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Social preferences, support for redistribution, and attitudes towards vulnerable groups

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Abstract

In this work, I explore the explanatory power of experimentally-elicited social preferences over self-reported support for redistribution. Social preferences are obtained by means of a simplified dictator game embedded in an online survey that also includes a questionnaire on preferences for redistribution, beliefs, inequality perceptions, and ideological positioning. I find that social preferences covary strongly with self-reported support for increased taxation. Besides, more generous social preference types are more likely to have favourable views towards specific welfare beneficiaries, especially those usually regarded as less deserving, such as migrants, the unemployed, or the poor. Some elements that correlate negatively with preferences for redistribution are being older than 65, having a right-wing ideology, believing that personal effort is the main driver of one's economic position, and distrusting others; while being a parent or perceiving high inequality have the opposite effect. Social preferences help thus further understand public support for redistribution and the political feasibility of redistributive policies.

Keywords: Social Preferences, Preferences for Redistribution, Solidarity, Support for Migration, Altruism, Survey Experiment.

JEL-classification: C91, D30, D63, D64, H50.

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1 Introduction

The fact that stated preferences for redistribution vary widely within and between countries is well documented by now[1]. The multiple survey studies carried out both at the national and international level usually suggest that, while most citizens favour redistribution to some extent, individual heterogeneities should not be ignored. Many efforts have been exerted into unravelling the influence of different determinants on preferences for redistribution. One possible explanation of the divergence are polarized views about the sources of income inequality that require state compensation.[2] Citizens also differ in their redistributive views as a consequence of their perceptions about the extent to which one's economic position is due to elements within or beyond one's control and responsibility.[3] The connection between support for redistribution and beliefs about the prevalence and fairness of different sources of inequality has been studied in the recent decades making use of extensive opinion surveys, often finding a strong positive correlation between the belief that one's economic position is driven by personal effort and support for lower levels of redistribution (Piketty, 1995; Fong, 2001; Bénabou and Tirole, 2006; Alesina and La Ferrara, 2005; Alesina and Angeletos, 2005; Alesina and Giuliano, 2011). The perceived level of inequality also plays a role in explaining diverging support for redistribution: citizens can be biased in their assessment of income differences and their own position in society, and it is this inaccurate perception of inequality that drives their support for redistribution (Cruces et al., 2013; Niehues, 2014; Durante et al., 2014; Kuziemko et al., 2015).

Support for redistribution usually refers to the willingness to accept higher taxes aimed at reducing income differences in society and thus connects to ideas about the preferred level of state intervention. Nevertheless, solidaristic attitudes can vary widely depending on the perceived deservingness of the potential welfare recipients (Van Oorschot, 2006; Petersen, 2012). The divide between the deserving and undeserving poor seems to be well grounded in society, with certain

[1] See Schokkaert and Tarroux (2022) for a recent overview.

[2] In this sense, in the responsibility-sensitive fairness view, sources driven by luck and circumstances, such as the place of birth or parental background, are considered unfair and worth compensation, while sources related to individual effort are fair and to be held responsible for. For a discussion on responsibility-sensitive ideas, Equality of Opportunity theory and luck egalitarianism, see Roemer (1998); Fleurbaey (2008); Roemer and Trannoy (2015); Ferreira and Peragine (2016).

[3] The self-motivated belief that individual effort is ultimately rewarded by achieving success and a good economic position is defined as the "belief in a just world" by Lerner (1980).

social groups usually regarded in more favourable ways than others. We find already in the Poor Laws, passed in the United Kingdom in 1834, a clear divide between citizens who deserve help and those who don't. The elderly, the sick or disabled, and children were to be found among the former, while those who were considered able to work but not willing to, such as the unemployed or the "idle", were included in the latter (Waxman, 1983; Katz, 1989). With data from the British Attitudinal Survey, Hills (2002) confirms that this ranking persists nowadays, as is the case in many other Western countries (van Oorschot, 2000).

Recently, migrants have probably become the least supported group due, among other factors, to ideas about identity (Van Oorschot, 2006), perceptions about their cultural, religious, and economic characteristics (Alesina et al., 2018), and (biased but malleable) ideas about their impact on the labour market (Haaland and Roth, 2020). In this sense, opinions about which inequality sources deserve state compensation matter to determine attitudes towards different vulnerable groups. One could speculate that citizens with a strong belief that personal effort is the main driver of one's economic success might be less sympathetic with certain welfare recipients and more willing to blame them for their bad situation. However, little is known about both the *degree* of solidarity towards different groups as well as the magnitude and drivers of the *universality* defining these solidaristic attitudes, that is, the extent to which support is homogeneous across groups.

The aforementioned literatures rely almost exclusively on stated opinions in usually large, international surveys to understand fairness and redistributive ideas as well as their determinants. While beliefs and perceptions of individuals as directly reported in questionnaires can be very insightful, they are also limited. In this regard, recent contributions have started to explore the possibilities offered by simple experimental designs, embedded in online surveys, aimed at measuring inequality aversion and social preferences (see Schokkaert and Tarroux (2022) for an overview).

Experimentally-elicited social preferences[4], defined as one's concern not just for one's resources but also for those of others, have been shown to be an interesting predictor of support for redistribution and political outcomes. The rationale behind this association would be the plausible connection between one's willingness to share resources with others and one's idea of a society where resources are shared through redistribution. Müller and Renes (2021) identify that the

[4] Also called other-regarding or redistributive preferences.

predominant attitude in a modified dictator game is inequality aversion, especially among left-wing respondents, while efficiency-seekers are less likely to support an increase of the income tax or reductions of inequality. Fisman et al. (2017) also show that experimentally-elicited inequality aversion relates to political behaviour by predicting vote for Obama in the 2012 election and affiliation to the Democratic party, although their measure of altruism doesn't seem to connect solidly with stated support for redistribution. Almås et al. (2020) show that Americans tolerate more inequality than Norwegians on average, and that this is explained by their diverging fairness views, rather than by the weight put on equality versus efficiency. In what refers to political outcomes, conservative respondents of both countries tolerate higher inequality. Kerschbamer and Müller (2020), with a non-parametric identification of social preferences, provide relevant evidence that individuals who behave in a selfish manner in an experimental setting are likely to show lower levels of support for redistribution, have less favourable views about migrants, and vote for right-wing options.

This study contributes to the expanding experimental literature on the nature and prevalence of social preferences and their demographic, socio-economic, and ideological correlates [5]. Also, it adds to the empirical work that relates self-reported support for redistribution and experimentally-observed social preferences by implementing a non-parametric elicitation methodology. This tool enables a straight-forward identification of social preferences with a very low cognitive burden for respondents. Finally, it expands the discussion on the drivers of perceived deservingness of different welfare recipients and the universality of solidarity. As some of the papers mentioned, it combines a experimental approach for the identification of social preferences with a survey for the collection of stated preferences for redistribution. This work aims therefore at shedding light on the research question of whether more generous social preferences, obtained in an experimental setting, predict stronger stated support for general redistribution and towards specific welfare recipients. Moreover, this study highlights that the individual level of *generosity,* as captured by social preferences, is a relevant characteristic to take into account when studying redistributive support, essential to estimate the political feasibility of redistributive policies.

Main findings include that respondents classified into the two most generous

[5] Some of the main contributions, while not all, are those of Fehr and Schmidt, 1999; Andreoni and Miller, 2002; Charness and Rabin, 2002; Engelmann and Strobel, 2004; Fisman et al., 2007; Blanco et al., 2011; Iriberri and Rey-Biel, 2011; Kerschbamer, 2015; Bruhin et al., 2019.

experimentally-derived social preference types, *inequality averse* and *altruistic,*[6] are significantly more supportive of general increased taxation (as compared to the least generous social preference category). Besides, more generous social preference types are more likely to support migrants, the unemployed, and the poor, the most "undeserving" vulnerable groups from a meritocratic perspective. Besides, *altruists* also hold more favourable views towards children and the sick or disabled, as do the *inequality averse* for the latter. When looking at the universality of the expressed solidarity, we observe the most generous in the experimental module in the survey also display a smaller distinction in their support towards different groups.

Alongside social preferences, some other relevant correlates of general support of redistribution found are being right-wing, believing that effort is the main determinant of one's economic position, and tending to distrust others, which covary negative and significantly. Perceiving high levels of inequality has the opposite effect. Turning to attitudes towards specific potential welfare recipients and the level of universality of solidarity, we find that those who are right-wing and distrustful are also less supportive of all vulnerable groups and less universal in their attitudes (that is, their views about the groups are rather heterogeneous). Those perceiving high inequality similarly have more favourable views across all groups and have more universal views. Those who hold the belief that personal effort is the main driver of one's economic outcomes are less likely to favour the unemployed but more supportive of the elderly and the sick or disabled. Finally, respondents who declare to enjoy some sort of benefit seem to support more strongly all groups, with the exception of migrants.

