Perceptions of circumstances vs. effort in education and the demand for redistribution: evidence from a survey experiment^{*}

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Abstract

We investigate how providing information about educational inequality affects fairness perceptions and demand for redistribution in Germany. Using a survey experiment among the German voting-age population, we find that information about the extent of educational inequality strongly increases the perception that circumstances rather than effort determine educational success. These effects persist into a follow-up survey conducted two weeks later. Information also significantly increases donations to charities supporting students from disadvantaged socioeconomic backgrounds, but does not affect public support for equity-enhancing educational policies. We use causal forests to show the heterogeneity in the treatment effect.

Keywords: fairness views, information, educational inequality, survey experiment, charitable donations, equality of opportunity, policy preferences

JEL classification: I24, H52, H11, D83, D63, D64

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1. Introduction

The relationship between the extent of inequality and the demand for redistribution has been an important question in social sciences for many years (e.g., Piketty 1995; Norton and Ariely 2011; Wright 2018; Alesina et al. 2018b). One key element in this discussion is the public's perception regarding the fairness of observed distribution of outcomes and the underlying sources of inequality (e.g., Alesina and Angeletos 2005; Bénabou and Tirole 2006). In line with this reasoning, people are less willing to demand redistribution in settings where individuals are responsive for their own economic success in the sense that individual outcomes are a result of own effort (rather than of external circumstances or bad luck).

This paper investigates educational inequality as one important determinant for people's demand for redistribution. Educational inequality is a major concern of policy-makers around the world and there is ample empirical evidence that circumstances outside of an individual's control, especially family background, determine students' educational achievement (e.g., Schütz et al. 2008; Björklund and Salvanes 2011; OECD 2018). As better educational attainment is also rewarded with higher wages on the labor market (e.g., Card 2010), educational inequality can have severe implications for economic inequality and inequality of opportunity (e.g., Nickell 2004; Corak 2013). One possible means to mitigate the impact of family background is the introduction of redistributive measures which aim at equalizing education outcomes and thereby increasing equality of opportunity, especially for children from disadvantaged families (e.g., Lergetporer et al. 2020, for a discussion of different education policies). While a large strand of research has explored preferences for governmental redistribution (e.g., Alesina et al. 2018b; Hoy and Mager 2021), determinants of private actions towards redistribution, such as private donations to charities who aim at redistributing resources between different population groups, are largely unexplored.

In this paper, we study how information about the extent of educational inequality in Germany affects (i) fairness views and (ii) demand for private *and* governmental redistribution by conducting a large-scale survey experiment (N>3,000) within the German voting age population. Because people often hold misperceptions about the extent of inequality in society (e.g., Kluegel 1986; Norton and Ariely 2011), our approach is to inform respondents about the actual extent of educational inequality in Germany. In our corresponding survey experiment, we inform a randomly selected treatment group about the relationship between parents' socioeconomic status (SES) and their children's educational attainment. In particular, treated respondents learn about the absolute share of students from more and less advantaged families who attend academic schools (*Gymnasium*) alongside the unconditional gap in academic school attendance in Germany. The treatment is not only informative about educational opportunities, but also about income opportunities later in life since students with a university entrance qualification – which is typically obtained at a *Gymnasium* - experience large wage premia on

their earnings.¹ After information provision, the treatment group answers the same questions on perceived fairness and preferences for redistribution as the uninformed control group.

We find that most Germans think that educational success is the result of effort rather than external circumstances. In the uninformed control group, only 17.2 percent of respondents believe that a high educational degree (mainly or rather) depends on external circumstances while the remaining 82.8 percent believe that education success can be attributed to own effort instead. Similar patterns can be found for fairness views concerning economic success more generally: A majority of 65.0 percent also believes that high income (mainly or rather) depends on own effort rather than external circumstances.

We then show that information about the extent of educational inequality affects respondents' expressed fairness views. In the treatment group - who is informed about the academic school attendance rates of students from more and less advantaged families (49 and 19 percent respectively) as well as the resulting difference (30 percentage points) - the share of respondents who believe that educational attainment is the result of external cirumstances significantly increases to 29 percent. In contrast to fairness views concerning educational success, the information treatment only mildly affects fairness views concerning high income.

How do people update their beliefs about educational inequality in Germany? As our treatment informs about different aspects related to educational inequality - differences in academic school attendance rates between low and high SES students as well as the absolute attendance rates of those two student subgroups –, the size and direction of the treatment effect will depend on respondents' prior beliefs about the provided information. We find large misperceptions regarding all three information pieces. On average, Germans believe that 71 percent of students (accurate value 49 percent) from more advantaged families attend academic schools while they believe that 30 percent of students (accurate value 19 percent) from less advantaged families do so. These beliefs result in a large misperception of the SES gap in academic school attendance, which respondents expect to amount to 41 percentage points on average (accurate value: 30 percentage points). Given these misperceptions, it is unclear ex ante how respondents would react to information provision. On the one hand, respondents may be surprised by the unexpected 'low' share of high SES students who attend academic schools and therefore be less likely to believe external circumstances to be the main driver of education success. On the other hand, respondents may be surprised by the 'low' share of low SES students who attend the Gymnasium and therefore adjust their view that it is mainly external circumstances which decide about educational success upwards. Turning to the belief-updating process, we find persistent information treatment effects on beliefs about academic school attendance rates elicited in the follow-up survey two weeks later. Our results suggest that respondents seem to particularly remember the information about the academic school attendance rate of students

¹ Dodin et al. (2021) and Schmillen and Stüber (2014) show that individuals with a university entrance qualification in Germany typically earn 42 to 44 percent more on gross earnings. Similarly, recent evidence has shown that these individuals also exhibit a lower risk of unemployment (Hausner et al. (2015)) and higher life expectancies (Gärtner (2002)).

from less advantaged families, suggesting that they internalize this particular piece of information to a larger extent than the other pieces.

Turning to preferences for redistribution, we show that private donations to charities aiming to foster equality of opportunity significantly increase in response to information provision. At baseline, most respondents (66 percent) decide to donate at least some amount to one of two suggested charities. Information on the SES gap in academic school attendance largely and significantly increases the share of donators by about 9 percentage points each. The increased generosity of respondents can also be found in alternative measures, such as the average amount of donations or the share of respondents who decide to donate more than the median.

Despite its large effects on perceived fairness views and preferences for private redistribution, information about the extent of educational inequality does not affect preferences for governmental redistribution. While a large share of respondents (75.1 percent) in the control group supports increased school spending to foster equality of opportunity, the information treatment on the SES gap does not affect policy preferences. In fact, effect sizes are small and economically negligible.

Finally, we explore several explanations why the information treatment only translates into preferences for private but not governmental redistribution. Subgroup analyses reveal that the information treatment does not differentially affect respondents with different political ideologies nor with different levels of trust in the government, suggesting that partisan biases or beliefs about the governmental capability are unlikely to account for the heterogeneous effects on private and governmental redistribution. Further analyses also show that respondents think that the concrete policy proposal – increasing school spending - is well suited to foster equality of opportunity mitigating concerns that doubts about policy effectiveness explain our limited treatment effects on policy preferences.

Overall, our results suggest that information about the extent of educational inequality persistently affects fairness view concerning educational success as well preferences for private redistribution, but fail to affect preferences of governmental redistribution in terms of public support for education policies that foster equality of opportunity.

There is a long tradition in social sciences to study the relationship between inequality and preferences for redistribution (Piketty 1995; Benabou and Ok 2001; Alesina and Giuliano 2011; Durante et al. 2014; Hvidberg et al. 2020; Almås et al. 2019).² Previous studies show that perceptions over the underlying sources of inequality are an important explanatory factor (Alesina and Glaeser 2010; Bénabou and Tirole 2006; Alesina and Angeletos 2005). On the one hand, economic success can be the result of ability and effort, and failure may mainly be attributed to the individuals' inability to take their chances. On the other hand, the system can be unfair and economic failure may be the result of bad luck or external circumstances beyond

² One strand of this literature has investigated heterogeneities in redistributive preferences using incentivized lab experiments (e.g., Cappelen et al. (2007); Fisman et al. (2007); Cappelen et al. (2013); Cappelen et al. (2015); Jakiela (2015); Fisman et al. (2017)) while another strand has focused on redistributive preferences in the general population (e.g., Edlund (1999); Osberg and Smeeding (2006); Bellemare et al. (2008); Fisman et al. (2015); Falk et al. (2018)).

an individual's control. Because of the different sources attributed to individual success, the two notions have very different implications for redistribution preferences with the latter yielding a higher demand for redistribution than the former. Indeed, several papers have empirically confirmed the link between fairness views and distributional preferences, using social survey data (e.g., Fong 2001; Alesina and La Ferrara 2005; Roth and Wohlfart 2018).

We most strongly relate to the experimental literature that investigates how changing people's perceptions about the extent of inequality affects their preferences for governmental redistribution (see also Ciani et al. 2021, for a survey on the recent literature). Earlier work has provided survey respondents with information on their ranking in the national income distribution (Cruces et al. 2013; Kuziemko et al. 2015; Karadja et al. 2017; Bublitz 2020; Hoy and Mager 2021) or the global income distribution (Fehr et al. 2019). Similarly, McCall et al. (2017) and Alesina et al. (2018b) inform their study participants about actual economic inequality in the US and Lergetporer et al. (2020) about current educational inequality in Germany. The common take-away from these studies is that while information usually leads to greater concern about inequality, it mostly fails to shift peoples' redistribution preferences neither towards policies aiming at equality of outcomes (e.g., Kuziemko et al. 2015; Hoy and Mager 2021) nor towards policies aiming at equality of opportunity (Alesina et al. 2018b; Lergetporer et al. 2020). In contrast to these studies, we do not only investigate preferences for governmental redistribution, but also for private redistribution by offering our survey participants the possibility to privately donate to charities that aim at equalizing opportunities of students with different family background. Our results show that information about existing inequalities does not generally fail to alter redistributive preferences, but rather seems to be ineffective with respect to preferences for governmental redistribution.

We also relate to the literature on determinates of charitable giving more broadly. Within this strand of literature, several papers have analyzed the relationship between income inequality and charitable donations with ambiguous results: Some studies - mainly conducted in the laboratory - find that increases in income inequality are associated with smaller amounts of charitable contributions (Chan et al. 1996; Buckley and Croson 2006; Côté et al. 2015; Duquette and Hargaden 2021). However, observational studies document that increases in income inequality can also lead to larger donations (e.g., Payne and Smith 2015). In contrast to these studies, we do not investigate the effects of changes in inequality per se, but are interested in how changes in *perceived* inequality affect charitable donations. In addition, we do not elicit preferences for charitable giving in general, but focus on charities that aim at redistributing opportunities from one part of the population to another.

Given that answers stated in our donation question bear direct monetary consequences for the survey participants, the elicited donations reflect respondents' revealed preferences for private redistribution. As such they bear a large advantage over conventional survey measures as they

can help to overcome the common critique that preferences for redistribution do not capture actual behavior and are more prone to experimenter demand effects (Haaland et al. 2020).³ The remainder of the paper is structured as follows. Section 2 introduces some institutional background on the German education system. Section 3 presents the opinion survey, the experimental design as well as the estimation strategy. Section 4 challenges our results. And section 5 concludes.

