnings. Similarly, people may endorse inequality at the workplace as long it reflects at least some merit, even if luck, for example market fluctuations, also plays an important role. Our findings thus show that attitudes to inequality and redistribution may be quite elastic, since they are highly sensitive to how we construe inequality in terms of merit and luck (Kuziemko *et al.*, 2015).

The paper is organized as follows: Section 2 outlines the theoretical framework. Section 3 presents the experimental design. Section 4 reports the main results and the heterogeneity analysis, while Section 5 provide a more detailed analysis of mechanisms. Section 6 offers some concluding remarks.

2 Theoretical framework

To guide our analysis and the interpretation of the results, we introduce a simple social preference model that focuses on how individuals make choices as third-party spectators when they are fully informed about the earnings of two other individuals and about the role of luck and merit in determining these earnings. Luck is the source of inequality if earnings are randomly determined,

while merit is the source of inequality if performance on the task determines earnings and the better performer earners more.

What distribution of earnings would spectators implement if given the opportunity to redistribute earnings? Let y be the income the spectator allocates to the individual with greater earnings - in the following referred to as the *high-earner* - and let m be what the spectator considers to be the fair income to the high-earner. The other individual is referred to as the $low-earner$. We assume that spectators dislike deviations from what he or she considers a fair distribution of earnings, as captured by the following simple spectator utility function (Cappelen *et al.*, 2013):

$$V(y;\cdot) = -g(y-m), \tag{1}$$

where $g(y \neq m) > 0$ and $g(y = m) = 0$. Since there is no cost of redistribution, it follows straightforwardly from the model that the spectators implement what they view as the fair solution, i.e. $y = m$. The key question addressed in this study is what spectators view as the fair income to the high-earner in situations in which the earnings are caused by both luck and merit.

We focus on *mixed situations* where some of the time is spent on a task where luck (L) is the source of inequality in earnings, and the rest of the time is spent on a task where merit (M) is the source of inequality in earnings. We consider situations were the same individual is the high-earner in both tasks and receives all the earnings. This ensures that the initial distribution of earnings is the same in all situations, and allows us to identify the effect of varying the source of the initial inequality on the spectator behaviour. The total earnings from a task is only determined by the length of the task, $X(\alpha L) = X(\alpha M) = \alpha X$, which implies that the sum of the earnings from the two tasks, X, also is constant across situations.

Let $m(\alpha L, (1-\alpha)M)$ denote what the spectator considers fair to give to the high-earner in a situation where α of the time was spent on a luck task and $(1-\alpha)$ of the time was spent on a merit task, and let $m(\alpha J, (1-\alpha)J) = m(J)$, $J = L, M$, denote what the spectator considers fair to give to the high-earner when the entire time was spent on a single task and earnings were determined by J. Finally, let $m(\alpha L|(1-\alpha)M)$ denote what a spectator considers fair to give to the high-earner for a task of length α when luck is the source of inequality in this task and merit is the source of inequality in the other task. It follows that $m(\alpha L, (1-\alpha)M) = m(\alpha L|(1-\alpha)M) + m((1-\alpha)M|\alpha L)$. Trivially, we assume that the fair income to the high-earner for a task when the time is split in two tasks with the same source of earnings is given by the share of time spent on the task, $m(\alpha J \mid (1-\alpha)J) = \alpha m(J)$, $J = L, M$.

Our focus is on how the presence of both luck and merit affects what is considered fair income to the high-earner. A natural prediction, and a point of departure for the analysis, is to assume that the two tasks are considered independently by the spectator, as captured by the following condition:

Independence: The fair income to the high-earner for a single task is independent of the source of the earnings on the other task: $m(\alpha J \mid (1-\alpha)M) = m(\alpha J \mid (1-\alpha)L)$, $J = L, M$.

The independence condition implies that the fair income to the high-earner in a mixed situation is given by the time spent on each of the two tasks and what the spectator considers fair in the only-luck and only-merit situations.

Observation 1: Spectators satisfy Independence if and only if $m(\alpha L, (1-\alpha)M) = \alpha m(L) + (1-\alpha)m(M)$.

Proof: Only-if-part: By definition, $m(\alpha L, (1-\alpha)M) = m(\alpha L \mid (1-\alpha)M) + m((1-\alpha)M \mid \alpha L)$. By Independence, $m(\alpha L, (1-\alpha)M) = m(\alpha L \mid (1-\alpha)L) + m((1-\alpha)M \mid \alpha M)$, and the result follows from the assumption that $m(\alpha J \mid (1-\alpha)J) = \alpha m(J)$, $J = L, M$. The if-part follows straightforwardly.□

In the analysis, we will compare the behaviour of the spectators to the linear prediction following from Observation 1. In particular, we are interested in whether spectators violate the independence condition because they assign primacy to merit in mixed situations. In this analysis, we define the merit primacy effect as follows:

Merit primacy effect: There is a positive complementarity between luck and merit in the reward of the high-earner in mixed situations if $m(\alpha L, (1-\alpha)M) > m(\alpha L \mid (1-\alpha)L) + m((1-\alpha)M \mid \alpha M)$.

It follows straightforwardly that the merit primacy effect implies a violation of the independence condition:

Observation 2: Spectators reveal a merit primacy effect in their distributive choices if and only if $m(\alpha L, (1-\alpha)M) > \alpha m(L) + (1-\alpha)m(M)$.

Proof: The observation follows immediately from the definition of the merit primacy effect, $m(\alpha L, (1-\alpha)M) > m(\alpha L \mid (1-\alpha)L) + m((1-\alpha)M \mid \alpha M)$, and the assumption that $m(\alpha J \mid (1-\alpha)J) = \alpha m(J), J = L, M$.□

Observation 2 clarifies how we can identify the merit primacy effect by comparing spectator choices in a mixed situation to the linear prediction that follows from the only-luck and only-merit situations if spectators satisfy the independence condition.

3 Experimental Design

In the experiment, we had two types of participants: workers and spectators. Workers earned money by completing work on real effort assignments, but did not make any distributive decisions. The spectators, who are the main focus of this study, decided whether to redistribute earnings between

a pair of workers who had completed the same assignment. A spectator's decision determined the actual distribution of payments between two workers and the decision thus had monetary consequences for the two workers, but not for the spectator. After making the distributive decision, the spectators completed a non-incentivized survey that included questions about their attitude towards redistributive policies as well as standard background questions about gender, age, political orientation, and education.

The spectators were randomly assigned to one of four treatments that only differed with respect to the relative importance of luck and merit in determining workers' earnings from the assignment. In the following, we describe the design and the sample in more detail.

3.1 Treatments

In all four treatments the spectators were informed that two workers had worked for a total of ten minutes and that the total earnings of the pair were fixed at 600 tokens (equivalent to 6 USD). The spectator was also informed about how the earnings were determined, which differed across treatments.

In the *only-luck* treatment (L), spectators were informed that the workers had worked on a sentence unscrambling task for ten minutes and that the earnings for the assignment had been determined by a lottery. The worker winning the lottery had been assigned 600 tokens and the other worker had been assigned zero tokens. Hence, in this treatment, the inequality in earnings reflects that one worker was lucky and the other worker was unlucky.

In the *only-merit* treatment (M), spectators were informed that the workers had worked on a code recognition task for ten minutes and that the earnings for the assignment had been determined by the number of correct answer. The worker with the highest score had been assigned 600 tokens and

the other worker had been assigned zero tokens. Hence, in this treatment, the inequality in earnings reflects that one worker was better than the other at the task.

