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## Technological change, task complexity, and preferences for redistribution

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# Technological Change, Task Complexity, and Preferences for Redistribution

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## Technological Change, Task Complexity, and Preferences for Redistribution\*

### Abstract

Technological change has fundamentally transformed the US labour market in recent decades, with high-earning jobs becoming increasingly focused on nonroutine, complex tasks. We provide a first experimental test of whether fairness perceptions and preferences for redistribution differ when top earners gain their incomes through luck, routine work, or complex work. We find that the desired tax rate on top earners is up to 5.3 percentage points lower for the complex work treatment compared to the routine work treatment. Interestingly, performance on complex tasks is also more likely to be seen as the result of inherited intelligence.

JEL Code: D31, D63, D91, H24

Keywords: Top income tax, technological change, redistribution, distributive preferences, fairness

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# 1 Introduction

A large body of evidence shows the importance of fairness views in shaping redistributive preferences ([Alesina, Stantcheva, & Teso, 2018](#); [Almås, Cappelen, & Tungodden, 2020](#); [Ballard-Rosa, Martin, & Scheve, 2017](#); [Cappelen, Moene, Sørensen, & Tungodden, 2013](#); [Durante, Putterman, & van der Weele, 2014](#); [Lefgren, Sims, & Stoddard, 2016](#); [Stantcheva, 2021](#)). A key finding from this literature is that demand for redistribution is lower when the better off are seen to have earned their incomes rather than obtained them through luck ([Cappelen, Moene, et al., 2013](#); [Durante et al., 2014](#); [Lefgren et al., 2016](#)). The luck versus earned income distinction misses something important, however, as real-world distributive decisions are much more typically between incomes earned through different types of work.

In this study, we provide a first experimental test of whether fairness views and redistributive preferences differ when high-income earners gain their incomes through luck, routine work, or (non-routine) complex work. This set up aims to mirror the changing nature of tasks in the US labour market as a result of routine-biased technological change, which has seen a substantial shift towards the type of abstract problem-solving and complex communications tasks that are complementary to information and communications technologies ([Acemoglu & Autor, 2011](#); [Autor, Levy, & Murnane, 2003](#); [Cortes, Jaimovich, & Siu, 2017](#)).

Recent work looking at task complexity at the occupational level in the US shows that occupations with high task complexity have substantially higher wages and saw greater wage and employment growth than simple occupations over the 1980 and 2005 period ([Caines, Hoffmann, & Kambourov, 2017](#)). The trend towards increasing work complexity has also been observed in the highest-earning sectors of the economy. For example, the jobs of employees in the finance industry, which make up a disproportionate share of the top 1% of wage earners in the US ([Bivens & Mishel, 2013](#)), have become markedly more complex on multiple dimensions since the 1980s ([Philippon & Reshef, 2012](#)).

Technological change has therefore resulted in a large increase in demand for

skilled (i.e., college-educated) workers in recent decades ([Van Reenen, 2011](#)), and has been clearly linked to both the rise in the college wage premia ([Autor, Katz, & Kearney, 2008](#)) and the concentration of income at the very top of the ladder ([Kaplan & Rauh, 2013](#)). If high incomes increasingly being earned through more complex, analytical tasks leads to inequalities being perceived as fairer, this could provide an important new demand-side explanation for the substantial fall in the progressivity of the US tax system since the 1980s ([Piketty & Saez, 2007](#); [Saez & Zucman, 2019](#)).

In our experiment, participants are divided into groups of five and randomly allocated to one of three treatment arms. In each treatment arm, \$5 is allocated to one member of the group, and the allocation is decided either through luck (random allocation), performance on a routine slider task, or performance on a complex problems task. Our complex work treatment is specifically designed to replicate the type of cognitive, non-routine work that has become so richly rewarded in the US labour market following the information and communications technologies (ICT) revolution.

We then give both workers and a set of impartial spectators the opportunity to tax the top earner and redistribute to the other members of the group. The impartial spectators are additional subjects who did not take part in the first stage of the experiment, are not part of any of the groups, and have no material stake in the decision. Our design therefore allows us to isolate the underlying mechanisms for any changes in preferences across treatments. While spectator decisions allow us to isolate potential differences in perceived deservingness by excluding selfish considerations ([Cappelen, Moene, et al., 2013](#)), the distributive choices of workers also include selfish considerations, across tasks of varying complexity. Testing both of these mechanisms is important to fully understand support for taxing top earners outside of the laboratory setting, where citizens' preferences are influenced by a combination of the two. In three novel incentivised belief elicitations, we are further able to test the underlying causes for potential differences in perceived deservingness of top incomes across treatments. Specifically, we test whether such differences are due to a change in perceived cognitive cost, agency, or uniqueness of the required skills across tasks

of varying complexity.

We supplement our interactive online experiment with two survey experiments. The first aims to support the external validity of our main results by using vignettes to test whether individuals' preferences for taxing hypothetical high-income individuals differ when they have earned their (identical) incomes through an office job focused on performing simple repetitive tasks (e.g., data input, basic customer service etc.) or an office job focused on performing more complex tasks (e.g., data analysis, strategic decision-making, managing etc.). The second uses vignettes to explore whether higher earning individuals' jobs are generally perceived to be more complex. This aims to further draw out the implications of our main experiment for contemporary demands for taxing top earners.

Our key findings are as follows. Respondents' perceptions of what determines performance and payoffs differ widely across our three treatment arms. Luck is picked out as the most important factor in determining who receives the bonus allocation when it is randomly allocated and effort is singled out as the most important factor for performance in the routine work treatment. In contrast, for the complex work treatment, effort, education and inherited intelligence are all seen to be important for good performance. This increases confidence in our experimental design, as it shows that the tasks chosen for the routine and complex work treatments are perceived to be of distinctly different levels of complexity.

When just looking at impartial spectators, which allows us to isolate the purely prosocial part of redistributive preferences (as they have no material interest in the redistributive decision), we find that redistribution is significantly lower when payoffs are the result of (routine or complex) work as opposed to luck. Going beyond the existing literature, our experiment also shows that the redistributive preferences of impartial spectators depend on the type of work being performed. The desired tax rate on top earners in the complex work treatment is 5.3 percentage points lower than in the routine work treatment. When looking at the workers, whose payoffs are directly affected by the redistributive decision, we do not see significant differ-

ences in redistributive preferences between the routine and complex work treatments. This suggests that differences between the routine and complex work treatments in the preferred tax rate on top earners are mostly driven by prosocial, other-regarding preferences.

Turning to the effects on core beliefs. When incomes are the result of complex work rather than routine work, impartial spectators believe inequalities are fairer and top earners are more deserving. This appears to be the central mechanism linking increasing task complexity to lower redistributive demands. Our three novel belief elicitations yield null results, however, which suggests that differences in fairness views and redistributive preferences between the routine and complex work treatments are not driven by rational belief updating. Rather, there simply appears to be a widely-held (and acted upon) belief that complex work is more deserving than routine work.

The results from our first follow-up vignettes study closely align with those from the main experiment. We find that the desired tax rate on hypothetical high-income office workers (with identical incomes) is 1.1 percentage points lower when their job focuses primarily on complex (non-routine) tasks than when their job focuses primarily on repetitive (routine) tasks. We also find that high incomes from more complex jobs are perceived to be fairer and more deserved. Building on this, our second vignettes study then shows that higher earning jobs are widely perceived to be more complex. For instance, a job with a \$25,000 annual income is on average perceived to have complexity of 3.3 (on an scale from 0-10), whereas the equivalent figure for a job with a \$500,000 annual income is 7.7.

Our paper contributes to the large literature on the importance of fairness views for redistributive preferences. Empirical studies show that people are more averse to redistribution if economic success is perceived as deserved—i.e., due to hard work and merit rather than luck—and argue this is essential to understanding the lower levels of redistribution in the United States than in Europe ([Alesina, Glaeser, & Sacerdote, 2001](#); [Alesina & La Ferrara, 2005](#); [Fong, 2001](#)). These findings align with theoretical

models where different (self-fulfilling) beliefs about the role of effort in determining labour market success lead to multiple equilibria in taxation and redistribution. Societies that believe that high incomes are the result of effort, and hence fair, choose lower taxes and redistribution than those that believe high incomes arise from luck or other advantages of the (already) well-off ([Alesina & Angeletos, 2005](#); [Bénabou & Tirole, 2006](#); [Dimick, Rueda, & Stegmueller, 2018](#)).

There is also a growing experimental literature on the extent to which individuals display a preference for redistribution when incomes are gained through luck (i.e., random assignment) as opposed to earned (e.g., through performance on a task). This literature is primarily based on simple, non-interactive games carried out in a laboratory setting, such as (modified) dictator games ([Cappelen, Moene, et al., 2013](#); [Carlsson, He, & Martinsson, 2013](#); [Cherry, Frykblom, & Shogren, 2002](#); [Oxoby & Spraggon, 2008](#)) or public good games ([Balafoutas, Kocher, Putterman, & Sutter, 2013](#); [Kroll, Cherry, & Shogren, 2007](#)), however, there are some more recent contributions that specifically incorporate voting over redistribution ([Durante et al., 2014](#); [Krawczyk, 2010](#); [Lefgren et al., 2016](#)). The broad consensus from this body of work is that demand for redistribution is lower when income is earned rather than when it is simply (randomly) allocated. More recent research from [Almås et al. \(2020\)](#) uses online experiments to explore how fairness views and redistributive preferences differ between the United States and Scandinavia. Aligning with the findings of the observational literature, they find that inequality acceptance is significantly higher (and support for redistribution lower) in the US than in Scandinavia due to considerably more Americans holding libertarian fairness views—i.e., the belief that inequalities due to both luck and productivity are fair.

Our research also relates closely to the recent research utilising online survey experiments to investigate preferences for tax policy and redistribution. [Alesina et al. \(2018\)](#) find that Americans are more optimistic than Europeans about social mobility and the fairness of the market system, and that receiving pessimistic information about mobility increases demand for redistribution. Turning to the tax system specif-

ically, [Stantcheva \(2021\)](#) explores how Americans understand and reason about tax policy. She finds that support for income and estate taxes is much more heavily influenced by concerns about the fairness of inequality and taxation than by concerns about efficiency. In line with this finding, [Scheve and Stasavage \(2021\)](#) find that equal treatment fairness beliefs affect preferences over progressive taxation in Germany, the UK and the US.

We make an important contribution to the experimental literature in economics on fairness perceptions and redistributive preferences. Our experiment is, to the best of our knowledge, the first to test how the type and complexity of tasks affects preferences for redistributing top incomes. While most of the existing literature has focused on differences between income that is earned and income that is obtained by luck, this does not accurately reflect most real-world distributive decisions, which are typically between incomes earned from performing different types of tasks. Our experimental design also allows us to test the mechanisms underlying differences in fairness perceptions across different tasks. The novel belief elicitation developed in this paper may therefore prove useful for future research on fairness perceptions of earned income.

Our results also speak to one of the main findings of the literature on distributive preferences: that incomes which are the result of luck are more likely to be redistributed and perceived as unfair than earned incomes ([Almås et al., 2020](#); [Brock, Lange, & Ozbay, 2013](#); [Cappelen, Moene, et al., 2013](#); [Cappelen, Sørensen, & Tungodden, 2010](#); [Cherry et al., 2002](#); [Cherry & Shogren, 2008](#); [Gee, Migueis, & Parsa, 2017](#); [Krawczyk, 2010](#); [Lefgren et al., 2016](#); [Rey-Biel, Sheremeta, & Uler, 2018](#)). This finding is commonly interpreted as indicating a preference for meritocracy among subjects (e.g. [Cappelen, Hole, Sørensen, & Tungodden, 2007](#); [Cappelen, Konow, Sørensen, & Tungodden, 2013](#); [Cappelen et al., 2010](#)), whereby agency is the relevant factor in determining the deservingness of earnings ([Akbaş, Ariely, & Yuksel, 2019](#)). While we replicate this main finding when focusing only on our luck and routine work treatments, our results in the complex work condition seemingly contradict this mer-

itocratic interpretation. In our experimental setting and our vignette study, earnings from complex work are less likely to be redistributed and perceived as more deserving than earnings from routine work. This is the case even though inherited intelligence is perceived as most important to perform well in the complex work task (see Figure 4). Arguably, inherited intelligence is not a factor over which our subjects have agency. This result, therefore, suggests that the meritocratic interpretation of existing experimental findings might not hold beyond the simple luck versus earned income distinction.

When it comes to the relationship between technological change and individual-level preferences, most of the existing research is in political science. For example, recent micro-level studies have shown that workers more exposed to technology-induced job loss are more supportive of redistribution (Bussemeyer & Sahm, 2021; Thewissen & Rueda, 2019), as well as policies to slow the pace of technological change (Gallego, Kuo, Manzano, & Fernández-Albertos, 2022). Workers at greater risk of automation have also been found to be more supportive of mainstream left (Gingrich, 2019) and populist right parties and candidates (Anelli, Colantone, & Stanig, 2021; Frey, Berger, & Chen, 2018; Gingrich, 2019; Kurer, 2020). The key point of departure of our study from this work is that we look beyond individuals' exposure to automation and their (self-interested) preferences for redistribution and focus on how technology has changed the complexity of the work that top earners undertake and how this has fed through into (other-regarding) preferences for redistribution.

On the macro-level, there is also recent work showing the strong association between the expansion of the knowledge economy and lower tax progressivity in the OECD countries (Hope & Limberg, 2022). Our experimental evidence provides crucial new insights into the possible mechanisms underlying these striking cross-country correlations.

The rest of the article proceeds as follows. Section 2 sets out our experimental design. Section 3 presents the main results of our experiment, as well a number of sensitivity and robustness checks. Section 4 then presents the results of our follow-up

vignettes studies. Lastly, we provide some concluding remarks in Section 5.