2. Institutional background

Appendix Figure A1 gives an overview of the German school system. Compulsory schooling extends from the age of six until the age of 18. The comprehensive primary school usually takes four years and provides basic education in mathematics, German as well as science and social subjects. After completing primary school, students transition to the secondary schools. At this point in time, children are tracked in one of three different school tracks: While the basic and intermediate track prepare for an apprenticeship training or vocational education, only the academic track directly leads to the university entrance qualification, called *Abitur*. The academic track is primarily offered by the academic school *Gymnasium*. Overall, academic school (*Gymnasium*) attendance is relatively common in Germany. 32 percent of 15-years-old children attended a Gymnasium in 2015 (own calculations based on PISA 2015 data).

Even though there is no strict rule that determines which track students can attend after primary school, primary school teachers express recommendations on which school type she thinks the child should pursue. In 2015, in 12 of the 16 German states, this recommendation is not binding and it is in the parents' discretion to decide about their child' secondary school. In the remaining states, parents can only diverge from the recommendations if their child passes a special test or trial lesson (see Grewenig 2021 for more details).

When it comes to educational inequality, Germany has been repeatedly criticized for the fact that family background is a very strong predictor for students' educational performances even in international comparison. For instance, the German mean achievement gap in PISA 2015 science tests scores between high- and low-SES students amounted to 42 score points, the equivalent of more than one year of schooling, which lies above the average OECD performance gap of 38 score points (OECD, 2016). This pattern is also reflected in academic school attendance rates. While only 19 percent of 15-year-old children in the lowest 50 percent of families (in terms of their social background and family income) attend a *Gymnasium*, the respective share for children in the highest 50 percent of families amounts to 49 percent (own calculation based on data from PISA 2015, see Appendix A for details). The resulting gap of 30 percentage points is striking not at least because individuals with a university entrance

³ The same argument is also used by Alesina et al. (2018a) who investigate how perceptions about immigrants influence people's support for redistribution.

qualification – which is typically obtained at a $Gymnasium^4$ - do not only experience a large wage premium on gross earnings of around 42 to 44 percent (see Dodin et al. 2021 and Schmillen and Stüber 2014, for corresponding estimates), but also show lower risk of unemployment (Hausner et al. 2015) and higher life expectancy (Gärtner 2002).

3. Data and empirical strategy

This section describes the data collection, the survey design, the sample characteristics and the econometric model.

3.1 Data collection and sample

Our research is based on data from the ifo Education Survey 2019, a large opinion survey on education policy in Germany. Sampling and polling were carried out by Kantar Public, a renowned German survey company, in May 2019. Overall, the survey encompassed 37 questions related to education policy and respondents were also asked about a rich set of sociodemographic background characteristics at the end of the survey. Median completion time was 30 minutes. Moreover, non-response rate is very low, ranging between 0.00 percent and 0.19 percent for the questions used in this paper.

Respondents were sampled and surveyed via an online platform, implying that they answered the survey autonomously on their own digital devices. At this online platform, respondents can take surveys on exchange for rewards. In our survey, all respondents are incentivized with 75 tokens for survey completion. Subsequently, these tokens can be collected and exchanged for gift vouchers or items of well-known online retailers. Thus, their exact value may differ between respondents depending on their preference.⁵

To investigate the persistence of potential information effects beyond the main survey, respondents were also asked to participate in a follow-up survey roughly two weeks later. The follow-up survey re-elicits respondents' belief about the extent of educational inequality as well as their fairness views, but does not contain information about the extent of educational inequality. Overall, 80 percent of the original participants decided to take part in the follow-up survey. The median lag to the main survey was 15 days with a range from 7 to 40 days.

⁴ Overall, 57 percent of children who attend a *Gymnasium* after primary school later graduate from a university. Among children who switch to another type of secondary school (other than *Gymnasium*) after primary school, the respective share amounts to 13 percent (own calculations based on German NEPS data).

⁵ Our compensation for survey participation corresponds to the standard rate that is offered by the polling firm. As an example, respondents may directly convert the 75 tokens into money, in which case they are worth about 0.75 Euro. This implies that the hourly wage equivalent of the compensation is relatively low at about 1.90 Euro, which already suggests that the collectable tokens may be (much) more valuable to the respondents than their pure monetary equivalent. Moreover, intrinsic motivation or "gamification" – a phenomenon where respondents value tokens more than their monetary equivalent (e.g., Puleston (2011); Keusch and Zhang (2015)) might also foster survey participation.

For our final analyses, we drop respondents who did not pass an attention check posed halfway through the survey⁶ which leaves us with 2,094 respondents in the main survey and 1,671 in the follow-up survey. As illustrated in Appendix Table A1, our sample is broadly representative of the German population in terms of gender, age, region, and household income. For instance, 79.5 percent of our respondents live in West Germany, compared to 80.1 percent in the 2015 Microcensus⁷. 53 percent of respondents in our sample are female whereas 51 percent are in the Microcensus. Our sample is also reasonably close to the population in terms of education: 40 percent of our respondents have a university entrance degree (*Abitur*), compared to 32 percent in the Microcensus. Overall, it is reassuring to find that our sample covers a broad and diverse spectrum of individuals in Germany.

3.2 The Survey

Information treatment

We conduct a survey experiment that informs respondents about the extent of educational inequality in Germany. Appendix Figure A2 provides an overview over the experimental design. In Germany, educational inequality between students from different socioeconomic backgrounds is large in international comparison (e.g., OECD 2020) and manifests itself early during the educational careers of children. In fourth grade, students from more disadvantaged families show significantly lower skills in mathematics, science and reading (Stanat et al. 2017). This is particularly noteworthy as competencies achieved during primary school are decisive for the students' transition to secondary school (see section 2 for more institutional details).

We define educational inequality as the relationship between children's academic school attendance and their parents' socioeconomic status. Since academic schools are the most important German school type where students obtain the prerequisite to attend the university, the *Abitur*, and this degree is positively associated with many economic outcomes (e.g., Gärtner, 2002; Schmillen and Stüber, 2014; Hausner et al., 2015; Dodin et al., 2021), our measure intends to capture a crucial aspect of equality of opportunity.

Our randomized information treatment informs respondents about the gap in academic school attendance rates of 15-year-old children in the lowest and highest 50 percent of family SES status. The treatment informs participants that 49 percent of students from the more advantaged half of all families (in terms of their social background and family income) attend a *Gymnasium*. Treated respondents also learn that, among students from the less advantaged half of all families, this share amounts to 19 percent which yields an SES gap of 30 percentage points (see also Appendix A on details about the calculation of the information treatments). On the one

⁶ The wording of the attention check was as follows "It sometimes happens that survey participants do not read individual questions accurately. To ensure that you read the questions accurately, we ask you to ignore the following question and enter the number twenty-two in the text field. [line-beak] The German states are also responsible for universities and colleges. What do you think, how many currently have tuition fees?" While none of the 16 German states currently have tuition fees, only respondents who answered 22 were left in the final sample.

⁷ Research Data Centres of the Federal Statistical Office and the statistical offices of the Laender, Microcensus, census year 2015.

hand, the unconditional gap could purely reflect existing SES differences in student achievement in the sense that high SES students perform better in school and are thus more likely to attend the *Gymnasium*. In this case, our measure of educational inequality would approach zero once we control for student test scores in different domains. On the other hand, it could purely reflect SES differences in behavioral barriers (e.g., institutional knowledge) unrelated to student achievement. In this case, we would expect our measure to remain unchanged once we control for the performance of students. Along with the verbal statement about the SES gap in academic school attendance, respondents in the information group also receive a graphical illustration on the academic school attendance rates among students with different family background (see Appendix Figure A3 for details).

Eliciting prior and posterior beliefs

To assess respondents' information status at baseline, we elicited prior beliefs about the extent of educational inequality of all participants early on in the survey. In particular, we ask respondents about the share of students from the more advantaged half and less advantaged half of all families (in terms of their social background and family income) who attend an academic school.⁸ This allows us not only to map respondents' perceptions about the SES gap in academic school attendance rates, but also about the absolute attendance rates of those two student groups. To shed further light on the belief-updating process, we re-elicit respondents' beliefs about the main survey. For this purpose, we literally ask the same question on the share of students from more and less advantaged family as in the main survey.

Eliciting fairness views

In the discussion around inequality and redistribution, one important element is the degree to which individuals are responsive for their own economic success and the extent to which own effort (vs. external circumstances) pays off. Here, the literature has mainly discussed two views (e.g., Alesina and Angeletos 2005; Bénabou and Tirole 2006). The first view is that economic success is the result of ability and effort, and failure can mainly be attributed to the individuals' inability to take their chances. On the contrary, the second view poses that the system is unfair and that economic failure is the result of bad luck or circumstances beyond an individual's control. Because of the different sources attributed to individual success, the two notions have also very different implications for preferences for redistribution with the former having a lower demand for redistribution than the latter. Consequently, one condition for higher support of

⁸ The corresponding belief elicitation question is posed to all respondents regardless of their treatment assignment and reads as follows: "Think of a comparison between children from the better and worse off half of all families (in terms of social background and family income). What do you think is the percentage of students from.... (i) the more advantaged half of all families who attend a *Gymnasium*?, (ii) the less advantaged half of all families who attend a *Gymnasium*?"

redistribution is that the existing inequality, in our case the extent of educational inequality, is perceived to be a result of external circumstances rather than lack of effort.

To shed light on whether our information intervention is indeed able to alter people's fairness views, we ask respondents the following question: "Some say that success in life depends primarily on one's own effort. Others say that success in life depends primarily on external circumstances. In your opinion, what determines whether one achieves the following in life?" Respondents can then choose one of the following four answer categories "mainly own effort", "rather own effort", "rather external circumstances", or "mainly external circumstances". To analyze the extent to which respondents draw a connection between educational and economic success, we elicit these views for both "a high educational degree" as well as "a high income".

Eliciting charitable donations

Besides fairness views, we aim to focus on peoples' distributional preferences. For this purpose, we distinguish between preferences for governmental and for private redistribution. We first investigate private redistribution by analyzing individual donations to charities that foster equality of opportunity in education. We therefore endow every respondent with 80 tokens in addition to the tokens they receive for survey participation.⁹ Subsequently, respondents can commit to donating any amount between 0 tokens or the full amount of 80 tokens to one or two charities. We selected two charities that are well-perceived in Germany and target students from disadvantaged families.¹⁰

Given that answers stated in the donation question bear direct monetary consequences for the survey participants, they also reflect revealed preferences for private redistribution. As such, they are well suited to mitigate concerns of experimenter demand driving our main results (Quidt et al. 2018; Mummolo and Peterson 2019) as potential demand effects should be lower in tasks where real money is at stake (Haaland et al. 2020).