In the *some-merit* treatment (SM) and *mostly-merit* treatment (MM), which are our main treatments of interest, spectators were informed that workers had worked on both tasks. In both treatments, the inequality in earnings was partly due to luck and partly due to merit, but the earnings could be cleanly decomposed into one part originating from luck and one part originating from merit. In the some-merit treatment workers had worked for nine minutes on the sentence unscrambling task and one minute on the code recognition task. The tokens were allocated in proportion to the time they had spent on each of the tasks: 540 tokens were allocated for the sentence unscrambling task to the worker who won the lottery and 60 tokens were allocated for the code recognition task to the worker with the highest number of correct answers. Correspondingly, in the mostly-merit treatment, the workers had worked for one minute on the sentence unscrambling task and nine minutes on the code recognition task, with 60 tokens allocated to the worker who won the lottery and 540 tokens allocated to the worker with the highest number of correct answers.

The main analysis focuses on comparing the spectator decisions in the some-merit and mostly-merit treatments for the pairs of workers where the worker who won the lottery also had the highest number of correct answers to the spectator decisions in the only-luck and only-merit treatments. In all these four treatments, the initial inequality is that the high-earner has 600 tokens and the low-earner has 0 tokens, and hence these treatment comparisons allow for a clean identification of how the source of inequality affects the spectator decisions.[1] Table 1 provides an overview of the earnings distribution and the determinants of earnings in each of the four treatments.

[1] In the two treatments where the high earner was unlucky or had the lowest number of correct answers, the initial inequality is that the high-earner has 540 tokens and the low-earner has 60 tokens. Hence, they cannot be used in the main analysis, since the difference in initial earnings introduces a confound when studying how the presence of merit and luck affects spectator behaviour.

Table 1: Overview of treatments and initial distributions

Treatment	Time	Task	Initial distribution High-earner	Low-earner
Only luck	100 %	Luck task	600	0
		Initial distribution	**600**	**0**
Some merit	10 %	Merit task	60	0
	90 %	Luck task	540	0
		Initial distribution	**600**	**0**
Mostly merit	90 %	Merit task	540	0
	10 %	Luck task	60	0
		Initial distribution	**600**	**0**
Only merit	100 %	Merit task	600	0
		Initial distribution	**600**	**0**

Note: The table shows the distribution of tokens between the high-earner and the low-earner prior to redistribution for each of the four treatments. To ensure that the total initial distribution was the same across all treatments we only included the situations in the some-merit and mostly-merit treatment in which the winner of the merit task also was the winner of the lottery.

3.2 Sample and procedures

We recruited 2115 individuals from the online labour market Amazon Mechanical Turk to take part in this study, where 1005 acted as spectators.[2] All individuals were US-based and had a high-quality track record at the platform.[3] Table A1 provides an overview of the characteristics of the individuals who acted as spectators for each of the four treatments and show that the distribution is balanced across treatments. The spectators were on average 34 years old, 47 percent were female and about one third reported to have high school as their highest educational attainment.

The workers were explained how the initial assignment of earnings would be determined, but they were not informed about their actual earnings. They were told, however, that a third person, the spectator, would be informed about the assignment and their earnings, and would be given the

[2]We conducted two rounds. In the first round, we recruited 400 individuals, who acted both as workers and as spectators; in the second round, we recruited 1815 individuals (who had not taken part in the first round), where 1210 acted in the role as worker and 605 acted in the role as spectator. As shown in Figures A1 and A2 in Appendix A, the results are strikingly similar in the two rounds.

[3]The requirement was set to 95% approval rate across at least 5000 tasks.

Table 2: Sequence of events in the experiment

Stage of experiment	
1. **Work stage:**	Workers complete assignments.
2. **Earnings stage:**	Workers are matched in pairs and assigned earnings according to treatment.
3. **Redistribution stage:**	Each spectator decides for one pair of workers whether and how much to redistribute.
4. **Payment stage:**	Workers in the pair are paid according to the decision of the spectator.

opportunity to redistribute the earnings between them and the other worker they were matched with. The spectators were provided detailed information about the tasks and the exact instructions given to the workers about the payment procedure.[4] The spectators were also provided a table that showed how the initial distribution of earnings had been determined. In the mixed situations, this implied that the spectators were shown that the high-earner had been both lucky and solved more correct answers than the low-earner. Based on this information, the spectators decided whether to reallocate any of the earnings from the high-earner to the low-earner. The workers received the payment determined by the matched spectator within a few days after the spectators made their choice. The spectators received a fixed participation fee of 2 dollars. Table 2 summarizes the main stages in the experiment.

4 Main results

Figure 1 provides, for each treatment, a histogram of the spectator behaviour in terms of how much the spectator allocates to the high-earner. We observe considerable heterogeneity both within and between treatments. In the only-luck treatment, the majority of the spectators, 68 percent, choose to equalize earnings completely, while 10 percent choose not to transfer any money to the low-earner.

[4] All instructions for this study are provided in Appendix C. The data are available at Cappelen *et al.* (2022).

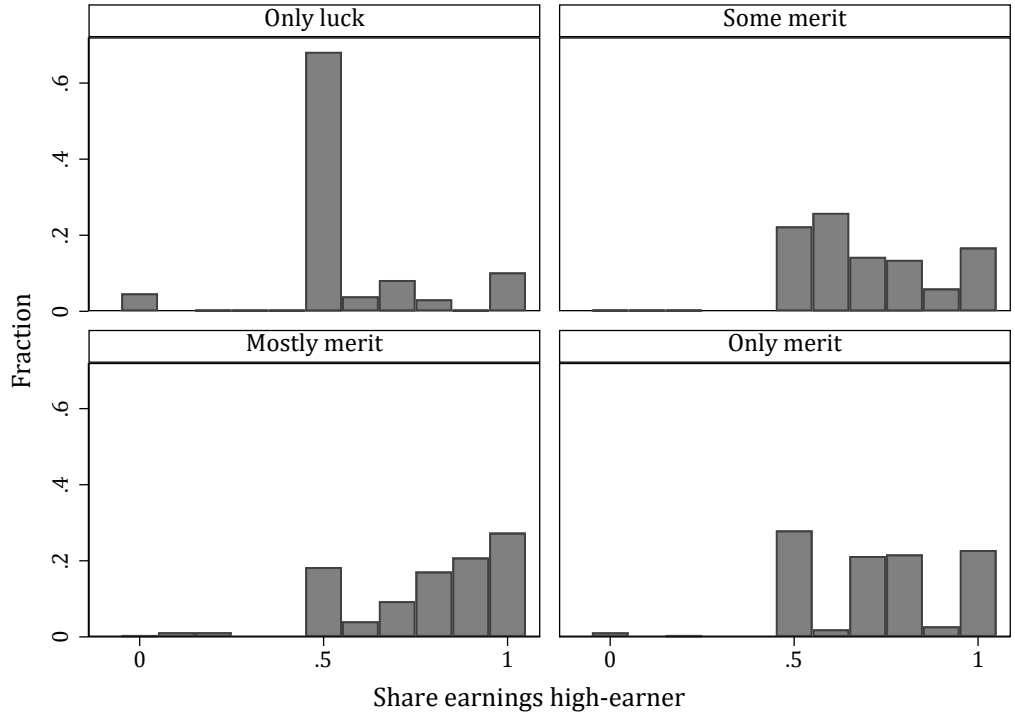
Table 3: Non-parametric test of distribution

	Some merit	Mostly merit	Only merit
Only luck	0.0000	0.0000	0.0000
Some merit		0.0000	0.0598
Mostly merit			0.0005

Note: The table reports p-values from a Mann Whitney U-test based on pairwise comparisons of the treatments in terms of the distribution of the share of earnings given to the high earner.

In contrast, in the only-merit treatment, a much smaller share of the spectators, 28 percent, choose to equalize, while a much larger fraction, 23 percent, choose not to redistribute at all. The spectator behaviour in the some-merit and the mostly-merit treatments are quite similar to the behaviour in the only-merit treatment, with 22 percent and 18 percent respectively choosing to equalize earnings, and 16 percent and 27 percent choosing not to redistribute at all. In Table 3, we report non-parametric tests of whether the distributions of the share given to the high-earner are different in the four treatments. We observe that all pairwise comparisons strongly reject that the distributions are the same ($p < 0.001$), except for the comparison between some merit and only merit ($p = 0.0598$).

