Fairness and family background

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Abstract
Fairness preferences fundamentally affect individual behavior and play an important role in shaping social and political institutions. However, people differ both with respect to what they view as fair and with respect to how much weight they attach to fairness considerations. In this article, we study the role of family background in explaining these heterogeneities in fairness preferences. In particular, we examine how socioeconomic background relates to fairness views and to how people make trade-offs between fairness and self-interest. To study this, we conducted an economic experiment with a representative sample of 14- to 15-year-old and matched the experimental data to administrative data on parental income and education. The participants made two distributive choices in the experiment. The first choice was to distribute money between *themselves* and *another* participant in a situation where there was no difference in merit. The second choice was to distribute money between two *other* participants with unequal merits. Our main finding is that there is a systematic difference in fairness view between children from low-socioeconomic status (SES) families and the rest of the participants; more than 50 percent of the participants from low-SES families are egalitarians, whereas only about 20 percent in the rest of the sample hold this fairness view. In contrast, we find no significant difference in the weight attached to fairness between children from different socioeconomic groups.

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Introduction

Fairness preferences fundamentally affect individual behavior and play a crucial role in shaping social and political institutions. Importantly, it is well documented from economic experiments that most people are motivated by fairness considerations and are willing to sacrifice personal gains in order to eliminate income inequalities they view as unfair (Bolton and Ockenfels, 2000; Engelmann and Strobel, 2004; Fehr and Schmidt, 1999), but it is also shown that most people view some income inequalities as fair (Cappelen et al., 2007; Cherry et al., 2002; Frohlich et al., 2004; Konow, 2000). There is considerable heterogeneity both with respect to how much weight people attach to fairness considerations relative to their self-interest and with respect to what people view as fair (Cappelen et al., 2007, 2010, 2013a; Engel, 2011), and in this article we study the role of family background in explaining these heterogeneities in fairness preferences.

In order to examine this relationship, we conducted a real effort fairness experiment with a representative sample of 14–15-year olds and matched the behavioral data to administrative data on parental income and education. The distribution phase of the experiment had two parts. In the first part, participants anonymously distributed money between themselves and another participant, where both had made the same contribution to the pool of money being distributed. Since it is commonly assumed that an equal split is the fair allocation in such a situation, the share given to the other participant provides us with a measure of the weight the participants attach to fairness considerations relative to self-interest. In the second part, participants distributed money between two other participants with unequal merits, that is, they had made unequal contributions to the pool of money being distributed. This allows us to identify the participants' fairness views, specifically whether they are meritocrats finding inequalities reflecting differences in merit to be fair, or egalitarians.

Our main finding is that there is a large and significant difference in the fairness views across groups with different family background: participants from low-socioeconomic status (SES) families are much more likely to have an egalitarian fairness view and consider an equal distribution as fair in a situation with unequal merits; more than 50 percent of the participants from low-SES families are egalitarians, whereas only about 20 percent in the rest of the sample hold this fairness view. We do, however, not find any socioeconomic gradient in the weight attached to fairness between adolescents with different socioeconomic background.

To the best of our knowledge, this is the first article to study the relationship between fairness preferences and family background on a sample of adolescents. Our findings contribute to the literature on how fairness preferences differ between groups within and across societies (Cappelen et al., 2013b; Engel, 2011; Henrich et al., 2005). The study also contributes to the extensive literature on the development of children's fairness preferences in psychology (Damon, 1977; Eisenberg et al., 1995; Gilligan, 1982; Hook and Cook, 1979; Kohlberg, 1984; Mikula, 1972; Moore et al., 1993; Piaget, 1965) and, more recently, in behavioral economics (Almås et al., 2010; Bauer et al., 2014; Benenson et al., 2007; Fehr et al., 2008; Fehr et al., 2013; Harbaugh et al., 2007; Sutter and Kocher, 2007; Sutter, 2007). This literature has shown that children tend to become more prosocial with age in early childhood and more meritocratic and inequality accepting in

adolescence. The present article contributes to our understanding of how fairness prefer-
ences are shaped in childhood by documenting a strong association between children's
socioeconomic background and their fairness views.