Eliciting policy preferences

Next, we investigate public preferences towards governmental redistribution. The literature distinguishes between two types of distributional policies, namely policies aiming at equality of outcomes, such as progressive taxation or minimum wages, (e.g., Alesina and La Ferrara 2005, Kuziemko et al. 2015) and policies aiming at equality of opportunity, such as educational

⁹ The 80 tokens correspond to about 0.80 Euro. Note that this amount is almost the same amount as respondents receive for survey participation. It yields a total payout of more than 2,400 Euro when taking all endowments together.

¹⁰ In particular, we selected *Deutsches Kinderhilfswerk e.V.* and *Die Chancenstiftung*. Upon request, respondents could choose to learn more about these two charities by clicking on an information button (overall, 13.8 percent chose to learn more about the foundations). The additional information about *Deutsches Kinderhilfswerk e.V.* states that the foundation is committed to a child-friendly Germany and that the donations are dedicated for the "*Chancengerechter Bildungsstart*" project, which, among others, provides children from low-income families with school materials. The additional information about *Die Chancenstiftung* states that the foundation awards scholarships to children and young people from low-income families. The scholarship recipients usually receive professional tutoring.

policies (e.g., Alesina et al. 2018b, Lergetporer et al. 2020, Fehr et al. 2021). Because our information treatment targets educational inequality which is particularly closely entwined with equality of opportunity, we elicit respondent' preferences towards the latter. For this reason, we ask whether survey participants favor or oppose increased governmental spending for children from less advantaged families with the purpose of increasing equality of opportunity.¹¹ Answers to this question could be given on a 5-point Likert-scale ranging from "strongly favor" to "strongly oppose". To force respondents to think about trade-offs between education spending and alternative usage of funds, we also make it salient that additional expenditures usually have to be financed through taxes.

3.3 Sample balance

Appendix Table A2 presents results from a balancing test to check whether the randomization successfully balanced respondents' observable characteristics across the treatment arms of the main experiment. The first column shows the average characteristics in the control group. The subsequent columns present characteristics of the information treatment group together with the respective difference to the control group. Importantly, only 2 out of 31 pairwise comparisons are significant at the 5-percent level, as we would expect by pure chance. Moreover, regressing treatment status simultaneously on all covariates yields a p-value for joint significance of 0.286. We thus conclude that random assignment worked as intended.

Next, Appendix Table A3 investigates whether participation in the follow-up survey is related to treatment assignment in the main survey. Regressing a dummy for follow-up-survey participation on the treatment indicator and covariates shows insignificant coefficients on the information treatment. The table further reveals that respondents who are older, have higher trust in government, and have a middle school or university entrance degree, are more likely to participate in the follow-up survey. Reassuringly, among follow-up survey participants, respondents' observable characteristics are still well-balanced across treatment arms (see Appendix Table A4). Therefore, treatment-effect estimates of the experiment on outcomes measured in the follow-up survey are still unbiased.

3.4 The econometric model

We estimate the effects of the experimental information treatment on outcomes with the following regression model:

$$y_i = \alpha_0 + \alpha_1 T_i^{uncond} + \delta' X_i + \varepsilon_i \tag{1}$$

where y_i is the outcome variable of interest for respondent *i*, i.e. her fairness views or demand for redistribution. T_i^{uncond} indicates whether respondent *i* received information on the unconditional SES gap in *Gymnasium* attendance. X_i is a vector of control variables, and ε_i is

¹¹ Measuring peoples' preferences for equality of opportunity policies by eliciting their view on educational spending is a common approach. For instance, Alesina et al. (2018b) elicit preferences for public education spending or Fehr et al. (2021) analyzes attitudes toward public education spending.

the error term. Since ε_i is uncorrelated with treatment status through randomization, the coefficient α_1 provides an unbiased estimate for the causal treatment effect of information provision even without adding further control variables. But as the inclusion of covariates can increase the precision of estimates, we show results both with and without covariates in our main analyses.

4. Results

4.1 Information provision and fairness views

Experimental results

Figure 1 illustrates the causal effect of providing different pieces of information about the extent of educational inequality on respondents' fairness views. The depicted estimates show treatment effects on fairness views concerning (i) a high educational degree (*Panel A*) and (ii) a high income (*Panel B*).

The information treatment has a large and significant effect on respondents' expressed view that educational attainment is the result of luck or external circumstances rather than effort as illustrated in Panel A. In the uninformed control group, a baseline share of 17.3 percent believes that a high educational degree (mainly or rather) depends on external circumstances. In the treatment group that is informed about the academic school attendance rates of students from more (49 percent) and less advantaged families (19 percent), this share largely and significantly increases to 29.4 percent.

Turning to the respondents' expressed fairness views on high income in Panel B, we find that at baseline, 35 percent of respondents think that a high income can be assigned to external factors or luck rather than effort. The information slightly increases this share as one would expect. However, the information treatment does not show large and significant effects on fairness views.

Table 1 reveals experimental results in regression form using a continuous four-point measure. Estimates are based on equation (1) with columns 1 and 3 showing the unconditional regressions, and columns 2 and 4 including our set of covariates¹². Overall, the table confirms our visual impressions. Information on educational inequality significantly increases (decreases) people's view that external circumstances (effort) determine a high educational attainment. In contrast, our information treatment hardly affect respondents' view that external circumstances (effort) determine conomic success in form of a high income. Reassuringly, the inclusion of covariates does not qualitatively affect our results. Moreover, the treatment effects are robust to the coding of the outcome variable: The conclusions that we draw from the table remain unchanged if fairness views are treated as a dummy variable or if a separate coefficient is estimated for each answer category (Appendix Table A5).

¹² While all models in this paper are estimated as linear probability models, (ordered) probit models yield qualitatively similar results (results available upon request).

Table 2 combines data from the main survey and the follow-up survey and regresses fairness views on the information treatment indicator, a follow-up-survey dummy, and the interaction of the treatment indicator with the follow-up dummy. To increase precision, the outcomes depict fairness views concerning a high educational degree (a high income) as elicited on the four-point scale, with higher values indicating a stronger role of external circumstances. For fairness views concerning a high educational attainment, columns 1 and 2 show that the information treatment effect persists in the follow-up survey. As expected, the treatment effect in the follow-up survey tends to be somewhat smaller than the one in the main survey likely due to imperfect recall (see coefficient on the interaction term). Columns 3 and 4 report persistent treatment effects on fairness views concerning a high income. Similar to the main survey, treatment seems to increase respondents' view that external circumstances are decisive for economic success, but the effect size is comparably small and not statistically significant at conventional levels.

In sum, providing information on the extent of educational inequality has a large and positive effect on the expressed view that a high educational degree is the result of external circumstances rather than effort. The treatment effect also persists into a follow-up survey, which implies that (i) respondents are indeed able to understand and remember the provided information, and (ii) the treatment effect is unlikely to stem from experimenter-demand (Haaland et al. 2020).

How do people update their beliefs about educational inequality in Germany?

An idiosyncratic feature of our information treatment is that it provides respondents with different pieces of information concerning educational inequality: In particular, we do not only inform about the difference in academic school attendance between low and high SES students, but also about the absolute attendance rates of those two student groups. In this section, we investigate how respondents update their beliefs in response to information provision and whether the effects found in the previous section reflect genuine belief-updating. To this end, we elicited respondents' prior beliefs about academic school attendance rates for children from different socioeconomic backgrounds earlier in the survey and corresponding posterior beliefs in a follow-up survey two weeks after the main survey. We first show descriptive evidence on respondents' prior beliefs and then turn to providing experimental evidence on how individuals update their beliefs in response to information provision.

Overall, respondents severely misperceive the extent of educational inequality in Germany. On average, Germans believe that 71 percent of students (accurate value 49 percent) from a more advantaged family attend the academic school *Gymnasium* (see Appendix Figure A4). At the same time, they also believe that 30 percent of students (accurate value 19 percent) from a less advantaged family attend the academic school (see Appendix Figure A4). These beliefs result in a large misperception of the SES gap in academic school attendance, which respondents expect to amount to 41 percentage points on average (accurate value: 30 percentage points). Furthermore, prior beliefs are closely associated with stated fairness views concerning

educational attainment. The view that external circumstances rather than effort are decisive for a high educational attainment is more pronounced among respondents who perceive a larger share of more advantaged students to attend the academic schools *and* among respondents who perceive the SES gap in academic school attendance rates to be larger (see columns 1 and 3 of Appendix Table A6). In contrast, the higher respondents believe the academic school attendance among less advantaged students to be, the less they think that a high educational degree can be attributed to external circumstances (see column 2 of Appendix Table A6) Given misperceptions, it is unclear ex ante how respondents would react to our information treatment. On the hand, respondents may be surprised by the unexpected 'low' share of *high* SES students who attend the *Gymnasium* and therefore adjust their view that it is mainly

SES students who attend the *Gymnasium* and therefore adjust their view that it is mainly external circumstances which decide about educational success downwards. On the other hand, respondents may be surprised by the 'low' share of *low* SES students who attend the *Gymnasium* and therefore adjust their view that it is mainly external circumstances which decide about educational success upwards. The ultimate direction of the information treatment effect will thus depend on which piece of information respondents update their beliefs more strongly to.

To shed some light on the belief-updating process, we next investigate the information treatment effect on respondents' posterior beliefs elicited in the follow-up survey. The follow-up survey re-elicits respondents' beliefs about the share of students from more and less advantaged families in the same way as in the main survey, but does not provide treated respondents with the accurate information. Table 3 regresses posterior beliefs on the treatment indicator from the main survey based on equation (1). It shows that information provision persistently improves beliefs about academic school attendance rates. While effect sizes go into the expected direction for both, the share of students from more advantaged and from less advantaged families, the corresponding treatment effect is only significantly different for low SES students.

Overall, our analyses suggest that respondents seem to particularly internalize academic school attendance rates for low SES students. Those findings are also consistent with the fact that the treatments positively affect the view that it is mainly external circumstances are decisive for educational success found in the previous section.

Mechanisms

To understand better how participants interpret the information about the extent of educational inequality, we also study treatment effects on the stated importance of different aspects related to the transition from primary to secondary schools. For that purpose, respondents could rate the following five different aspects on a five-point scale from "very important" to "very unimportant" on how important they perceive these aspects to be for a transition to the academic schools (*Gymnasium*): (i) "educational attainment of parents", (ii) "financial situation of parents", (iii) "effort and diligence of students", (iv) "talent of students", (v) "preferences of students and parents". Regressing the importance of the different aspects on the treatment

indicator reveals that information about the extent of educational inequality increases the importance that respondents assign to the educational background and financial situation of parents (Table 4).¹³ Interestingly, the stated importance of students' effort and diligence is hardly affected by the information treatment, suggesting that Germans do not perceive a trade-off between external circumstances and effort.

4.2 Information provision and demand for redistribution

In this section, we investigate whether the information provision that increased the respondents' perceived role of circumstances vs. effort for educational success also has an effect on preferences for redistribution. We distinguish between preferences for private redistribution - in form of private donations to charities which aim to foster equality of opportunity - and preferences for governmental redistribution - in form of support towards increased education spending to foster equality of opportunity. Both will be investigated in turn.