Figure 1: Histograms of share of earnings allocated to high-earner



Note: The figure shows, by treatment, the histogram of the fraction of spectators who choose the alternative shares of earnings to the high-earner.

We now turn to a regression analysis of the treatment effects. Let D_i be the share of earnings allocated to the high-earner. Further, let $I(SM_i)$, $I(MM_i)$ and $I(M_i)$ be indicator variables taking the value one if the spectator is in the respective treatment, and let $\mathbf{X}_i$ be a vector of control variables. Our main empirical specification can now be written as follows:

$$D_i = \alpha + \beta_1 I(SM_i) + \beta_2 I(MM_i) + \beta_3 I(M_i) + \gamma \mathbf{X}_i + \epsilon_i. \tag{2}$$

The only-luck treatment serves as the baseline in equation (2), and thus β_i provides an estimate of the causal effect on spectator behaviour of moving from a situation where only-luck determines earnings to a situation where some, mostly, or only-merit determines the earnings.

Table 4 reports the estimates for equation (2), both with and without the inclusion of control variables. From columns (1) and (2), we observe that the introduction of merit has a significant effect on the share allocated to the high earner. In line with previous studies (Almås *et al.*, 2020), we observe that there is a huge effect of moving from an only-luck situation to an only-merit situation: the share allocated to the high-earner increases with 31 percent (from 0.55 to 0.72; $p < 0.001$).[5] Strikingly, however, we observe almost the same increase when only some merit is introduced (from 0.55 to 0.69; $p < 0.001$), and actually even a larger increase when merit mostly determines the earnings, but there is some role of luck (from 0.55 to 0.79; $p < 0.001$). As shown in column (2), these findings are robust to the inclusion of control variables.

We find a similar pattern when we consider the share of spectators equalizing. In columns (3) and (4) in Table 4, the outcome variable is an indicator variable taking the value one if the spectator

[5] As explained, the two treatments where the high earner was unlucky or had the lowest number is excluded from the main analysis. These two treatments provide further evidence of spectators being more inequality accepting when the initial source of inequality is merit rather than luck and the histograms for the spectator allocations in these two treatments is provided in Figure A3 in Appendix A. Comparison of these two treatments show that the share allocated to the high-earner who has the highest number of correct answer but is unlucky is 16 percent greater than the share allocated to the high-earner who has been lucky but has the lowers number of correct answers (0.60 vs. 0.69, $p < 0.001$).

equalize the earnings of the high-earner and the low-earner and zero otherwise. The move from an only-luck situation to an only-merit situation causes a huge reduction in the share of spectators equalizing (from 0.68 to 0.28; $p < 0.001$), and the drop is actually even larger in the mixed situations (to 0.22; $p < 0.001$ when there is some merit and 0.18; $p < 0.001$ when there is mostly merit).

In Figure 2, we show the predicted shares for the mixed-situations if the spectators satisfied the independence condition, see Observation 1. We observe that there is strong evidence of a large merit primacy effect in both mixed situations. The spectators give the high-earner almost 20 percent more than predicted in the some-merit treatment (0.68 versus 0.57, $p < 0.001$) and 11 percent more than predicted in the mostly-merit treatment (0.79 versus 0.71, $p < 0.001$).

To study whether spectator choices relate to the characteristics of the spectators (political orientation, socioeconomic status, and gender), we report heterogeneity analysis by estimating the following regression with interactions:

$$\begin{aligned} S_i =& \alpha + \beta_1 I(SM_i) + \beta_2 I(MM_i) + \beta_3 I(M_i) + \theta B_i + \lambda_1 I(SM_i)B_i + \lambda_2 I(MM_i)B_i \\ &+ \lambda_3 I(M_i)B_i + \gamma \mathbf{X}_i + \epsilon_i, \end{aligned} \tag{3}$$

where B_i is an indicator variable for spectator i being either conservative, having high education or being female. The variables conservative, high education and female are also included in the X vector.

From Table 5, we observe that there are no significant differences in treatment effects across the subgroups. In all subgroups, we identify a large and highly significant merit primacy effect in both mixed situations.[6]

We summarize this analysis in our first main result:

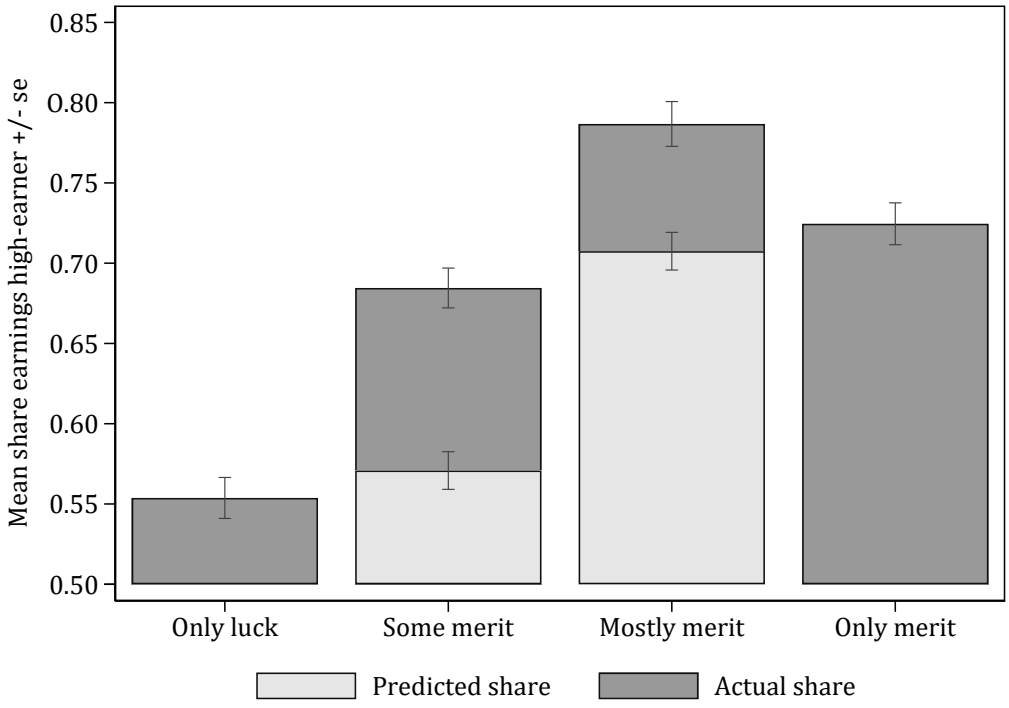
[6] See also Figure A4 in Appendix A, which for each subgroup compares actual behaviour to predicted behaviour if the spectators satisfied the independence condition.

Table 4: Main treatment effects

	Share	Share	Equalize	Equalize
Some merit	0.131***	0.131***	-0.467***	-0.468***
	(0.0178)	(0.0178)	(0.0391)	(0.0389)
Mostly merit	0.233***	0.233***	-0.503***	-0.503***
	(0.0189)	(0.0189)	(0.0382)	(0.0381)
Only merit	0.171***	0.172***	-0.407***	-0.413***
	(0.0182)	(0.0182)	(0.0405)	(0.0405)
Female		-0.00994		0.0717**
		(0.0130)		(0.0276)
Age		-0.0170		0.0395
		(0.0132)		(0.0274)
College		0.00599		-0.00777
		(0.0142)		(0.0292)
Liberal		-0.00621		-0.00832
		(0.0133)		(0.0273)
Constant	0.554***	0.566***	0.682***	0.642***
	(0.0128)	(0.0197)	(0.0292)	(0.0411)
N	1005	1005	1005	1005

Note: Columns (1) and (2) report linear regressions on the share of earnings given to the high-earner. Columns (3) and (4) report linear regressions on an indicator variable for whether the spectator equalized. "Some merit" is an indicator variable taking the value one if the participant is in the some-merit treatment "Mostly merit" is an indicator variable taking the value one if the participant is in the mostly merit treatment "Only merit" is an indicator variable taking the value one if the participant is in the only-merit treatment. "Female is a dummy for the spectator being a woman, "Age" is a dummy variable taking the value one if the spectator's age is above the median, "College" is a dummy for having completed college and "Liberal" is a dummy which is equal to one if the spectator considers himself to be either liberal or very liberal. Robust standard errors in parenthesis. (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

Figure 2: Reward of high-earner: Actual versus predicted spectator choice



Note: The figure shows the average share of total earnings allocated to the high-earner for each treatment. It also shows the predicted share in the some-merit treatment and the mostly-merit treatment based on the spectator choices in the only-merit and only-luck treatments if there were no merit primacy effect. The upper and lower level of the standard error of the mean and the prediction is also displayed.