Experimental design

To study the participants' fairness preferences, we conducted an experiment with a pro-
duction phase and a distribution phase. In the production phase, the participants were
given limited time to work on a simple task, which consisted of counting the number
of black squares in a matrix shown on their screen. The participants were told the follow-
ing before the task:

> The task is to count how many black squares there are in a matrix that will be shown to
> you on the screen. When you have done this for a matrix, you should enter the number in
> the field below the matrix. When you have counted for all the matrices, you hit the but-
> ton to continue. You will then get a new set of matrices. You can also choose to continue
> even if you haven't counted all matrices on one page. For each matrix you count cor-
> rectly, you will get one point. Your points will be updated on the screen each time you
> continue to a new page. On the screen you will also see a timer that tells you how much
> time you have left. When time is up, the computer will count your points, including those
> from the last page you were on. You will earn money on this task. What you earn con-
> sists of two parts. First, you will earn 50 NOK independent of how many correct answers
> you gave. If you get at least as many points as the average of what the other participants
> get in this session, you will earn 75 NOK extra. If you get less points than the average,
> you will earn 25 NOK extra. When you are done with the task, you must consider how
> the money you have earned should be distributed among participants (including yourself).
> What distributional choices you and others make will determine your actual payment
> from this part of the experiment. When you have read these instructions, you can hit the
> button to start working on the task.

After conducting the task, the participants took part in the distribution phase. The
distribution phase had two parts. In the first part, each participant was anon-
ymously matched with another participant and asked to decide how the sum of his
or her own fixed payment and the other participant's fixed payment, in total 100
NOK (approximately 8 USD at the time of the experiment), should be distributed
between the two of them. The participant was free to choose any distribution of the
money. Both participants in a pair made a decision about how the money should be
distributed and were told that one of the two decisions would be randomly drawn
at the end of the experimental session to decide the actual distribution of the
money in the pair.

   The key feature of this choice, which we refer to as the stakeholder choice, is that
there are no potential economic benefits of giving money to the other participant. If a
participant is narrowly selfish and only aims to maximize own income, he or she should
allocate everything to him- or herself. However, people typically also care about being
fair. In this situation, where the two individuals have made an equal contribution to the
sum of money being divided, it seems likely that most people consider it fair to divide the

money equally. The participants are thus placed in a situation where there is a trade-off between fairness considerations, which pull in the direction of giving half the money to the other participant, and self-interest, which pulls in the direction of giving nothing. How much a participant decides to give to the other participant can therefore serve as a measure of how much weight that participant places on fairness considerations relative to self-interest.[2]

In the second part of the distribution phase, each participant was asked to decide, as a spectator, how the bonus earned by two *other* participants should be distributed. They had to decide on a distribution for a pair where one participant had been less productive than the mean in the session and thus had earned the low bonus of 25 NOK, while the other participant had been at least as productive as the mean and had thus earned the high bonus of 75 NOK. The spectators were given a binary choice between a distribution equal to the earnings, giving 25 NOK to the least productive and 75 NOK to the most productive, or an equal division of 50 NOK to both participants.[3]

The key feature of the spectator choice is that the decision-maker has no stake in the situation. This implies that there is no trade-off between fairness and self-interest and the spectators can therefore be expected to choose the alternative they view as most fair. We can thus use the spectator choice to identify the fairness view of a participant. In particular, it enables us to examine whether he or she views inequality as fair when it reflects differences in merit.

We conducted 10 experimental sessions at NHH Norwegian School of Economics, where each session lasted for approximately 2 hours, and used a web-based interface.[4] All participants received a show-up fee of 50 NOK, in addition to what they earned in the experimental session. Neither participants nor experimenters could associate decisions with particular participants and this was common knowledge. Special care was taken so that the payment procedure ensured participant-experimenter anonymity. At the end of the experimental session, the computer assigned a payment code to each of the participants, and a group of assistants, who were not present in the lab during the experimental session, prepared envelopes containing the payments corresponding to each payment code. The assistants also made sure that it was impossible to identify the amount of money by simply looking at the envelope. After bringing the envelopes to the lab, the assistants immediately left and the envelopes were handed out in accordance with the payment codes.

Sample and background data

The participants' were recruited among Norwegian adolescents in 9th grade, that is, 14–15-year-olds. Nineth grade is compulsory in Norway and almost all children attend public schools (97.2 percent). We randomly selected 11 public middle schools in Bergen, which is the second largest city in Norway and close to the national average of the Norwegian urban population with respect to the distribution of income, education, and occupation. Two schools later withdrew due to practical circumstances. At each school, we randomly selected two classes and all the students in the selected classes received a personal invitation to participate in the experiment. Participation was voluntary and both

Table 1. Parental background: Comparison of sample and population.