Charitable donations

At baseline, most respondents (66 percent) decide to donate some positive amount of tokens to the charities. Moreover, donations are positively associated with respondents' fairness views about educational success. In the uninformed control group, the share of donators is on average 2.3 percentage points higher (not significant) if respondents consider a high educational degree as a result of external circumstances or luck rather than effort (results available on request).

Table 5 regresses donations on the treatment indicator based on equation (1). Information on the unconditional SES gap largely and significantly increases the share of respondents who decide to privately donate money to foster equality of opportunity. The information treatment effect amounts to significant 9 percentage points (see column 1) which constitutes a large increase from baseline donations. The increased generosity of respondents is also retrieved in the average amount of donated tokens which significantly increase by 3.2 tokens after information provision on educational inequality (column 2). Interestingly, the baseline share of respondents who decides to donate the full amount of 80 tokens (30 percent) is unaffected by the information treatments (column 3). Moreover, we also find an increase in donations above the median (column 4), suggesting that our information treatment does not only positively affect very small donations.¹⁴

Figure 2 additionally shows the treatment effect on stated donations using a conditional distribution function. Information about the extent of educational inequality seems to

¹³ For the regressions, we z-standardize the five-point scale outcomes.

 $^{^{14}}$ In the corresponding donation elicitation question, respondents had the opportunity to distribute their donations between two charities (see section 2 for details). In the control group, 28.6 percent of respondents allocate the full amount of their donations to *Deutsches Kinderhilfswerk e.V.* and 7.6 percent of respondents contribute the full amount of donations to *Die Chancenstiftung* (the remaining 63.7 percent equally distribute donations between the two charities). While our information treatments significantly increase average donations, the allocation of donations between the charities remains by and large unaffected (results available upon request).

particularly increase donations to an amount of about 50 tokens. In contrast, large donations between 50 and 80 tokens are hardly affected by the treatment.

Policy preferences

We find a very high baseline support towards increased governmental spending for children from less advantaged families. Despite the question making trade-offs between education and alternative usages of funds very salient, we find that more than 75 percent of respondents (strongly) favor increased educational spending with the purpose of fostering equality of opportunity. Only a small minority of 12.6 percent opposes it. In addition, policy preferences are also closely linked to respondents' fairness views. In the uninformed control group, the share of respondents who support increased government spending is 13 percentage points higher than if respondents consider a high educational degree as a result of external circumstances or luck rather than effort (results available on request).¹⁵

Even though we are able to detect a large and significant information treatment effect on fairness views and preferences for private redistribution, we do not find a strong effect of the information treatment on policy preferences in the overall population. Table 6 regresses policy preferences on the treatment indicator based on equation (1). The information on the unconditional SES gap in academic school attendance does not change respondents' policy views. Depending on the exact specification, effect sizes vary between -1.1 percentage points (support in column 1) and 1.5 percentage points (opposition in column 2) and are neither statistically nor economically meaningful. Further exploiting variation beyond the population shares that support/oppose the policy by measuring preferences as a continuous five-point scales shows very similar results. With increased precision in this specification, the provided information increases the policy index by roughly -0.005 index points, which is not statistically significant at conventional levels (column 3).

4.3 Potential explanation for heterogeneous effects of information treatments on charitable donations vs policy preferences

In this section, we test several potential explanations for why the information treatments show large and significant effects on preferences for private redistribution, but not on preferences for governmental redistribution.

Partisan biases

The null effect of our information treatments on support for governmental redistribution could mask important heterogeneities by respondents' political ideology or partisanship. Left-wing respondents may become more supportive of equal opportunity policies in general, and

¹⁵ Similarly, policy preferences are also closely linked to respondents' charitable donations. In the uninformed control group, the average amount of donations among respondents who support increased government spending is 16 tokens higher than for respondents who are neutral or oppose increased government spending (results available on request).

especially when undertaken by the government. In contrast, right-wing respondents may indeed change their fairness views and preferences for private redistribution, but not favor additional government intervention (see e.g., Alesina et al. 2018b on information about intergenerational mobility or Haaland and Roth 2021 on information about racial gaps).

To explore this channel, we focus on respondents' long-term party attachment and distinguish between the following three subgroups:¹⁶ (i) left-leaning partisans, i.e. respondents who report that they support SPD, LINKE, or GRÜNE, (ii) right-leaning partisans, i.e. respondents who report that they support CDU/CSU, FDP, or AfD and (iii) non-partisans, i.e. respondents who report that they have no particular long-term party attachment. We subsequently divide our sample into the three subgroups and estimate regression models based on equation (1). Appendix Table A7 reports results on perceived fairness views and preferences for redistribution. Columns 1, 4, and 7 report information effects for left-leaning respondents, columns 2, 5, and 8 for right-leaning respondents and the remaining columns for respondents with no particular party attachment. Interestingly, the information treatment effect on respondents' view that mainly external circumstances rather than effort determine educational success, seems to be much stronger for left-leaning respondents than for right-leaning respondents. However, the treatment effect on preferences for redistribution (neither private redistribution in columns 4, 5, and 6 nor governmental redistribution in columns 7, 8, and 9) does not seem to differ between respondents with different political ideologies although leftleaning respondents seem to favor much more redistribution at baseline than right-leaning respondents (see control mean in columns 7 and 8). We therefore conclude that differences in treatment effects between private donations and preferences for governmental redistribution are unlikely to be driven by partisan biases.

Similarly, the effect differences with respect to private vs. governmental redistribution cannot be explained by other relevant interest groups. Appendix Table A8 reports results on perceived fairness views and preferences for redistribution for respondents with different educational background. Although the information effect on preferences for private redistribution seems to be driven by respondents whose parents do not have a high school degree (*Abitur*, which is usually obtained at the *Gymnasium*), the corresponding treatment effect on preferences for governmental redistribution is muted for both subgroups.

Trust in government

Another potential explanation for the limited responsiveness of policy preferences to information about educational inequality might be that respondents mistrust the government and are pessimistic about the governments' ability to reduce equality of opportunity. Indeed, 68 percent of our respondents report that they have little or no trust in the German government. To further explore this channel, we investigate heterogeneous information effects by respondents' reported trust. Again, we divide our sample into two subgroups (those with low

¹⁶ We focus on long-term party attachment because it reflects fundamental political values instead of short-term considerations guiding intended voting behavior.

and high trust in the government) and estimate regression models based on equation (1). Appendix Table A9 reports results on perceived fairness views and preferences for redistribution. Overall, results suggest that the information treatment effect is rather homogenous across subgroups, indicating that (lack of) trust in government does not seem to drive our diverging effects on preferences for private vs. governmental redistribution.

Policy effectiveness

Finally, we explore whether doubts about policy effectiveness can explain our limited treatment effects on policy preferences. If respondents believe that increased educational spending is not suitable to foster equality of opportunity, or that other policies may be more effective in doing so, information provision about the extent of educational inequality may induce them to change their private redistribution, but not their preferences for governmental redistribution as elicited in our specific policy question (see also Lergetporer et al. 2020 for a detailed discussion).

We asked a subset of our survey respondents on what they believe how suitable a variety of potential policy interventions are to foster equality of opportunity. Appendix Figure A5 (Panel A) reveals that the vast majority thinks that increasing governmental expenditure to schools mostly serving children from a disadvantaged family background is very or rather effective to combat educational inequality in Germany. In fact, this share is among the highest when comparing it to other policy proposals that are frequently discussed in the context of reducing educational inequality in the German public debate.

Similarly, respondents may also think that increased educational spending conflicts with other important goals of education policy. In particular, respondents may perceive a trade-off between increasing equality and increasing efficiency of the education system. If they also believe that efficiency is an important policy goal to achieve but our policy measure does not help to achieve this goal, they may be reluctant to increase their support for higher education expenditures. However, as Appendix Figure A5 (Panel B) reveals, the vast majority also acknowledges that increased governmental spending for schools is also very suitable to increase the overall performance of the German education system.

In sum, respondents do not seem to find a limited effectiveness in our proposed policy measure nor find an equity-efficiency trade-off therein.

Heterogeneous Treatment Effects using Machine Learning

Finally, we explore heterogeneous treatment effects with respect to charitable donations and preferences for governmental redistribution. Since looking for subgroups by splitting the sample according to one or two variables is rather limited and spurious results might arise from an intense search for subgroups (Betrand et al. 2017), we explore heterogeneity using machine learning algorithms. With that, we are also able to capture more complex, high-dimensional combinations of covariates that might be missed otherwise.

To this end, we use the Causal Forest algorithm, proposed by Athey and Imbens (2016), Wager and Athey (2018), and Athey et al. (2019), which is an adapted version of the Random Forest, originally proposed by Breiman (2001). Our goal is to estimate the conditional average treatment effects (CATEs):

$$\tau(\mathbf{x}) = \mathbf{E}[Y_i(1) - Y_i(0) | X_i = \mathbf{x}]$$
(3)

This method is based on a standard regression tree: The algorithm starts with the whole (training) dataset, takes a covariate, and splits the data into two leaves. The split is chosen such that it minimizes the goodness-of-fit criterion (here: Minimization of expected mean squared error of predicted treatment effects (Athey and Imbens 2016)). The algorithm repeats this process until it reaches a terminal leaf. Within these terminal leaves, everyone shares values of certain covariates. Out-of-sample predictions are then made by determining which terminal leaf an observation belongs to based on the covariates (Davis and Heller 2017). The CATE is obtained as the difference in the mean outcomes between a treatment and control observation within a terminal leaf (Davis and Heller 2017). In other words, the CATE is the predicted treatment effect for out-of-sample observations that belong to a terminal leaf with specific values of a covariate. Wager and Athey (2018) expand the idea of a causal tree to many trees: The causal forest. The causal forest averages the predictions from the large set of causal trees. We describe more details about the algorithm in Appendix B.

We discuss treatment heterogeneity for the two outcomes, amount of donated tokens as well as policy preferences. First, we visualize the distribution of the predicted CATEs in Figure 3. For the amount of donated tokens, the distribution of the CATEs in Panel (A) looks similar to a normal distribution, indicating that treatment effects on donations are rather homogeneous. In contrast, the distribution of the CATEs for the policy preferences in Panel (B) is more diverse, suggesting that there may be more effect heterogeneities concerning the policy outcome.

Next, we divide the sample into four subgroups according to the size of their predicted CATE and calculate the average treatment effect within these four groups (Figure 4). For charitable donations, the formal test of treatment effect heterogeneity shows that the differences are not statistically significant, confirming our first impression that the effects do not vary between different subgroups (Panel A). In Panel B, we show the respective effect on policy preferences: Here, the first group (ntile1) significantly differs from the other three groups which confirms the presence of heterogeneous treatment effects.

Subsequently, we compare all covariates across the quartiles of predicted treatment effects. Table 7 provides an overview on how individuals with a high predicted treatment effect (Ntile4) distinguish from those with a low predicted treatment effect (Ntile1). There are sizable differences in the covariates between the four groups. Respondents with the lowest predicted CATEs seem to be more patient than respondents with the highest predicted CATEs. They are also less risk-averse and have a lower income on average.