In terms of general redistributive preferences, some demographic characteristics that correlate positive and significantly are being parent to young children (general redistribution and towards the poor, children, and the elderly), living in an urban area (general and migrants), having higher education (migrants), or being married (children). Those older than 65 are less likely to support general redistribution and migrants.

The rest of the paper is structured as follows: Section 2 describes the data and experimental design, Section 3 introduces experimentally-derived social prefer-

[6] In our setting, *inequality averse* respondents are those who, in the context of a redistribution task, choose to reduce the distance between their resources and those of the other hypothetical player. *Altruistic* respondents always opt for sharing their resources with the "other" involved, regardless of their relative position.

ences, Section 4 presents the empirical model and results, and Section 5 concludes.

2 Data and experimental design

In this section, I describe the methodology employed to elicit social preferences and attitudes towards redistribution. The former are obtained by means of an experimental task consisting of a modified dictator game, and the latter are gathered directly with a questionnaire, both embedded in an online survey.

2.1 The online experiment

The sample was obtained from the online panel of respondents of the research agency Qualtrics in the UK. The study took place in August 2019, reaching a population of 573 participants.[7] Quotas were established to ensure sample balance in terms of demographic and socio-economic characteristics with respect to the overall UK population. The experimental module presents a modified dictator game in a two-person context, played twice by all respondents.[8] The task enables the non-parametric elicitation of social preferences by placing respondents in a "dictator" position and advancing through a series of binary choices between pairs of allocations for themselves and a hypothetical "other". All choices include an equal split of resources, taken as reference point, and an unequal split. In half of the choices, the unequal split places the decision maker ahead of the other, in an advantageous position, while the opposite is true in the other half. This allows to elicit the degree of self-centred inequality aversion in two complementary but fundamentally different situations. Respondents receive an economic reward of around 5 euros for participating in the survey and completing it within established parameters of time and attention. The reason to avoid real monetary incentives is twofold. First, Krawczyk and Le Lec (2021) offer evidence that, in the particular case of the elicitation methodology that we will employ (the *Equality Equivalence Test,* Kerschbamer, 2015),

[7] Informed consent was obtained from all participants.

[8] The data of the second round of the game is not utilized in this paper. This second round is preceded by four randomized information treatments that describe the hypothetical "other" along two dimensions: personal background and effort. The experimental variation created allows to identify causal effects in social preferences due to responsibility-sensitive concerns. These effects are discussed in Cabeza and Decancq (2023).

economic incentives don't seem to shift choices significantly. However, it is true that the authors find that decision makers are slightly more generous in the non-incentivized setting. And second, when eliciting social norms, some authors have indicated that the presence of real incentives might enhance self-interest in undesirable ways (see Konow, 2000; Schokkaert and Tarroux, 2022). Furthermore, Bowles and Polania-Reyes (2012) discuss extensively the several challenges that setting incentives in an experiment entails, such as the difficulty of choosing the right amount, the information incentives reveal about the context, or how their presence can affect self-determination of respondents and hamper the elicitation of social preferences.[9]

2.1.1 *ABDC* algorithm to define allocations

The experimental design is inspired by the *Equality Equivalence Test* (Kerschbamer, 2015), a non-parametric methodology that permits to elicit inequality aversion in an advantageous and a disadvantageous inequality situation for the decision maker, to then categorize social preferences into archetypes according to their choices in each domain. In Cabeza and Decancq (2023), the algorithm is modified by defining the amounts displayed interactively with the *Adaptive Bisectional Dichotomous Choice* method (Decancq and Nys, 2021). A theoretical framework is put forward that enables the definition of social preferences allowing for non-Paretian positional concerns. Furthermore, several non-parametric altruism tests are presented to define a partial ordering on these social preferences. The main advantage this methodology offers is that the pay-offs adapt as the respondent moves forward in the game. This adjustment reduces significantly the cognitive burden and increases the efficiency of the elicitation process. As the comparisons required to elicit the preferences are reduced, so are the respondent fatigue and survey implementation costs. [10]

In the design, respondents make three dichotomous choices in each inequality situation (advantageous and disadvantageous) between a fixed, equal allocation of resources and an adapting, unequal split. Figure 1 displays the example pro-

[9] Stantcheva (2022), Carson and Groves (2007) or Mentzakis and Sadeh (2021) offer further evidence that experiments and surveys lacking incentives can be useful to predict behaviour.

[10] While asking respondents to choose between multiple combinations of allocations is common practice in choice experiments, too many questions can lead to respondent fatigue and the application of choice heuristics that could hamper the quality of the results (Johnston et al., 2017). A limitation of this simplified design is the lack of a consistency test on the elicited preferences, avoided for the sake of simplicity.

vided to respondents where the preferred option is the unequal split (selected in red). After the example, respondents see three pairs of scenarios including unequal splits disadvantageous from themselves, to then go through thee more pairs of scenarios offering them higher pay-offs. Out of the four amounts displayed in each pair of scenarios, three of them are fixed and one adapts as the game advances. The fixed amounts correspond to the pay-offs for "me" and "other" in the equal split (always set at 20 units as reference point) and the amount for the "other" in the unequal splits. In the first three choices, creating disadvantageous inequality for the respondent, this amount is set at 30 units. Respectively, it is set at 10 units in the following three choices, which enables the elicitation of self-centred inequality aversion also when the respondent is in an advantageous situation. The only amount which isn't fixed is the one allocating a pay-off for the respondent in the unequal split. This amount adjusts iteratively depending on the respondent's previous choice. In this sense, respondents are asked to choose an alternative at every step, and, while they have the possibility to go back in the game and change their choice, such behaviour in barely observed in the sample. Note that, for the sake of efficiency and due to the interactive aspect of the game, inconsistent choices as such are ruled out.

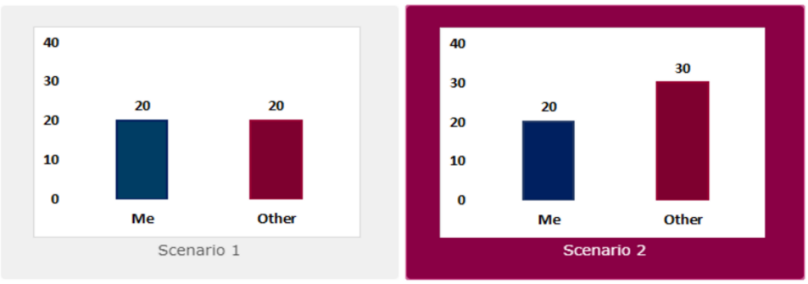
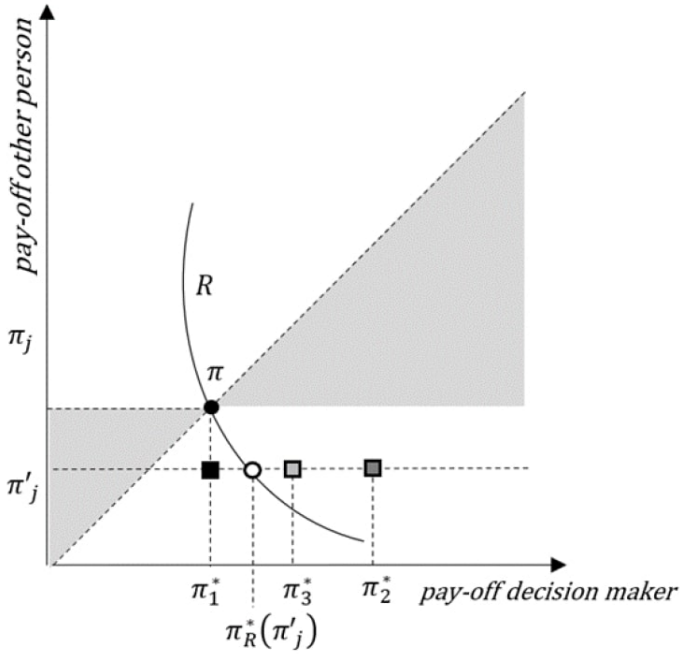


Figure 1: Example of binary choice in the experiment. The instructions given to respondents read as follows: "In each of the upcoming screens, you will see two graphs that represent two different imaginary scenarios: In Scenario 1 (on the left), you will always see an equal division of resources between you and another hypothetical participant. In this scenario, the allocation would imply £20 for you (blue column in the graph) and £20 for the other participant (red column). In Scenario 2 (on the right), you will see another way of sharing the resources. For instance, you might see an allocation implying £20 for you (blue column) and £30 for the other participant (red column). Please, indicate in each screen which of the two scenarios you prefer."