Table 5: Investigation of heterogeneous treatment effect of political view, educational level and gender

	Political View B=1 if Liberal		Education B=1 if High		Gender B=1 if Female	
	Share	Equalize	Share	Equalize	Share	Equalize
Some merit	0.113***	-0.442***	0.121***	-0.465***	0.119***	-0.523***
	(0.028)	(0.059)	(0.031)	(0.065)	(0.024)	(0.051)
Mostly merit	0.256***	-0.531***	0.243***	-0.501***	0.259***	-0.548***
	(0.029)	(0.057)	(0.034)	(0.068)	(0.026)	(0.049)
Only merit	0.170***	-0.414***	0.153***	-0.428***	0.196***	-0.426***
	(0.028)	(0.060)	(0.032)	(0.070)	(0.026)	(0.056)
B	-0.00598	-0.00777	-0.00260	-0.0111	0.00976	0.00989
	(0.026)	(0.059)	(0.027)	(0.061)	(0.025)	(0.059)
B*Some merit	0.0332	-0.0488	0.0161	-0.00583	0.0250	0.118
	(0.036)	(0.079)	(0.038)	(0.081)	(0.036)	(0.079)
B*Mostly merit	-0.0394	0.0476	-0.0125	-0.00184	-0.0564	0.0991
	(0.038)	(0.077)	(0.041)	(0.082)	(0.038)	(0.077)
B*Only merit	0.00324	0.00135	0.0283	0.0212	-0.0487	0.0325
	(0.037)	(0.082)	(0.039)	(0.086)	(0.036)	(0.081)
Constant	0.565***	0.641***	0.571***	0.644***	0.556***	0.670***
	(0.024)	(0.051)	(0.026)	(0.054)	(0.023)	(0.048)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observation	1005	1005	1005	1005	1005	1005
R-squared	0.152	0.192	0.149	0.191	0.154	0.193
Some merit+B*Some merit	0.146***	-0.491***	0.137***	-0.471***	0.144***	-0.405***
	(0.023)	(0.052)	(0.022)	(0.049)	(0.026)	(0.060)
Mostly merit+B*Mostly merit	0.217***	-0.483***	0.230***	-0.503***	0.202***	-0.449***
	(0.025)	(0.051)	(0.023)	(0.046)	(0.028)	(0.059)
Only merit+B*Only merit	0.174***	-0.413***	0.181***	-0.406***	0.147***	-0.394***
	(0.024)	(0.055)	(0.022)	(0.050)	(0.026)	(0.059)

Note: The table reports results from linear regressions of share of earnings given to the high-earner and an indicator variable for whether the spectator equalized earnings on treatment indicators, control variables and interaction variables, see regression equation (3). B is an indicator variable taking the value 1 if the spectator is liberal (columns (1) and (2)), has college education (columns (3) and (4)), or is female (columns (5) and (6)). In the regressions, we include all control variables used in Table 4, except the variable captured by B. All variables are defined in Table 4. Robust standard errors in parentheses (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$)

Result 1: *We identify, across subgroups, a large and highly statistically significant merit primacy effect in the distributive choices of the spectators.*

5 Mechanisms

We here provide a further discussion of the underlying mechanisms driving the merit primacy effect in spectator behaviour.

The joint presence of merit and luck in the mixed situations may cause the spectator to reward luck more, $m(\alpha L|(1-\alpha)M) > m(\alpha L|(1-\alpha)L)$, or merit more, $m(\alpha M|(1-\alpha)L) > m(\alpha M|(1-\alpha)M)$. We refer to the overall effect as the merit primacy effect, since we believe that both sources could be seen as merit gaining primacy in the fairness consideration. The fact that the spectator knows that the high-earner is the best performer in the merit task may cause the spectator to become more accepting of earnings inequality in both tasks. The spectator may feel that it is unfair for the best performer that some of the earnings are determined by luck, and thus may consider it fair that the high-earner gets a larger share from the luck task. An increase in the reward of luck may also reflect that the spectator takes an ex ante perspective and compensates the high-earner for the potential bad draw in the determining the payment from the luck task. On the other hand, the perception that it is unfair for the best performer that some of the earnings are determined by luck may also cause the spectator to consider it fair that the high-earner gets a larger share of the earnings from the merit task. An increase in the reward of merit may also reflect that the presence of both luck and merit makes the merit aspect even more salient than when there is no luck component determining earnings.

The following observation establishes when we can identify whether luck or merit is rewarded more in mixed situations:

Observation 3: Spectators reveal that they (i) reward luck more in mixed situations if and only if $m(\alpha L, (1-\alpha)M) > \alpha m(L) + (1-\alpha)X$ (**the luck test**) and (ii) reward merit more in mixed situations if and only if $m(\alpha L, (1-\alpha)M) > m(M)$ (**the merit test**). **Proof**: See Appendix B□

Observation 3 shows that spectators reveal that luck is rewarded more in mixed situations if they in the some-merit treatment allocate a larger share of the earnings to the high-earner than the linear prediction (Observation 1). We observe from Figure 2 that this is indeed the case ($0.68 > 0.9 * 0.55 + 0.1; p < 0.001$). The second part of Observation 3 shows that spectators reveal that merit is rewarded more in mixed situations if we have the paradoxical result that spectators give more to the high-earner in the mostly-merit treatment than in the only-merit treatment $m(MM) > m(M)$.[7] We observe from Figure 2 that this is also the case (79 percent versus 72 percent, $p < 0.001$). Hence, we find that the merit primacy effect in the spectator choices reflects both that luck is rewarded more and that merit is rewarded more in the mixed situations.

In Table 5, we observe that both mechanisms are present in all subgroups. It is particularly striking to see the consistency in the merit test, where spectators in all subgroups give more to the high-earner when both merit and luck determine earning than when only merit determines earnings.

We summarize the mechanism analysis in our second main result:

Result 2: *We show, across subgroups, that the merit primacy effect is driven by a positive complementarity both in the reward of luck and in the reward of merit.*

[7] It should be noted that the presence of a merit primacy effect does not imply the paradoxical pattern that we observe in the mostly-merit situation. Observation 3 only shows that it is only with the paradoxical result that we can identify that merit is rewarded in mixed situations.

6 Concluding remarks

The present study is motivated by the work of (Smith, 1759), who argued that people have a ”disposition to admire the rich and the great” (p 84). In line with this idea, we have shown that people, when acting as third-party spectators, exhibit a strong merit primacy effect when determining how much to give to the high-earner in situations where earnings are determined by both merit and luck. As a result, they give more to the high-earner when merit determines ninety percent of the earnings than when merit determines all the earnings. We also show that spectators allocate close to the same share to the high-earner when merit only accounts for ten percent of the earnings as when merit accounts for all of the earnings; a little bit of merit is enough to make people significantly more inequality accepting. Thus, in the presence of luck, people find it even more important to reward merit, and, in the presence of merit, people find it more acceptable that the better performer is lucky.