	Father		Mother	
	Population	Sample	Population	Sample
A. Education				
Only compulsory education	0.158	0.151 (0.016)	0.170	0.169 (0.017)
Some secondary education	0.374	0.408 (0.022)	0.334	0.345 (0.021)
At least some college	0.4682	0.441 (0.022)	0.496	0.486 (0.022)
B. Income				
Mean income	632	624 (22)	407	364 (9)
10th percentile	279	302 (17)	190	173 (10)
25th percentile	394	403 (10)	286	245 (8)
50th percentile	519	527 (16)	381	342 (8)
75th percentile	736	754 (22)	481	433 (9)
90th percentile	1049	1009 (33)	615	541 (28)

Note: In panel A, we report the share of individuals in each category of education, where 'population' refers to the full population having children in the 1996 cohort in Bergen, weighted by the number of such children, and 'sample' refers to the parents of the 483 participants for whom we have data on family background. In panel B, we report the mean and the distribution of income in thousands 2009 NOK (from administrative data, using the social insurance definition of income). Standard errors in parentheses (for the sample only).

students and their parents had to consent to participation. The participation rate was high; 524 of 602 invited students took part in the experiment (87 percent).[5]

In collaboration with Statistics Norway, we matched the data from the experiment to Norwegian administrative data, which is a linked national administrative high-quality data set. We have detailed parental background information on education and income for 483 of the 523 children (477 of the 517 in the stakeholder choice).[6] Table 1 shows that our sample of parents is largely representative for the population in Bergen.

Our main definition of a low-SES family is that the family is in the bottom fifth of both the income and the education distribution, where family income is measured as the total income of the father and the mother and family education is measured as the total years of education of the father and the mother.[7] We focus on the bottom fifth of the education distribution since this captures a distinct group of families where one parent has no more than compulsory schooling and the other parent has no more than high school. In a highly educated society, such a family clearly has a low educational background. Some parents with only compulsory education do well in terms of income, however, and thus we also impose the restriction that the families are in the bottom fifth of the income distribution. According to our definition, 8 percent of the participants in our experiment are from low-SES families.

A model of distributive choice

To fix ideas, we present a simple model of how participants make decisions in the distribution phase of the experiment (see e.g. Almås et al., 2010; Cappelen et al., 2007;

Cappelen et al., 2013b for related model formulations). In the first part of the distribution phase, the participants make a choice as a stakeholder and we assume that stakeholders in such situations are motivated by own income and fairness considerations when deciding how to distribute the sum of earnings:

$$V^i(y; \cdot) = y - \beta^i f(|y - F^i|), \tag{1}$$

where, y is what the participant allocates to him- or herself and F^i is what the participant considers to be his or her fair income. The perceived unfairness is captured by the function $f(|y - F^i|)$, where we assume that the perceived unfairness is increasing in the absolute value of the difference between own income and fair income and $f(0) = 0$.

Participants may differ both in the weight they attach to fairness relative to self-interest (β^i) and in what they consider to be a fair distribution (F^i). We assume that the individuals either endorse an egalitarian fairness view $(F^i = F^E)$ that finds all inequalities unfair or endorse a meritocratic fairness view $(F^i = F^M)$ that finds fair inequalities reflecting differences in merit. In a situation where earnings reflect merit, we can write these positions as:

$$F^E = \frac{1}{2}X, \tag{2}$$
$$F^M = x_i, \tag{3}$$

where, x_i is the decision-maker's earnings.

In the stakeholder choice, both fairness views justify an equal split of the money since the two participants have equal earnings. The share of the money given by individual i therefore provides us with a measure of the weight attached to fairness considerations relative to self-interest, β^i.

In the spectator choice, however, the two fairness views have different implications, since the two individuals in the pair have unequal merits. The egalitarian fairness view (F^E) considers the fair distribution to be an equal division, while the meritocratic view (F^M) considers the fair distribution to be that the participants receive their earnings. Since self-interest plays no role for the spectators we assume that they simply minimize the perceived unfairness, the choice in the second part of the experiment thus reveals the participants' fairness view.

Results

We start by presenting some descriptive statistics of the behavior in the two choice situations before we examine the association between socioeconomic background and fairness preferences.