These consecutive choices between equal and unequal splits allow to define one interval of social preferences per inequality subdomain. This interval is assumed to include an allocation -the *equivalent pay-off*- considered by the respondent as good as the reference equal split of resources. The consecutive choices described above are now illustrated as π and π_1^*, π_2^*, and π_3^*, respectively, in Figure 2. More precisely, it presents an example of the mechanism in the advantageous subdomain. The respondent would first choose between the equal split π and the unequal one π_1^* (the black circle and square, respectively). After choosing the equal split, the algorithm defines the next unequal split to consider versus the equal split, in our example, π_2^*, the dark grey square. If this time the unequal alternative was chosen, the algorithm would define the next unequal choice to the left of π^*. This way, the last choice to be made is between π and π_3^*. In our example, the latter -unequal- split is chosen. Hence, the interval between π_1^* and π_1^* contains the values of the equivalent pay-off consistent with the choices of the respondent. The elicited social preference is illustrated by the indifference curve R, while the *equivalent pay-off* is denoted $\pi_R^*(\pi'_j)$.

Figure 2: Non-parametric method for the elicitation of social preferences.



2.1.2 Classification into social preference types

Once the game has been played, it is possible to distinguish respondents who display self-interested behaviour from those revealing other-regarding concerns, and classify them into *social preferences types*. This is done by looking at respondents' willingness to share (WTS) their resources when they are ahead and behind the hypothetical "other" involved in the distributive task. By looking at the position of the preferred choices of each respondent, their *willingness-to-share* in each domain of inequality can be defined as:

$$WTS = \frac{\pi_i^* - \pi_i}{\pi_j - \pi_j'}, \tag{1}$$

where π_i and π_j represent the pay-offs for the respondent and the "other" in the equal split, respectively; and π_i^* and π_j' represents the amounts in the unequal alternative. We hence obtain two parameters per respondents, WTS in the advantageous and disadvantageous domains of inequality, which enable the classification of social preferences according to their sign.

The social preference types and their associated experimental behaviour is summarized in Tables 1 and 2. The nomenclature used follows the one proposed in Kerschbamer (2015). Respondents are labelled as *selfish* if they only care about their own pay-offs, regardless of what the other receives (represented with a vertical indifference curve that would go through the equal split of resources). Respondents who are willing to share more resources when they are ahead of the "other" can be classified as: *inequality averse*, if they are willing to reduce the inequality between pay-offs also when disadvantaged, and *altruistic*, in the case where they are willing to share more resources even when they are disadvantaged.[11] The former have a "C" shaped indifference curve, while that of the latter would start at the North-West quadrant, passing through the equal reference split towards the South-East quadrant. On the other end of the scale, we find respondents who are unwilling to share their resources when in a disadvantaged situation. If they also behave in this way when advantaged, we label them as *spiteful* (their curve going from the N-E quadrant towards the S-W one), while if they are indifferent to the other's pay-offs we label them as

[11] In the classification of Kerschbamer (2015), respondents who are indifferent about the pay-offs of the other when disadvantaged are classified as *maximin*.

envious (N-E quadrant until the equal split and vertical from that point and below).[12]

Table 1: Social preference types.

Type	Willingness to share resources
spiteful	unwilling to share with "other" in any scenario.
envious	unwilling to share if "other" has more; indifferent if less.
selfish	only cares about own resources, indifferent about "other".
inequality averse	willing to share if "other" has less, unwilling if more.
altruist	willing to share with "other" in any scenario.

Table 2: Social preference types and willingness-to-share per inequality domain.

Type	WTS Disadvantageous	WTS Advantageous	Observations
spiteful	[-1, -0.5]	[-0.75, -0.25]	66
envious	[-1, -0.5]	[0, 0.5]	111
selfish	[-0.25, 0]	[0, 0.5]	99
inequality averse	[-1, -0.5]	[1, 2]	170
altruist	[0.5, 1.5]	[1, 2]	83
total (classified)			540
dropped			*44*
total (in sample)			573

However, only a few respondents were classified into some of the original *EET*'s 9 categories. Therefore, and in order to increase the statistical power of the regression analyses presented in Section 4, five main social preference types are kept, reflecting extreme non-altruistic behaviour (*spiteful*), the behaviour of those who prefer that the "other" isn't ahead (*envious*), self-interested attitudes (*selfish*), the behaviour of those who want to reduce the distance between their own pay-off and that of the "other" (*inequality averse*), and finally, the most generous attitude (*altruist*).[13] The few respondents with negative generosity when advantaged and indifferent or positive when disadvantaged (*kick-down* (11 respondents) or *equality averse* (21), respectively), or indifferent when advantaged and positive when disadvantaged (*kiss-up*, 12), are dropped from the sample. Also, respondents classified as *maximin* (56) and *altruistic* (27) are merged into one single category, as one could argue that their behaviour is close in interpretation: both types are positively generous when ahead and indifferent or also generous when behind, respectively.

[12] See Kerschbamer's depiction of each types' curve (Kerschbamer, 2015, p.91).

[13] The *altruist* category merges respondents who are *maximin* and *altruist* in Kerschbamer's original classification.

2.2 The questionnaire

2.2.1 Dependent variables

Support for redistribution. After the experimental module, respondents are asked about their fairness and redistribution views directly.[14] The main dependent variables tackle support for redistribution and agreement with increased taxation to ensure a decent standard of living for five specific (potential) welfare recipients: migrants, the unemployed, the poor, children, the elderly, and the sick and disabled.[15] The support for general redistribution question is to be answered with a 0-10 response scale going from "Completely against" to "Completely in favour". Figure 3 presents a histogram of the responses that allows to see that a majority of respondents support redistribution to a rather high extent, with less than 15% of responses falling below the midpoint in the scale. These responses are then grouped into four categories in order to make the scale comparable to that of support towards vulnerable groups, including categories 0 to 3 in the first level (11% of the sample), 4 and 5 in the second one (27.40%), 6 and 7 in the third one (31.94%), and 8 to 10 in the fourth and last one (remaining 29.49%).

In what concerns support towards vulnerable groups, Figure 4 presents histograms of the responses, with migrants receiving the least favourable attitudes: only 40% of respondents support to some extent that taxes are increased to ensure them a decent living. The elderly and the sick or disabled gather far more support, with almost 80% of the sample stating to be supportive of a tax increase in their favour.

Universality of solidarity. Besides studying the stated *degree* of support towards each specific vulnerable group, the magnitude of the differences between attitudes towards each group is also addressed. In other words, a more *universal* solidarity is expressed by stating a similar level of support, high or low, across all groups. Conversely, respondents are considered to express a less *universal* solidarity if they support some groups more strongly than others. In order to build an indicator of universality, the absolute differences between respondents'

[14] The questionnaire is presented to respondents after the experimental module given that the aim is exploring the explanatory power of social preference types on stated behaviour.

[15] These groups are chosen because they are the main recipients of state support, in the form of unemployment benefits, minimum income protection, children allowances and scholarships, pensions, and sickness and disability leaves.

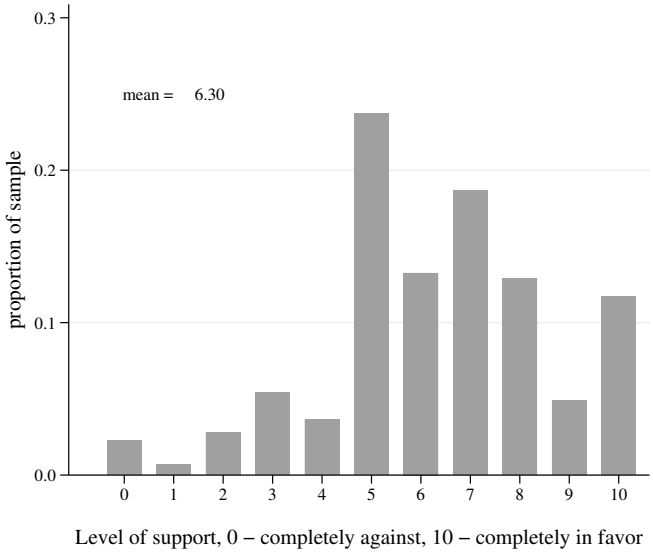


Figure 3: Support for redistribution: "Please, indicate to what extent you would be willing to support more redistribution in your country", 10-point scale.

support scores are summed up. Then, the obtained index is reversed in order to have respondents who state the same level of support across all groups scoring 0 (the case for about 30% of the sample), and the rest of respondents displaying negative degrees of universality ranging from -4 down to -26 units of added differences (corresponding to, for instance, showing the minimum support for migrants and the unemployed, slightly more support towards the poor, and the maximum score for children, the elderly, and the sick or disabled). Figure 5 presents the percentage of the sample at each level of universality.