We believe that these findings shed light on inequality acceptance in society, by showing that inequality acceptance critically depends on whether people believe that the inequality at least partly reflects merit. This may contribute to explain why some people consider the income of the top one percent to be fair; they may believe that even though luck is involved, these earnings also reflect some merit and this fact may take primacy in their fairness considerations: “The incomes at the top, especially in the top one percent, have grown much faster than average. These high earners have made significant economic contributions, but they have also reaped large gains. The question for public policy is what, if anything, to do about it” (p.22) (Mankiw, 2013). At the same time, the power of merit is also reflected in the arguments of those who consider the increase in income of the top one percent unfair. They find it urgent to argue that these incomes do not reflect merit at all: “Inequality

is rising for structural reasons that have nothing to do with the social value produced by the labour of the top one percent of earners".[8]

The merit primacy effect in people's fairness considerations may also be important for our understanding of the cross-country variation in income inequality. A main focus in the present literature has been on people's beliefs about the relative importance of merit and luck in determining earnings (Alesina and Angeletos, 2005; Bénabou and Tirole, 2006; Piketty, 1995). Our findings, however, suggest that cross-country belief differences may be less essential, at least as long as people in most countries consider merit to have some role in determining earnings. Consequently, the cross-country variation in inequality acceptance may be driven by different societies having different views about the extent to which merit can justify income inequalities rather than by differences in beliefs about the relative importance of merit and luck in determining earnings (Almås *et al.*, 2020).

We believe that the framework introduced in this paper opens up several interesting research avenues. It is important to further explore which psychological mechanisms are driving the merit primacy effect, and the extent to which it is sensitive to the particular context of the distributive situation. One possibility is that our "disposition to admire the rich and the great" leads us to consider it unfair for the best performer that some of their earnings stem from luck, and therefore makes people reward luck more in the presence of merit.

The present study focused on spectator decisions, to investigate how our third-party moral considerations are shaped by the presence of both merit and luck as sources of inequality. Another interesting next step would be to study how these moral considerations interact with selfish considerations when making such choices. Important work has shown that incentives may crowd out pro-social motivation (Bowles, 2019; Kranton, 2019), but it may also shape our moral considerations of merit

[8] http://www.economist.com/blogs/democracyinamerica/2013/06/inequality

and luck. We need to better understand the determinants of inequality acceptance in society, which is of great importance for how we interpret social interaction and design political institutions.

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A Supplementary analysis

This appendix provides supplementary analysis referred to in the main text.

Table A1 provides an overview of the control variables by treatment and show that the sample is balanced.

The experiment was conducted in two rounds. The two rounds were identical in all respects except that in the first round the participants took the role of both worker and spectator, where each worker

Table A1: Sample statistics and balance test

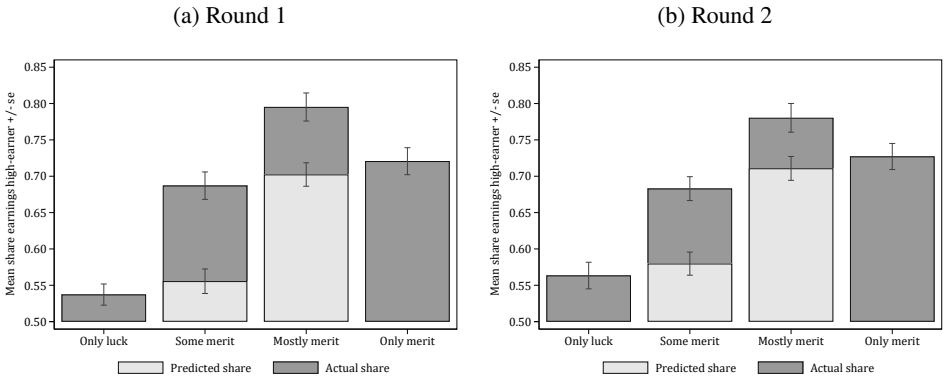
	Only luck	Some merit	Mostly merit	Only merit	All	
Female	0.45	0.46	0.45	0.52	0.47	0.44
	(0.50)	(0.50)	(0.50)	(0.50)	(0.50)	
Age	33.69	33.94	33.47	34.45	33.89	0.77
	(11.68)	(10.87)	(10.14)	(11.30)	(11.01)	
Liberal	0.56	0.55	0.59	0.55	0.56	0.71
	(0.50)	(0.50)	(0.49)	(0.50)	(0.50)	
College	0.64	0.63	0.73	0.69	0.67	0.074
	(0.48)	(0.48)	(0.44)	(0.47)	(0.47)	
Observations	255	251	245	254	1005	

Note: "Age" in years, "Female" as proportion of the sample, "Liberal" as proportion of the spectators answering that they consider themselves to be liberal and "College" as proportion of the sample reporting College as their highest educational attainment. Standard deviations in parenthesis. The final column reports the p-value from the F-test of regressions of the control variables on the treatment dummies.

acted as a spectator for a pair of workers within the same treatment. In this round, we had twice as many spectator decisions as pairs of workers and each spectators' decision was therefore implemented for his respective pair with fifty percent probability. The workers were not informed about their own earnings prior to acting as spectators. In the second round the spectators only acted as spectators and had not participated in the work phase and we had a unique spectator for each pair of workers. The spectators decision was thus implemented with certainty.

Figure A1 displays the average share of earnings given to the high-earner in each of the four treatments for the two rounds separately, while Figure A2 shows that comparison of actual and predicted choice by round. The results are strikingly similar, indicating that the spectators were not influenced by being exposed to the treatment themselves.

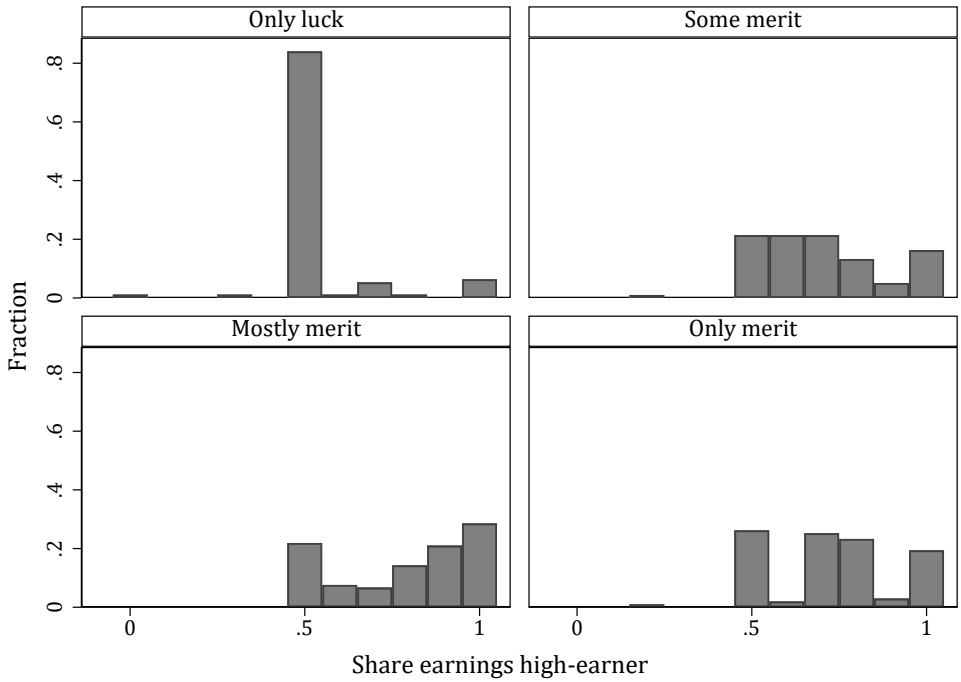
Figure A1: Share given to high earned by experiment round