## 2 Experimental Design

Our main experimental design follows the existing literature by asking impartial spectators to redistribute income between workers. The spectator design, which is commonly used in the experimental literature on distributive preferences (e.g. [Almås et al., 2020](#); [Cappelen, Moene, et al., 2013](#)), allows us to isolate prosocial preferences as spectators have no material interest in the decision they make. We depart from most of the existing studies in three important ways: First, we ask spectators to decide on an allocation of income for groups of five rather than pairs of workers. This allows us to test redistributive preferences for incomes of top earners more directly. Second, spectators make decisions in all treatment conditions in randomised order. Third, we also ask all workers to decide on a level of redistribution within their group. For each group, there is then a 50% chance that the decision of one of three impartial spectators will be implemented<sup>1</sup> and a 50% chance that the decision of one of the five workers will be implemented.

Our experiment aims to understand how people assess the changing complexity of work in the labour market. We therefore use a within-subject design, whereby each spectator makes decisions in all three treatment conditions. We do this as it better matches the real-world assessments we are interested in understanding than a between-subject design. When people assess the fairness of incomes earned through complex work in the real world, they do so by comparison to other types of work and not in isolation. This is what we aim to capture in our experiment. A within-subject design also has the advantage that it allows us to estimate individual-level, and not just average, treatment effects. Finally, recent experimental evidence suggests that concerns about demand effects in online experiments might be exaggerated, which is usually the main concern raised about within-subject designs ([Mummolo & Peterson,](#)

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<sup>1</sup>Each spectator makes allocation decisions in all three treatment conditions but only one of their decisions will potentially be implemented. Therefore, three spectators are matched with each worker group and one spectator decision is selected at random to have a 50% chance of implementation.



2019).

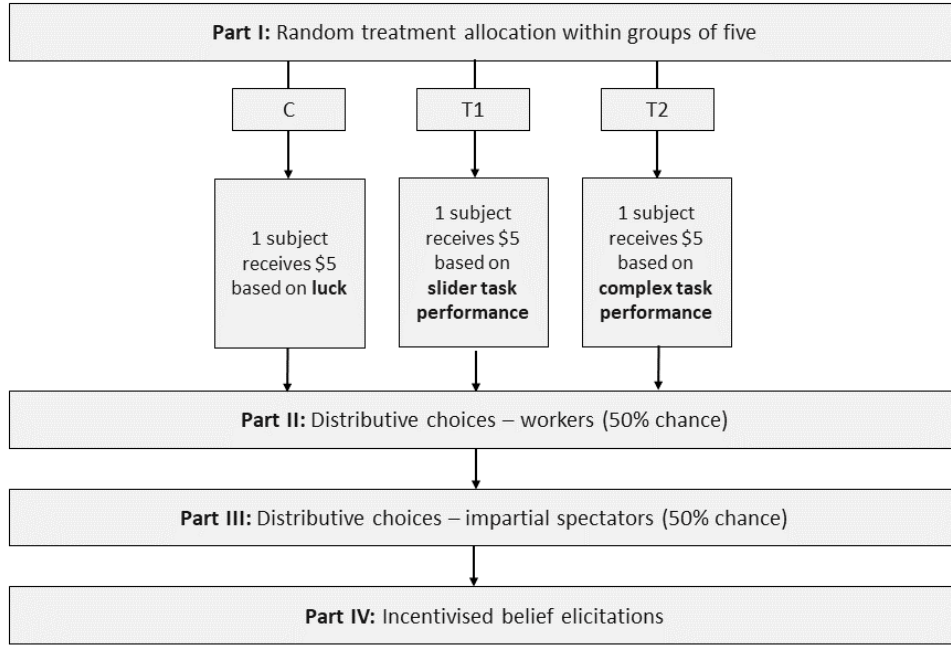
Prior to spectators and workers making their redistributive choices, workers are assigned to one of our three treatment conditions. In the luck treatment, one of the five workers is randomly allocated an initial bonus of \$5. In the routine work treatment, workers each complete a simple slider task (Gill & Prowse, 2012) for three minutes. Here, the worker who completes the most sliders within each group receives an initial bonus allocation of \$5. In the complex work treatment, each worker completes complex problems for three minutes. The worker who completes the most problems correctly within each group then receives an initial bonus allocation of \$5. These problems consist of an even mix of math exercises (Niederle & Vesterlund, 2007), Raven's progressive matrices (Raven, 2000), and anagrams (Charness & Villeval, 2009). They are selected to mirror the type of abstract, problem-solving tasks that have become so highly valued in the US labour market since the ICT revolution. We purposely choose a mix of different types of problems to capture the non-routine nature of the type of work we are interested in. By dividing the complex work treatment into short individual problems, we are also able to estimate individual performance in a comparable manner to the routine work treatment.

Spectators as well as workers are provided with information on the initial \$5 bonus allocation within their group. They are then able to propose a reallocation of the \$5, to be divided equally between the other group members. While workers only make one distributive choice for their own group, spectators make three decisions. Each of these three decisions is for a group of workers in a different treatment condition. The order in which spectators see these three groups is randomised.

In the final part of the experiment, we explore the underlying mechanisms by eliciting spectator and worker beliefs, including three novel incentivised belief elicitation mechanisms that aim to directly test three potential competing mechanisms.

Figure 1 provides an overview of the experimental design. In the remainder of the section, each part of the experiment will be explained in more detail. The full experimental instructions are set out in Part F of the Appendix.

Figure 1: Experimental Design



## 2.1 Part I: Work Stage

The first part of the experiment consists of the work stage. Here, workers are randomly assigned to the luck, routine work, or complex work treatment. They are then randomly allocated to a group of five. Each worker within the group has been allocated to the same treatment. While workers in the luck treatment are simply told that the bonus will be allocated to one randomly selected worker, those in the routine and complex work treatments are asked to do a task for three minutes. Figure 2 illustrates examples of tasks workers faced in each treatment condition. The example shown for the complex work treatment is a Raven's progressive matrix, which is only one of the three different types of tasks workers face in randomised order during the work stage (examples of the other two complex tasks are shown in the experimental instructions in Part F of the Appendix).

The randomly chosen worker (in the luck treatment) or the best performer (in the routine and complex work treatments) is allocated an initial bonus of \$5. This amount will, however, only be paid after the decisions in part II and III are made and

Figure 2: Example Worker Screens

Please move as many sliders as possible to the number 50.

0 10 20 30 40 50 60 70 80 90 100

Please move the slider to 50

☐ \_\_\_\_\_

Please move the slider to 50

☐ \_\_\_\_\_

Please move the slider to 50

☐ \_\_\_\_\_

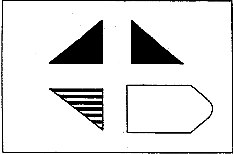
Please move the slider to 50


☐ \_\_\_\_\_


Please move the slider to 50


☐ \_\_\_\_\_


Which of the below options completes the pattern?





1  


2  


3  


4  


5  


6  


<input type="radio"/> Option 1	<input type="radio"/> Option 2	<input type="radio"/> Option 3
<input type="radio"/> Option 4	<input type="radio"/> Option 5	<input type="radio"/> Option 6

*Note:* The screen on the left was displayed to workers in the routine work treatment group. The screen on the right shows an example task workers faced in the complex work treatment group.

the beliefs in part IV are elicited.

## 2.2 Part II: Worker Distribution Stage

Workers are provided with the payoff information for their group (i.e., which group member was allocated the \$5). Prior to making their distributive choice, workers are asked four understanding questions and are provided with the correct answers for each question before being able to proceed. They then have the option to redistribute the \$5 allocated to the top earner, to be equally distributed across the other group members. Given there is a 50% chance the decision of one of the five workers will be implemented and that worker is chosen at random, there is a 10% chance an individual worker's decision will be implemented. The left panel in Figure 3 illustrates an example decision scenario for a worker who is not herself a top earner in the complex work condition.

## 2.3 Part III: Spectator Distribution Stage

After workers have completed their part of the experiment but prior to payment of the bonus allocations, spectators each make three allocation decisions, one for each treatment. The order in which they make decisions across the three treatments is randomised. For the routine and complex work decisions, spectators are asked to participate in the respective task themselves for one minute without being informed of their own performance. This stage aims to provide spectators with a better idea of the complexity of each task and allows us to compare spectator and worker decisions while holding task experience constant.

Prior to making their distributive choice, spectators are also asked four understanding questions and are provided with the correct answers for each question before being able to proceed. For each treatment, spectators are then provided with the payoff information for a group and have the option to redistribute the \$5 allocated to the top earner, to be equally distributed across the other group members. There are three spectators for each group and a 50% chance the decision of one of the three spectators will be implemented. As that spectator is chosen at random, there is a 17% chance an individual spectator's decision will be implemented. Spectators receive no information on the preferences expressed by the workers in part II. The right panel in Figure 3 illustrates an example decision scenario for a spectator in the complex work condition.






## 2.4 Part IV: Belief Elicitations

To determine the underlying mechanism for potential differences in redistributive choices across treatments, we elicit spectator and worker beliefs as well as demographics and distributive and political questions at the end of the experiment. For spectators, the treatment-specific beliefs are elicited after each of the three decisions. Additionally, we specifically include three incentivised belief elicitations at the end of the experiment that allow us to directly test three potential competing mechanisms:

**Perceived Cognitive Cost:** Subjects are asked whether they would be willing to

Figure 3: Example Distribution Screens

Please consider the below information for your group.

Participant 1	Participant 2	Participant 3	Participant 4	You
				
\$0	\$5	\$0	\$0	\$0






You now have the option to redistribute the bonus allocation of **Participant 2**.

**Participant 2** received the initial \$5 bonus allocation because they correctly completed the most complex problems within your group. Please indicate how much of the \$5 you wish to redistribute. Any indicated amount will be split evenly among you and the other three participants within the group. If you do not want to redistribute the bonus allocation, you can just enter \$0.

How much of the \$5 do you want to redistribute?

Amount you want to redistribute (in \$):

Please carefully consider the below scenario.

Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
				
\$0	\$5	\$0	\$0	\$0

You now have the option to redistribute the bonus allocation of **Participant 2**.

**Participant 2** received the initial \$5 bonus allocation because they correctly completed the most complex problems within the group. Please indicate how much of the \$5 you wish to redistribute. Any indicated amount will be split evenly among the other four participants within the group. If you do not want to redistribute the bonus allocation, you can just enter \$0.

How much of the \$5 do you want to redistribute?

Amount you want to redistribute (in \$):

*Note:* The left panel shows a distribution screen for a worker and the right panel shows a distribution screen for an impartial spectator.

perform the task (again) within their treatment condition and, if so, what the minimum amount of payment would be they would want to receive for their participation. To put restrictions on subjects' required minimum payments, we inform them that 10 subjects with the lowest suggested amount will be selected to actually complete the task at their proposed rate. Although this introduces a strategic element, it will be held constant across treatments. A higher average required minimum payment in the complex work treatment as opposed to the routine work treatment would suggest that the perceived cognitive cost of the complex problems task is higher. Alternatively, if the required minimum payment in the complex work treatment is lower, it would suggest that the cognitive cost is perceived to be lower. This may be the case because the intrinsic motivation to perform the complex problems task is so high that it outweighs the effect of task difficulty on cognitive cost. Additionally, if one task is perceived to be more engaging than the other, this would reduce the cognitive cost and, in turn, also reduce the required minimum payment in this elicitation. Our mea-

sure can therefore provide an estimate of the net cognitive cost of each task, taking all these considerations into account.

**Perceived Agency:** Subjects (within treatment conditions) are asked to provide incentivised estimates of the average performance of workers in two previous studies that differed (only) in the size of the prize given to the best performer. If subjects believe there to be a larger difference in performance for the slider task than for the complex problems task under different prizes, it would suggest that they perceive workers to have more agency over their effort level in the slider task as compared to the complex problems task. While the absolute estimates for these questions will, of course, be affected by their own performance in the task and how intrinsically motivated they believe workers to be, the difference between the two prize scenarios will still capture their perception of agency. If subjects are within  $\pm 5$  percentage points of the correct answer for each estimate, they will receive an additional payment of 20 cents.

**Perceived Uniqueness of Skill:** We ask subjects (within treatment conditions) to provide incentivised estimates of the number of workers out of 100 randomly selected ones who were able to perform the task above a certain performance threshold. If subjects are within  $\pm 5$  percentage points of the correct answer, they will receive an additional payment of 20 cents. If subjects estimate the number of workers being able to perform very well in the complex problems task to be lower than in the slider task, that would suggest that skills needed for the complex problems task are perceived to be more unique than those needed to perform well in the slider task. The performance threshold is set based on worker performance in the pilot study and corresponds to the number of sliders/complex problems only the top 20% of workers in the pilot were able to complete within 3 minutes.

The main experiment was conducted via Prolific Academic between the 14th and 25th of July 2022 with a total sample size of 519 spectators and 2,366 workers.<sup>2</sup> Our experimental design and the following analysis were pre-registered via the American

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<sup>2</sup>Due to some workers dropping out between the work and distribution stages, these numbers do not correspond directly to the numbers stated in our pre-analysis plan.