2.2.2 Independent variables

In order to shed light to the understanding of the determinants of support for redistribution, I look at the correlation with some elements that have previously been identified in the literature, such as ideology, beliefs about the drivers of one's economic position, trust in others, and perceptions of inequality. Figure 6 presents histograms of the variables described below.

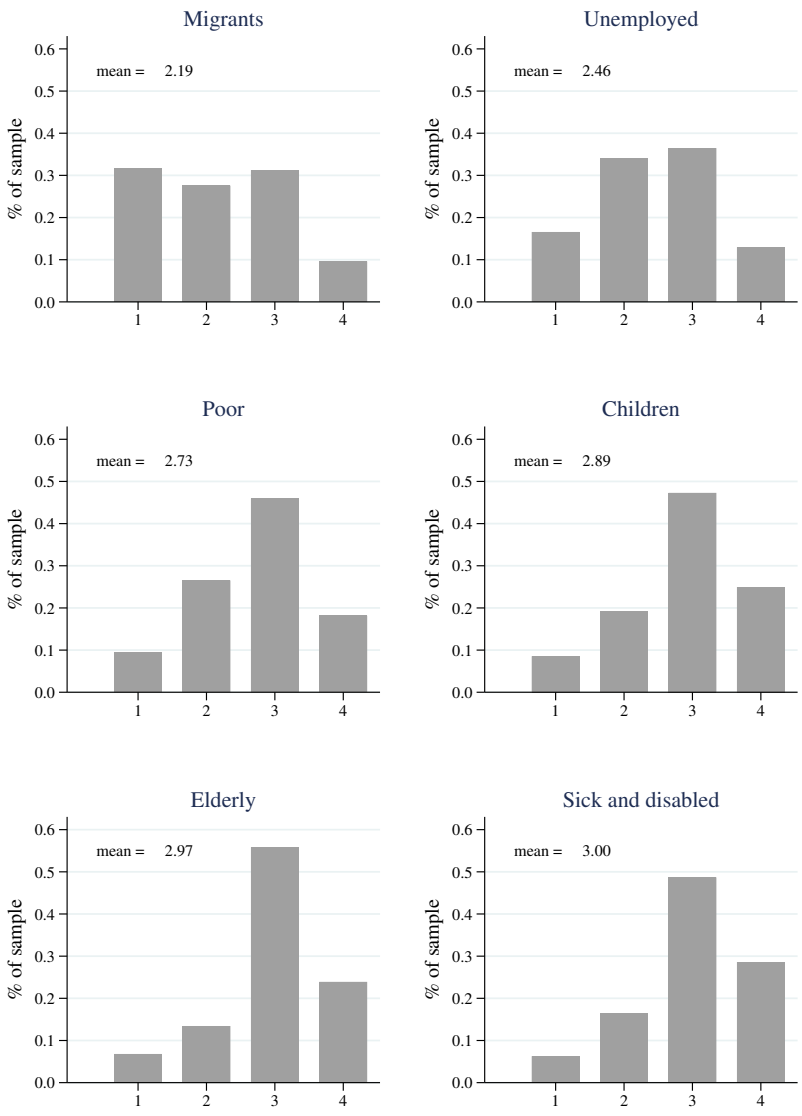
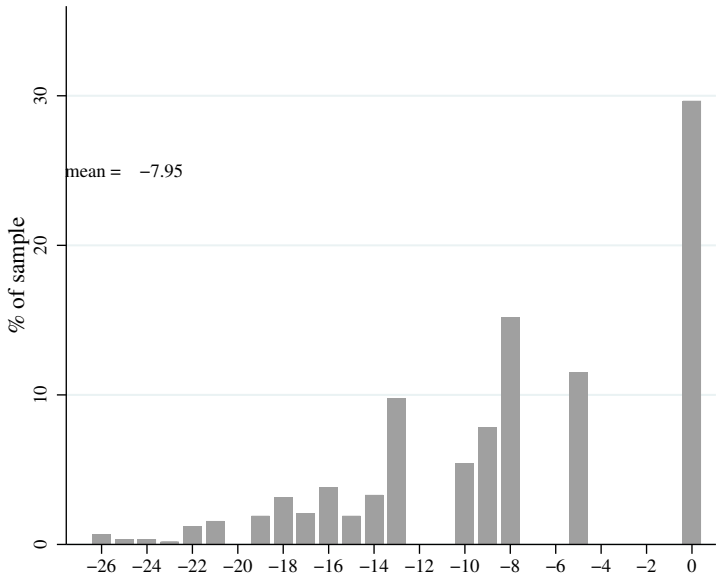


Figure 4: Stated support for redistribution toward specific vulnerable groups: "Please, indicate to what extent you would agree to pay higher taxes to ensure a decent standard of living for... the elderly/the unemployed/children/the sick and disabled/migrants/the poor", 4-point scale.

Figure 5: Universality of solidarity towards vulnerable groups.



Note: the value 0 implies the same level of support towards all groups.

Ideology. Ideas about the preferred level of redistribution are deeply connected to one's beliefs about what the role of the state in providing for citizens should be, and therefore at the core of one of the most essential divides between left and right-wingers, that of the desirable degree of solidarity towards those in need (Alesina and Giuliano, 2011). Information about ideological positioning is collected on a 0-10 scale, where 0 represents identifying completely as left-wing, and 10, as right-wing. While the distribution of responses is slightly skewed to the right, the average response is around 5 points.

Beliefs about the role of effort and luck in driving one's economic position. Ideas about the main drivers of one's economic position have often been shown to relate to support for redistribution (Piketty, 1995; Fong, 2001; Bénabou and Tirole, 2006; Alesina and La Ferrara, 2005; Alesina and Angeletos, 2005; Alesina and Giuliano, 2011). Respondents state whether they consider it is more due to luck and circumstances or personal effort on a 0-10 scale, with less than 30% of respondents choosing the former and about half the latter.

Trust in others. The belief that others try to take advantage if given the chance, or rather try to be fair, is another element that could help better understand support for redistribution and solidaristic attitudes (Daniele and Geys, 2015). The distribution of responses in our sample is slightly skewed to the right, with an average of 5.84.

Inequality perceived. Perceptions on the level of inequality in society are measured from very low to very high, on a 5-point scale. Only 10% of respondents find inequality low or very low while 50% of respondents find it high or very high. Inequality perceptions have been widely studied as an important determinant of redistributive support. Both (real) experienced inequality and perceived inequality have been shown to have a positive impact of support for redistribution. For instance, Cruces et al. (2013) report on the systematic biased assessment individuals make of their own income position and how their support for redistribution adjusts once informed about their true situation. In a related study, Niehues (2014) concludes that subjective inequality perceptions are a better predictor of redistributive preferences that actual inequality.

Personal characteristics. Respondents also report their demographic and socio-economic characteristics (see Table 3). About a quarter of respondents are older than 65 years-of-age, and the sample is balanced by design in terms of gender, too. Roughly, half of the respondents have children. A bit less than half of the sample lives either in a big city or its outskirts. In terms of socio-economic characteristics, around 40% of respondents have higher education.[16] A fifth of the sample earns more than £45,000 per year, while about a third receives some sort of benefit.[17]

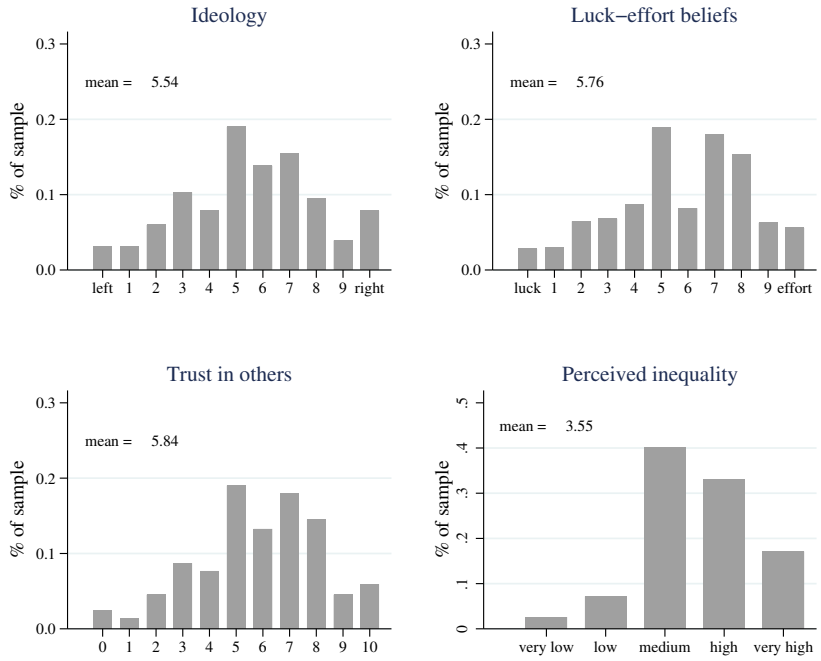
3 Distribution of social preferences

This section presents the prevalence of social preferences as elicited in the experimental task. Respondents are classified into five main types of social preferences

[16] Basic education is defined as having no completed formal education or only primary school, and higher education as having attended university for a Bachelor's, Master's or PhD degree.