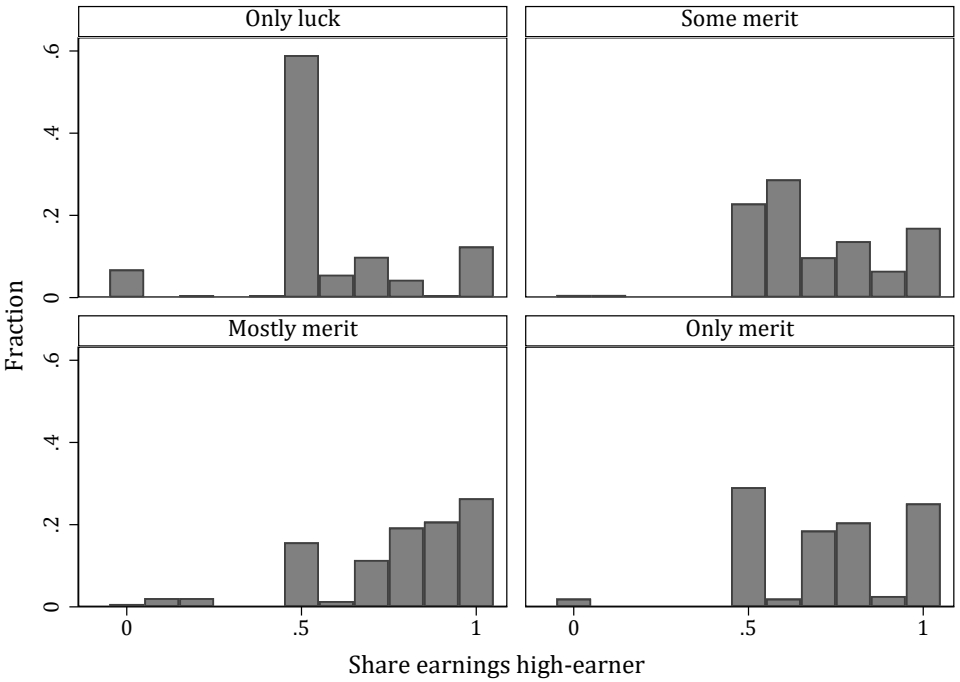
Note: The figure shows the mean share of earnings allocated to high-earner in each of the treatments as well as the predicted share in the some-merit and mostly-merit treatments. In experiment 1 the spectators had also participated in the worker session while experiment 2 was conducted with pure spectators.

Figure A2: Histogram by experiment round

(a) Round 1

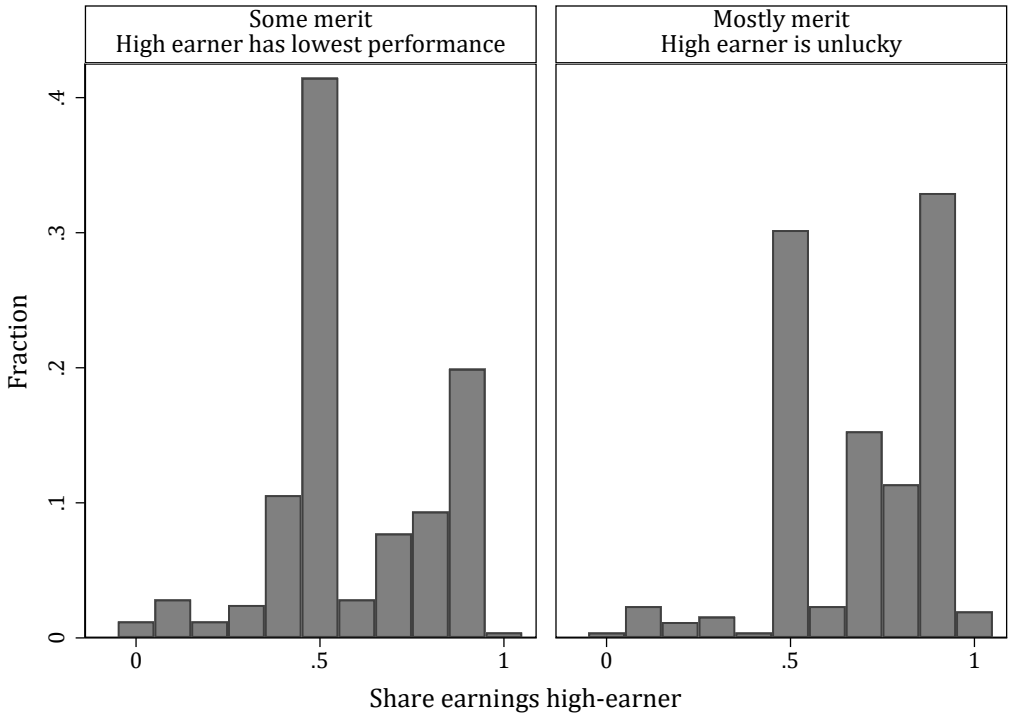


(b) Round 2



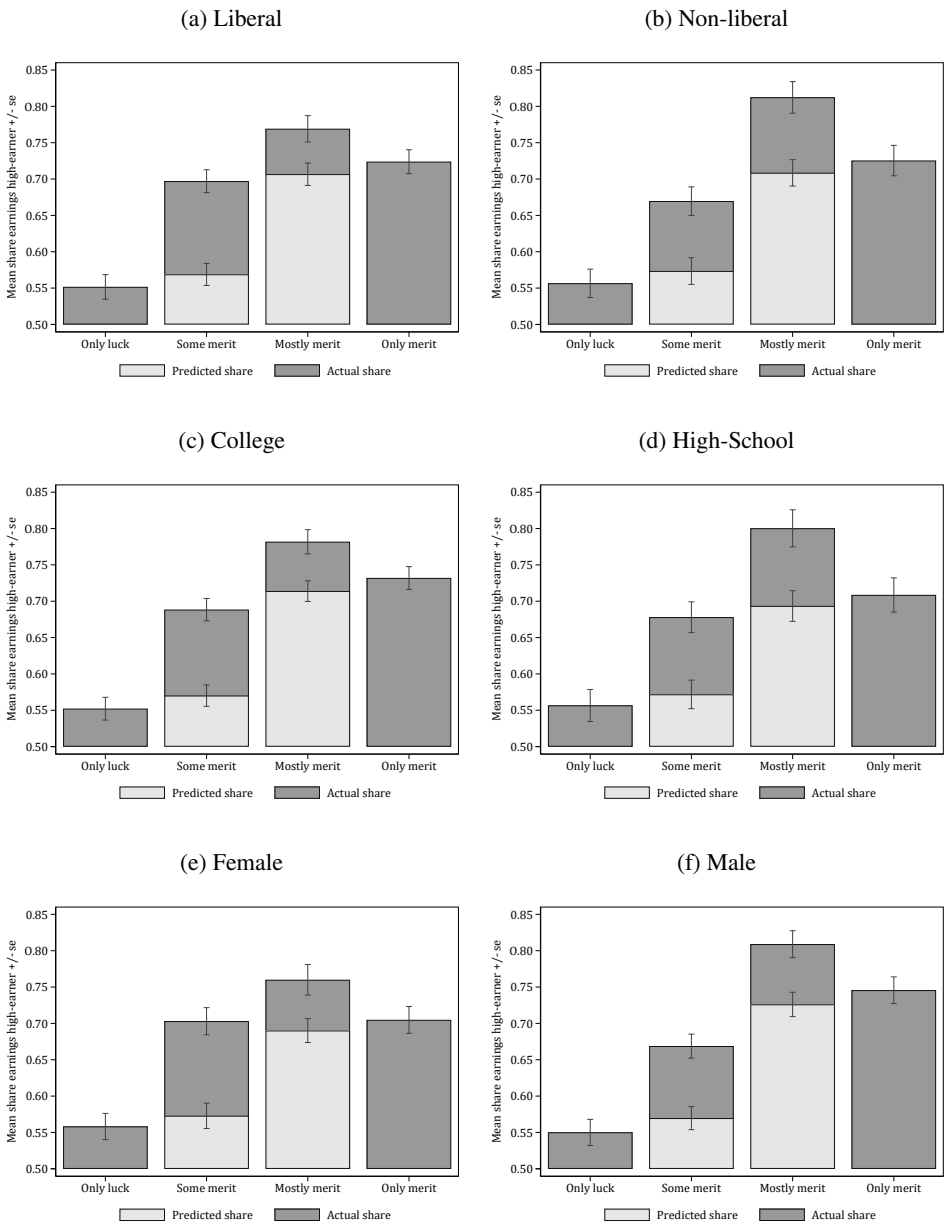
Note: The figure shows, by treatment, the histogram of the fraction of spectators who choose the alternative shares of earnings to the high-earner in each experimental round.