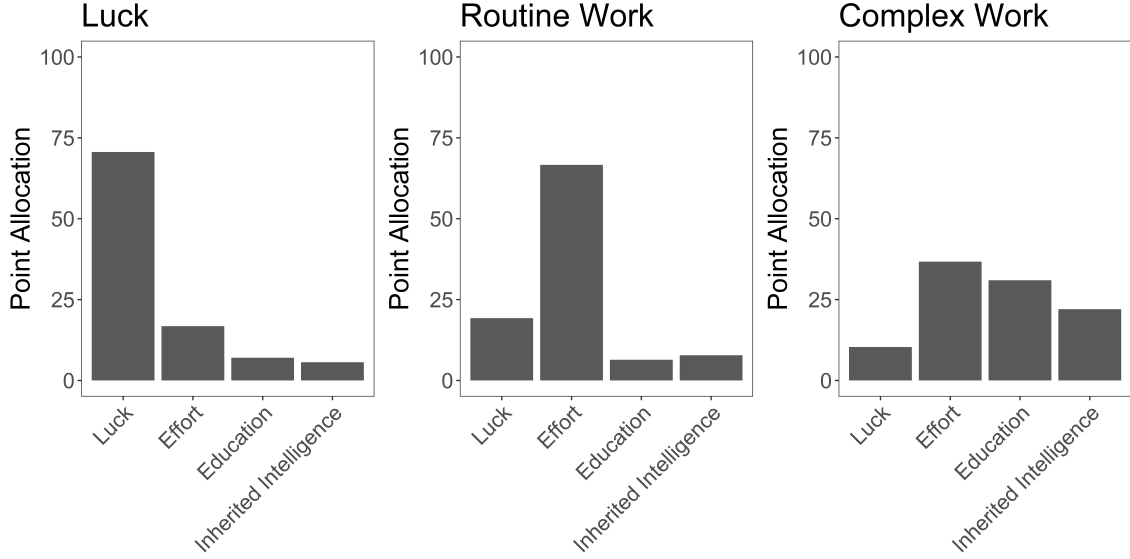
Economic Association’s registry for Randomized Controlled Trials with the reference ID AEARCTR-0009719. The average time subjects took to complete the experiment was 12mins for workers and 18mins for spectators. The average earnings of workers was \$2.79 and the average earnings of spectators was \$2.59. This corresponds to an average hourly rate of about \$14 for workers and \$9 for spectators.

## 3 Results

### 3.1 Perceptions of Treatments

In this section, we present the results of our main experiment. First, we are interested in individuals’ perceptions of our treatments. More specifically, we asked respondents what they think matters for performance across the treatments. Participants allocated 100 points to 4 different options – luck, effort, education, and inherited intelligence. Figure 4 shows the point allocation by treatment condition. In line with the basic premise of our experiment, we see that the pattern of allocated points varies distinctively between treatments. As expected, luck is indeed perceived as the dominant aspect for receiving the bonus for the luck treatment. In contrast, participants see effort as the most important aspect for the routine work treatment. Both findings are in line with the existing experimental literature, which has used similar treatments. Importantly, respondents do not solely associate doing well in our complex work treatment with simple effort. Instead, they assign a diverse set of different characteristics to the treatment. Alongside effort, respondents also see education and inherited intelligence as central for performance in complex tasks. Crucially, these factors are also highly important in contemporary labour markets that have been transformed by technological change. Overall, these findings show strong support for our assumption that our treatments clearly differentiate between luck, routine work, and complex work.

Figure 4: Perceptions of What Matters for Performance Across Treatments



*Note:* Point allocation based on question "Why do you think [some perform well on the task participants in this group completed]/[one participant received the initial allocation of the \$5 bonus]? Please allocate a total of 100 points across the below four options. Please ensure that the more points you allocate to an option, the more important you consider it to [be able to perform well on the task]/[receive the initial allocation of the \$5 bonus]. Please allocate all 100 points before proceeding."

### 3.2 Redistributive Preferences

We now turn to the effects of the treatments on redistributive preferences. Recall that respondents had the possibility to take away up to \$5 from the top earner and distribute it evenly among the other workers. We rescale this measure into a tax rate, with \$5 resulting in a tax rate of 100% for top earners, and \$0 resulting in a tax rate of 0%. We estimate the following model:

$$TR_i = \beta_0 + \beta_1 R_i + \beta_2 C_i + \epsilon_i \quad (1)$$

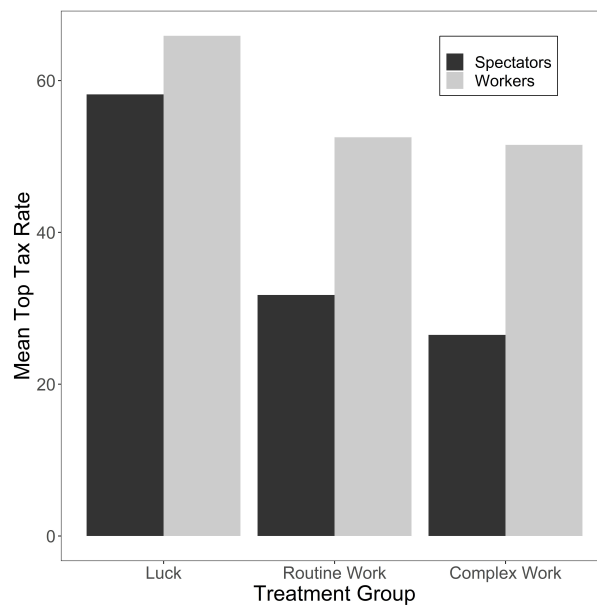
$TR_i$  denotes our outcome variables for each respondent  $i$  (i.e., tax rate preferences on the highest income earners).  $R_i$  is the binary treatment variable for the routine work task and  $\beta_1$  is its coefficient.  $C_i$  is the binary treatment variable for the complex problems task and  $\beta_2$  is its coefficient. For both variables, the indicator takes the value '1' for the routine/complex work treatment and '0' otherwise. The luck treatment marks the reference category.  $\beta_0$  denotes the intercept.  $\epsilon_i$  denotes the error term. We



estimate Equation 1 and compare the treatment effects for impartial observers and workers separately. Furthermore, we are mainly interested in comparing the effects of different types of work. To investigate whether preferences for redistribution vary significantly between the two types of work, we run additional regression models where we drop the luck treatment group. Here routine work marks the reference category. Standard errors are clustered at the respondent-level.<sup>3</sup>

We run models for impartial spectators and for workers. This allows us to isolate prosocial preferences by just looking at spectators, who have no material interest at stake in the redistributive decision. In contrast, the results for workers will also be affected by self-interest. By isolating other-regarding preferences through the spectator choices (Cappelen, Moene, et al., 2013), we can test whether self-interest plays a role in the distributive choices of workers.

Figure 5: Average Tax Rate on Top Earners by Treatment Group



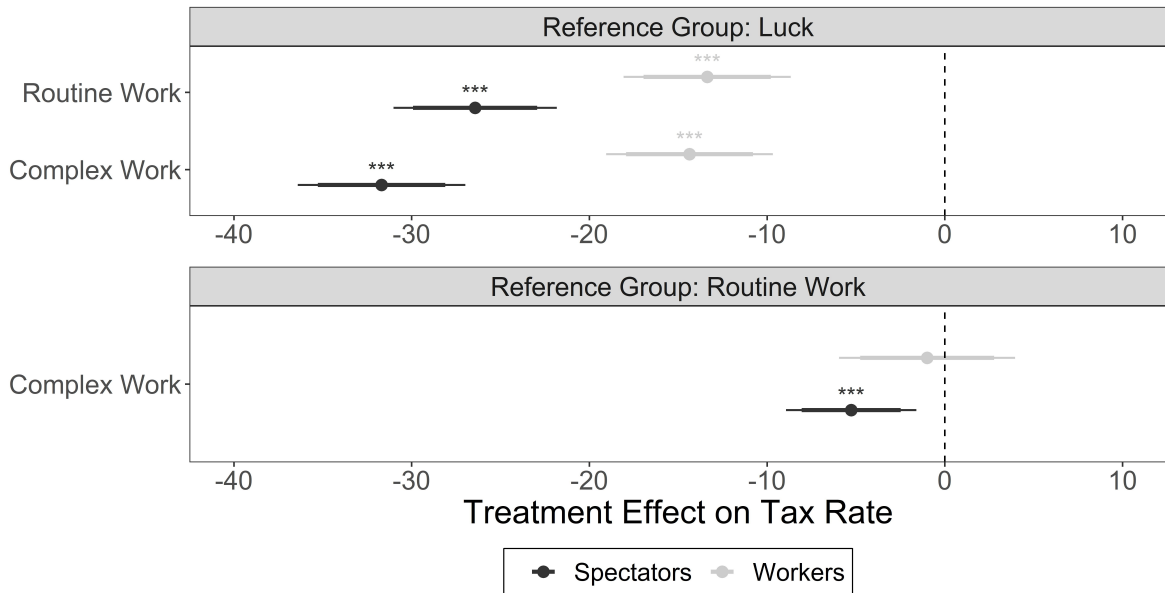
*Note:* The figure shows the average tax rates on the top income earner by treatment condition, separated by spectators and workers.

Before we look at the regression results, let us take a look at the descriptives. Figure 5 shows the average tax rates for the top earner by treatment group. Overall, the tax rate for top earners is higher for workers – who have material interests at stake – compared to impartial spectators. Furthermore, the differences in the average tax

<sup>3</sup>We also check our models by using robust standard errors instead of clustered ones (Figure D1).

rate between treatments are substantially smaller for workers than for spectators. For instance, the preferred tax rate on luck is around 26 percentage points higher than tax rate on routine work for the spectators. For the workers, this difference is only 13 percentage points.

Figure 6: Treatment Effects on Tax Rate on Top Earner



*Note:* The figure shows the treatment effects on the preferred tax rate on the top earner. Results are presented for spectators and for workers. The upper panel uses the luck treatment as a reference category. In the lower panel, the routine work treatment marks the reference group. Results are based on an OLS model with spectator-clustered standard errors. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals. See Table B1 for the full models.  $***p < 0.001$ ,  $**p < 0.01$ ,  $*p < 0.05$

Figure 6 shows the results of the regression models. We start with the prosocial part of preference formation by looking at the impartial spectators. Both the routine work and the complex work treatments have a strong negative effect on the preferred tax rate on the top earner. Taking the luck treatment as the reference group, the coefficients are highly statistically significant ( $p < 0.001$ ). On average, people prefer a 26.4 percentage points lower tax for the top earners in the routine work group compared to the group where the top earner is determined by luck. For complex work, the preferred tax rate is 31.7 percentage points lower. These results are in line with the large body of work that looks at differences in redistributive preferences when income is earned and when it is obtained by luck. Going beyond this general finding, we can

see clear differences when comparing types of work. On average, impartial spectators want a 5.3 percentage points lower tax rate for people who became top earners by performing complex tasks compared to those who became top earners by performing routine tasks. This effect is statistically significant at the 0.001 level.

The findings look different for the workers. Workers have an incentive to maximise their income. First, both work treatments have a substantially weaker impact on the preferred tax rate for the top earner compared to the luck treatment. Compared to the effect size for impartial spectators, the treatment effect is halved. Furthermore, the difference between routine work and complex work drops to 1 percentage point and becomes statistically insignificant. Taken together, these findings indicate that aggregate differences in the preferred tax rate between types of treatment are driven by prosocial, other-regarding dynamics.

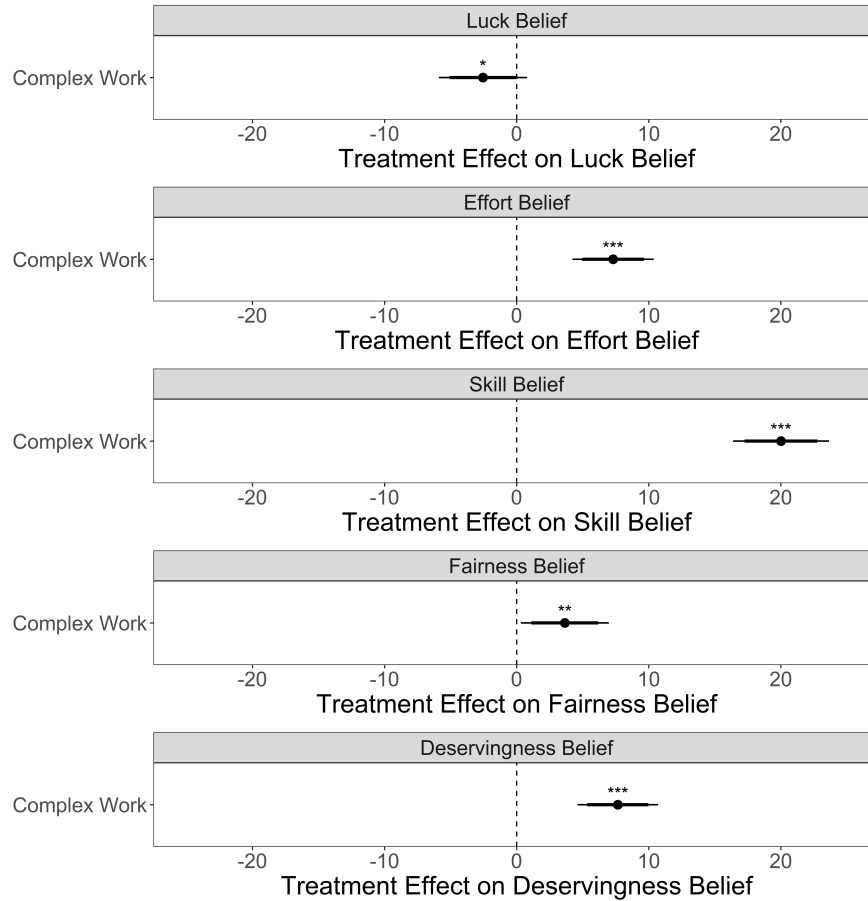
To check whether the results are driven by lack of attention among respondents through the survey, we excluded the quickest 10% of answers for both spectators and workers. The findings are almost identical (Figure D2). We also drop all those respondents who have not allocated 100 points to the "Luck" option when asked about what matters for receiving the \$5 in the luck treatment group. Again, findings hold (Figure D3). Furthermore, we run interaction models to check whether our findings are driven by subgroup effects (Table D1). We find little variation in the treatment effects when differentiating respondents by characteristics such as gender, age, political affiliation, and income.