Finally, Table 8 shows the ranking of the covariates in terms of the variable importance. The variable importance captures the relative frequency with which a forest splits on the covariates

across all grown trees (Farbmacher et al. 2021). Especially income, age, patience, and risk seem to be most important. On the contrary, educational background does not show up in the most important variables which suggests that effects are not driven by whether respondents are able to understand the information that we provide or not. A closer look at the relationship between the CATE and the most important variables according to the variable importance reveals for the policy preferences that the more patient respondents are, the lower the CATE. We also see a slight positive relationship between age and the CATE. Lastly, German respondents seem to have a higher CATE on policy preferences on average than non-German respondents.

In sum, our heterogeneity analyses reveal that treatment effects are rather homogeneous regarding private donations while there are some noteworthy treatment effect heterogeneities regarding the respondents' policy preferences. Given that only a small group of respondents adapt their policy preferences in response to the information provision, our findings suggest that policy preferences in the general population are less malleable to information provision than preferences for private redistribution. This interpretation is also in line with Luttmer and Singhal (2011) who suggest that preferences for governmental redistribution have an important cultural component that is rather stable over time.

5. Conclusions

Educational inequality is a major concern of policy-makers around the world and is an important determinant for people's demand for redistribution. By conducting a large-scale experiment, we study how information about the extent of educational inequality in Germany affects individuals' fairness views and their demand for private *and* governmental redistribution. We find that most Germans think that educational success is the result of effort rather than external circumstances. We then show that information about the extent of educational inequality in Germany affects respondents' fairness views. The provided information consists of three information pieces: Differences in academic school attendance rates between low and high SES students as well as the absolute attendance rates of those two student subgroups. When this information is provided, the share of respondents who believe that success in life (in terms of a higher educational degree and a higher income) is the result of circumstances significantly increases.

We also document large misperceptions regarding all three information pieces and find a persistent information treatment effect on beliefs about academic school attendance rates elicited in the follow-up survey two weeks later. This suggests that the information treatment is understood and memorized by respondents. Our results suggest that respondents seem to particularly remember the information about the academic school attendance rate of students from less advantaged families, which suggests that this is the piece of information respondents might find most relevant.

Regarding preferences for redistribution, we show that information provision significantly increases private donations to charities which aim at promoting equality of opportunity while it does not affect preferences for governmental redistribution.

References

- Alesina, Alberto and George-Marios Angeletos, "Fairness and Redistribution," American Economic Review, 95 (2005), 960–980.
- Alesina, Alberto and Paola Giuliano, "Preferences for Redistribution," in *Handbook of Social Economics* 1, Jess Benhabib, Alberto Bisin, and Matthew O. Jackson, eds. (North-Holland, 2011), 93–131.
- Alesina, Alberto and Edward L. Glaeser, *Fighting poverty in the US and Europe: A world of difference,* Reprinted. (Oxford: Univ. Press, 2010).
- Alesina, Alberto and Eliana La Ferrara, "Preferences for redistribution in the land of opportunities," *Journal of Public Economics*, 89 (2005), 897–931.
- Alesina, Alberto, Armando Miano, and Stefanie Stantcheva, "Immigration and Redistribution," 2018a.
- Alesina, Alberto, Stefanie Stantcheva, and Edoardo Teso, "Intergenerational Mobility and Preferences for Redistribution," *American Economic Review*, 108 (2018b), 521–554.
- Almås, Ingvild, Alexander W. Cappelen, and Bertil Tungodden, "Cutthroat Capitalism versus Cuddly Socialism: Are Americans More Meritocratic and Efficiency-Seeking than Scandinavians?," *Journal of Political Economy*, 128 (2019), 1753–1788.
- Athey, Susan and Guido Imbens, "Recursive partitioning for heterogeneous causal effects," *Proceedings of the National Academy of Sciences of the United States of America*, 113 (2016), 7353–7360.
- Athey, Susan, Julie Tibshirani, and Stefan Wager, "Generalized random forests," *The Annals of Statistics*, 47 (2019).
- Bellemare, Charles, Sabine Krger, and Arthur van Soest, "Measuring Inequity Aversion in a Heterogeneous Population Using Experimental Decisions and Subjective Probabilities," *Econometrica*, 76 (2008), 815–839.
- Benabou, Roland and Efe A. Ok, "Social Mobility and the Demand for Redistribution: The Poum Hypothesis," *The Quarterly Journal of Economics*, 116 (2001), 447–487.
- Bénabou, Roland and Jean Tirole, "Belief in a Just World and Redistributive Politics*," *The Quarterly Journal* of *Economics*, 121 (2006), 699–746.
- Betrand, Marianne, Bruno Crépon, Alicia Marguerie, and Patrick Premand, "Contemporaneous and Post-Program Impacts of a Public Works Program: Evidence from Côte d'Ivoire," (2017).
- Björklund, Anders and Kjell G. Salvanes, "Education and Family Background," in *Handbook of the economics of education* 3, Eric Alan Hanushek, Stephen Machin, and Ludger Woessmann, eds., 1. ed. (Amsterdam: North-Holland, 2011), 201–247.
- Breiman, Leo, "Random Forests," Machine Learning, 45 (2001), 5-32.
- Bublitz, Elisabeth, "Misperceptions of income distributions: cross-country evidence from a randomized survey experiment," *Socio-Economic Review* (2020), mwaa025.
- Buckley, Edward and Rachel Croson, "Income and wealth heterogeneity in the voluntary provision of linear public goods," *Journal of Public Economics*, 90 (2006), 935–955.
- Cappelen, Alexander W., Astri D. Hole, Erik Ø. Sørensen, and Bertil Tungodden, "The Pluralism of Fairness Ideals: An Experimental Approach," *American Economic Review*, 97 (2007), 818–827.
- Cappelen, Alexander W., Karl O. Moene, Erik Ø. Sørensen, and Bertil Tungodden, "Needs Versus Entitlements—An International Fairness Experiment," *Journal of the European Economic Association*, 11 (2013), 574–598.
- Cappelen, Alexander W., Knut Nygaard, Erik Ø. Sørensen, and Bertil Tungodden, "Social Preferences in the Lab: A Comparison of Students and a Representative Population," *The Scandinavian Journal of Economics*, 117 (2015), 1306–1326.
- Card, David, "The Causal Effect of Education on Earnings," in *Handbook of Labor Economics* 3, Orley Ashenfelter and David E. Card, eds., Transferred to digital print 2010 (Amsterdam, Boston, Heidelberg, London, New York, Oxford, Paris, San Diego, San Francisco, Singapore, Sydney, Tokyo: Elsevier, 2010), 1801–1863.
- Chan, Kenneth S., Stuart Mestelman, Rob Moir, and R. A. Muller, "The Voluntary Provision of Public Goods under Varying Income Distributions," *The Canadian Journal of Economics*, 29 (1996), 54.
- Ciani, Emmanuele, Fréget Louis, and Manfredi Thomas, "Learning about inequality and demand for redistribution: A metaanalysis of in-survey informational experiments," *OECD Papers on Well-being and Inequalities*, No. 2 (2021).
- Corak, Miles, "Income Inequality, Equality of Opportunity, and Intergenerational Mobility," *Journal of Economic Perspectives*, 27 (2013), 79–102.

- Côté, Stéphane, Julian House, and Robb Willer, "High economic inequality leads higher-income individuals to be less generous," *Proceedings of the National Academy of Sciences of the United States of America*, 112 (2015), 15838–15843.
- Cruces, Guillermo, Ricardo Perez-Truglia, and Martin Tetaz, "Biased perceptions of income distribution and preferences for redistribution: Evidence from a survey experiment," *Journal of Public Economics*, 98 (2013), 100–112.
- Davis, Jonathan M. and Sara B. Heller, "Using Causal Forests to Predict Treatment Heterogeneity: An Application to Summer Jobs," *American Economic Review*, 107 (2017), 546–550.
- Dodin, Majed, Sebastian Findeisen, Lukas Henkel, Dominik Sachs, and Paul Schüle, "Social Mobility in Germany," *CESifo Working Papers*, 9200 (2021).
- Duquette, Nicolas J. and Enda P. Hargaden, "Inequality and giving," *Journal of Economic Behavior & Organization*, 186 (2021), 189–200.
- Durante, Ruben, Louis Putterman, and Joël van der Weele, "Preferences for Redistribution and Perception of Fairness: An Experimental Study," *Journal of the European Economic Association*, 12 (2014), 1059–1086.
- Edlund, Jonas, "Trust in Government and Welfare Regimes: Attitudes to Redistribution and Financial Cheating in the USA and Norway," *European Journal of Political Research*, 35 (1999), 341–370.
- Falk, Armin, Anke Becker, Thomas Dohmen, Benjamin Enke, David Huffman, and Uwe Sunde, "Global Evidence on Economic Preferences," *The Quarterly Journal of Economics*, 133 (2018), 1645–1692.
- Farbmacher, Helmut, Heinrich Kögel, and Martin Spindler, "Heterogeneous effects of poverty on attention," *Labour Economics*, 71 (2021), 102028.
- Fehr, Dietmar, Johanna Mollerstrom, and Ricardo Perez-Truglia, "Your Place in the World: Relative Income and Global Inequality," 2019.
- Fehr, Dietmar, Daniel Müller, and Marcell Preuss, "Perceptions of Equality of Opportunity and Inequality Acceptance," *Working Paper* (2021).
- Fisman, Raymond, Pamela Jakiela, and Shachar Kariv, "Distributional Preferences and Political Behavior," *Journal of Public Economics*, 155 (2017), 1–10.
- Fisman, Raymond, Pamela Jakiela, Shachar Kariv, and Daniel Markovits, "The distributional preferences of an elite," *Science (New York, N.Y.)*, 349 (2015), aab0096.
- Fisman, Raymond, Shachar Kariv, and Daniel Markovits, "Individual Preferences for Giving," *American Economic Review*, 97 (2007), 1858–1876.
- Fong, Christina, "Social preferences, self-interest, and the demand for redistribution," *Journal of Public Economics*, 82 (2001), 225–246.
- Gärtner, Karla, "Differentielle Sterblichkeit Ergebnisse des Lebenserwartungssurveys," Zeitschrift für Bevölkerungswissenschaft, 2 (2002), 185–211.
- Grewenig, Elisabeth, "School Track Decisions and Teacher Recommendations: Evidence from German State Reforms," *ifo Working Paper No. 353* (2021).
- Haaland, Ingar and Christopher Roth, "Beliefs about Racial Discrimination and Support for Pro-Black Policies," *The Review of Economics and Statistics* (2021), 1–38.
- Haaland, Ingar, Christopher Roth, and Johannes Wohlfart, "Designing Information Provision Experiments," *CESifo Working Papers*, 8406 (2020).
- Hausner, Karl Heinz, Doris Söhnlein, Brigitte Weber, and Enzo Weber, "Bessere Chancen mit mehr Bildung," *IAB-Kurzbericht*, 11 (2015).
- Hoy, Christopher and Franziska Mager, "Why Are Relatively Poor People Not More Supportive of Redistribution? Evidence from a Randomized Survey Experiment across Ten Countries," *American Economic Journal: Economic Policy*, 13 (2021), 299–328.
- Hvidberg, Kristoffer, Claus Kreiner, and Stefanie Stantcheva, "Social Positions and Fairness Views on Inequality," 2020.
- Jakiela, Pamela, "How Fair Shares Compare: Experimental Evidence from Two Cultures," *Journal of Economic Behavior & Organization*, 118 (2015), 40–54.
- Karadja, Mounir, Johanna Mollerstrom, and David Seim, "Richer (and Holier) Than Thou? The Effect of Relative Income Improvements on Demand for Redistribution," *The Review of Economics and Statistics*, 99 (2017), 201–212.
- Keusch, Florian and Chan Zhang, "A Review of Issues in Gamified Surveys," *Social Science Computer Review*, 35 (2015), 147–166.
- Kluegel, James R., *Beliefs about Inequality: Americans' Views of What is and What Ought to be*, 1st ed. (Somerset: Taylor and Francis, 1986).

