I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 14828

Dissecting Inequality-Averse Preferences

Marcelo Bergolo
Gabriel Burdin
Santiago Burone
Mauricio De Rosa
Matias Giaccobasso
Martin Leites

NOVEMBER 2021

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 14828

Dissecting Inequality-Averse Preferences

Marcelo Bergolo
Universidad de La República and IZA

Gabriel Burdin
University of Leeds and IZA

Santiago Burone
Universidad de La República and University of Antwerp

Mauricio De Rosa
Universidad de La República and Paris School of Economics

Matias Giaccobasso
UCLA and Universidad de La República

Martin Leites
Universidad de La República

NOVEMBER 2021

ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Dissecting Inequality-Averse Preferences*

Although different approaches and methods have been used to measure inequality aversion, there remains no consensus about its drivers at the individual level. We conducted an experiment on a sample of more than 1800 first-year undergraduate economics and business students in Uruguay to understand why people are inequality averse. We elicited inequality aversion by asking participants to make a sequence of choices between hypothetical societies characterized by varying levels of average income and income inequality. In addition, we use randomized information treatments to prime participants into competing narratives regarding the sources of inequality in society. The main findings are that (1) the prevalence of inequality aversion is high: most participants' choices revealed inequality-averse preferences; (2) the extent of inequality aversion depends on the individual's position in the income distribution; (3) individuals are more likely to accept inequality when it comes from effort rather than luck regardless of their income position; (4) the effect of social mobility on inequality aversion is conditional on individual's income position: preferences for mobility reduces inequality aversion for individuals located at the bottom of the income distribution, where risk aversion cannot play any role.

JEL Classification: D63, D64, D81 C13, C91

Keywords: inequality aversion, fairness, risk, effort, luck, redistribution, questionnaire-experiments

Corresponding author:
Martin Leites
IECON - Universidad de La República
Department of Economics
G. Ramirez 1926
Montevideo
Uruguay
E-mail: martin.leites@fcea.edu.uy

* We would like to thank seminar participants at Ridge (May, 2019), Aucip (July, 2019), ECINEQ (July, 2019) and IIPF (August, 2019). This research was funded by the Agencia Nacional de Investigación e Inovación (ANII) - grant FCE 1 2014 104284. The experiment is registered in the Registry for Randomized Controlled Trials operated by the American Economic Associ- ation: RCT ID AEARCTR-0002471.

1 Introduction

Previous research has shown -in many settings- that a substantial fraction of individuals dislike unequal outcomes (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; Charness and Rabin, 2002; Cappelen et al., 2013; Clark and D'Ambrosio, 2015). Individual well-being may be affected by other individuals' outcomes through inequality aversion; hence, understanding its roots could reveal useful insights about individual behavior and social welfare.[1] Several arguments have been advanced in the literature in order to explain why some people are inequality averse However, these competing mechanisms have rarely been investigated under a unified framework.

This paper contributes to fill this gap by providing evidence about the main drivers of inequality aversion. We use a questionnaire study inspired by Amiel and Cowell (1992) and Carlsson et al. (2005), where individuals choose between alternative hypothetical societies characterized by varying levels of average income and inequality. Their choices allow to infer whether and how much they like or dislike income inequality. From each individual's set of choices, and under the assumption of a specific but sufficiently general utility function, we recover the implied distribution of the inequality aversion parameter. Our experiment was performed on the 2018 and 2019 cohorts of first-year undergraduate students in Economics and Business enrolled at the largest University in Uruguay (Universidad de la República).

We use priming techniques from experimental psychology to understand the roots of inequality aversion (Cohn and Maréchal, 2016; McCoy and Major, 2007). Specifically, we randomly divide the sample into four groups and introduce a series of information treatments. The first group is the *control* group. Participants in this group do not receive any additional information beyond the baseline instructions. As a result, they decide based on their preferences and prior beliefs. The second group is the *effort-message* group. Here, participants are told that the position in the income distribution is the result of effort. The third group is the *luck-message* group. Participants selected in this group are exposed to a message saying that the level of inequality in the hypothetical society is the result of luck. These two treatments are designed to analyze if individual preferences are consistent with a meritocratic view (Roemer and Trannoy, 2016; Ramos and Van de gaer, 2016). The fourth group is the *mobility-message* group. In this treatment we do not include

[1] Inequality aversion has been proved to be relevant in different areas of study, such as taxation and public good provision (Andreoni et al., 1998; Fehr and Schmidt, 2001; Charness and Rabin, 2002; Luttmer and Singhal, 2014; Clark and D'Ambrosio, 2015; Aronsson et al., 2016; Aronsson and Johansson-Stenman, 2018), externalities and public policy objectives (Frank, 2005; Alesina and Giuliano, 2011; Fleurbaey and Maniquet, 2018), labor markets and organizations (Card et al., 2012; Breza et al., 2017; Cullen and Perez-Truglia, 2018) and support for redistributive policies both within and between societies (Piketty, 1995; Benabou and Ok, 2001; Alesina et al., 2001; Alesina and Angeletos, 2005; Georgiadis and Manning, 2012; Piketty et al., 2014; Alesina and Giuliano, 2015).