### **3.3 Core Beliefs**

To test which prosocial aspects account for the fact that people want to redistribute less when income differences stem from complex work rather than routine work, we investigate a range of core beliefs. We look at the spectators and investigate the treatment effect on five different types of beliefs. The first three cover luck, effort, and skill. We ask respondents to which extent they think luck/effort/skill is required to perform well on a respective task. In addition, we look at the effect on perceptions

of fairness and deservingness. If prosocial preferences are indeed behind the lower demand for redistribution when people earned their pay-off via complex work, we would expect that people perceive top earners' pay-off as more deserved and fairer. We include two questions asking "To what extent did you think the top earner deserved their \$5 bonus in the initial allocation?" and "How fair did you consider the initial allocation of the \$5 bonus within the group?" to test this. We ask about all five beliefs after each treatment and respondents could then answer on 11-point range from 0-10 and answers were rescaled to percentage points.

Figure 7: Treatment Effects on Core Beliefs



*Note:* The figure shows the treatment effects on perceptions of luck, effort, skill, fairness, and deservingness. In all models, routine-based work is the reference category. Answers were rescaled to percentage points (0-100). Results are based on an OLS model with spectator-clustered standard errors. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals. See Table [B2](#) for the full models. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

Figure 7 presents the main treatment effects. For all models, we are mainly inter-

ested in differences between routine and complex work. Hence, we exclude the luck treatment group. Routine work is the reference category. Respondents believe that slightly less luck is required to do well on the complex work task. The belief that luck is required is 2.6 percentage points lower in the complex work treatment and the effect is statistically significant at the 0.05 level. The results for effort and skill are even more striking. Despite people carrying out both tasks for the exact same amount of time, respondents think that substantially more effort is needed to do well on the complex work task. The effect size is 7.3 percentage points and the finding is statistically highly significant. Furthermore, respondents think that substantially more skill is needed to do well on the complex work task. Compared to the routine work treatment, the complex work treatment increases beliefs that skills are important to do well by 20 percentage points and the effect is highly statistically significant ( $p < 0.001$ ).

Most importantly, we find that respondents perceive the initial allocation of the bonus as fairer and top earners as more deserving in the complex work treatment than in the routine work treatment. Perceptions of fairness are 3.7 percentage points higher and the effect on perceptions of deservingness is 7.7 percentage points. Both estimates are statistically significant. Together, these findings suggest other-regarding perceptions of fairness and deservingness can help to explain differences in redistributive preferences between types of work. When incomes are the result of complex work, impartial spectators believe inequalities are fairer and top earners are more deserving. This, in turn, can account for lower redistributive demands.

### 3.4 Testing Specific Mechanisms

We check three distinct mechanisms that might account for the fact that earnings from complex work are perceived as more deserving and resulting inequalities are seen as fairer. To test for these mechanisms, we compare the results of our three novel belief elicitations outlined in Section II.

**Perceived Cognitive Cost:** More complex tasks might be seen as cognitively more

costly. Constantly adapting to more challenging, skill-intensive tasks might be perceived as a higher burden on workers (*ceteris paribus*). Hence, they might deserve their higher payoffs. To test this mechanism, subjects are asked whether what the minimum amount of payment would be they would want to receive for perform the task again. A higher average required minimum payment in the complex work treatment as opposed to the routine work treatment would suggest that the perceived cognitive cost of the complex problems task is higher. Model 1 in Table 1 shows the results. The effect is positive (around \$0.50), but statistically insignificant. Hence, we do not find robust support for the perceived cognitive cost mechanism.

**Perceived Agency:** Agency might play a role. It might, for instance, be the case that individuals have more discretion over the number of tasks that they can fulfil in the complex work treatment than in the routine work treatment. Subjects (within treatment conditions) are asked to provide incentivised estimates of the average performance of workers in two previous studies that differed (only) in the size of the prize given to the best performer. If subjects believe there to be a larger difference in performance for the slider task than for the complex problems task under different prizes, it would suggest that they perceive workers to have more agency over their effort level in the slider task as compared to the complex problems task. We measure the relative difference in percent to make them comparable between treatments. Model 2 in Table 1 shows the results. The findings do not provide support for the perceived agency mechanism. For the complex work group, respondents think that the increase in average performance is slightly higher than for the routine work treatment. However, the finding is statistically indistinguishable from zero.

Table 1: Regression Results for Specific Mechanisms

	Model 1: Cognitive Costs	Model 2: Agency	Model 3: Uniqueness of Skill
Complex Work	0.51 (1.40)	3.86 (7.08)	0.71 (1.33)
R <sup>2</sup>	0.00	0.00	0.00
Num. obs.	1036	1036	1036

Model 1: Cognitive Costs	Model 2: Agency	Model 3: Uniqueness of Skill
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*Note:* The figure shows the treatment effects on the minimum bonus payment needed to do task again (cognitive costs mechanism), the perception of percentage difference between prize scenarios (agency mechanism), and perception of workers above performance threshold (uniqueness of skill mechanism). In all models, routine work is the reference category. Results are based on an OLS model with spectator-clustered standard errors. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

**Perceived Uniqueness of Skill:** Perceptions of the uniqueness of skills might be crucial. If the ability to perform more complex, skilled tasks is perceived as relatively rare, workers who perform such tasks might be seen as unique and therefore more deserving of a wage premia. Hence, if people perceive the ability to solve complex problems as rare, they might regard a higher reward as justified and fair. We ask subjects (within treatment conditions) to provide incentivised estimates of the number of workers out of 100 randomly selected ones who were able to perform the task above a certain performance threshold. If subjects estimate the number of workers being able to perform very well in the complex problems task to be lower than in the slider task, that would suggest that skills needed for the complex problems task are perceived to be more unique than those needed to perform well in the slider task. Model 3 in Table 1 shows the results. The findings are substantively and statistically insignificant.

In sum, our additional experiments that make use of novel incentivised belief elicitations do not show support for any specific mechanisms. Perceived cognitive cost, perceived agency, and perceived uniqueness of skill do not seem to account for the differences in core beliefs and redistributive preferences between types of work. Our results indicate that instead of specific mechanisms, broader beliefs that income differentials arising from complex work are more deserved and fairer than income differentials arising from routine work account for differences in redistributive preferences. Overall, these findings show strong support for our main premise that, with technological change and the accompanying changes in the nature of labour market

Table 2: Vignette Wording in Vignette Study I

<b>Vignette Name</b>	<b>Vignette Wording</b>
Routine Work	Consider a person working in an office. Their job mainly involves performing simple repetitive tasks. A typical day in the office involves inputting data into spreadsheets, filing expense reports, and providing basic customer service. They do not manage other colleagues. They typically work from 9am to 6pm. Their annual income last year was \$100,000/\$500,000.
Complex Work	Consider a person working in an office. Their job mainly involves performing abstract problem solving and complex communications tasks. A typical day in the office involves analyzing sales and performance data, making strategic decisions about the business, and handling important client relationships. They manage several other colleagues. They typically work from 9am to 6pm. Their annual income last year was \$100,000/\$500,000.

tasks, inequalities are seen as fairer and demand for redistribution is dampened.

## 4 Vignettes Studies

### 4.1 Vignettes Study I: Work Complexity and Preferred Tax Rates

To further probe the external validity of our findings, we run a vignettes study to test whether individuals' preferences for taxing hypothetical high-income citizens differ when they have earned their (identical) incomes through an office job focused on routine tasks (e.g., data input, basic customer service etc.) or an office job focused on complex tasks (e.g., data analysis, strategic decision-making, managing others etc.).

Respondents each receive two vignettes. The order of the vignettes is randomised across respondents. Each vignette sets out how a hypothetical high-income individual earns their annual income. We use two annual incomes: \$100,000 and \$500,000. Respondents either see the two vignettes with the \$100,000 annual income or with the \$500,000 annual income. The two vignettes describe: 1) an office job focused on routine tasks; or 2) an office job focused on complex tasks. The typical daily time spent in the office is kept the same in both vignettes, so the only difference between the scenarios is the complexity of the tasks the workers undertake (see Table 2).



We use a within-subjects design for our main analysis. After respondents have read each vignette, they are asked about their preferred income tax rate for the hypothetical individual in the vignette. This aims to mirror the redistributive decisions we elicit from the workers and impartial spectators in the main experiment. For each vignette, respondents are then asked to justify their chosen tax rate, before being asked a series of questions about their beliefs and preferences that can help point to the underlying drivers for their tax rate decision. The study was fielded with a new sample of 2,500 US Americans 2 weeks after our main interactive online experiment. We recruited participants using Prolific Academic. Coding and randomization was implemented via Qualtrics.<sup>4</sup>

On average, respondents preferred a tax rate of 23.6 percentage points for routine work. In contrast, the preferred tax rate for complex work was 22.4 percentage points.<sup>5</sup> Figure 8 shows the effect of complex work on the preferred tax rate. We run three different models. The first model uses the whole sample. The second one only uses those respondents who saw the vignettes with the \$100,000 income level and the third model only looks at the \$500,000 income level. In all models, routine work marks the reference category. In line with our general finding, people prefer a lower overall tax rates rate for people who earn their income via complex work. The effect size is around 1.1 percentage points and highly statistically significant ( $p < 0.001$ ). The effect size is almost twice as large for the higher income group than for the lower one. These findings show strong support for the findings from our interactive online experiment.

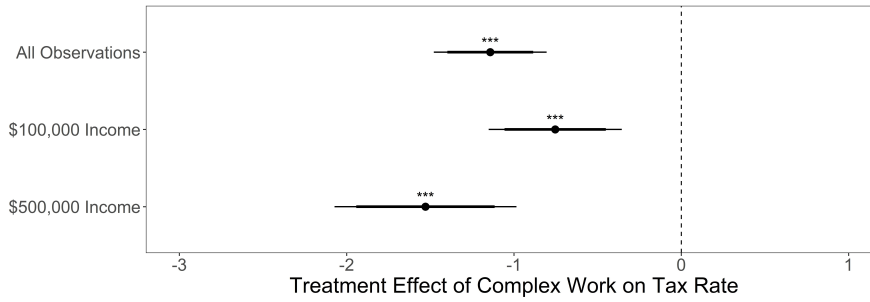
We also look at the effect on the different core beliefs (Figure 9). The pattern is remarkably similar to the findings of the interactive online experiment. On average, respondents think that high incomes from complex work are less the result of luck and more due to effort and skill when compared to the high incomes from routine work. Furthermore, they think that high incomes from complex work are fairer and

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<sup>4</sup>We preregistered the vignettes study alongside our main experiment (ID AEARCTR-0009719). The vignette study was conducted between the 8th and the 10th of August 2022.

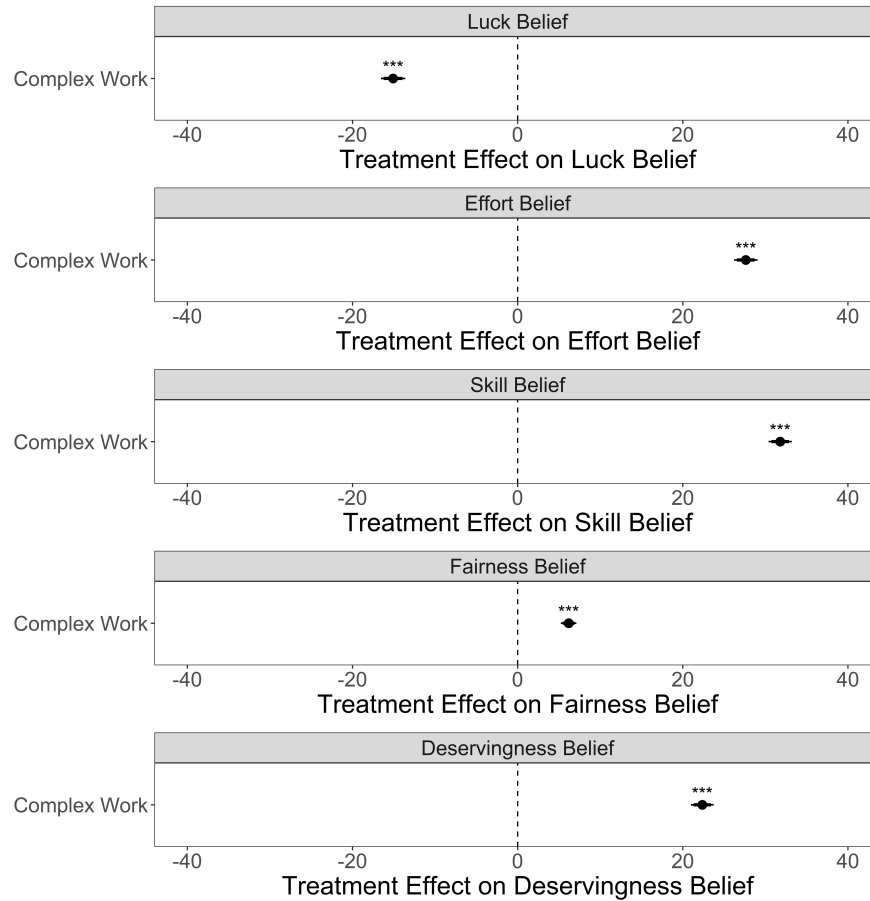
<sup>5</sup>Figure A1 in the Appendix shows a descriptive overview of the preferred tax rates by work type.

Figure 8: Regression Results for Vignettes Study I



*Note:* The figure shows the treatment effect of complex work the preferred tax rate. In all models, routine-based work is the reference category. Results are based on an OLS model with respondent-clustered standard errors. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals. See Table [E1](#) the full models. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

Figure 9: Treatment Effects on Core Beliefs for Vignettes Study I



*Note:* The figure shows the treatment effects on perceptions of luck, effort, skill, fairness, and deservingness. In all models, routine-based work is the reference category. Answers were rescaled to percentage points (0-100). Results are based on an OLS model with respondent-clustered standard errors. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals. See Table [E2](#) the full models. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

more deserved. The main difference to the interactive online experiment is that the effect sizes for the different core beliefs are substantially larger.