[17] The dummy variable for benefits gives 1 to respondents who declare to be recipients of any kind of benefit or several at a time, including unemployment benefits, scholarships, child allowances, or minimum income protection.

Figure 6: Independent variables.



(Top left) Ideological self-positioning: "Please, could you position yourself ideologically in the following scale?". (Top right) Beliefs about what drives one's economic position: "Some people think economic position is mainly achieved thanks to one's effort and hard work, while others think it is determined by luck and circumstances, and others would place themselves somewhere in between both extremes. What do you think determines economic position?". (Bottom left) Trust in others: "Concerning trusting other people, some people think others try to take advantage of you if they get a chance, while others think people try to be fair, and others would place themselves somewhere in between both extremes. Where would you position yourself?". (Bottom right) Perception of inequality in the UK: "How do you think inequality is in the UK? (we refer to the difference between the income of the richest and that of the poorest, in average)".

Table 3: Descriptive statistics of the sample.

Variable	Obs.	% sample
Female	573	50%
Married	573	50%
Parent	573	55%
Urban	573	42%
Above 65 years-old	573	25%
Bachelor's or higher	573	42%
High income (above £45,000)	573	22%
Benefits	573	32%

Note: all variables are coded in a dichotomous way.

Table 4: Frequency of social preference types by group.

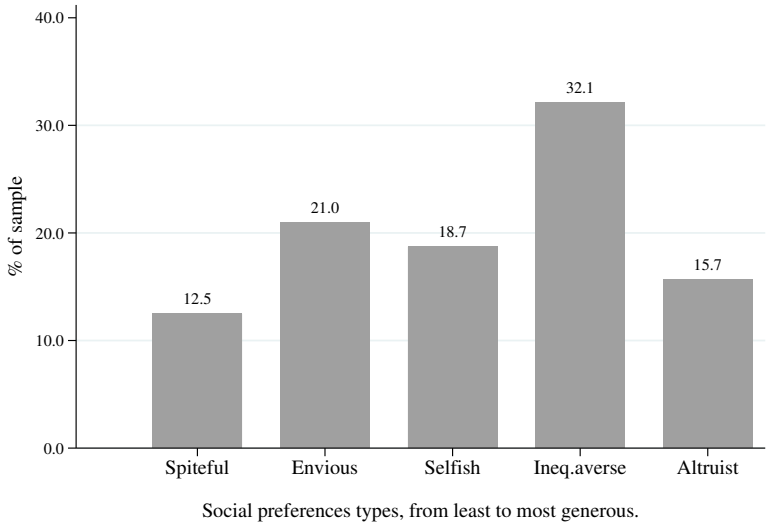
Type	Total	Females	Over 65	High education	High income
Spiteful	12.5%	12.9%	10.5%	13.1%	10.34%
Envious	21%	23.1%	23.9%	18.9%	22.4%
Selfish	18.7%	12.1%	20.9%	23.4%	25.9%
Ineq. averse	32.1%	38.3%	32.8%	31.5%	27.6%
Altruist	15.7%	13.6%	11.9%	13.1%	13.8%

based on their redistributive choices. Ordered from least to most generous, these are: spiteful, envious, selfish, inequality averse, and maximin/altruistic[18]. Figure 7 presents the percentage of the sample that can be classified into each of the social preferences types. While following traditional economic theory one would expect a majority of respondents to be self-interested, in our sample less than 20% of respondents are classified as *selfish* in our non-incentivised setting. The most frequent social preference in our sample is *inequality aversion*, with about a third of the respondents increasing their generosity when the other has less resources and decreasing it when the other is ahead. Around 20% of respondents can be considered *envious*, provided that they are indifferent about the other when they are ahead, but reduce their generosity if behind. Finally, between 10 and 15% of respondents could be categorized into the most benevolent (*maximin* and *altruist*) or malevolent types (*spiteful*).

Table 4 presents the distribution of types for certain demographic and socio-economic characteristics. Females in the sample are more likely to be inequality averse than males, while individuals older than 65 years-of-age and those who declare to earn over £45,000 a year are more likely to be envious and selfish than

[18]Respondents classified as *maximin* and *altruistic* are merged into one category in order to obtain more balanced levels.

Figure 7: Frequency of social preference types.



younger and less well-off respondents. Those with higher education are also classified as selfish in a larger proportion. Regressing the social preference types on demographic, socio-economic, and ideological characteristics (see Table 5), we learn that married individuals are, on average, less likely to be classified as *spiteful*. Those living in urban areas are less often *envious*, while those who identify as right-wing and express little trust in others are more frequently categorized in this type. Females have lower chances to behave as the *selfish* type, while the opposite holds for those with higher education. *Inequality averse* respondents are also more likely to be female and perceive higher inequality, but not parents or right-oriented. Finally, living in an urban area slightly increases the chances to be classified as altruist. Having higher education or being distrustful have the opposite effect.

Figure 8 gives a first idea of the relation between experimentally-derived social preferences and attitudes towards taxation. Note in panel A the divide between the three least generous types -*spiteful, envious,* and *selfish*- and the two most generous ones -*inequality averse* and *altruistic*-, with the latter being almost half a point more supportive of general redistribution (on a 4-point scale). Panel B displays average support towards vulnerable groups by social preference. While the level of support towards children and, especially, the elderly and the

sick/disabled (blue dots, solid and empty, respectively) barely varies by social preference type, this does not seem to be the case for migrants (empty orange dots), who are more favoured by respondents that behaved more generously in the experimental task. Finally, panel C represents the *a priori* link between social preferences and the degree of universality of solidarity towards groups. In this case, the least generous respondents, from the perspective of their experimental behaviour - *spiteful*, are also those who show the least universal attitude in terms of solidarity towards vulnerable groups, that is, those who display the larger differences in support towards each potential welfare recipient.

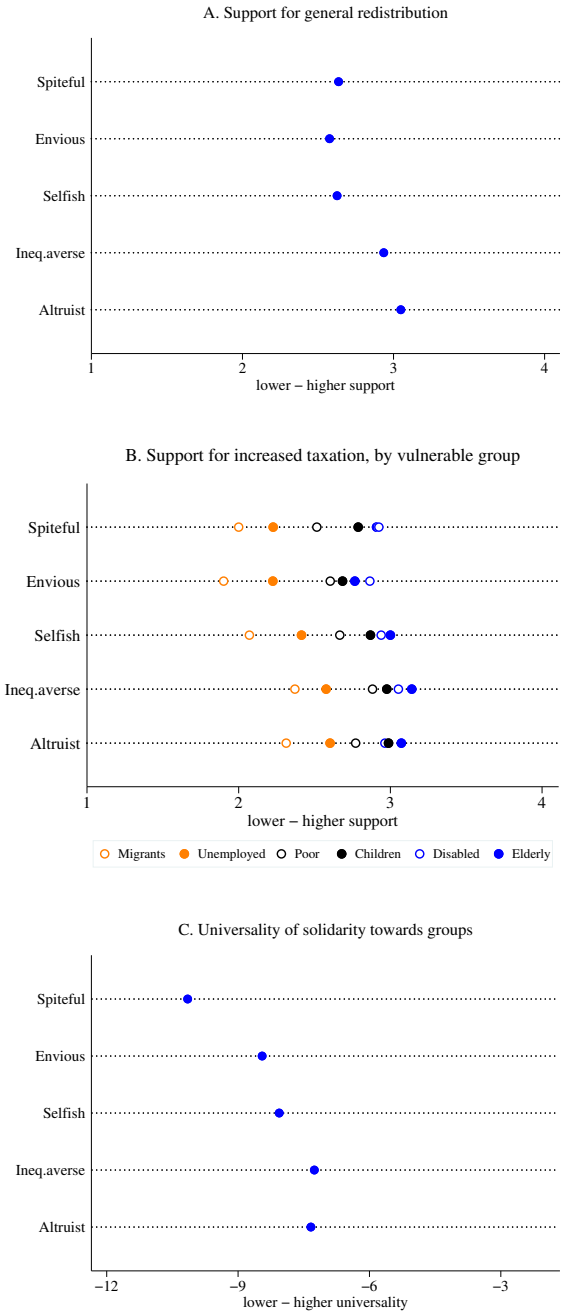
Table 5: Social preference types on demographic, socio-economic, and ideological covariates.