any reference to effort or luck, but we explicitly mention that the hypothetical grandchild has the possibility of moving upwards or downwards. Related to this treatment, there are two competing channels. On the one hand, income mobility creates a better environment for equality of opportunity and may reduce inequality aversion (Jäntti and Jenkins, 2015; Amiel and Cowell, 1999). On the other hand, higher income mobility could lead to greater inequality aversion due to risk aversion (Harsanyi, 1953; Atkinson, 1970; Jäntti and Jenkins, 2015). We ask all participants to repeat the task in three different scenarios that change the position of the grandchild in the income distribution: at the mean, at the minimum and at the maximum. With these variations we are able to test if inequality aversion depends on the relative level of deprivation or affluence. In addition, this allows us to explore if the effects of information treatments are sensitive to the position in the distribution.

We document four main findings. First, most individuals in our sample made choices consistent with the presence of inequality-averse preferences. This is remarkable considering that experiments with students usually provide a lower bound for prosocial behavior (Cappelen et al., 2015; Henrich et al., 2010; Fehr et al., 2006). Our preferred estimation of the inequality aversion parameter for the baseline control group is 0.214. This means that on average individuals are willing to sacrifice 2% of their income to reduce inequality in society by 10%, holding the level of utility constant. This magnitude falls within the range of previous estimates (Carlsson et al., 2005; Amiel and Cowell, 1999). Importantly, our measure of inequality aversion correlates in the expected direction with self-reported views about the consequences of inequality (e.g. positive or negative externalities), redistributive policies, and the role of government. Second, we find that inequality aversion is sensitive to the individual's position in the income distribution. Third, we find that inequality aversion is very sensitive to the notion of fairness. In particular, we find a strong difference when we compare *effort-message* and *luck-message* groups. Our results suggest that inequality aversion is much larger when inequality comes from luck. This meritocratic view dominates regardless of individuals' position. Finally, the effect of *mobility-message* treatment is very sensitive to the individual's position. While there is no effect when choices are made at the mean, risk aversion dominates when participants are located in the upper part of the distribution and prospects of upward mobility dominate when people choose in the bottom of the distribution.

Our paper contributes to three strands of literature. First, it contributes to the literature on inequality aversion (Clark and D'Ambrosio, 2015; Charness and Rabin, 2002; Fehr and Schmidt, 2001). We depart from existing studies in two distinct ways. On the one hand, it is common to estimate inequality aversion using games in which the relevant society is formed only by a limited number of participants. This creates a less anonymous environment where the income of other members of the society is more salient compared

to a setting where participants are required to think of inequality more generally. Such settings hinder the distinction between actual distaste for inequality and other social preferences such as envy, compassion, or pride, which are more likely to show up in contexts of more personalized interactions. On the other hand, the few exceptions that analyze inequality aversion in more general settings, do not use experimental strategies. Instead, they estimate inequality aversion from regressions that use subjective variables and self-reported beliefs, such as Kroll and Davidovitz (2003); Schwarze and Härpfer (2007); Brennan et al. (2008). In this paper we combine the best of both worlds. Our experimental survey establishes sufficiently general and anonymous conditions, and proposes a clear trade-off between individual outcomes and income inequality for a general representation of a society. Furthermore, we use an experimental design that allow us to derive the inequality aversion parameter from actual choices and not from self-reported beliefs. This setting is more favourable for a more direct interpretation of our results as inequality aversion.

Second, we provide new evidence about the micro-foundations of inequality aversion based on an online experimental survey (Pirttilä and Uusitalo, 2010; Amiel et al., 2009; Traub et al., 2009, 2005; Carlsson et al., 2005; Amiel and Cowell, 1999). We use a unified framework to elicit inequality aversion and multiple randomized information treatments to test for various long-standing hypotheses about why people consider inequality as a "good" or a "bad". One important driver of inequality aversion is associated with the notion of fairness, i.e. whether inequality is the result of effort or luck (Alesina and Giuliano, 2011). Recent papers studying fairness motives rely on field experiments or surveys of representative samples (Cappelen et al., 2019; Almås et al., 2020; Karadja et al., 2015; Fong, 2001; Alesina et al., 2018). However, they usually focus on preferences for redistribution – or other self-reported measures of attitudes toward inequality – rather than on experimentally-elicited measures of an inequality aversion parameter. Our paper provides novel experimental evidence about how individual inequality aversion depends on the source of inequality (luck vs. effort). Moreover, we show that this meritocratic view holds regardless of individuals' position in the income distribution.