- Kuziemko, Ilyana, Michael I. Norton, Emmanuel Saez, and Stefanie Stantcheva, "How Elastic Are Preferences for Redistribution? Evidence from Randomized Survey Experiments," *American Economic Review*, 105 (2015), 1478–1508.
- Lergetporer, Philipp, Katharina Werner, and Ludger Woessmann, "Educational inequality and public policy preferences: Evidence from representative survey experiments," *Journal of Public Economics*, 188 (2020), 104226.
- Luttmer, Erzo F. P. and Monica Singhal, "Culture, Context, and the Taste for Redistribution," *American Economic Journal: Economic Policy*, 3 (2011), 157–179.
- McCall, Leslie, Derek Burk, Marie Laperrière, and Jennifer A. Richeson, "Exposure to rising inequality shapes Americans' opportunity beliefs and policy support," *Proceedings of the National Academy of Sciences of the United States of America*, 114 (2017), 9593–9598.
- Mummolo, Jonathan and Eric Peterson, "Demand Effects in Survey Experiments: An Empirical Assessment," *American Political Science Review*, 113 (2019), 517–529.

Nickell, Stephen, "Poverty and Worklessness in Britain," The Economic Journal, 114 (2004), C1-C25.

- Norton, Michael I. and Dan Ariely, "Building a Better America—One Wealth Quintile at a Time," *Perspectives on Psychological Science*, 6 (2011), 9–12.
- OECD, Equity in Education: Breaking Down Barriers to Social Mobility (Paris: OECD Publishing, 2018).
- Osberg, Lars and Timothy Smeeding, ""Fair" Inequality? Attitudes toward Pay Differentials: The United States in Comparative Perspective," *American Sociological Review*, 71 (2006), 450–473.
- Payne, A. A. and Justin Smith, "Does income inequality increase charitable giving?," *The Canadian Journal of Economics*, 48 (2015), 793–818.
- Piketty, Thomas, "Social Mobility and Redistributive Politics," *The Quarterly Journal of Economics*, 110 (1995), 551–584.
- Puleston, Jon, "Improving Online Surveys," International Journal of Market Research, 53 (2011), 557-560.
- Quidt, Jonathan de, Johannes Haushofer, and Christopher Roth, "Measuring and Bounding Experimenter Demand," *American Economic Review*, 108 (2018), 3266–3302.
- Roth, Christopher and Johannes Wohlfart, "Experienced inequality and preferences for redistribution," *Journal* of *Public Economics*, 167 (2018), 251–262.
- Schmillen, Achim and Heiko Stüber, "Bildung lohnt sich ein Leben lang," IAB-Kurzbericht, 1 (2014).
- Schütz, Gabriela, Heinrich W. Ursprung, and Ludger Wößmann, "Education Policy and Equality of Opportunity," *Kyklos*, 61 (2008), 279–308.
- Stanat, Petra, Stefan Schipolowski, Camilla Rjosk, Sebastian Weirich, and Nicole Haag, *IQB-Bildungstrend* 2016. Kompetenzen in den Fächern Deutsch undMathematik am Ende der 4. Jahrgangsstufe im zweiten Ländervergleich (Münster: Waxmann, 2017).
- Wager, Stefan and Susan Athey, "Estimation and Inference of Heterogeneous Treatment Effects using Random Forests," *Journal of the American Statistical Association*, 113 (2018), 1228–1242.
- Wright, Graham, "The Political Implications of American Concerns About Economic Inequality," *Political Behavior*, 40 (2018), 321–343.

Figure 1: Effect of information treatment on fairness views

Panel A: External circumstances are decisive for a high educational degree



Notes: Responses to the question "Some say that success in life depends primarily on one's own effort. Others say that success in life depends primarily on external circumstances. In your opinion, what determines whether one achieves the following in life? a high educational degree (Panel A), a high income (Panel B)" Control/ Uncond. SES gap: respondents in respective experimental groups. Data source: ifo education survey 2019.

Panel B: External circumstances are decisive for a high income



Figure 2: Distribution of charitable donations across experimental groups

Notes: Cumulative distribution functions on respondents' donations to charities that aim at fostering equality of opportunity. Control/Uncond. SES gap: respondents in respective experimental groups. Data source: ifo education survey 2019.

Figure 3: Distribution of CATEs

Panel A: Average donations

Panel B: Policy preferences (5-point scale)



Notes: Distribution of the Conditional Average Treatment Effects for the amount of donations stated by respondents (in lifepoints) (Panel A) and support for inequality-reducing policies on 5-point scale (Panel B). Data source: ifo education survey 2019.

Figure 4: ATE by ntile

10

ATE Estimate

0

-5

Panel A: Average donations



Panel B: Policy preferences (5-point scale)

Notes: Observations are split into four groups according to their predicted Conditional Average Treatment Effects. The figure shows the average treatment effect within these four groups for the amount of donations stated by respondents (in lifepoints) (Panel A) and support for inequality-reducing policies on 5-point scale (Panel B). Data source: ifo education survey 2019.

Table 1: Effect of information treatment on fairness views

	Perceived role of circumstances (high educational degree)		Perceived role of circmstances (high income)		
	(1)	(2)	(3)	(4)	
Uncond. SES gap	0.255***	0.257***	0.048***	0.048***	
	(0.036)	(0.035)	(0.038)	(0.037)	
Covariates	No	Yes	No	Yes	
Control mean	1.802	1.802	2.181	2.181	
Observations	2094	2094	2093	2093	
R-squared	0.024	0.073	0.001	0.042	

Notes: OLS regressions. Dependent variables: (1) - (2) external circumstances (luck) are decisive for high educational attainment on a 4-point scale, (3) - (4) external circumstances (luck) are decisive for high income on a 4-point scale. Control mean: mean of the outcome variable in the control group. Covariates include: age, female, born in Germany, West Germany, living in large city, risk, patience, parents with university education, income, current employment status, middle school degree, high school degree, partner living in household, parental status, work in education sector and imputation dummies. Data source: ifo Education Survey 2019. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Table 2: Persistence of information treatment effects on fairness views

	Perceived role of (high educat	Perceived role of circumstances (high educational degree)		of circumstances ome)
	(1)	(2)	(3)	(4)
Uncond. SES gap	0.262***	0.256***	0.054	0.052
	(0.040)	(0.039)	(0.042)	(0.042)
Uncond. SES gap x follow-up	-0.183***	-0.183***	-0.036	-0.036
	(0.040)	(0.040)	(0.043)	(0.043)
Follow-up	-0.017	-0.017	-0.049*	-0.049*
-	(0.028)	(0.029)	(0.030)	(0.030)
Uncond. SES gap in follow-up	0.079**	0.074**	0.018	0.016
Covariates	No	Yes	No	Yes
Observations (respondents)	1671	1671	1671	1671
R-squared	0.020	0.063	0.002	0.042

Notes: OLS regressions. Dependent variables: (1) - (2) external circumstances (luck) are decisive for high educational attainment on a 4-point scale, (3) – (4) external circumstances (luck) are decisive for high income on a 4-point scale. See Table 1 for included covariates. Data source: ifo Education Survey 2019. Sample: respondents who participated in the follow-up survey. Robust standard errors in parentheses, adjusted for clustering at the respondent level * p<0.1, ** p<0.05, *** p<0.01.

	Belief: SES gap in academic school		Belief: Academic sc	hool attendance high	Belief: Academic school attendance low		
	atten	dance	SI	SES		SES	
	(1)	(2)	(3)	(4)	(5)	(6)	
Uncond. SES gap	0.942	1.154	-0.869	-0.784	-1.811***	-1.938***	
	(1.033)	(1.032)	(0.813)	(0.808)	(0.668)	(0.671)	
Covariates	No	Yes	No	Yes	No	Yes	
Control mean	38.689	38.689	68.957	68.957	30.268	30.268	
Observations	1671	1671	1671	1671	1671	1671	
R-squared	0.000	0.040	0.001	0.042	0.004	0.028	

Table 3: Effect of information treatment on posterior beliefs elicited in the follow-up survey

Notes: OLS regressions. Dependent variables: (1) - (6) respondents' stated posterior belief as indicated in the table header. Control mean: mean of the outcome variable in the control group. See Table 1 for included covariates. Data source: ifo Education Survey 2019. Sample: respondents in the follow-up survey. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

	Parental education	Financial situation	Effort	Talent	Preferences
	(1)	(2)	(3)	(4)	(5)
Uncond. SES gap	0.134***	0.124***	-0.015	-0.017	0.070
	(0.043)	(0.043)	(0.040)	(0.040)	(0.044)
Covariates	Yes	Yes	Yes	Yes	Yes
Control importance	0.625	0.557	0.933	0.907	0.500
Observations	2094	2094	2094	2094	2094
R-squared	0.047	0.037	0.050	0.075	0.015

Table 4: Effect of information treatment on aspects important for academic school attendance

Notes: OLS regressions. Dependent variables: Respondents' stated importance that the following aspects are important for transition to Gymnasium elicited on 5-point scale, 1 = not important at all, 5 = very important, standardized mean zero, standard deviation one; (1) parental education, (2) financial situation, (3) effort, (4) talent, (5) preferences. Control importance: share of those who state that respective aspect is very/rather important in the control group. See Table 1 for included covariates. Data source: ifo Education Survey 2019. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

	No donation (1)	Average donations (2)	Full donation (3)	Donation above median (4)
Uncond. SES gap	-0.093***	3.267**	0.004	0.046**
	(0.020)	(1.401)	(0.020)	(0.021)
Covariates	Yes	Yes	Yes	Yes
Control mean	0.338	37.499	0.303	0.396
Observations	2093	2093	2093	2093
R-squared	0.056	0.061	0.046	0.041

Table 5: Effect of information treatment on charitable donations

Notes: OLS regressions. Dependent variables: (1) dummy variable coded one if amount of donations is 0, (2) amount of donations stated by respondents (in lifepoints), (3) dummy variable coded one if amount of donations is 80 (maximum possible share), (4) dummy coded one if amount of donation is above the median donation. Control mean: mean of the outcome variable in the control group. See Table 1 for included covariates. Data source: ifo Education Survey 2019. Robust standard errors in parentheses. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.10.