	(1) spiteful	(2) envious	(3) selfish	(4) ineq_averse	(5) altruist
female	0.011	0.039	-0.134***	0.122***	-0.038
	(0.031)	(0.037)	(0.034)	(0.041)	(0.032)
married	-0.081**	0.014	-0.057	0.093**	0.030
	(0.037)	(0.042)	(0.038)	(0.046)	(0.035)
parent	0.044	0.017	0.022	-0.090**	0.007
	(0.035)	(0.040)	(0.038)	(0.046)	(0.036)
urban	0.021	-0.111***	0.025	-0.013	0.078**
	(0.033)	(0.037)	(0.039)	(0.046)	(0.037)
older_66	-0.009	0.011	0.037	0.011	-0.051
	(0.036)	(0.045)	(0.044)	(0.052)	(0.039)
higher_educ	0.013	-0.021	0.073**	-0.009	-0.055*
	(0.031)	(0.038)	(0.037)	(0.043)	(0.032)
high_income	-0.015	0.035	0.079*	-0.060	-0.039
	(0.038)	(0.046)	(0.046)	(0.050)	(0.040)
benefits	0.009	0.015	0.003	-0.072	0.045
	(0.033)	(0.039)	(0.039)	(0.046)	(0.037)
right	0.012	0.076**	-0.027	-0.107**	0.046
	(0.033)	(0.038)	(0.035)	(0.042)	(0.035)
effort_oriented	0.042	-0.058	0.043	-0.012	-0.014
	(0.030)	(0.037)	(0.034)	(0.042)	(0.032)
distrustful	-0.024	0.074**	0.007	0.019	-0.076**
	(0.030)	(0.037)	(0.035)	(0.042)	(0.032)
high_ineq	0.010	-0.041	0.005	0.075*	-0.050
	(0.031)	(0.038)	(0.035)	(0.042)	(0.033)
_cons	0.095	0.144*	0.194**	0.409***	0.158**
	(0.065)	(0.078)	(0.079)	(0.099)	(0.068)
N	529	529	529	529	529
R^2	0.0317	0.0572	0.0698	0.0744	0.0776

Robust standard errors between brackets. Regional controls included.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Figure 8: Support for redistribution by social preference type.



4 Results

4.1 Support for redistribution and its demographic, socio-economic, and ideological determinants

In this section, the correlation of self-reported preferences for redistribution and demographic, socio-economic, and ideological variables is explored by estimating the parameters of the following empirical model with OLS [19]:

$$Redis_{iq} = \beta_{0q} + \beta_{1q} X_i + \beta_{2q} Y_i + \beta_{3q} Z_i + \varepsilon_{iq}, \tag{2}$$

where *Redis* stands for the stated preferences of respondent i in the redistribution question q, corresponding to general redistribution and support for migrants, the unemployed, the poor, children, the elderly, and the sick or disabled, respectively.[20] In vector X, demographic factors are included, namely, being female, married, parent to young children, living in an urban area, region of residence,[21] and being older than 65. Vector Y includes socio-economic characteristics, that is, having higher education (Bachelor's and above), earning over £45,000/year, and receiving some social benefit. Finally, vector Z gathers dummies for ideological self-positioning as right-wing, effort-oriented beliefs about the main drivers of one's economic position, the belief that others try to take advantage if given the chance (labelled as "distrustful"), and for perceiving high inequality in the country. The idiosyncratic error term is denoted ε_i.

Support for redistribution Table 6 presents the estimation results of the baseline models, where support for redistribution is regressed on demographic (column 1), socio-economic (2), and ideological characteristics (3). Focusing on the last column, we see that those who are the parents of young children or live in an urban area are, on average, more supportive of redistribution (0.277*** and 0.150*, on a 1-4 scale), while those older than 65 are less supportive by

[19] An ordered probit estimation offers comparable results and is available upon request.

[20] While the original question addressing support for increased taxation is answered on a 0-10 scale, for the empirical analysis it is transformed into a 4-level variable. This is done to ease the comparability of coefficients with the models that take support for specific vulnerable groups as dependent variable. The estimation results are comparable with both variables, and available upon request.

[21] I classify postcodes into eleven main areas: East Midlands, East of England, Greater London, North East, North West, Northern Ireland, Scotland, South East, South West, Wales, and West Midlands.

about 0.34 units, relative to younger respondents in the sample. One could speculate that those who are parents might want to have a less unequal society for their children, and those living in urban areas might simply be more exposed to income differences and thus willing to reduce them via taxation. On the contrary, the elderly might consider that they have already contributed their fair share to society and therefore oppose higher taxation that could negatively impact their resources. Concerning the ideological variables, while the right-wing, effort-oriented, and especially the distrustful, are less supportive of redistribution (-0.307***, -0.152*, -0.508***), those who perceive high inequality are significantly more redistributive (0.439***). These attitudinal effects are rather unsurprising and in line with previous literature mention in the Introduction.

Solidaristic attitudes towards vulnerable groups Table 7 shows the results of estimating the full model taking as the dependent variable attitudes towards specific welfare recipients (columns 1-6) and the universality level of solidarity (column 7). Firstly, some variables have effects across all specifications, namely, positioning as right-wing and being distrustful, that decrease support for all groups and universality, and perceiving high inequality, that boosts favourable attitudes and universality. As commented above, these attitudinal correlations could be reasonably expected. Secondly, some variables have effects on most stated attitudes, but not all. This is the case of being on benefits, that increases support towards all groups except migrants, and holding the belief that effort is the main driver of one's economic position, which decreases support for increased taxation to aid the unemployed, but increases support towards the elderly and the sick or disabled. Regarding the former, one could think that native citizens who receive welfare benefits might oppose stronger generosity towards migrants due to a self-serving bias. The latter finding resonates with the meritocratic narrative that those who believe that personal effort drives success could "blame" the unemployed for their situation and thus oppose increased taxation in their favour, while they would perceive the elderly as fully deserving of their benefits (i.e., reciprocity after their contribution to the system) and the sick or disabled as undeserving of their unfortunate situation, due to pure bad luck. Finally, some demographic and socio-economic characteristics also covary significantly with stated attitudes: parents are more favourable to the poor and children, while married respondents (who are not parents) support less the latter. Respondents over 65 years-of-age are less supportive of redistri-

bution towards migrants, while those with higher education support them -and the unemployed- slightly more.

Table 6: Support for redistribution on covariates.

	(1) redistribution	(2) redistribution	(3) redistribution
female	0.006	-0.009	-0.035
	(0.082)	(0.082)	(0.074)
married	-0.084	-0.045	-0.095
	(0.092)	(0.097)	(0.088)
parent	0.302***	0.272***	0.277***
	(0.092)	(0.093)	(0.087)
urban	0.198**	0.183**	0.150*
	(0.088)	(0.088)	(0.079)
older 65	-0.434***	-0.411***	-0.340***
	(0.102)	(0.105)	(0.096)
higher educ.		0.138*	0.009
		(0.083)	(0.079)
high income		-0.136	-0.029
		(0.106)	(0.096)
benefits		0.164*	0.102
		(0.088)	(0.081)
right			-0.307***
			(0.079)
effort			-0.152*
			(0.078)
distrustful			-0.508***
			(0.077)
high ineq.			0.439***
			(0.078)
_cons	2.734***	2.669***	2.971***
	(0.169)	(0.173)	(0.198)
N	573	573	573
R^2	0.0799	0.0923	0.2401

Robust standard errors in brackets. Regional controls included.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Support for redistribution towards groups and universality on covariates.