The top panels in Figure 1 provide an overview of the decisions made by participants in the two choice situations. The upper left panel in Figure 1 provides the histogram of the stakeholder choice for all participants. The average share given is 0.31, but we observe considerable heterogeneity in distributive behavior. About half of the participants, 51.8 percent, chose to share equally, while 33.3 of the participants chose to take everything for themselves. Most of the remaining participants chose to give about a quarter of the money to the other participant. The upper right panel in Figure 1 provides an overview of the decision made by the participants as spectators. We observe that only 27.0 percent of the participants chose the egalitarian alternative. Most participants thus
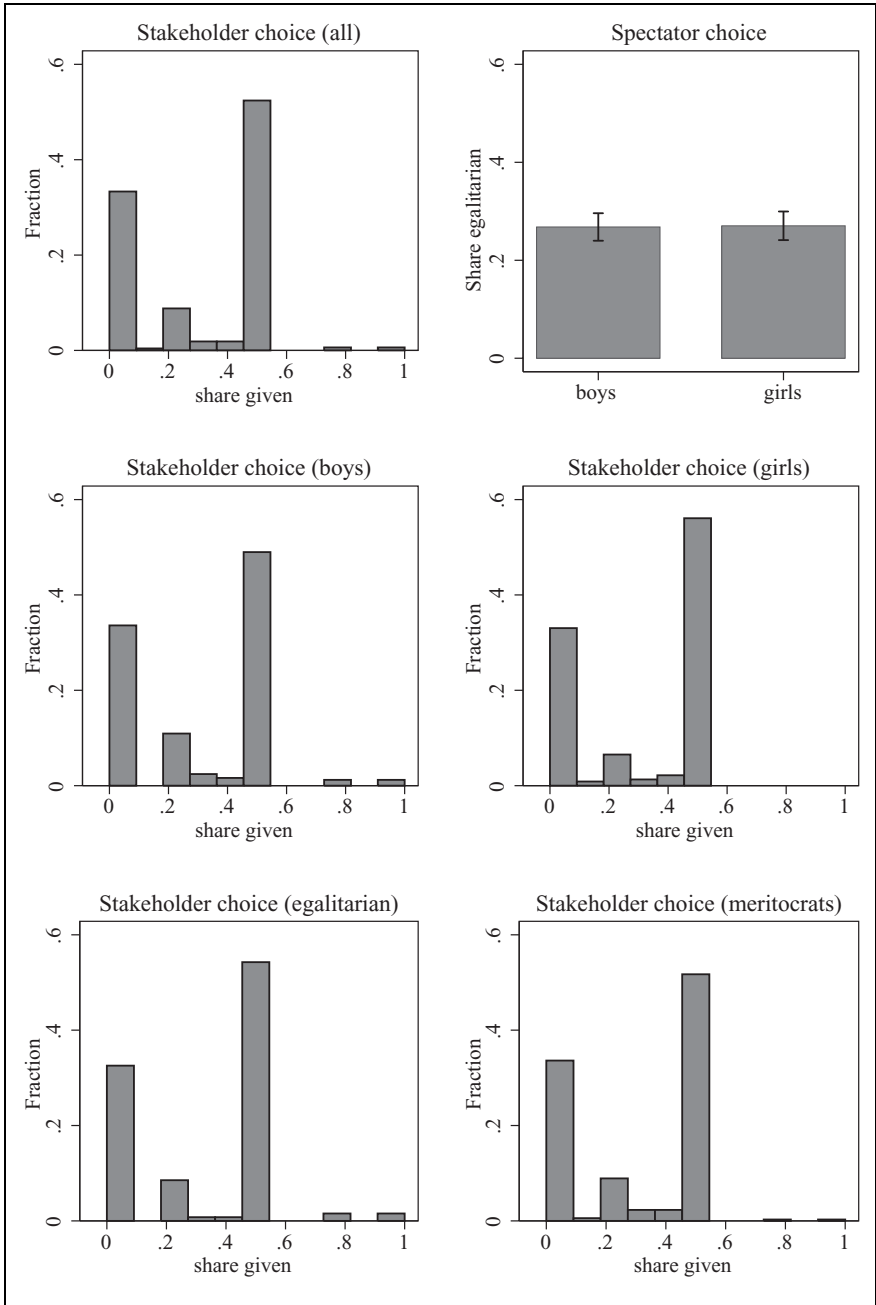
Figure 1. Descriptive statistics. The figure reports descriptive statistics for the stakeholder choice and the spectator choice; 'share given' is the share of the available money given to the other participant in the spectator choice and 'share egalitarian' is the share that divides equally in the spectator choice.
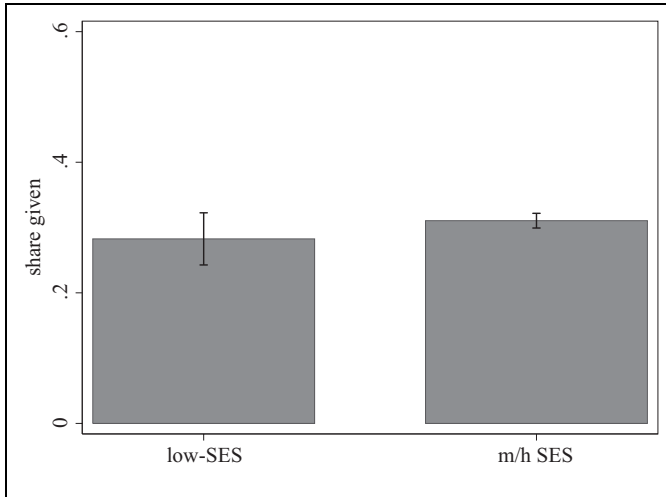
Figure 2. Differences in weight attached to fairness by SES. The figure reports the average share given to the other participant in the stakeholder choice by family background. A family is defined as low-SES if the family is in the bottom fifth of both the income and the education distribution, where family income is measured as the total income of the father and the mother and family education is measured as the total years of education of the father and the mother. The standard errors are indicated. SES: socioeconomic status.