	Support inequality-reducing policies	Opposition inequality-reducing policies	Inequality-reducing policies (Five-point scale)
	(1)	(2)	(3)
Uncond. SES gap	-0.011	0.015	-0.005
	(0.019)	(0.015)	(0.043)
Covariates	Yes	Yes	Yes
Control mean	0.751	0.126	3.823
Observations	2094	2094	2094
R-squared	0.034	0.023	0.040

Table 6: Effect of information treatment on policy preferences

Notes: OLS regressions. Dependent variables: (1) dummy variable coded one if respondent is mainly/rather in favor of inequality-reducing policies, (2) dummy variable coded one if respondent is rather not/not at all in favor of inequality-reducing policies, (3) support for inequality-reducing policies on 5-point scale. Control mean: mean of the outcome variable in the control group. See Table 1 for included covariates. Data source: ifo Education Survey 2019. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

Covariates	Ntile1	Ntile2	Ntile3	Ntile4	p-value (1 vs. 4)
Age	48.27	51.85	53.63	58.68	0.00
Female	0.54	0.53	0.56	0.44	0.03
Born in Germany	0.87	0.96	0.98	0.99	0.00
City size $\geq 100,000$	0.25	0.36	0.39	0.35	0.01
Partner in household	0.55	0.45	0.59	0.78	0.00
Parent(s) with university degree	0.34	0.32	0.29	0.23	0.00
Middle school degree	0.31	0.34	0.39	0.38	0.07
Univ. entrance degree	0.46	0.44	0.37	0.36	0.01
Full-time employed	0.21	0.11	0.09	0.06	0.00
Part-time employed	0.07	0.06	0.05	0.05	0.32
Self-employed	0.08	0.04	0.05	0.03	0.01
Unemployed	0.32	0.45	0.50	0.54	0.00
Retired/Ill/etc.	0.32	0.34	0.32	0.31	0.95
Parent status	0.50	0.52	0.62	0.77	0.00
Patience	7.75	7.09	6.30	4.66	0.00
Risk tolerance	5.07	4.78	4.61	4.01	0.00
Monthly household Income (ϵ)	2.61	2.41	2.39	3.02	0.00
West Germany	0.92	0.86	0.75	0.71	0.00
Work in education sector	0.11	0.08	0.07	0.12	0.60
No party preference	0.16	0.24	0.28	0.25	0.00
Right leaning party	0.46	0.24	0.30	0.34	0.00
Left leaning party	0.18	0.32	0.29	0.29	0.00
General voting	0.85	0.88	0.87	0.87	0.58
Educ. important for vote	0.72	0.69	0.70	0.69	0.37
Trust in government	0.37	0.28	0.29	0.34	0.47

 Table 7: Covariates by ntiles (policy preferences)

Notes: Variables included in the causal forest estimations (policy preferences). Mean value of variables for four groups split according to the predicted Conditional Average Treatment Effect. P-value for difference between first and fourth group. Data source: ifo education survey 2019.

Variable	
Age	0.17
Patience	0.17
Monthly household Income (ϵ)	0.14
Risk tolerance	0.12
West Germany	0.05
Born in Germany	0.05
Full-time employed	0.03
Right leaning party	0.03
City size $\geq 100,000$	0.03
No party preference	0.02
Educ. important for vote	0.02
Parent(s) with university degree	0.02
Part-time employed	0.02
Female	0.02
Partner in household	0.02
Parent status	0.02
General voting	0.01
Middle school degree	0.01
Trust in government	0.01
Retired/Ill/etc.	0.01
Univ. entrance degree	0.01
Unemployed	0.01
Left leaning party	0.01
Work in education sector	0.01
Self-employed	0.00
No degree	0.00

Table 8: Variable Importance (policy
preferences)

Notes: Variable importance measure (policy preferences) for the Causal Forest. Data source: ifo education survey 2019.

Appendix A: Derivation of information treatments on educational inequality

Our randomized information treatment informs respondents about the gaps in academic school (*Gymnasium*) attendance rates of 15-year-old children in the lowest and highest 50 percent of family SES status. The treatment, *the unconditional gap treatment*, informs participants that 49 percent of students from the more advantaged half of all families (in terms of their social background and family income) attend a *Gymnasium* while only 19 percent of students from the less advantaged half of all families do so. This yields an unconditional SES gap of 30 percentage points.

The information on the unconditional gap provided in the treatment could, for instance, reflect the fact that low SES students perform worse in school and are therefore less likely to attend the *Gymnasium*. Alternatively, it could reflect SES differences in behavioral barriers (e.g., institutional knowledge of parents) that are unrelated to student achievement.

The treatment uses the connection between children's school attendance and their parents' socioeconomic status as a measure for educational inequality. The focus on academic school attendance captures an important dimension of equality of opportunity since *Gymnasium* attendance is a crucial step towards obtaining the university entrance degree and, thus, also important for later life income (e.g., Dodin et al. 2021).

To calculate the gap in academic school attendance rates, we use data from the Programme for International Student Assessment (PISA) conducted by the Organisation for Economic Cooperation and Development (OECD) in 2015. For the SES split, we use the PISA index of economic, social and cultural status (ESCS), a composite measure of home possessions including books at home, the highest parental occupation, and the highest parental education. We first rank German children according to their points in this index and then perform a median split of students. We calculate that 19 percent children with an SES index score below the median and 49 percent of children with an index score above the median attend a *Gymnasium*. Measuring educational inequality as socioeconomic differences in *Gymnasium* attendance has a major advantage. In contrast to achievement measures, e.g., PISA test scores as used, for instance, by Lergetporer et al. (2020), Gymnasium attendance rates are easily interpretable for the general population. In the public debate, differences in academic school attendance rates are frequently used by the media to report on the extent of educational inequality. For instance, the newspaper ZEIT has several reports on the so-called *Bildungstrichter* ("education hopper") with an essential component of this hopper constituting the difference in *Gymnasium* attendance between high and low SES students (see, e.g., Die Zeit, 9 May 2018, https://www.zeit.de/gesellschaft/2018-05/chancengleichheit-herkunft-elternhaus-universitaetakademikerfamilie [accessed 25 January 2022]). At the same time, our respondents are well aware about the educational implications of *Gymnasium* attendance. In a corresponding guess question, our survey participants estimate that 51 percent of students attending a *Gymnasium* will receive a university degree whereas only 39 percent of students attending all other school types (other than *Gymnasium*) will receive a university degree.

Appendix B: Causal Forest Algorithm

We use the Causal Forest algorithm, proposed by Athey and Imbens (2016), Wager and Athey (2018), and Athey et al. (2019), to estimate the Conditional Average Treatment Effects (CATE). With this algorithm, we apply the "honest" approach and grow so-called "honest trees": One part of the training data is used for building and growing the best fitting tree, i.e., it is used to determine the splits in the tree (Davis and Heller 2017). The other part is used to estimate the treatment effects within each leaf of the tree (Athey and Imbens 2016; Wager and Athey 2018). We include the following baseline characteristics in the estimation: age, female, born in Germany, West Germany, living in large city, risk, patience, parents with university education, income, current employment status (full time, part time, self-employed, unemployed, retired/ill/etc.), middle school degree, high school degree, partner living in household, parental status, work in education sector, trust in governance, education important for vote, general voting behavior. We split the data set into 60 percent training and 40 percent test observations and evaluate the results on the test set. We set the number of trees equal to 10,000. The number of variables that the algorithms examines at each split is set to 22 (all covariates).

Appendix Figure A1: The German schooling system



Notes: The figure gives an overview of the school system in Germany. After elementary school which takes four years (only in a few states six years), students are tracked into three different school types: The basic and intermediate track last to grades 9 and 10, respectively, and prepare students for apprenticeship training or other forms of vocational education. The academic track ends with grade 13 (or 12) and directly leads to the university entrance qualification. Later track switching is, in principle, possible, enabling graduates from the basic and intermediate track to continue on to the next higher track, respectively, and/or obtaining their university entrance qualification via the specialized high track. Source: Grewenig (2021).

Appendix Figure A2: Experimental design



Appendix Figure A3: Illustration of the information treatments

Panel A: Unconditional SES gap in Gymnasium attendance



Source: ifo Education Survey 2019



Appendix Figure A4: Distribution of prior beliefs about educational inequality

Notes: Histogram of the distribution of beliefs about academic school attendance (*Gymnasium*) rates for students with different family background. Wording: Think of a comparison between children from the better and worse off half of all families (in terms of social background and family income). What do you think is the percentage of students from... (i) the more advantaged half of all families who attend a *Gymnasium*?" The blue vertical line indicates the correct answers. Data source: ifo Education Survey 2019.

Appendix Figure A5: Educational reform proposals in Germany

Panel A: Suitability of reform proposal to increase equality of opportunity



Panel B: Suitability of reform proposal to increase average student performance



Notes: Question wording: "And how suitable do you think the reform proposals are for increasing equal opportunities in the German education system?" (Panel A); "And how suitable do you think the reform proposals are for raising the performance level in the German education system?" (Panel B). Data source: ifo Education Survey 2019

	Microcensus	Analysis sample
	(1)	(2)
Age	50.764 (0.030)	53.067 (0.327)
Female	0.513 (0.001)	0.531 (0.011)
Living in West Germany (excl. Berlin)	0.801 (0.001)	0.796 (0.009)
Net household income above median	0.479 (0.001)	0.438 (0.011)
Educational attainment		
University entrance degree (Fachabitur/Abitur)	0.326 (0.001)	0.413 (0.011)
Middle school degree (Mittlere Reife)	0.299 (0.001)	0.352 (0.010)
No degree / basic degree	0.375 (0.001)	0.234 (0.009)
Working full-time	0.421 (0.001)	0.323 (0.010)
Observations	405,748	2,094

Appendix Table A1: Comparison of analysis sample to Microcensus data

Notes: Means; standard errors in parentheses. Column (1): all people aged 18 or older in the Microcensus 2015 (representative of the German population). Column (2): our analysis sample. Data sources: Microcensus 2015 and ifo Education Survey 2019.

	Control	Control Uncond. SES Gap		
	Mean	Mean	Diff.	p-value
Age	53.18	52.95	-0.24	0.72
Female	0.52	0.55	0.03	0.20
Born in Germany	0.95	0.96	0.01	0.54
City size $\geq 100,000$	0.34	0.39	0.05	0.03
Partner in household	0.59	0.58	-0.01	0.64
Parent(s) with university degree	0.28	0.30	0.03	0.18
Highest educational attainment				
No degree/basic degree	0.23	0.24	0.01	0.71
Middle school degree	0.37	0.34	-0.03	0.15
Univ. entrance degree	0.40	0.42	0.02	0.29
Employment status				
Full-time	0.33	0.32	-0.01	0.78
Part-time	0.12	0.14	0.02	0.22
Self-employed	0.05	0.06	0.01	0.61
Unemployed	0.05	0.04	-0.01	0.32
Retired/Ill/etc.	0.45	0.44	-0.01	0.72
Parent status	0.61	0.59	-0.02	0.44
Party preference				
CDU	0.17	0.19	0.01	0.46
SPD	0.18	0.15	-0.04	0.03
Grüne	0.14	0.16	0.01	0.47
Linke	0.10	0.10	0.00	0.86
FDP	0.06	0.05	-0.01	0.17
AfD	0.09	0.11	0.02	0.16
None	0.22	0.23	0.00	0.94
Other	0.02	0.02	0.01	0.22
Educ. Important for vote	0.70	0.72	0.02	0.26
General Voting	0.87	0.87	0.00	0.94
Patience	6.51	6.35	-0.16	0.10
Risk tolerance	4.60	4.74	0.14	0.22
Monthly household income (\in)	2556.21	2567.73	11.52	0.86
West Germany	0.79	0.80	0.01	0.52
Work in education sector	0.10	0.10	0.00	0.92
Trust in government	0.32	0.32	0.00	0.93

Appendix Table A2: Respondent characteristics across treatment arms

Notes: Group means. 'Diff.' displays the difference in means between the control group and respective treatment groups.