Figure A3: Histograms of share of earnings allocated to high earner in the two excluded treatments



Note: The figure shows, by treatment, the histogram of the fraction of spectators who choose the alternative shares of earnings to the high-earner in the two treatments where the high earner was unlucky or had the lowest number of correct answers.

Figure A4: Reward of high-earner: Heterogeneity analysis



Note: The figure shows the average share given to the high-earner for each subgroup in the four treatments. It also shows the predicted share given to the high-earner in the some-merit and mostly-merit treatments. The standard errors are indicated by the bars.

B Formal proof of observation 3

We here provide the formal proof of Observation 3. For this analysis, we introduce two minimal assumptions:

A.1 The fair income to the high-earner from a task is not greater than the earnings from this task:

$m(\alpha J \mid (1-\alpha)K) \leq X(\alpha J)$ for any $\alpha \in [0,1]$ and $J, K = L, M$.

A.2 The fair income to the high-earner for a task where merit is the source of inequality is at least as great as the fair income to the high-earner for a task where luck is the source of inequality:

$m(\alpha M \mid (1-\alpha)J) \geq m(\alpha L \mid (1-\alpha)K)$ for any $\alpha \in [0,1]$ and $J, K = L, M$.

Assumption **A.1** should be uncontroversial and **A.2** is in line with the well established regularity in the literature that people are more accepting of inequality due to merit than inequality due to luck (Almås *et al.*, 2020). Given these two assumptions, we can state the following observation.

Observation 3: Spectators reveal that they (i) reward luck more in mixed situations if and only if $m(\alpha L, (1-\alpha)M) > \alpha m(L) + (1-\alpha)X$ (**the luck test**) and (ii) reward merit more in mixed situations if and only if $m(\alpha L, (1-\alpha)M) > m(M)$ (**the merit test**).[9]

Proof: (I) If (i) is satisfied, then $m(\alpha L, (1-\alpha)M) > \alpha m(L) + (1-\alpha)X$. Hence, by definition, $m(\alpha L \mid (1-\alpha)M) + m((1-\alpha)M \mid \alpha L) > m(\alpha L \mid (1-\alpha)L) + (1-\alpha)X$. By reorganizing, it follows that $m(\alpha L \mid (1-\alpha)M) - m(\alpha L \mid (1-\alpha)L) > (1-\alpha)X - m((1-\alpha)M \mid \alpha L)$. By A.1, $m((1-\alpha)M \mid \alpha L) \leq (1-\alpha)X$. Hence, the right side is non-negative. Consequently, the left

[9]Observation 3 shows that stricter requirements are needed to identify whether it is merit or luck that is rewarded more in mixed situations than to establish the overall merit primacy effect. We achieve the strongest version of the luck test stated in Observation 2 by comparing a situation where luck determines all the earnings to a mixed situation where luck determines most of the earnings, since this is where a merit primacy effect on the reward of luck may have the largest effect. Correspondingly, we achieve the strongest version of the merit test stated by comparing a situation where merit determines all the earnings to a mixed situation where merit determines most of the earnings, since this is where a merit primacy effect on the reward of merit may have the largest effect.

side is strictly positive, and the if-part follows. The only if-part follows by observing that if (i) is not satisfied, $m(\alpha L, (1-\alpha)M) \leq \alpha m(L) + (1-\alpha)X$, then this can be rationalized by merit being rewarded more in mixed situations. To see this, assume that luck is not rewarded more in mixed situations, $m(\alpha L \mid (1-\alpha)M) = \alpha m(L)$. It then follows that $m(\alpha L, (1-\alpha)M) \leq \alpha m(L) + (1-\alpha)X$ implies that $m((1-\alpha)M \mid \alpha L) \leq (1-\alpha)X$, which is consistent with A.1. Hence, the observation that $m(\alpha L, (1-\alpha)M) \leq \alpha m(L) + (1-\alpha)X$ can be rationalized by merit being rewarded more in mixed situations and the only-if-part of the result follows.

(II) If (ii) is satisfied, then $m(\alpha L, (1-\alpha)M) > m(M)$. Hence, $m(\alpha L \mid (1-\alpha)M) + m((1-\alpha)M \mid \alpha L) > m(\alpha M \mid (1-\alpha)M) + m((1-\alpha)M \mid \alpha M)$. By reorganizing, it follows that $m((1-\alpha)M \mid \alpha L) - m((1-\alpha)M \mid \alpha M) > m(\alpha M \mid (1-\alpha)M) - m(\alpha L \mid (1-\alpha)M)$. By A.2, $m(\alpha M \mid (1-\alpha)M) \geq m(\alpha L \mid (1-\alpha)M)$. Hence, the right side is non-negative. Consequently, the left side is strictly positive, and the result follows. The only if-part follows by observing that if (ii) is not satisfied, $m(\alpha L, (1-\alpha)M) \leq m(M)$, then this can be rationalized by luck being rewarded more in mixed situations. To see this, assume that merit is not rewarded more in mixed situations, $m(\alpha M \mid (1-\alpha)L) = \alpha m(M)$. It then follows that $m(\alpha L, (1-\alpha)M) \leq m(M)$ implies that $m((1-\alpha)L \mid \alpha M) \leq m((1-\alpha)M \mid \alpha M)$, which is consistent with A.2. Hence, the observation that $m(\alpha L, (1-\alpha)M) \leq m(M)$ can be rationalized by luck being rewarded more in mixed situations and the only-if-part of the result follows.□

C Instructions

Common introduction for all treatments

Please read the instructions below carefully

General Instructions

The results from this experiment will be used in a research project and it is therefore important that you carefully read and follow all instructions. Note that you will remain anonymous throughout the experiment. In other words, the actions you take cannot be traced back to you at any point by neither the researchers nor the other participants.

The experiment consists of two parts – a decision part and a questionnaire part – and you must complete both parts to become eligible for payment. You will be paid a fixed participation fee of US $2.00.

You will be given detailed instructions on your screen before each part of the experiment. Please read the instructions to each part carefully before you move on to the next page.

When you have finished the experiment you will be given a unique completion code. You have to copy this code to the completion code field on the AMT web page that directed you here to get your participation approved. Your payment will be sent to you within a few days after the completion of this HIT.

If you have any questions regarding this experiment, you may contact thechoicelab@nhh.no.

I have read and understood the above and desire to participate in this study.

( ) Yes

( ) No

Instructions only luck

In another HIT two participants, person A and person B, were asked to perform a sentence unscrambling task. Both participants worked for ten minutes. The task did not have right and wrong answers, and thus it is not possible to measure the participants' performance on this task. After completing the work, the participants were informed that they could receive a bonus. The distribution of bonus between person A and person B is determined by a two stage process, an initial distribution and a final distribution. Here is how we explained the payment procedure to them:

> *Initial distribution:*
>
> *Sentence unscrambling assignment: The initial distribution of tokens will be determined by a lottery where each of you with equal probability can receive 600 or 0 tokens. Specifically, either you or the participant you are randomly matched with will receive 600 tokens, and the other will receive 0 tokens.*
>
> *Final distribution:*
> *The final distribution will be decided by a participant from another HIT. A randomly selected participant will be informed about the task you have performed and the determination of the initial distribution between you and the other participant. This third participant will then be asked to determine the final distribution of tokens between you and the other participant. The decision of this third participant will determine the final distribution of tokens and thus your bonus from the experiment.*

You are the third participant who is to determine the final distribution between person A and B. In the instructions to person A and B, we used a currency unit called tokens and one token is worth 1 US cent. Proceed to the next screen for more details.