## 4.2 Vignettes Study II: Income and Perceived Work Complexity

So far, we have shown that perceptions of work complexity matter for redistributive preferences. In the main interactive online experiment, impartial spectators prefer lower tax rates for top earners who performed more complex tasks as their income is seen as more deserved. The first vignette study shows support for the external validity of these findings. However, we do not know whether higher earning individuals are perceived to undertake more complex work. If they are, this would help to explain why overall redistributive demands have been so limited in an era of rising inequality.

To test whether perceptions of work complexity vary by income, we run a second vignettes study. Respondents each receive four vignettes. As in the previous vignettes study, the order of the vignettes was randomized. Each vignette describes an (identical) office worker. The only difference between the vignettes is the annual income of the worker. We use four annual income levels: \$25,000, \$50,000, \$100,000, and \$500,000. This provides a good spread across the income distribution and includes top earners. The vignettes are worded as follows.

*Consider a person working in an office. They typically work from 9am to 6pm. Their annual income last year was [\$25,000/\$50,000/\$100,000/\$500,000].*

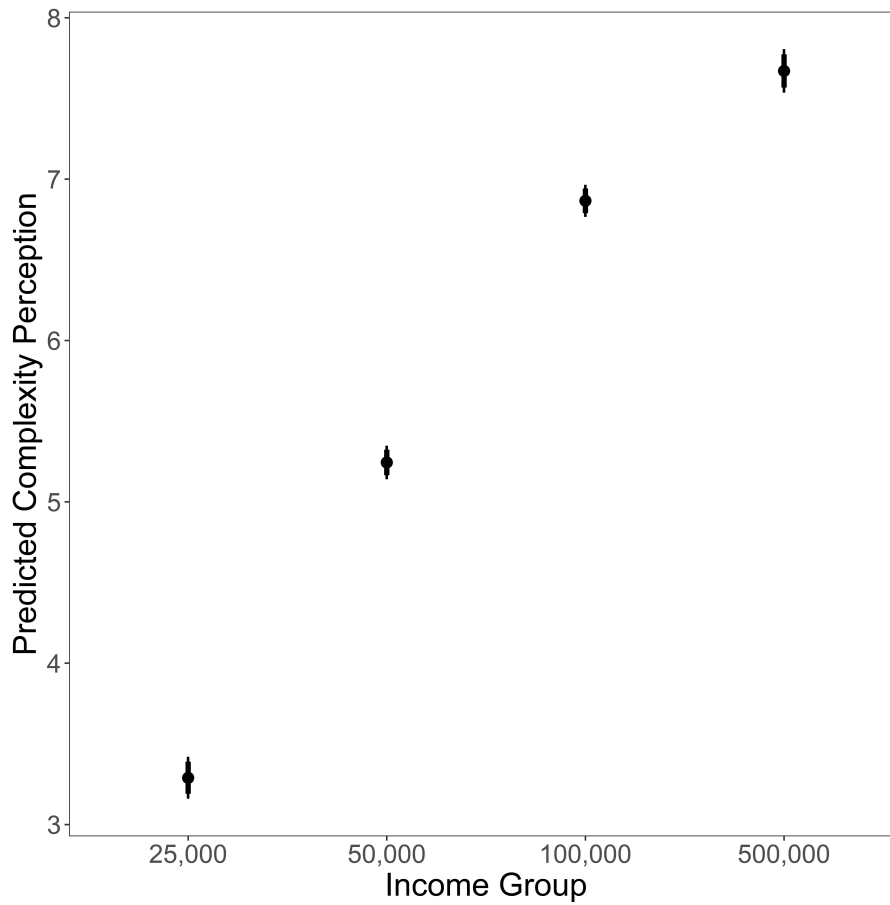
Again, we use a within-subjects design. After each vignette, respondents are asked about the perceived complexity of the tasks the individual in the vignette carries out as part of their job. They can answer on an 11-point range from "0 – very routine tasks" to "10 – very complex tasks". We recruited a completely new sample of 2,000 US Americans via Prolific Academic.<sup>6</sup>

Figure 10 presents the results by plotting predicted values of complexity perceptions for each income level. The data show a clear pattern: People perceive that

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<sup>6</sup>Again, coding and randomization was implemented via Qualtrics and the vignettes study was preregistered alongside the main interactive online experiment. The fieldwork was conducted between 27th and 28th of January 2023.

Figure 10: Perceived Work Complexity By Income



*Note:* The figure shows the predicted values for perceived work complexity. Predicted values are calculated for each income vignette. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals.

workers with higher incomes perform more complex tasks at work. The differences between each income group are substantial and highly statistically significant ( $p < 0.001$ ). For the vignette with an income of \$25,000, people assign an average work complexity level of around 3.3 points. The perceived complexity rises strongly to 5.2 points for the \$50,000 income vignette, 6.9 for \$100,000 income vignette, and 7.7 for the vignette with a yearly income of \$500,000.<sup>7</sup> Thus, these findings show strong support for the expectation that higher income is associated with a higher work complexity.

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<sup>7</sup>Table E3 presents the treatment effects using the \$25,000 income vignette as a reference category.

## 5 Conclusion

In this paper, we explore whether redistributive preferences are affected by the complexity of the work that people do. More specifically, we provide new experimental evidence on whether preferences for taxing top earners differ when their incomes have been gained through luck, routine work or complex work. This set up is aiming to mirror the changing nature of tasks in the US labour market in recent decades as a result of routine-biased technological change. It also takes an important step beyond the dichotomous earned income vs. luck distinction in much of the previous experimental work in this field.

We find that impartial spectators, who have no material interest in the redistributive decision, are less willing to redistribute away from top earners, and see their high incomes as more deserved and fairer, when they are the result of complex work. The desired tax rate on top earners is 5.3 percentage points lower in the complex work treatment than the routine work treatment. We do not find similarly significant effects for workers. Taken together, these results highlight the importance of prosocial, other-regarding preferences in underpinning the differences in preferred tax rates between the routine and complex work treatments. The main finding of the central interactive online experiment is also replicated in a follow-up vignettes study, which helps strengthen the external validity of our results. A second vignettes study then provides strong evidence that high earning jobs are widely perceived to be more complex than jobs with lower earnings.

Four contributions stand out. First, we find that, beyond the well-established differences between earned income and luck, different types of work also come with implications for redistributive preferences. Crucially, broad perceptions of fairness and deservingness principles seem to be the driving factors at play. Our experimental set up allowed us to isolate these other-regarding preferences by eliciting preferences of impartial spectators. Furthermore, when contrasting the findings for spectators with those for workers (who have a material interest in the redistributive decision), we could see clear differences in line with our argument that other-regarding pref-

erences matter. Second, we make use of novel experiments to test whether rational belief updating can account for differences in fairness views and redistributive preferences. Our findings reveal that rational belief updating is not driving our results. Our results show that there simply appears to be a widely-held (and acted upon) belief that complex work is more deserving than routine work. Third, our results provide a novel explanation for why the redistributive response to the inequalities generated by rapid technological change in the United States since the 1980s has been so muted.

Finally, our results contradict the common interpretation of differences in the redistribution of incomes gained from luck versus work to indicate a preference for meritocracy. Although our subjects believe inherited intelligence to be a more important factor in performing well in the complex work than in the routine work task, they nonetheless redistribute less of the earnings from complex work and perceive these earnings to be more deserving. An agency-based interpretation of the fairness of earned income may therefore be able to account for the distinction between simple effort and luck, but cannot explain the difference between routine and complex work reported in this paper. Importantly, we observe this inconsistency on the same subject pool, as we use a within-subject design for our spectators.

There are several potential fruitful directions for future work that come out of our study. First, it would be important to see the extent to which the results hold outside of the United States, especially in countries with very different fairness and deservingness perceptions such as the Scandinavian countries. Second, more work is needed into the mechanisms linking task complexity with fairness perceptions and redistributive preferences. Lastly, our experimental evidence could be nicely complemented by observational studies exploring the extent to which the changing task profile of labour markets in advanced economies in recent decades has affected actual tax rates.

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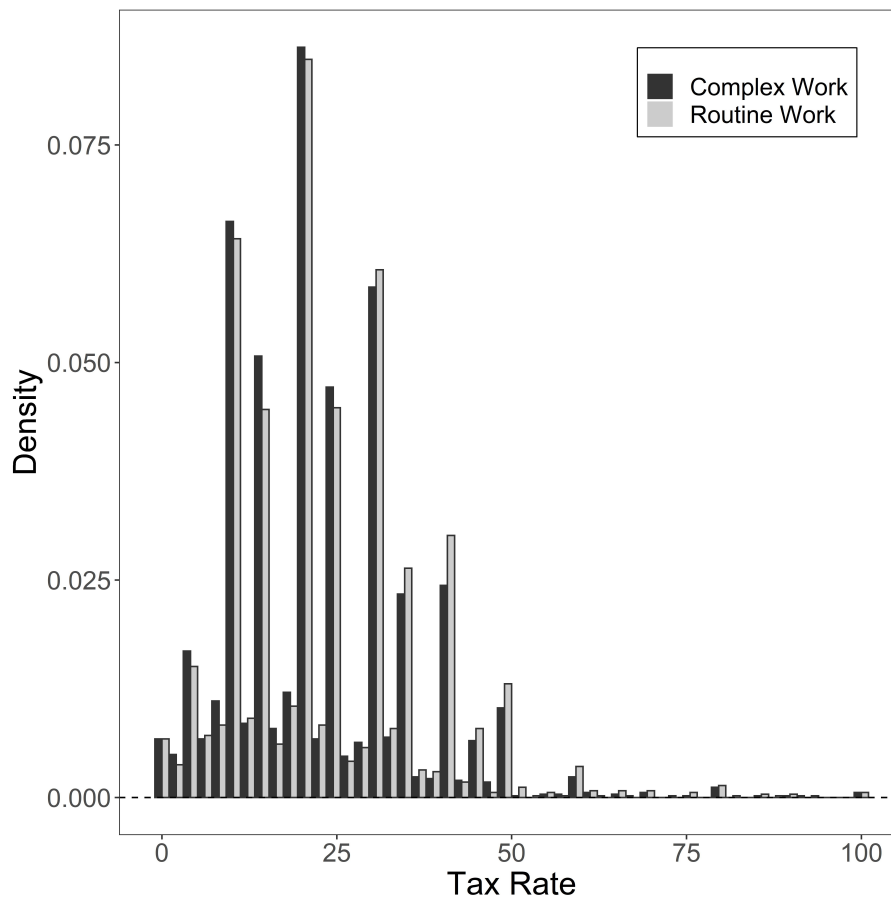
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# Online Appendix

## Part A: Descriptives

Figure A1 presents descriptive information on the main dependent variable of Vignettes Study I. The graph shows the density of the answers for the preferred tax rate by treatment group. A higher share of respondents prefer a tax rate of up to 28% for complex work compared to routine work. In contrast, a higher share of respondents prefer tax rates of 30% or more for routine work compared to complex work.

Figure A1: Histogram of Density For Preferred Tax Rates in Vignettes Study I



## Part B: Regression Models

Table B1 shows the full regression models for Figure 6 in the main text. Models 1 and 2 show the effect of the treatments on the preferred tax rate for the top earner for spectators. Models 3 and 4 show the effects for workers. In Models 1 and 3, the luck treatment marks the reference category. In Models 2 and 4, we drop the luck treatment observations from the sample and routine word marks the reference category.

Table B1: Regression Results for Treatment Effects on Tax Rate on Top Earner

	Model 1	Model 2	Model 3	Model 4
	Spectators		Workers	
Routine Work	-26.43*** (1.78)		-13.37*** (1.82)	
Complex Work	-31.69*** (1.82)	-5.27*** (1.42)	-14.36*** (1.82)	-0.99 (1.92)
R <sup>2</sup>	0.14	0.01	0.03	0.00
Num. obs.	1557	1038	2327	1541

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$

Table B2 presents the full regression models for Figure 7. In Models 1, 3, 5, 7, and 9, the luck treatment marks the reference category. In Models 2, 4, 6, 8, and 10, the luck treatment observations are dropped and routine work marks the reference category.