	(1) M	(2) U	(3) P	(4) C	(5) E	(6) D	(7) Un.
female	-0.040	-0.033	-0.059	0.052	0.025	0.082	-0.394
	(0.078)	(0.072)	(0.069)	(0.068)	(0.066)	(0.067)	(0.550)
married	-0.064	-0.017	-0.109	-0.175**	-0.070	-0.138*	0.393
	(0.091)	(0.083)	(0.081)	(0.078)	(0.077)	(0.078)	(0.622)
parent	0.077	0.132	0.205**	0.323***	0.129*	0.050	-0.923
	(0.090)	(0.081)	(0.080)	(0.077)	(0.075)	(0.076)	(0.611)
urban	0.138*	0.074	0.035	0.011	-0.012	0.008	0.376
	(0.083)	(0.080)	(0.075)	(0.075)	(0.071)	(0.073)	(0.616)
older 65	-0.222**	-0.062	0.089	-0.057	0.003	0.048	0.212
	(0.091)	(0.085)	(0.080)	(0.086)	(0.084)	(0.086)	(0.699)
high educ.	0.154*	0.124*	0.057	0.114	0.023	0.099	0.082
	(0.080)	(0.075)	(0.072)	(0.071)	(0.071)	(0.071)	(0.576)
h. income	-0.008	-0.103	-0.055	-0.002	0.077	0.023	-0.262
	(0.092)	(0.092)	(0.089)	(0.092)	(0.088)	(0.091)	(0.728)
benefits	0.028	0.238***	0.290***	0.269***	0.218***	0.195***	-1.076*
	(0.087)	(0.078)	(0.074)	(0.073)	(0.069)	(0.073)	(0.619)
right	-0.231***	-0.246***	-0.221***	-0.173**	-0.122*	-0.203***	-1.554***
	(0.081)	(0.073)	(0.072)	(0.072)	(0.070)	(0.070)	(0.590)
effort	-0.069	-0.190**	-0.012	0.044	0.150**	0.144**	-2.179***
	(0.081)	(0.074)	(0.069)	(0.069)	(0.066)	(0.066)	(0.560)
distrust	-0.456***	-0.372***	-0.179**	-0.268***	-0.203***	-0.288***	-1.119**
	(0.079)	(0.074)	(0.070)	(0.071)	(0.069)	(0.071)	(0.569)
high ineq.	0.457***	0.334***	0.374***	0.372***	0.324***	0.347***	0.075
	(0.079)	(0.073)	(0.069)	(0.069)	(0.066)	(0.067)	(0.576)
_cons	2.126***	2.368***	2.591***	2.765***	2.791***	2.816***	-6.313***
	(0.187)	(0.191)	(0.186)	(0.151)	(0.140)	(0.149)	(1.353)
N	573	573	573	573	573	573	573
R^2	0.2006	0.1936	0.1740	0.1987	0.1188	0.1527	0.0931

M: migrants, U: unemployed, P: poor, C: children, E: elderly, D: disabled, Un: universality. Robust standard errors in brackets. Regional controls included. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.2 Support for redistribution and social preferences

We now add social preferences to the previous empirical specifications to study their connection with self-reported preferences for redistribution. Firstly, I regress preferences for redistribution on the main social preference types (taking the least generous as reference category), and then control for demographic, socio-economic, and ideological characteristics. I estimate with OLS the parameters of the following model:

$$Redis_{iq} = \beta_{0q} + \beta_{1q} SocialPrefs_i + \beta_{2q} X_i + \beta_{3q} Y_i + \beta_{4q} Z_i + \varepsilon_{iq}, \qquad (3)$$

where vector $SocialPrefs$ introduces the social preferences types based on dis-

tributive behaviour in experimental task, and all other elements are equal to Equation 1.

Table 8 presents in Column 1 the results of regressing stated preferences for redistribution on experimentally-derived social preferences controlling for demographic, socio-economic, and ideological elements. We observe that respondents classified as *inequality averse* and *altruistic* are significantly more supportive of general increased taxation (0.312**, 0.422***), which offers evidence in favour of the hypothesis that generous experimental behaviour is connected to self-reported redistributive preferences. Some personal characteristics that further help to understand stronger attitudes towards taxation are, as in previous specifications, being a parent and perceiving higher inequality, while being older than 65, right-wing, effort-oriented, or distrustful drive redistributive preferences in the opposite direction. The full table of results, including the coefficients for the controls, can be found in Annex E.

Columns 2 to 7 present the results of the estimation when attitudes towards vulnerable groups become the explained variables. We conclude that more generous social preference types are also more likely to support what could be considered the "least deserving" vulnerable groups, from the meritocratic perspective: those classified as *inequality averse* or *altruistic* score around 0.4 units more in terms of support towards migrants, the unemployed, and the poor. Besides, *altruists* are more favourable towards children and the sick/disabled, as are the *inequality averse* for the latter. Looking at the degree of universality of solidarity (last column), we also find that more generous types make a smaller distinction in their support towards groups, with *altruists* being 3 units more universal than the reference *spiteful* type. Following this, we could connect generosity in the experimental setting, expressed as the willingness to share resources with an unknown other, with the self-reported agreement to see one's taxes raised in order to help those in need, with no further selection criterion (that is, all vulnerable groups equally). Concerning personal characteristics, we confirm the same correlations found in the specifications without social preference types. Notice that the model addressing support for increased taxation to aid the elderly (column 5) shows that this attitude has no apparent association with social preferences. Perhaps the dictator game does not have the most adequate features to capture the ideas underlying support towards the elderly, while other tasks tackling reciprocity might be more suitable.[22]

[22] See, for instance, Charness and Rabin, 2002.

Table 8: Support for general redistribution, towards vulnerable groups, and universality, on social preference types.

	(1) redistribution	(2) migrants	(3) unempl	(4) poor	(5) elderly	(6) children	(7) disabled	(8) universal
envious	0.118	0.081	0.108	0.213*	0.014	0.027	-0.015	1.746
	(0.139)	(0.143)	(0.128)	(0.124)	(0.134)	(0.136)	(0.129)	(1.090)
selfish	0.051	0.074	0.204	0.165	0.019	0.121	0.117	1.928*
	(0.145)	(0.143)	(0.129)	(0.121)	(0.131)	(0.137)	(0.121)	(1.069)
ineq. averse	0.312**	0.377***	0.333***	0.390***	0.124	0.207	0.243**	2.502**
	(0.130)	(0.134)	(0.118)	(0.116)	(0.129)	(0.128)	(0.119)	(1.034)
altruist	0.422***	0.405***	0.420***	0.344***	0.072	0.284**	0.228*	3.017***
	(0.140)	(0.151)	(0.132)	(0.130)	(0.135)	(0.139)	(0.131)	(1.161)
_cons	2.815***	1.959***	2.174***	2.375***	2.746***	2.686***	2.702***	-8.051***
	(0.232)	(0.218)	(0.216)	(0.215)	(0.172)	(0.186)	(0.171)	(1.559)
N	529	529	529	529	529	529	529	529
R^2	0.2690	0.2299	0.2175	0.1905	0.1100	0.2086	0.1710	0.1152

Robust standard errors in brackets. Reference social preference: spiteful. Controls: female, married, parent, urban, older 65, high education, high income, benefits, region, right, effort, distrustful, high inequality.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5 Conclusions

I have explored the explanatory power of experimentally-elicited social preferences over support for general redistribution and towards specific vulnerable groups. Given that the evidence provided is based on the correlation of social preferences with support for redistribution, it does not allow to identify causal effects: the existence of unobserved confounding elements that would correlate with both cannot be ruled out. While the results should be cautiously interpreted, they nevertheless contribute to the debate in, at least, three expanding fields. First, the use of social preferences to better understand support for redistribution. This work shows that experimentally-obtained social preferences correlate strongly with self-stated redistributive preferences and are also connected to favourable attitudes towards certain potential welfare recipients usually perceived as less deserving, such as migrants, the unemployed, or the poor. This results resonate with and extend previous findings in this emerging literature, such as those of Kerschbamer and Müller (2020). Furthermore, the degree of universality of solidarity towards these groups is also found to connect with experimentally-derived generosity. In other words, those who seek to reduce inequality and are more willing to share their resources with a hypothetical, unknown "other" in the redistributive task also state similar levels of support towards all potential welfare recipients. Second, in terms of the elicitation of social preferences, the straight-forward methodology employed for the non-parametric elicitation imposes a low cognitive burden on respondents. It helps to reduce fatigue and thus allows for it to be easily embedded in a broader opinion survey. And third, this contributes to the wider work that investigates the determinants of preferences for redistribution. This study highlights that the level of *generosity* (as expressed in the distributive task) is a relevant individual characteristic to take into account when studying redistributive support, while it is usually missing in attitudinal studies. In addition, it offers evidence that some ideological elements, such as right-wing positioning, the belief that effort is the main determinant of one's economic position, and distrust in others, decrease average support for redistribution, while perceiving high inequality levels has the opposite effect. These elements, along with social preferences, are central to disentangling support for redistribution, and ultimately, the political feasibility of redistributive policies.

A limitation this work faces is the fact that the experimental task employed to

elicit social preferences relies on a hypothetical setting. Therefore, the results might be affected by this feature and their validity could be tested replicating the setting with monetary incentives. Further work could address the replication of these findings in a larger, representative sample and their validity in other countries. Also, the explanatory power of social preferences could be tested with different redistributive and political outcomes, which would serve to give us a stronger understanding, for instance, of support towards specific social benefits or voting behaviour. A policy implication that could cautiously be derived from our results is that more extensive and universal redistributive policies would probably be politically feasible in societies with a larger prevalence of *altruistic* or *inequality averse* citizens, as compared to societies with a majority of less generous social preference types.