Decision about final distribution:
Your task is to determine the final token distribution between person A and person B. Your decision will be implemented and determine the final bonus payment to person A and person B. Your decision will not affect your own payoff in any way.

We will now explain to you how the initial distribution between person A and person B was determined. Person A won the lottery and the initial distribution for the sentence unscrambling assignment is thus 600 tokens to person A and 0 tokens to person B. The initial token distribution of person A and person B is displayed in the table below:

	Person A	Person B
Sentence unscrambling (10 min.)	600	0
Initial distribution	600	0

Please enter your decision for the final distribution of tokens between person A and person B in the table below (it must total 600).

	Person A	Person B	Total
Final distribution	0	0	0

Instructions some merit

In another HIT two participants, person A and person B, were asked to perform two tasks: a sentence unscrambling task and a code recognition task. Both participants worked for ten minutes, nine minutes on the sentence unscrambling task and one minute on the code recognition task. The sentence unscrambling task did not have right and wrong answers, and thus it is not possible to measure the participants' performance on this task. For the code recognition task the participants were scored on the number of correct answers. After completing the work, the participants were informed that they could receive a bonus. The distribution of bonus between person A and person B is determined by a two stage process, an initial distribution and a final distribution. Here is how we explained the payment procedure to them:

> ***Initial distribution:***
> *Sentence unscrambling assignment: For this part, the initial distribution of tokens will be determined by a lottery where each of you with equal probability can receive 540 or 0 tokens. Specifically, either you or the participant you are randomly matched with will receive 540 tokens, and the other will receive 0 tokens.*
>
> *Code recognition assignment: For this part, the initial distribution of tokens will be determined by the number of points you collected on this assignment relative to the number of points collected by the participant you have been matched with. Specifically, the one with the highest score on the code recognition assignment will receive 60 tokens and the other will receive 0 tokens. If both of you have the same score then you will receive 30 tokens each.*
>
> ***Final distribution:***
> *The final distribution will be decided by a participant from another HIT. A randomly selected participant will be informed about the task you have performed and the determination of the initial distribution between you and the other participant. This third participant will then be asked to determine the final distribution of tokens between you and the other participant. The decision of this third participant will determine the final distribution of tokens and thus your bonus from the experiment.*

You are the third participant who is to determine the final distribution between person A and B. In the instructions to person A and B, we used a currency unit called tokens and one token is worth 1 US cent. Proceed to the next screen for more details.

Decision about final distribution:
Your task is to determine the final token distribution between person A and person B. Your decision will be implemented and determine the final bonus payment to person A and person B. Your decision will not affect your own payoff in any way.
We will now explain to you how the initial distribution between person A and person B was determined. Person A won the lottery and the initial distribution for the sentence unscrambling assignment is thus 540 tokens to person A and 0 tokens to person B. Person A had the highest score on the code recognition assignment and the initial distribution of tokens for the code recognition assignment is 60 tokens to person A and

0 tokens to person B. The initial token distribution of person A and person B is displayed in the table below:

	Person A	Person B
Sentence unscrambling (9 min.)	540	0
Code recognition (1 min.)	60	0
Initial distribution	600	0

Please enter your decision for the final distribution of tokens between person A and person B in the table below (it must total 600).

	Person A	Person B	Total
Final distribution	0	0	0

Instructions mostly merit

In another HIT two participants, person A and person B, were asked to perform two tasks: a sentence unscrambling task and a code recognition task. Both participants worked for ten minutes, one minute on the sentence unscrambling task and nine minutes on the code recognition task. The sentence unscrambling task did not have right and wrong answers, and thus it is not possible to measure the participants' performance on this task. For the code recognition task the participants were scored on the number of correct answers. After completing the work, the participants were informed that they could receive a bonus. The distribution of bonus between person A and person B is determined by a two stage process, an initial distribution and a final distribution. Here is how we explained the payment procedure to them:

> ***Initial distribution:***
> *Sentence unscrambling assignment: For this part, the initial distribution of tokens will be determined by a lottery where each of you with equal probability can receive 60 or 0 tokens. Specifically, either you or the participant you are randomly matched with will receive 60 tokens, and the other will receive 0 tokens.*
>
> *Code recognition assignment: For this part, the initial distribution of tokens will be determined by the number of points you collected on this assignment relative to the number of points collected by the participant you have been matched with. Specifically, the one with the highest score on the code recognition assignment will receive 540 tokens and the other will receive 0 tokens. If both of you have the same score then you will receive 270 tokens each.*
>
> ***Final distribution:***
> *The final distribution will be decided by a participant from another HIT. A randomly selected participant will be informed about the task you have performed and the determination of the initial distribution between you and the other participant. This third participant will then be asked to determine the final distribution of tokens between you and the other participant. The*

decision of this third participant will determine the final distribution of tokens and thus your bonus from the experiment.

You are the third participant who is to determine the final distribution between person A and B. In the instructions to person A and B, we used a currency unit called tokens and one token is worth 1 US cent. Proceed to the next screen for more details.

Decision about final distribution
Your task is to determine the final token distribution between person A and person B. Your decision will be implemented and determine the final bonus payment to person A and person B. Your decision will not affect your own payoff in any way.

We will now explain how the initial distribution between person A and person B was determined. Person A won the lottery and the initial distribution for the sentence unscrambling assignment is thus 60 tokens to person A and 0 tokens to person B. Person A had the highest score on the code recognition assignment and the initial distribution of tokens for the code recognition assignment is 540 tokens to person A and 0 tokens to person B. The initial token distribution of person A and person B is displayed in the table below:

	Person A	Person B
Sentence unscrambling (1 min.)	60	0
Code recognition (9 min.)	540	0
Initial distribution	600	0

Please enter your decision for the final distribution of tokens between person A and person B in the table below (it must total 600).

	Person A	Person B	Total
Final distribution	0	0	0

Instructions mostly merit

In another HIT two participants, person A and person B, were asked to perform a code recognition task. Both participants worked for ten minutes. For the task the participants were scored on the number of correct answers. After completing the work, the participants were randomly paired and informed that they could receive a bonus. The distribution of bonus between person A and person B is determined by a two stage process, an initial distribution and a final distribution. Here is how we explained the payment procedure to them:

Initial distribution:
Code recognition assignment: For this part, the initial distribution of tokens will be determined by the number of points you collected on this assignment relative to the number of points collected by the participant you have been matched with. Specifically, the one with the highest score on the code recognition assignment

will receive 600 tokens and the other will receive 0 tokens. If both of you have the same score then you will receive 300 tokens each.

Final distribution:
The final distribution will be decided by a participant from another HIT. A randomly selected participant will be informed about the task you have performed and the determination of the initial distribution between you and the other participant. This third participant will then be asked to determine the final distribution of tokens between you and the other participant. The decision of this third participant will determine the final distribution of tokens and thus your bonus from the experiment.

You are the third participant who is to determine the final distribution between person A and person B. In the instructions to person A and B, we used a currency unit called tokens and one token is worth 1 US cent. Proceed to the next screen for more details.

Decision about final distribution
Your task is to determine the final token distribution between person A and person B. Your decision will be implemented and determine the final bonus payment to person A and person B. Your decision will not affect your own payoff in any way.

We will now explain how the initial distribution between person A and person B was determined. Person A had the highest score on the code recognition assignment and the initial distribution of tokens for the code recognition assignment is 600 tokens to person A and 0 tokens to person B. The initial token distribution of person A and person B is displayed in the table below:

	Person A	Person B
Code recognition (10 min.)	600	0
Initial distribution	600	0

Please enter your decision for the final distribution of tokens between person A and person B in the table below (it must total 600).

	Person A	Person B	Total
Final distribution	0	0	0