Table B2: Regression Results for Treatment Effects on Core Beliefs

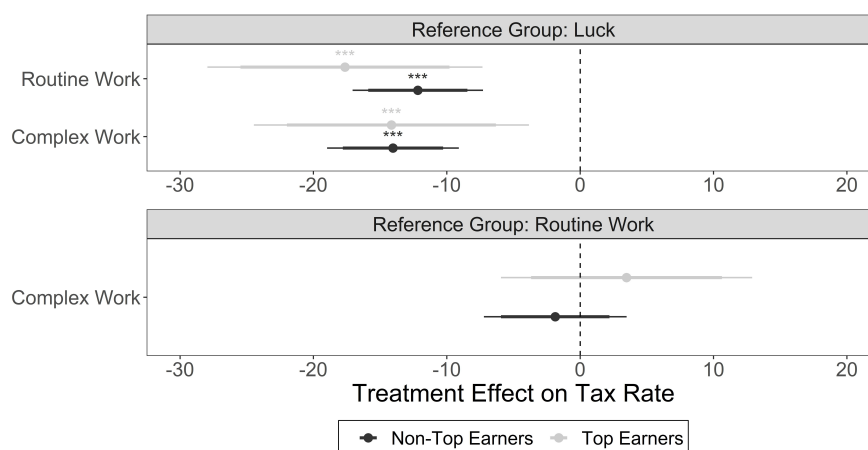
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
	Luck		Effort		Skill		Fairness		Deservingness	
Routine	−40.36*** (1.99)		44.44*** (1.89)		31.88*** (1.80)		22.35*** (1.75)		27.98*** (1.69)	
Complex	−42.91*** (1.94)	−2.55* (1.29)	51.74*** (1.87)	7.30*** (1.19)	51.90*** (1.75)	20.02*** (1.40)	26.00*** (1.86)	3.65** (1.29)	35.64*** (1.69)	7.66*** (1.18)
R <sup>2</sup>	0.29	0.00	0.39	0.02	0.35	0.13	0.10	0.00	0.20	0.02
Num. obs.	1534	1028	1508	1021	1512	1025	1533	1025	1496	1017

\*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$

## Part C: Differentiating Between Top Earners and Non-Top Earners

The group of workers consist of people who initially get the \$5 bonus and those who do not get a bonus. In the main analysis, we have merged these two groups in order to check whether the effect of our treatments varies between these two groups. If our main finding that prosocial, other-regarding preferences are the main mechanism of the observed treatment effect holds, we would expect to see variation between top earners and non-top earners. More specifically, with growing group size, self-interest motivations should become weaker as chances for direct benefits diminish. Hence, the coefficient of complex work compared to routine-based work should be more similar between the non-top earner group and the spectator group. Figure C1 shows the results when differentiating between top earners and non-top earners. In line with the main findings for workers, the coefficients for both groups are insignificant. However, the effect of complex work for non-top earners becomes slightly negative and converges to the finding for the spectators.

Figure C1: Treatment Effects on Tax Rate For Top Earner, Differentiated By Top Earners and Non-Top Earners

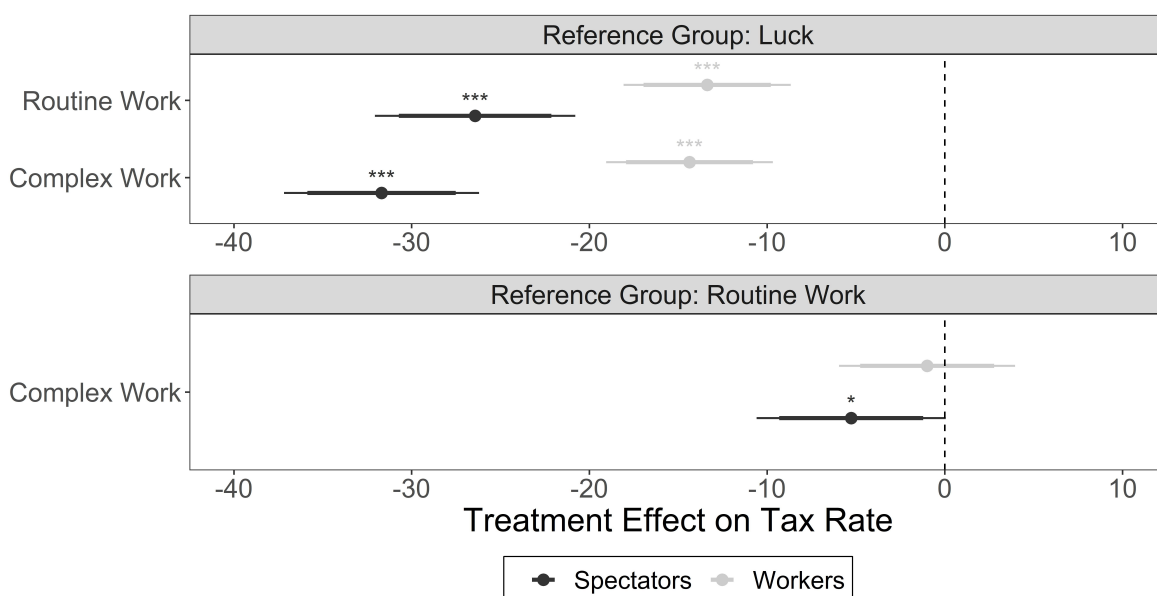


*Note:* The figure shows the treatment effects on the preferred tax rate on the top earner. Results are presented for top earners and for non-top earners. The upper panel uses the luck treatment as a reference category. In the lower panel, the routine work treatment marks the reference group. Results are based on OLS models. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

## Part D: Alternative Models

We check whether our results hold when using standard robust standard errors instead of clustered standard errors. Figure D1 shows the results. Although the significance levels get smaller, the main finding remains robust on the 0.05 level.

Figure D1: Treatment Effects on Tax Rate For Top Earner, Robust Standard Errors

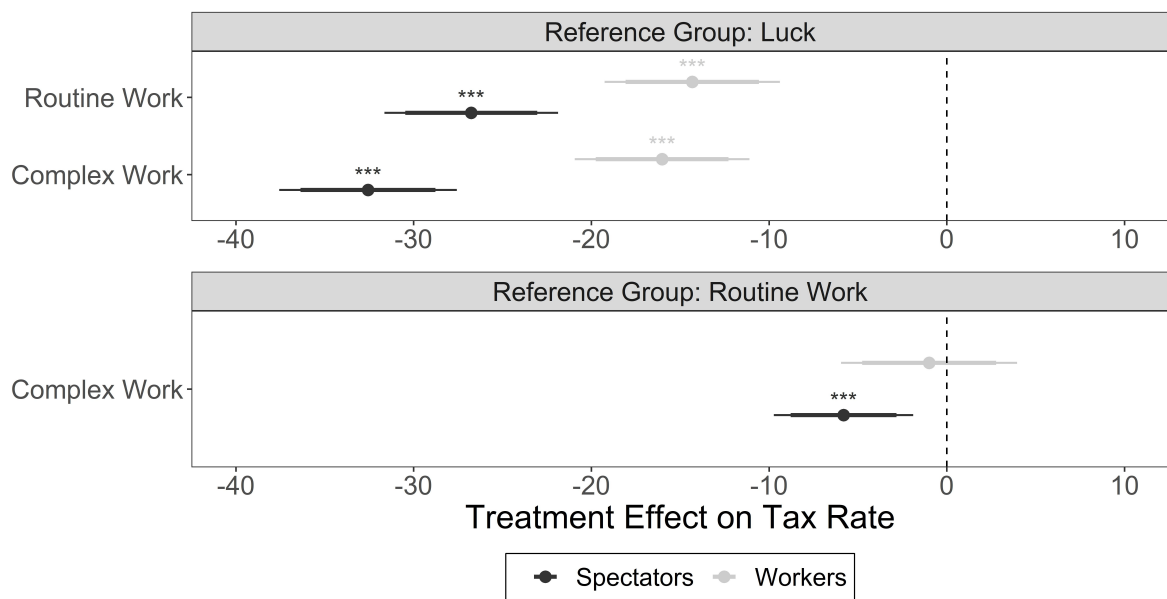


*Note:* The figure shows the treatment effects on the preferred tax rate on the top earner. Results are presented for spectators and for workers. The upper panel uses the luck treatment as a reference category. In the lower panel, the routine work treatment marks the reference group. Results are based on an OLS model with robust standard errors. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

To check that our results are not driven by respondents speeding through the survey, we run additional models where we drop the quickest 10% of respondents (for spectators and workers each). Our main findings hold (Figure D2). Furthermore, we run a subset analysis where we only include those respondents that have assigned 100 points to the "Luck" option when asked why respondents received the \$5 in the luck treatment. Again, findings hold (Figure D3).

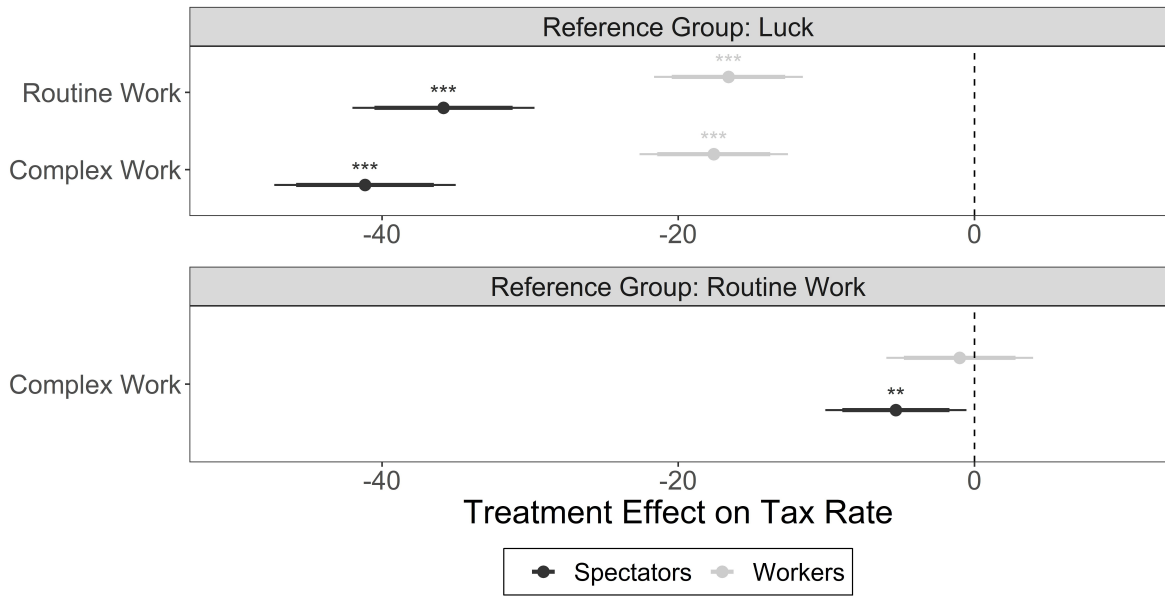


Figure D2: Treatment Effects on Tax Rate For Top Earner, Quickest 10% Excluded



*Note:* The figure shows the treatment effects on the preferred tax rate on the top earner. Results are presented for spectators and for workers. The upper panel uses the luck treatment as a reference category. In the lower panel, the routine work treatment marks the reference group. Results are based on an OLS model with spectator-clustered standard errors. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals. \*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

Figure D3: Treatment Effects on Tax Rate For Top Earner, Only 100% Luck Perception



*Note:* The figure shows the treatment effects on the preferred tax rate on the top earner. Results are presented for spectators and for workers. The upper panel uses the luck treatment as a reference category. In the lower panel, the routine work treatment marks the reference group. Results are based on an OLS model with spectator-clustered standard errors. Thick inner bars denote 95% confidence intervals and thin outer bars denote 99% confidence intervals. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$

We also check whether our main finding that spectators prefer a lower tax rate for top earners when their income was generated from complex work is driven by subgroup effects. We look at the effect of complex work (routine work marks the reference category) and interact the treatment with variables for gender, age, political affiliation, and income. None of the interaction effects is statistically significant (Table D1). Hence, our results are unlikely to be driven by specific subgroups.

Table D1: Regression Results for Interaction Effects

	Model 1	Model 2	Model 3	Model 4
Complex Work	−6.16** (1.93)	−1.69 (4.16)	−5.19** (1.90)	−8.67*** (2.22)
Male	−3.46 (3.01)			
Complex Work * Male	1.61 (2.86)			
Age		0.06 (0.10)		
Complex Work * Age		−0.09 (0.10)		
Republican			−10.50** (3.57)	
Complex Work * Republican			2.13 (3.74)	
Income				−0.00* (0.00)
Complex Work * Income				0.00 (0.00)
R <sup>2</sup>	0.01	0.01	0.02	0.01
Num. obs.	1026	1030	848	1006

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$

## Part E: Vignettes

### E.1 Vignettes Study I: Work Complexity and Preferred Tax Rates

Figure E1 shows the full regression results for the findings presented in Figure 8. In all models, the complex work vignette leads to a lower preferred tax rate. Furthermore, the effect size is stronger for higher incomes than for lower ones.

Table E1: Regression Results for Treatment Effects of Complex Work on Preferred Tax Rate

	Model 1 All Observations	Model 2 \$100,000 Income	Model 3 \$500,000 Income
Complex Work	−1.142*** (0.131)	−0.754*** (0.154)	−1.529*** (0.211)
R <sup>2</sup>	0.002	0.001	0.003
Num. obs.	4944	2468	2476

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$

Figure E2 shows full results for the effect of the complex work vignette on core beliefs (Figure 9 in the main text). All models were calculated using a within-design and clustered standard errors.

Table E2: Treatment Effects on Core Beliefs For Vignettes

	Model 1 Luck	Model 2 Effort	Model 3 Skill	Model 4 Fairness	Model 5 Deservingness
Complex Work	−15.086*** (0.576)	27.635*** (0.552)	31.799*** (0.548)	6.178*** (0.366)	22.364*** (0.536)
R <sup>2</sup>	0.065	0.241	0.318	0.011	0.145
Num. obs.	4726	4767	4795	4784	4599

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$

## E.2 Vignettes Study II: Income and Perceived Work Complexity

Table E3 shows the treatment effects for our second vignettes experiment which investigated whether perceived work complexity increases with income. The vignette with a yearly income of \$25,000 marks the reference category. We calculate models using clustered standard errors. The findings are in line with the results presented in the main manuscript: Higher income vignettes lead to a higher level of perceived work complexity. The effects are of a significant magnitude, with effect sizes ranging from 1.95 points (\$50,000 Income Vignette) to 4.38 points (\$500,000 Income Vignette) and are highly statistically significant ( $p < 0.001$ ).

Table E3: Regression Results for Treatment Effects of Income Vignettes on Perceived Work Complexity

	Model 1
\$50,000 Income Vignette	1.95*** (0.07)
\$100,000 Income Vignette	3.58*** (0.07)
\$500,000 Income Vignette	4.38*** (0.07)
R <sup>2</sup>	0.40
Num. obs.	8000

\*\*\* $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$

## Part F: Experimental Instructions

### F.1 Instructions for Main Experiment

#### F.1.1 Worker Instructions -Stage 1

##### Treatment Introduction

Thank you for participating in this study. In the following, you will have the opportunity to earn a bonus payment of up to \$5. Specifically, you will be asked to complete

a task which will take 3 minutes.