find it fair that income is distributed unequally as long as the inequality reflects differences in merit.

From the second row in Figure 1, we observe that there is a striking similarity in the distribution of the stakeholder choice for girls and boys. While some previous studies have found that men on average are more selfish than women (Engel, 2011), this does not seem to be the case with Norwegian adolescents.[8] Nor do we find any gender difference in the spectator choice. The similarity in behavior for boys and girls could reflect the fact that Norway for a long time has been implementing gender equalizing policies.[9]

The two panels in the bottom row of Figure 1 report histograms of stakeholder choice by fairness view. We observe that the choice behavior is very similar for egalitarians and meritocrats (and not statistically significantly different), they give away 32.4 percent and 30.2 percent, respectively. There is, in other words, no correlation between the participants' fairness views and the weight they attach to fairness, which suggests that F^i and β^i in our model capture two distinct aspects of an individual's fairness preferences.

We now turn to the relationship between family background and fairness preferences, where we focus on the comparison between low-SES children and the rest of the participants.

In Figure 2, we report the share of the money that was given to the other participant in the stakeholder situation by SES group. We observe that participants from both low-SES and medium/high-SES families place a substantial weight on fairness. On average, the participants gave away about 30 percent of the total earnings and there is no statistical significant difference between the two groups (see Table 2). This is robust to the inclusion of

Table 2. Regressions of share given on individual characteristics.

	1	2	3	4	5
Low-SES	−0.028		−0.028		−0.029
	(0.041)		(0.041)		(0.041)
Female		0.004	0.004		
		(0.022)	(0.022)		
Productive				−0.016	−0.016
				(0.022)	(0.022)
Constant	0.311	0.306	0.309	0.317	0.319
	(0.011)***	(0.015)***	(0.016)***	(0.016)***	(0.016)***
Observations	477	477	477	477	477
R^2	0.001	0.000	0.001	0.001	0.002

Note: SES: socioeconomic status; ordinary least squares. Standard errors are in parentheses. The table reports robust OLS regressions of the share given to the other participant in the stakeholder choice on the participants' background characteristics. 'Low-SES' is a dummy for the participant's family being in the bottom fifth of both the income and the education distribution, where family income is measured as the sum of the income of the father and the mother and family education is measured as the sum of the years of education of the father and the mother. 'Female' is a dummy for the participant being a girl. 'Productive' is a dummy for the participant having at least as high score as the median in his or her session. Robust standard errors are reported in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

gender and productivity as controls (column 3 and 5, respectively). We observe, from columns 2 and 4, that there is no correlation between gender or productivity in the task and the share given to the other participant.

Our findings suggest that there is no socioeconomic gradient in the weight attached to fairness considerations. In Appendix A, we furthermore show that this result is robust to alternative definitions of low-SES (Table A1) and to including continuous measures of parental income and education (Table A2).