6 Annex. Additional figures and tables

Construction of variables

Female. Dummy variable taking a value of 1 for females.

Married. Dummy variable taking a value of 1 for married individuals.

Parent. Dummy variable taking a value of 1 for individuals with young children (in school years).

Urban. Dummy variable taking a value of 1 for respondents that live in a big city or its suburbs.

Region. Categorical variable based on a question asking the respondent to choose her postcode area from the 121 available in the UK, which groups them into 11 areas: East Midlands, East of England, Greater London, North East, North West, Northern Ireland, Scotland, South East, South West, Wales, and West Midlands.

Age. Dummy variable taking a value of 1 to respondents older than 65 years-of-age.

Higher education. Dummy variable taking a value of 1 for individuals who have a minimum of a Bachelor's degree. Built from a categorical variable capturing the different stages in the British educational system. These have been grouped into eight categories: "No formal education", "Primary school", "Secondary school", "Professional training (other than higher education)", "Bachelor's degree", "Master's degree", "PhD", or "Other".

High income. Dummy variable taking a value of 1 for individuals who declare to live in a household with a total yearly income, after taxes, of more than £45,000. Built upon a variable capturing the household's total annual income in pounds, after taxes, with responses expressed in the following ten numerical intervals: "0 - £12,999", "£13,000 - £14,999", "£15,000 - £16,999","£17,000 - £18,999", "£19,000 - £20,999", "£21,000 - £24,999", "£25,000 - £28,999", "£29,000 - £34,999", "£35,000 - £44,999", or "Above £45,000". Also the options "I don't know" and "I refuse" are offered.

Benefits. Dichotomous variable where 1 captures whether the respondent is a recipient of any type of social benefit, including unemployment benefits, minimum income protection, child allowances, study scholarships, or "other".

Right. Dummy variable taking a value of 1 for those who self-position as right-wing, that is, those scoring 6 or higher on a categorical variable based on a question asking the respondent to position herself on a 0-10, left/right, scale.

Effort. Dummy variable taking a value of 1 for those who self-position as effort-oriented, that is, those scoring over 5 when expressing to what extent luck (0) or effort (10) determine one's economic position on a 0-10 scale.

Distrustful. Dummy variable taking a value of 1 for those who self-position as effort-oriented, that is, those scoring under 6 when expressing to what extent others will try to take advantage (0) or rather be fair (10) if given the opportunity.

High inequality. Dummy variable taking a value of 1 for those who state to perceive high or very high inequality in the UK. Built from a categorical variable based on a question asking the respondent to state her perception of inequality in the UK on a 1-5 scale in which 1 means "very low" and 5, "very high".

Redistribution. Discrete ordinal variable, taking values from 0 to 10, where 0 represents complete disagreement with increasing redistribution, and 10, complete agreement. Transformed into a 4-levels categorical variable.

Redistribution towards migrants, poor, unemployed, children, elderly, sick/disabled. Discrete ordinal variables, taking values 1 to 4, where 1 represents complete disagreement with increasing taxes to ensure decent living conditions to the vulnerable group, and 4, complete agreement.

Universality of solidarity. Discrete ordinal variable, taking values -26 to 0, where 0 represents that the same score of support has been given to all vulnerable groups, and higher values represent increasing differences in the scores.

Tables of results: preferences for redistribution explained with social preference and covariates

Table 9: Support for redistribution on social preferences and covariates.

	(1) redistribution	(2) redistribution	(3) redistribution
envious	-0.055	0.034	0.118
	(0.157)	(0.153)	(0.139)
selfish	-0.005	0.053	0.051
	(0.164)	(0.158)	(0.145)
ineq_averse	0.301**	0.374***	0.312**
	(0.145)	(0.142)	(0.130)
altruist	0.421***	0.412***	0.422***
	(0.162)	(0.158)	(0.140)
female		0.003	-0.027
		(0.084)	(0.076)
married		-0.081	-0.131
		(0.101)	(0.091)
parent		0.283***	0.272***
		(0.096)	(0.089)
urban		0.140	0.107
		(0.093)	(0.082)
older_65		-0.373***	-0.292***
		(0.105)	(0.096)
higher_educ		0.152*	0.034
		(0.086)	(0.081)
high_income		-0.131	-0.021
		(0.106)	(0.097)
benefits		0.164*	0.086
		(0.091)	(0.083)
right			-0.352***
			(0.085)
effort			-0.145*
			(0.080)
distrustful			-0.469***
			(0.078)
high_ineq			0.440***
			(0.079)
_cons	2.677***	2.483***	2.815***
	(0.137)	(0.214)	(0.232)
N	529	529	529
R^2	0.0395	0.1194	0.2690

Robust standard errors in brackets. Reference social preference type: spiteful. Regional controls included.

Table 10: Support for vulnerable groups and universality on social preferences and covariates.

	(1) migrants	(2) unemployed	(3) poor	(4) children	(5) elderly	(6) disabled	(7) universal
envious	0.081	0.108	0.213*	0.027	0.014	-0.015	1.746
	(0.143)	(0.128)	(0.124)	(0.136)	(0.134)	(0.129)	(1.090)
selfish	0.074	0.204	0.165	0.121	0.019	0.117	1.928*
	(0.143)	(0.129)	(0.121)	(0.137)	(0.131)	(0.121)	(1.069)
ineq_averse	0.377***	0.333***	0.390***	0.207	0.124	0.243**	2.502**
	(0.134)	(0.118)	(0.116)	(0.128)	(0.129)	(0.119)	(1.034)
altruist	0.405***	0.420***	0.344***	0.284**	0.072	0.228*	3.017***
	(0.151)	(0.132)	(0.130)	(0.139)	(0.135)	(0.131)	(1.161)
female	-0.068	-0.043	-0.064	0.065	0.040	0.113	-0.638
	(0.079)	(0.073)	(0.071)	(0.072)	(0.070)	(0.070)	(0.581)
married	-0.104	-0.008	-0.117	-0.194**	-0.069	-0.166**	0.383
	(0.094)	(0.087)	(0.087)	(0.084)	(0.084)	(0.083)	(0.654)
parent	0.090	0.105	0.188**	0.300***	0.125	0.038	-0.929
	(0.094)	(0.085)	(0.083)	(0.082)	(0.081)	(0.080)	(0.645)
urban	0.108	-0.008	0.037	0.005	0.009	0.018	0.025
	(0.085)	(0.084)	(0.079)	(0.080)	(0.077)	(0.077)	(0.657)
older_66	-0.191**	-0.028	0.122	-0.007	0.047	0.087	0.071
	(0.093)	(0.085)	(0.081)	(0.088)	(0.086)	(0.089)	(0.713)
higher_educ	0.163**	0.125	0.053	0.121	0.031	0.092	0.180
	(0.082)	(0.077)	(0.076)	(0.075)	(0.075)	(0.074)	(0.595)
high_income	0.057	-0.057	-0.019	0.014	0.068	0.042	-0.048
	(0.096)	(0.095)	(0.093)	(0.098)	(0.093)	(0.096)	(0.763)
benefits	-0.032	0.217***	0.262***	0.252***	0.189***	0.185**	-1.320**
	(0.090)	(0.082)	(0.076)	(0.076)	(0.071)	(0.074)	(0.644)
right	-0.305***	-0.278***	-0.251***	-0.206***	-0.169**	-0.216***	-1.660***
	(0.084)	(0.078)	(0.077)	(0.076)	(0.076)	(0.075)	(0.621)
effort_oriented	-0.038	-0.197**	0.022	0.028	0.139**	0.143**	-2.067***
	(0.083)	(0.078)	(0.072)	(0.072)	(0.069)	(0.069)	(0.587)
distrustful	-0.422***	-0.348***	-0.171**	-0.245***	-0.167**	-0.269***	-1.067*
	(0.080)	(0.075)	(0.071)	(0.074)	(0.072)	(0.073)	(0.580)
high_ineq	0.455***	0.351***	0.376***	0.384***	0.296***	0.335***	-0.113
	(0.080)	(0.074)	(0.072)	(0.072)	(0.070)	(0.070)	(0.598)
_cons	1.959***	2.174***	2.375***	2.686***	2.746***	2.702***	-7.051***
	(0.218)	(0.216)	(0.215)	(0.186)	(0.172)	(0.171)	(1.559)
N	529	529	529	529	529	529	529
R^2	0.2299	0.2175	0.1905	0.2086	0.1100	0.1710	0.1152

Robust standard errors in brackets. Reference social preference type: spiteful. Regional controls included.

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