After completing this first part of the study, you will be paired with four other participants who completed the same task. The participant with the best performance on the task in the group will be given an initial bonus allocation of \$5. You will then be invited to participate in a short follow-up study. The final bonus payments will only be allocated after the follow-up study, so it is important you complete both studies. We will pay out all final bonus payments within 10 days after the follow-up study is completed.

## **Control Introduction**

Thank you for participating in this study. In the following, you will have a chance to receive a bonus payment of up to \$5. There is nothing for you to do in the first part of the study. After completing the first part of the study, you will be paired with four other participants. One of you will be randomly chosen to receive an initial bonus allocation of \$5. You will then be invited to participate in a short follow-up study. The final bonus payments will only be allocated after the follow-up study, so it is important you complete both studies. We will pay out all final bonus payments within 10 days after the follow-up study is completed.

## **Slider Task**

You will now take part in a slider task. You will have to move as many sliders as possible to the number 50. You will have a total of 3 minutes for this task. The participant within your group of five who is able to move the most sliders to 50 will receive an initial bonus allocation of \$5.

Please ensure you are ready to begin the task. The 3 min countdown will begin as soon as you proceed to the next page.

Please move as many sliders as possible to the number 50.

0 10 20 30 40 50 60 70 80 90 100

Please move the slider to 50

Please move the slider to 50

Please move the slider to 50

Please move the slider to 50

Please move the slider to 50

Please move the slider to 50

## Complex Problems Task

You will now take part in a complex problems task. You will have to correctly answer as many complex problems as possible. You will have a total of 3 minutes for this task. The participant within your group of five who is able to correctly answer the most problems will receive an initial bonus allocation of \$5.

There are three types of complex problems you will be asked to solve in random order:

1. Raven's matrices: You will be shown a pattern of figures and asked to identify the missing piece.
2. Multiplication: You will be given a number and asked to identify two numbers that multiply to the given number. For example, if the given number is 18, a possible answer is 2 & 9, as  $2 \times 9 = 18$ .
3. Anagrams: You will be given 5 letters and asked to form a word that includes all of the 5 given letters. For example, if the letters are eglna, a possible solution is angle.

Please ensure you are ready to begin the task. The 3 minute countdown will begin as soon as you proceed to the next page.

[*Example Problems below.*]

Which two numbers multiply to the below number. You cannot use 1 x the number. You can also only use complete numbers:

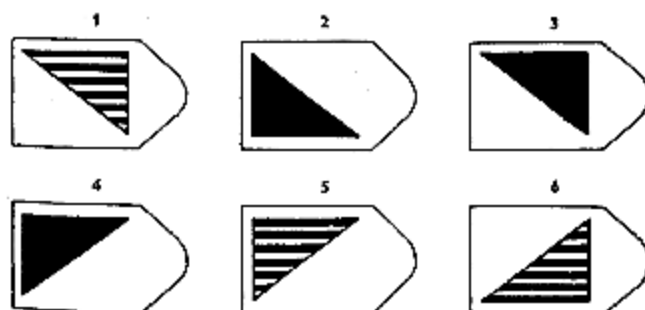
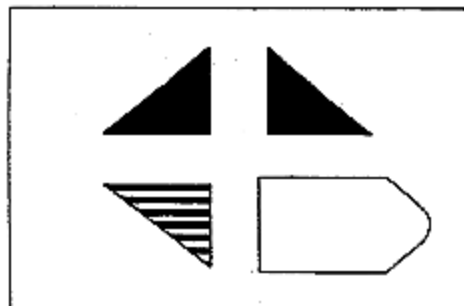
**158**

First Number

Second Number



Which of the below options completes the pattern?



☐ Option 1

☐ Option 2

☐ Option 3

☐ Option 4

☐ Option 5

☐ Option 6

Find a word that uses all the below letters:

**ehrta**

Your Word

## **Control End Stage 1**

You have now completed the first part of this study.

You will be randomly assigned to a group with four other participants and there will be an initial allocation of the \$5 bonus. You will then be invited for a short follow-up study within the next 3 days where you will be asked about your preferences for redistributing the bonus allocation within your group.

We will pay out all final bonus payments within 10 days after this follow-up study. Please note that you will only receive your final bonus payment if you also complete the follow-up study.

## **Treatment End Stage 1**

You have now completed the first part of this study.

You will be randomly assigned to a group with four other participants and there will be an initial allocation of the \$5 bonus. You will then be invited for a short follow-up study within the next 3 days where you will be asked about your preferences for redistributing the bonus allocation within your group. You will not have to complete any tasks again in this follow up study.

We will pay out all final bonus payments within 10 days after this follow-up study. Please note that you will only receive your final bonus payment if you also complete the follow-up study.

## **F.1.2 Worker Instructions - Stage 2**

### **Complex Problems Task Introduction**

Thank you for participating in this follow-up study. In the previous study, you took part in a complex problem task. You were asked to correctly complete as many complex problems as possible within 3 minutes. These complex problems consisted of Raven's matrices, multiplication exercises, and anagrams.

You have now been randomly assigned to a group and the participant who correctly

completed the most complex problems within your group has received an initial \$5 bonus allocation. On the next screen, you will be asked to decide on the allocation of the \$5 bonus within your group. You can redistribute equally among the remaining 4 people in your group any amount of the \$5. There is a 50% chance that the decision of an impartial participant who is not part of your group will be implemented and a 50% chance that the decision of someone in your group will be implemented.

We will provide you with information on which member of your group was allocated the initial bonus of \$5. You will then have the option to redistribute all or part of the \$5. Any indicated amount will be split evenly among everyone else in the group. Please note, that you might be the person who was allocated the \$5 initially.

## **Slider Task Introduction**

Thank you for participating in this follow-up study. In the previous study, you took part in a slider task. You were asked to move as many sliders as possible to the number 50 within 3 minutes.

You have now been randomly assigned to a group and the participant who correctly completed the most sliders within your group has received an initial \$5 bonus allocation. On the next screen, you will be asked to decide on the allocation of the \$5 bonus within your group. You can redistribute equally among the remaining 4 people in your group any amount of the \$5. There is a 50% chance that the decision of an impartial participant who is not part of your group will be implemented and a 50% chance that the decision of someone in your group will be implemented.

We will provide you with information on which member of your group was allocated the initial bonus of \$5. You will then have the option to redistribute all or part of the \$5. Any indicated amount will be split evenly among everyone else in the group. Please note, that you might be the person who was allocated the \$5 initially.

## Control Introduction

Thank you for participating in this follow-up study.

You have now been randomly assigned to a group and one of you has been randomly chosen to receive an initial \$5 bonus allocation. On the next screen, you will be asked to decide on the allocation of the \$5 bonus within your group. You can redistribute equally among the remaining 4 people in your group any amount of the \$5. There is a 50% chance that the decision of an impartial participant who is not part of your group will be implemented and a 50% chance that the decision of someone in your group will be implemented.

We will provide you with information on which member of your group was allocated the initial bonus of \$5. You will then have the option to redistribute all or part of the \$5. Any indicated amount will be split evenly among everyone else in the group. Please note, that you might be the person who was allocated the \$5 initially.

## Understanding Questions

Before you make your decision, please answer the following questions. Your final payment will not depend on your answers to these questions. However, please answer to the best of your ability as your answers will impact the quality of our research.

**U1:** How many participants are in each group?

- 3
- 4
- 5
- 10

**U2:** If you decide to redistribute \$4 of the initial bonus allocation of \$5 that one of the participants in your group received, how much will each of the other participants have after your decision?

- \$0

- \$1
- \$4
- \$5

**U3:** What is the chance that a redistribution decision made by one of the members of your group will be implemented?

- 25%
- 50%
- 75%
- 100%

Please review the correct answers to the questions below:

1. How many participants are in each group?

5

2. If you decide to redistribute \$4 of the initial bonus allocation of \$5 that one of the participants in your group received, how much will each of the other participants have after your decision?

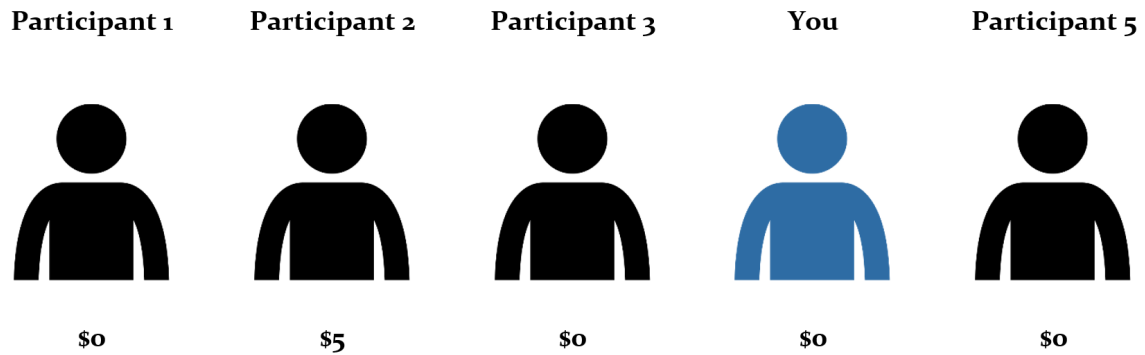
\$1

3. What is the chance that a redistribution decision made by one of the members of your group will be implemented?

50%

## **Decision Screen**

Please consider the below information for your group.



You now have the option to redistribute the bonus allocation of *Participant 4*. Participant 4 received the initial \$5 bonus allocation because they correctly completed the most sliders/complex problems within your group/was randomly chosen to receive the initial \$5 bonus allocation. Please indicate how much of the \$5 you wish to redistribute. Any indicated amount will be split evenly among you and the other three participants within the group. If you do not want to redistribute the bonus allocation, you can just enter \$0.

**Decision 1:** How much of the \$5 do you want to redistribute?

*Amount you want to redistribute (in \$):*

### **Beliefs and Preferences (treatment text in italics)**

**B1:** What was the reason you chose to redistribute the amount you did?

**B2:** How fair did you consider the initial allocation of the \$5 bonus within your group?

*[Scale from 0 to 10]*

**B3:** To what extent did you think the top earner deserved their \$5 bonus in the initial allocation?

*[Scale from 0 to 10]*

**B4:** To what extent do you think effort *is required to perform well on the task participants in your group completed/* was required to receive the initial allocation of the \$5 bonus?

*[Scale from 0 to 10]*

**B5:** To what extent do you think skill *is required to perform well on the task participants*

*in your group completed/ was required to receive the initial allocation of the \$5 bonus?*  
[Scale from 0 to 10]

**B6:** To what extent do you think *luck is required to perform well on the task participants in your group completed/* was required to receive the initial allocation of the \$5 bonus?  
[Scale from 0 to 10]

**B7:** Why do you think *some perform well on the task participants in your group completed/* one participant received the initial allocation of the \$5 bonus? Please allocate a total of 100 points across the below four options. Please ensure that the more points you allocate to an option, the more important you consider it to *be able to perform well on the task/* receive the initial allocation of the \$5 bonus. Please allocate all 100 points before proceeding.

- Inherited Intelligence
- Education
- Luck
- Effort

**M1:** What would be the minimum bonus payment you would need to receive to participate in a follow-up study where you complete the same task again for 3mins? You will not be informed of your performance on the task. We will select the 10 participants who suggest the lowest amount to participate in the follow-up study and they will receive their stated minimum bonus payment in return.

**M2a:** We previously asked 100 participants to also complete the same task that you completed for 3mins. There were a total of 100 sliders/ 30 complex problems that could be attempted in this study. The participant with the highest performance received a prize of \$10. How many of those 100 possible sliders/ 30 possible complex problems do you think participants in this study completed on average? If your guess lies within +/- 5 percentage points of the correct answer you will receive an additional bonus payment of 20ct.

**M2b:** In another study, we again asked 100 participants to also complete the same task that you completed for 3mins. There were a total of 100 sliders/ 30 complex problems that could

*be attempted in this study. The participant with the highest performance however received a prize of \$30. How many of those 100 possible sliders/ 30 possible complex problems do you think participants in this study completed on average? If your guess lies within +/- 5 percentage points of the correct answer you will receive an additional bonus payment of 20ct.*

**M3:** *Consider again the task you completed at the beginning of this study. We randomly selected 100 participants who also completed this task as part of our study. How many of these 100 participants do you believe were able to correctly complete more than 12 pages of sliders/ 12 complex problems within the 3mins? If your guess lies within +/- 5 percentage points of the correct answer you will receive an additional bonus payment of 20ct.*

### **F.1.3 Spectator Instructions**

#### **General Introduction**

Thank you for participating in this study.

In the following, you will be asked to decide on an allocation of money between groups of five participants three times. There is a 50% chance that one of your three allocation decisions will be implemented and will decide the actual payoffs of those five participants. Please consider each of your three decisions carefully as we will not tell you which of your decisions is the one that might be implemented.

#### **Introduction Slider Task Decision**

The five participants in the group had 3 minutes to move as many sliders as possible to the number 50. The participant who correctly completed the most sliders in the group received an initial bonus allocation of \$5, while the others received nothing. To give you a better understanding of the task, you can now try it yourself for 1 min.






*[Slider Task]*

In the following, you will be shown a scenario similar to the one below. Each of



the five participants in the group completed the slider task. The participant who correctly completed the most sliders in the group received an initial bonus allocation of \$5, while the others received nothing.

You are given information on the current bonus allocations of the five participants in the group. Before we pay out these bonus payments, however, you have the opportunity to redistribute part or all of the \$5 within the group. Any indicated amount will be split evenly among the other four participants within the group.

Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
				
\$0	\$0	\$0	\$5	\$0

## Introduction Complex Problems Task Decision

The five participants in the group had 3 minutes to answer as many complex problems as possible. The participant who answered the most complex problems correctly in the group received an initial bonus allocation of \$5, while the others received nothing. To give you a better understanding of the task, you can now try it yourself for 1 min. There are three types of complex problems you will be asked to solve in random order:






1. Raven's matrices: You will be shown a pattern of figures and asked to identify the missing piece.
2. Multiplication: You will be given a number and asked to identify two numbers that multiply to the given number. For example, if the given number is 18, a possible answer is 2 & 9, as  $2 \times 9 = 18$ .

3. Anagrams: You will be given 5 letters and asked to form a word that includes all of the 5 given letters. For example, if the letters are eglna, a possible solution is angle.

*[Complex Problems Task]*

In the following, you will be shown a scenario similar to the one below. Each of the five participants in the group completed the complex problems task. The participant who answered the most complex problems correctly in the group received an initial bonus allocation of \$5, while the others received nothing.

You are given information on the current bonus allocations of the five participants in the group. Before we pay out these bonus payments, however, you have the opportunity to redistribute part or all of the \$5 within the group. Any indicated amount will be split evenly among the other four participants within the group.






Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
				
\$0	\$0	\$0	\$5	\$0

## Introduction Control Decision

You will be shown a scenario similar to the one below. One of the five participants in the group was randomly chosen to receive an initial bonus allocation of \$5, while the others received nothing.

You are given information on the current bonus allocations of the five participants in the group. Before we pay out these bonus payments, however, you have the opportunity to redistribute part or all of the \$5 within the group. Any indicated amount will

be split evenly among the other four participants within the group.

Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
				
\$0	\$0	\$0	\$5	\$0

## Understanding Questions

Before you make your first decision, please answer the following questions. Your final payment will not depend on your answers to these questions. However, please answer to the best of your ability as your answers will impact the quality of our research.

**U1:** What is the chance that one of your allocation decisions will be implemented and decide the bonus payments for the group?

- 10%
- 25%
- 50%
- 100%

**U2:** How many participants are in each group?

- 3
- 4
- 5
- 10

**U3:** If you decide to redistribute 4 of the initial bonus allocation of 5 that one of the participants in the group received, how much will each of the other participants have after your decision?

- \$0
- \$1
- \$4
- \$5

Please review the correct answers to the questions below:

1. What is the chance that one of your allocation decisions will be implemented and decide the bonus payments for the group?

50%

2. How many participants are in each group?



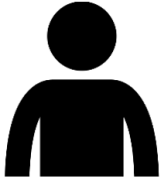

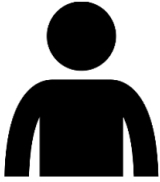
5

3. If you decide to redistribute \$4 of the initial bonus allocation of \$5 that one of the participants in the group received, how much will each of the other participants have after your decision?

\$1

## Decision Screens

Please carefully consider the below scenario.

Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
				
\$0	\$0	\$0	\$5	\$0

You now have the option to redistribute the bonus allocation of *Participant 4*.

Participant 4 received the initial \$5 bonus allocation because they correctly completed the most sliders/complex problems within the group/was randomly chosen to receive the initial \$5 bonus allocation. Please indicate how much of the \$5 you wish to redistribute. Any indicated amount will be split evenly among the other four participants within the group. If you do not want to redistribute the bonus allocation, you can just enter \$0.

**Decision 1:** How much of the \$5 do you want to redistribute?

*Amount you want to redistribute (in \$):*

### Beliefs and Preferences (treatment text in italics)

**B1:** What was the reason you chose to redistribute the amount you did?

**B2:** How fair did you consider the initial allocation of the \$5 bonus within the group?

*[Scale from 0 to 10]*

**B3:** To what extent did you think the top earner deserved their \$5 bonus in the initial allocation?

*[Scale from 0 to 10]*

**B4:** To what extent do you think *effort is required to perform well on the task* participants in this group completed/ was required to receive the initial allocation of the \$5 bonus?  
[Scale from 0 to 10]

**B5:** To what extent do you think *skill is required to perform well on the task* participants in this group completed/ was required to receive the initial allocation of the \$5 bonus?  
[Scale from 0 to 10]

**B6:** To what extent do you think *luck is required to perform well on the task* participants in this group completed/ was required to receive the initial allocation of the \$5 bonus?  
[Scale from 0 to 10]

**B7:** Why do you think *some perform well on the task* participants in this group completed/one participant received the initial allocation of the \$5 bonus? Please allocate a total of 100 points across the below four options. Please ensure that the more points you allocate to an option, the more important you consider it to *be able to perform well on the task*/receive the initial allocation of the \$5 bonus. Please allocate all 100 points before proceeding.

- Inherited Intelligence
- Education
- Luck
- Effort

**M1:** What would be the minimum bonus payment you would need to receive to participate in a follow-up study where you complete the same task again for 3mins? You will not be informed of your performance on the task. We will select the 10 participants who suggest the lowest amount to participate in the follow-up study and they will receive their stated minimum bonus payment in return.

**M2a:** We previously asked 100 participants to also complete the same task that you completed for 3mins. There were a total of 100 sliders/ 30 complex problems that could be attempted in this study. The participant with the highest performance received a prize of \$10. How many of those 100 possible sliders/ 30 possible complex problems do you think participants in this

*study completed on average? If your guess lies within +/- 5 percentage points of the correct answer you will receive an additional bonus payment of 20ct.*

**M2b:** *In another study, we again asked 100 participants to also complete the same task that you completed for 3mins. There were a total of 100 sliders/ 30 complex problems that could be attempted in this study. The participant with the highest performance however received a prize of \$30. How many of those 100 possible sliders/ 30 possible complex problems do you think participants in this study completed on average? If your guess lies within +/- 5 percentage points of the correct answer you will receive an additional bonus payment of 20ct.*

**M3:** *Consider again the task you completed at the beginning of this study. We randomly selected 100 participants who also completed this task as part of our study. How many of these 100 participants do you believe were able to correctly complete more than 12 pages of sliders/ 12 complex problems within the 3mins? If your guess lies within +/- 5 percentage points of the correct answer you will receive an additional bonus payment of 20ct.*

## **Second Decision Introduction**

You have now completed your first allocation decision.

Please remember that there is a 50% chance that one of your three allocation decisions will be implemented and will decide the actual payoffs of the group of participants.

Please click on the arrow below to proceed to your second decision.

## **Third Decision Introduction**

You have now completed your second allocation decision.

Please remember that there is a 50% chance that one of your three allocation decisions will be implemented and will decide the actual payoffs of the group of participants.

Please click on the arrow below to proceed to your third and final decision.

### **F.1.4 Demographics (Workers and Spectators)**

In this final part of the study, we will ask you a number of questions about yourself. Please read the questions carefully and answer honestly. This part should take only 2-3 minutes.

**D1: Age.** How old are you?

**D2: Gender.** What is your gender?

- Female
- Male
- Other
- Prefer not to say

**D3: Ethnicity.** To which of these groups do you consider you belong? You can choose more than one group.

- American Indian or Alaska Native
- Asian
- Black or African-American
- Native Hawaiian or other Pacific Islander
- Spanish, Hispanic or Latino
- White
- Other group
- Prefer not to answer

**D4: Education.** Which category best describes your highest level of education?

- Primary education or less
- Some high school



- High school degree/GED
- Some college
- 2-year college degree
- 4-year college degree
- Master's degree
- Doctoral degree
- Professional degree (JD, MD, MBA)
- Prefer not to answer

**D5: Household Income.** What is your total (annual) household income before tax?

- Under \$10,000
- \$10,000 - \$20,000
- \$20,001 - \$30,000
- \$30,001 - \$40,000
- \$40,001 - \$50,000
- \$50,001 - \$60,000
- \$60,001 - \$80,000
- \$80,001 - \$100,000
- \$100,001 - \$150,000
- \$150,001 - \$200,000
- \$200,001 - \$350,000
- \$350,001 - \$500,000

- Above \$500,000
- Don't know
- Prefer not to answer

**D6: Employment Status.** What is your current employment status?

- Full-time employee
- Part-time employee
- Self-employed or small business owner
- Medium or large business owner
- Unemployed and looking for work
- Student
- Not currently working and not looking for work (e.g. full-time parent)
- Retiree
- Prefer not to answer

**D7: Economics.** Have you ever taken a module on economics or a related subject area at university?

- Yes
- No
- I have never attended higher education

**D8: Political Orientation.** In politics people sometimes talk of left and right. Where would you place yourself on the following scale?

*[Scale from 0 (Left) to 10 (Right).]*

**D9: Party Affiliation.** Which party do you feel closest to?

- Democratic party
- Republican party
- Other
- Don't know

**D10: 2020 Vote.** Who did you vote for in the recent 2020 Presidential Election?

- Joe Biden
- Donald Trump
- Other candidate
- Didn't vote
- Don't remember
- Prefer not to say

**D11: Risk Preference.** Please tell us, in general, how willing or unwilling you are to take risks. Please use a scale from 0 to 10, where 0 means "completely unwilling to take risks" and a 10 means you are "very willing to take risks". You can also use any numbers between 0 and 10 to indicate where you fall on the scale.

**D12: Ambiguity Aversion.** Please respond to the following statements by indicating the extent to which you agree or disagree with them on a scale from 1 (I strongly agree) to 7 (I strongly disagree).

- There is a right way and a wrong way to do almost everything
- Practically every problem has a solution
- I feel relieved when an ambiguous situation suddenly becomes clear
- I find it hard to make a choice when the outcome is uncertain

**D13: Feedback.** Do you have any feedback or impressions regarding this study?

## F.2 Vignette Study I Instructions

### Introduction

Thank you for participating in this study.

In the following, you will be given two scenarios in which individuals gain their incomes in different ways. You will then be asked to decide on the amount of money you think each of these individuals should pay in taxes on this income. Please consider each scenario individually and think about what you consider to be an appropriate amount of money to pay in income taxes in each case. Please keep in mind that we are interested in your personal opinion and not in what the actual current tax rate in your country is.

Your answers will be used solely for academic research. The study is being carried out by non-partisan academic researchers seeking to advance our knowledge of society. It is important for the research that you answer as accurately as you can, so please read each of the statements and questions carefully.

### Vignettes

**V1. Routine work.** Consider a person working in an office. Their job mainly involves performing simple repetitive tasks. A typical day in the office involves inputting data into spreadsheets, filing expense reports, and providing basic customer service. They do not manage other colleagues. They typically work from 9am to 6pm. Their annual income last year was \$100,000/\$500,000.

**V2. Complex work.** Consider a person working in an office. Their job mainly involves performing abstract problem solving and complex communications tasks. A typical day in the office involves analyzing sales and performance data, making strategic decisions about the business, and handling important client relationships. They manage several other colleagues. They typically work from 9am to 6pm. Their annual

income last year was \$100,000/\$500,000.

## **Beliefs and Preferences**

**B1.** What proportion of their income do you think this person should pay in taxes for the year? (e.g., a tax rate of 40% would equate to paying \$40,000/\$200,000 in taxes.)

*[Scale from 0 – 100%.]*

**B2.** Why did you choose the tax rate that you did?

*[Free text.]*

**B3.** How deserving do you think this person was of their \$100,000/\$500,000 annual income?

*[Scale from 0 – 10.]*

**B4.** To what extent do you think effort was required for this person to earn their \$100,000/\$500,000 annual income?

*[Scale from 0 – 10.]*

**B5.** To what extent do you think skill was required for this person to earn their \$100,000/\$500,000 annual income?

*[Scale from 0 – 10.]*

**B6.** To what extent do you think luck was required for this person to earn their \$100,000/\$500,000 annual income?

*[Scale from 0 – 10.]*

**B7.** Why do you think this person received their annual income of \$100,000/\$500,000?

Please allocate a total of 100 points across the below four options. Please ensure that the more points you allocate to an option, the more important you consider it be.

Please allocate all 100 points before proceeding.

- Inherited Intelligence
- Education
- Luck
- Effort

**B8.** How fair do you think it is that some people earn an annual income of \$100,000/\$500,000?

[Scale from 0 – 10.]

**B9.** Do you think it is plausible that a person earns an income of \$100,000/\$500,000 from a job that mainly involves performing simple repetitive tasks/a job that mainly involves performing abstract problem solving and complex communications tasks?

- Entirely plausible
- Somewhat plausible
- Neither plausible or implausible
- Somewhat implausible
- Entirely implausible
- Don't know

## **F.3 Vignette Study II Instructions**

### **Introduction**

Thank you for participating in this study.

In the following, you will be given four scenarios in which individuals earn different incomes. You will then be asked about the type of work you believe these individuals do. Please consider each scenario individually and keep in mind that we are interested in your personal opinion.

Your answers will be used solely for academic research. The study is being carried out by non-partisan academic researchers seeking to advance our knowledge of society. It is important for the research that you answer as accurately as you can, so please read each of the statements and questions carefully.

## Vignettes

**V1. \$25,000 income.** Consider a person working in an office. They typically work from 9am to 6pm. Their annual income last year was \$25,000.

**V2. \$50,000 income.** Consider a person working in an office. They typically work from 9am to 6pm. Their annual income last year was \$50,000.

**V3. \$100,000 income.** Consider a person working in an office. They typically work from 9am to 6pm. Their annual income last year was \$100,000.

**V4. \$500,000 income.** Consider a person working in an office. They typically work from 9am to 6pm. Their annual income last year was \$500,000.

## Beliefs and Preferences

**B1.** How complex do you believe the tasks this person completes at work are?

[Scale from 0 – *very routine tasks* to 10 – *very complex tasks*.]

## Reasoning

**R1.** What was your rationale for your answers to the previous questions?