The absence of a social gradient in the share given to the other participant is striking since there are two arguments not captured by our model that one might think would cause the low-SES children to give less to the other participant than medium/high-SES children. First, one might think that low-SES children have higher marginal utility of money, which would strengthen the selfish argument and pull in the direction of giving away less. Second, one might think that the low-SES children would invoke a needs argument in their fairness consideration, which would provide a fairness argument for allocating more to themselves than to the other participant. Interestingly, none of these effects seems to be present in our experiment. The result is also surprising in light of Bauer et al. (2014), who find in a study in the Czech republic that children, aged 4–12 years, of parents with low education are more selfish. The different findings may, however, reflect that we study older children in a different cultural context.

In Figure 3, we report the share of participants who chose an equal split by SES group. We observe a large and statistically significant difference in the average share of egalitarians between low-SES children and the rest of the participants. Whereas more than 50 percent of the low-SES children chose the equal split, only about 20 percent of the rest of the participants did so. Column 1 in Table 3 confirms that the difference in the share of
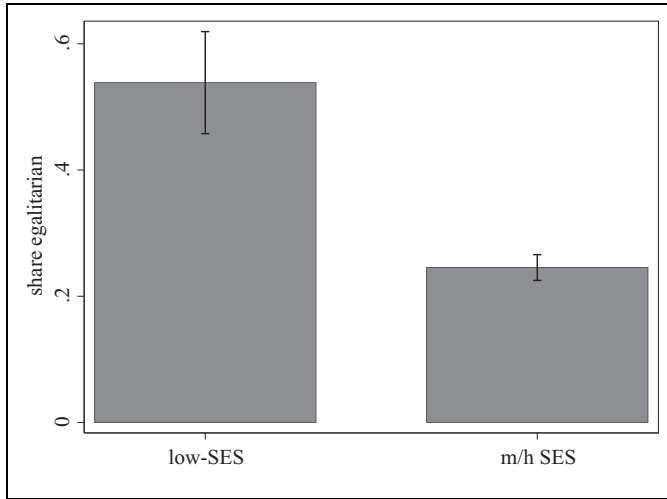
Figure 3. Difference in fairness views by SES. The figure reports the share of the participants who have an egalitarian fairness view and chose an equal split in the spectator choice by family background. A family is defined as low-SES if the family is in the bottom fifth of both the income and the education distribution, where family income is measured as the total income of the father and the mother and family education is measured as the total years of education of the father and the mother. The standard errors are indicated. SES: socioceconomic status.

Table 3. Regressions of fairness view on background characteristics.

	1	2	3	4	5
Low-SES	0.293		0.293		0.288
	(0.083)***		(0.083)***		(0.083)***
Female		0.002	0.004		
		(0.040)	(0.040)		
Productive				−0.101	−0.097
				(0.041)**	(0.040)**
Constant	0.245	0.268	0.243	0.323	0.298
	(0.020)***	(0.028)***	(0.028)***	(0.031)***	(0.031)***
Observations	483	483	483	483	483
R^2	0.032	0.000	0.032	0.013	0.044

Note: OLS: ordinary least squares. Standard errors are in parentheses. The table reports robust OLS regressions of the indicator value 'Egalitarian', taking the value one if the participant chose to divide equally in the spectator choice and zero otherwise, on the participants' background characteristics. 'Low-SES' is a dummy for the participant's family being in the bottom fifth of both the income and the education distribution, where family income is measured as the sum of the income of the father and the mother and family education is measured as the sum of the years of education of the father and the mother. 'Female' is a dummy for the participant being a girl. 'Productive' is a dummy for the participant having at least as high a score as the median in his or her session. Robust standard errors are reported in parentheses.
*$p < 0.10$; **$p < 0.05$; ***$p < 0.01$.

egalitarians by SES is statistically significant ($p < 0.01$). This result is robust to the inclusion of gender and productivity in the task as controls (columns 3 and 5, respectively).

In column 4 in Table 3, we also observe that there is a significant negative correlation between productivity and the likelihood of holding the egalitarian fairness view ($p < 0.05$). In other words, participants who would have benefited from an egalitarian distribution because they had the low bonus were more likely than others to act as an egalitarian when making a spectator choice. This result is consistent with a self-serving bias in the participants' fairness views (Babcock et al., 1995; Babcock and Loewenstein, 1997; Cappelen et al., 2013b; Dana et al., 2007; Konow, 2000; Messick and Sentis, 1983). However, as shown in column 5, this self-serving bias does not explain the association between low-SES and egalitarianism.