	Respondent participated in follow-up survey		
	(1)		
Treatments			
Uncond. SES gap	0.017	(0.018)	
Covariates			
Age	0.005***	(0.001)	
Female	-0.002	(0.015)	
Born in Germany	0.041	(0.039)	
City size $\geq 100,000$	-0.030**	(0.015)	
Partner in household	-0.006	(0.017)	
Parent(s) with university degree	0.001	(0.016)	
Highest educational attainment			
No degree/basic degree	0.000	(.)	
Middle school degree	0.079***	(0.020)	
Univ. entrance degree	0.087***	(0.022)	
Employment status			
Full-time	0.006	(0.035)	
Part-time	0.005	(0.039)	
Self-employed	0.000	(.)	
Unemployed	0.006	(0.049)	
Retired/Ill/etc.	-0.014	(0.034)	
Parent status	0.007	(0.017)	
Party preference			
CDU/CSU	-0.051*	(0.031)	
SPD	-0.053*	(0.032)	
Grüne	-0.055*	(0.032)	
Linke	-0.080**	(0.036)	
FDP	0.000	(.)	
AfD	-0.022	(0.035)	
None	-0.061*	(0.032)	
Other	0.047	(0.047)	
Educ. Important for vote	-0.014	(0.016)	
General voting	0.007	(0.025)	
Patience	-0.002	(0.003)	
Risk tolerance	-0.002	(0.003)	
Monthly household income (\mathbf{f})	0.000	(0.000)	
West Germany	-0.015	(0.018)	
Working in education sector	-0.037	(0.025)	
Trust in government	0.036**	(0.016)	
Observations	2,094		
R-squared	0.000		

Appendix Table A3: Participation in the follow-up survey

Notes: Dependent variable: dummy variable coded one if respondent participated in the follow-up survey. Robust standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

	Control	Uncond. SES Gap		
	Mean	Mean	Diff.	p-value
Age	54.70	53.94	-0.76	0.27
Female	0.52	0.54	0.03	0.30
Born in Germany	0.96	0.96	0.00	0.85
City size $\geq 100,000$	0.33	0.37	0.04	0.06
Partner in household	0.60	0.58	-0.02	0.50
Parent(s) with university degree	0.28	0.31	0.04	0.10
Highest educational attainment				
No degree/basic degree	0.21	0.22	0.01	0.47
Middle school degree	0.38	0.36	-0.02	0.29
Univ. entrance degree	0.41	0.42	0.01	0.67
Employment				
Full-time	0.33	0.31	-0.01	0.56
Part-time	0.12	0.13	0.02	0.33
Self-employed	0.05	0.06	0.01	0.38
Unemployed	0.05	0.04	-0.01	0.59
Retired/Ill/etc.	0.46	0.45	-0.01	0.77
Parent	0.63	0.61	-0.02	0.42
Political preference				
CDU	0.18	0.19	0.01	0.77
SPD	0.18	0.15	-0.03	0.10
Grüne	0.15	0.15	0.00	0.84
Linke	0.09	0.10	0.01	0.36
FDP	0.07	0.05	-0.01	0.27
AfD	0.10	0.11	0.01	0.54
None	0.21	0.22	0.01	0.71
Other	0.02	0.03	0.01	0.12
Educ. Important for vote	0.69	0.72	0.03	0.14
General Voting	0.88	0.87	-0.01	0.63
Patience	6.44	6.37	-0.08	0.47
Risk tolerance	4.51	4.74	0.24	0.07
Monthly household income (\mathbf{f})	2613.71	2582.28	-31.43	0.68
West Germany	0.79	0.79	0.01	0.69
Work in education sector	0.09	0.09	0.00	0.99
Trust in government	0.33	0.32	-0.02	0.49
Follow-up survey	0.79	0.81	0.02	0.33
Follow-up survey (incl controls)	0.62	0.64	0.02	0.25

Appendix Table A4: Respondent characteristics across treatment arms in the follow-up sample

Notes: Group means. 'Diff.' displays the difference in means between the control group and respective treatment groups. Sample: Follow-up survey participants.

	Circumstances	Mainly	Rather	Rather	Mainly
	decisive	circumstances	circumstances	effort	effort
	(1)	(2)	(3)	(4)	(5)
Panel A: High Educa	tional Degree				
Uncond. SES gap	0.123***	0.033***	0.090***	-0.023	-0.100***
	(0.018)	(0.008)	(0.017)	(0.022)	(0.020)
Covariates	Yes	Yes	Yes	Yes	Yes
Control mean	0.173	0.020	0.153	0.435	0.391
Observations	2094	2094	2094	2094	2094
R-squared	0.060	0.019	0.048	0.014	0.053
Panel B: High Income					
Uncond. SES gap	0.036*	0.011	0.025	-0.036*	-0.000
	(0.021)	(0.011)	(0.020)	(0.021)	(0.018)
Covariates	Yes	Yes	Yes	Yes	Yes
Control mean	0.350	0.058	0.291	0.424	0.227
Observations	2093	2093	2093	2093	2093
R-squared	0.040	0.018	0.026	0.021	0.029

Appendix Table A5: Effect of information treatment on fairness views: Robustness of outcome coding

Notes: OLS regressions. Dependent variables: (1) dummy variable coded one if respondent thinks that mainly/rather external circumstances (luck) are decisive, (2) - (5) dummy variable coded 1=answer category given in respective table header, 0 otherwise. Control mean: mean of the outcome variable in the control group. See Tabl 1 for included covariates. Data source: ifo Education Survey 2019. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

	Perceived role of external circumstances (education)			
	(1)	(2)	(3)	
Prior belief: Academic school attendance high SES	0.001**			
	(0.001)			
Prior belief: Academic school attendance low SES		-0.002***		
		(0.001)		
Prior belief: SES gap in academic school attendance			0.002***	
			(0.001)	
Covariates	No	No	No	
Observations	1050	1050	1050	
R-squared	0.004	0.008	0.013	

Appendix Table A6: Correlations between beliefs about educational inequality and fairness views

Notes: OLS regressions. Dependent variables (1) - (3): dummy variable coded one if respondent thinks that mainly/rather external circumstances are decisive for high educational attainment. Data source: ifo Education Survey 2019. Sample: Control group respondents. Robust standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

	Circumstances decisive for high education				Average donations		Support inequality-reducing policies		
	Left-	Right-	No	Left-	Right-	No	Left-	Right-	No
	leaning	leaning	attachment	leaning	leaning	attachment	leaning	leaning	attachment
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Uncond. SES gap	0.169***	0.079***	0.119***	3.424	2.847	1.453	-0.010	-0.014	0.013
	(0.030)	(0.029)	(0.037)	(2.218)	(2.444)	(2.983)	(0.024)	(0.035)	(0.044)
Covariates	No	No	No	No	No	No	No	No	No
Control mean	0.200	0.141	0.148	41.390	35.161	33.428	0.862	0.692	0.627
Observations	868	710	472	867	710	472	868	710	472
R-squared	0.035	0.011	0.021	0.003	0.002	0.001	0.000	0.000	0.000

Appendix Table A7: Effect of information treatment on fairness views and preferences for redistribution by political ideology

Notes: OLS regressions. Dependent variables: (1) - (3) dummy variable coded one if respondent thinks that mainly/rather external circumstances (luck) are decisive for high educational attainment, (4) - (6) amount of donations stated by respondents (in lifepoints), (7) - (9) dummy variable coded one if respondent is mainly/rather in favor of inequality-reducing policies. Control mean: mean of the dummy variable for the control group. See Table 1 for included covariates. Data source: ifo Education Survey 2019. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

	Circumstances decisiv	e for high education	Average d	lonations	Support inequality-reducing policies		
	Parents w/o	Parents w/	Parents w/o	Parents w/	Parents w/o	Parents w/	
	university entrance	university	university entrance	university	university entrance	university entrance	
	degree	entrance degree	degree	entrance degree	degree	degree	
	(1)	(2)	(3)	(4)	(5)	(6)	
Uncond. SES gap	0.109***	0.145***	3.975**	-0.447	-0.011	-0.025	
	(0.021)	(0.035)	(1.689)	(2.702)	(0.023)	(0.035)	
Covariates	No	No	No	No	No	No	
Control mean	0.167	0.189	36.897	39.069	0.747	0.763	
Observations	1486	608	1485	608	1486	608	
R-squared	0.017	0.027	0.004	0.000	0.000	0.001	

Appendix Table A8: Effect of information treatment on fairness views and preferences for redistribution by educational attainment

Notes: OLS regressions. Dependent variables: (1) - (2) dummy variable coded one if respondent thinks that mainly/rather external circumstances (luck) are decisive for high educational attainment, (3) - (4) amount of donations stated by respondents (in lifepoints), (5) - (6) dummy variable coded one if respondent is mainly/rather in favor of inequality-reducing policies. Control mean: mean of the dummy variable for the control group. See Table 1 for included covariates. Data source: ifo Education Survey 2019. Robust standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.10.

	Circumstances decisive for high education		Average	donations	Support inequality-reducing policies		
	High trust in	Low trust in	High trust in	Low trust in	High trust in	Low trust in	
	government	government	government	government	government	government	
	(1)	(2)	(3)	(4)	(5)	(6)	
Uncond. SES gap	0.131***	0.098***	1.965	4.164*	-0.021	-0.003	
	(0.022)	(0.032)	(1.739)	(2.470)	(0.024)	(0.031)	
Covariates	No	No	No	No	No	No	
Control mean	0.175	0.170	35.150	42.491	0.730	0.798	
Observations	1422	672	1421	672	1422	672	
R-squared	0.024	0.014	0.001	0.004	0.001	0.000	

Appendix Table A9: Effect of information treatments on fairness views and preferences for redistribution by trust in government

Notes: OLS regressions. Dependent variables: (1) - (2) dummy variable coded one if respondent thinks that mainly/rather external circumstances are decisive for high educational attainment, (3) - (4) amount of donations stated by respondents (in lifepoints), (5) - (6) dummy variable coded one if respondent is mainly/rather in favor of inequality-reducing policies. Control mean: mean of the dummy variable for the control group. See Table 1 for included covariates. Data source: ifo Education Survey 2019. Robust standard errors in parentheses. Significance levels: *** p < 0.01, ** p < 0.05, * p < 0.10.