In Appendix A, we show that the association between low socioeconomic background and fairness is stronger for the father's background than for the mother's background and that having parents with low education has a stronger effect on the likelihood of being egalitarian than having parents with low income (Table A3). In Appendix A, we also report regressions of the likelihood of being egalitarian on parental income and education separately (see Table A2), where we find that both variables have a significant negative effect on the share of egalitarians. Finally, we do not find that other features of family background, such as the number of siblings or whether the participant is the oldest child in the family, have any significant effect on the likelihood of being egalitarian (see Table A4).

Concluding remarks

In this article, we have examined the distributive behavior of a representative group of Norwegian adolescents in two choice situations, a stakeholder situation and a spectator situation, and we have linked the data on their behavior to data on family background. The behavior in the two choice situations enable us to identify the participants' fairness views and the weight they attach to fairness relative to own income. Our main finding is that there is a systematic difference across family background groups in what is considered to be a fair distribution. Whereas more than 50 percent of the participants from low-SES families are egalitarians, only about 20 percent in the rest of the sample hold this fairness view. In contrast, we find no significant difference in the weight attached to fairness considerations by adolescents from low-SES families compared with the rest of the sample. An interesting avenue for future research is to study the extent to which these results also hold in other countries. In particular, whether the effect of socioeconomic background is different in less egalitarian societies than Norway.

In order to design optimal policies and understand the support for political and social institutions in society, it is important to have knowledge of what people view as fair and how fairness views differ across groups. The present study suggests that disagreement about redistributive welfare policies across different socioeconomic groups does not only derive from selfish considerations being sensitive to your position in the income distribution, it may also stem from different socioeconomic groups having different ideas of fairness. Specifically, low-SES people may find a high level of redistribution fair from their egalitarian fairness viewpoint, while high-SES people may find it unfair from their meritocratic fairness viewpoint.

Our findings contribute to the literature on how fairness preferences differ between groups and societies (Engel, 2011; Henrich et al., 2005). In particular, our findings are interesting in light of Cappelen et al. (2013b), who examine differences in adults' fairness views between rich and poor countries. This study shows that there are systematic differences between individuals in two of the richest countries in the world (Norway and Germany) and in two of the poorest countries in the world (Tanzania and Uganda), with individuals from the poor countries being more egalitarian than individuals from the rich countries. The association between low-SES and egalitarianism in the present article shows a similar relationship among adolescents within a country.

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Declaration of Conflicting Interests

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Notes

1. We also have an online Appendix A (with supplementary tables) and an online Appendix B (with instruction for the experiment). Both are available with the working article version at the Choice Lab website, http://thechoicelab.no/.
2. Note that the stakeholder design is not well suited to identify the fairness view of the participants, specifically whether they are egalitarian or meritocrats. First, participants in this setting are influenced by both self-interest and fairness (which means that even egalitarians may not choose an equal split). Second, both meritocrats and egalitarians agree that an equal split is fair in this situation since both participants have made the same contribution.
3. Note that we compare with the mean productivity in the session, not the median productivity. Consequently, we could not guarantee that there were exactly 50 percent high earners and 50 percent low earners; in the experiment, we had 56.7 percent high earners. When constructing

spectator situations, some of the high earners were assigned to more than one situation. For these participants, we randomly selected one of the situations to determine their payout from this part of the experiment.

4. The experimental session consisted of a sequence of experiments, see Appendix B and Almås et al. (2015) for a discussion of all the experiments.

5. Six participants could not be paired for the stakeholder choice due to uneven numbers in six sessions, and we had to exclude one observation from the experiment for administrative reasons. This results in an experimental sample of 523 for the spectator choice and 517 for the stakeholder choice.

6. For 28 children, we have incomplete background information, whereas 12 children could not be matched to the administrative data.

7. The main results in the article are robust to alternative cutoffs for low-SES, including defining low-SES families as the bottom 30 percent or bottom 40 percent of both the income and the edcation distribution.

8. The lack of a gender effect on selfish behavior is consistent with the results from a previous study of fairness preferences among Norwegian adolescents (Almås et al., 2010).

9. In 2012, Norway ranked highest on the gender equality index of the UN comprising measures of educational attainment, labor market participation, and health. For further details on the gender equality index, see http://hdr.undp.org/en/media/.

Supplemental material

The online appendices are available at http://thechoicelab.no/

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