A second potential driver of inequality aversion is the individual's position in the income distribution. Previous research suggests different foundations for this mechanism: self-centered interest, such as envy, pride or altruism (Clark and D'Ambrosio, 2015; Charness and Rabin, 2002); risk perceptions of inequality Cowell and Schokkaert (2001); self-concern and ethical concerns (Amiel et al., 2009; Traub et al., 2009, 2005); reference points (Thaler, 2016; Charité and Kuziemko, 2015; Kuziemko et al., 2014; Carlsson et al., 2007, 2009) and positional concerns Heffetz and Frank (2011). However, previous studies that provide a measure of the inequality aversion parameter based on experimental surveys assume that it is insensitive to individuals' position. We contribute to this literature by providing empirical evidence showing that the

inequality aversion parameter depends on where one stands in the income distribution. Third, as suggested by multiple studies, a third important driver of inequality aversion is risk aversion (Carlsson et al, 2005; Johansson-Stenman et al., 2002a; Kroll and Davidovitz, 2003; and Ferrer-i Carbonell and Ramos, 2010). In addition, Amiel et al. (2015) find that a weak equality-mobility trade-off arises when inequality is required for greater mobility. These papers explore the role of risk-aversion and mobility separately but they do not consider possible interactions. By varying individual's position in the income distribution, our paper provides novel evidence about the inequality aversion response when preferences for income mobility compete with risk considerations. We find that the effect of preferences for mobility on inequality aversion dominates when participants are at the bottom of the income distribution, while the risk aversion channel dominates when they are at the top.

Finally, this paper also contributes to the discussion on the appropriate methods to measure distributional preferences and study their malleability in large samples. Our online experimental survey has proved to be a very flexible tool to elicit the parameter of interest on a large sample of individuals, test its sensitivity to alternative assumptions about the utility function, the consistency of responses and information treatments, and implement a wide range of attention and comprehension checks. We also show that the online nature of the experiment does not introduce significant biases, as our main findings were replicated for a sample of students in a conventional on-site classroom experiment.

The rest of the paper is organized as follows, section 2 presents a brief summary of the theoretical mechanisms that could explain individual inequality aversion. Section 3 explains the main details of our experimental design. Section 4 describes the experiment implementation and the information collected. Section 5 reports the main results. In section 6 the validity of our results is discussed and a battery of robustness checks are presented. Section 7 concludes.

2 Foundations of Inequality Aversion: an organizing framework

The existence of inequality-averse preferences and attitudes towards income redistribution is consistent with several theoretical explanations. The first one, a normative foundation, is "disinterested evaluation of inequality". It suggests that the income distribution in a society has an intrinsic value that depends on whether it is ethically justifiable or not. A second argument is "self-interested inequality aversion". In this case, individuals care about their relative income and their attitudes towards inequality depend on their position in the income distribution. The third and fourth arguments relate to instrumental reasons and can be linked both to selfish and unselfish considerations. The third argument relies on the fact that a larger dispersion in the income distribution increases uncertainty and risk. If individuals are risk averse, a more

disperse income distribution will be less attractive (Harsanyi, 1953; Atkinson, 1970; Jäntti and Jenkins, 2015). The fourth argument is related to different externalities that could be caused by larger levels of inequality. On the one hand, a more unequal income distribution could reduce human capital accumulation, deteriorate the quality of institutions and induce criminal behavior. On the other hand, a more disperse income distribution could increase individual effort since higher levels of income may be achieved, which would be absent when returns to effort are smaller. Depending on the magnitude of this effect, people may value inequality as a good because it is useful in order to increase social efficiency (Alesina and Giuliano, 2011).

To estimate the inequality aversion parameter we use a modified version of the model in Carlsson et al. (2005). In the basic model, individual i derives utility both from her own income and the level of income inequality of the society in which she lives. The general formulation of this for an individual i that lives in a society j is:

$$u_{i,j} = h(x_{ij}\Phi_j^{-\gamma}) \tag{1}$$

where h is any monotonically increasing transformation, x_i is the level of income corresponding to individual i, Φ_j is a measure of income inequality for society j and γ is a parameter of individual inequality aversion. Under this specification, γ can be interpreted as a constant inequality elasticity and represents the percentage increase in income required to hold the level of utility constant when inequality increases by 1%. In the extreme case in which $\gamma = 0$, individuals do not care about inequality at all. When $\gamma < 0$, individuals like inequality, i.e. inequality increases the individual's utility. When $\gamma > 0$, individuals are inequality averse; they dislike inequality.

If we assume that $h(.)$ is the identity function and use an indifference condition modeled in Carlsson et al. (2005), the critical value of γ that makes an individual indifferent between two societies A and B is:

$$\gamma_{A,B} = \frac{ln(x_{i,A}/x_{i,B})}{ln(\Phi_A/\Phi_B)} \tag{2}$$

Equation (2) shows the trade-off between individual income and the overall level of inequality. This means that an increase in inequality may be compensated by some additional income, such that the overall level of utility remains constant. The degree of substitution between income and inequality is given by γ.

The way in which the level of inequality of a society j enters the utility function of individual i in Carlsson et al. (2005) has three underlying assumptions. First, the only thing that matters for individual utility is the level of global inequality, not the reasons for it. Second, inequality aversion is homogeneous across individuals. Third, it does not distinguish the role of the comparative notion of inequality aversion. Although

convenient, these assumptions are restrictive and may oversimplify the relationship between inequality and individual well-being. In this paper, we test four additional mechanisms that may explain how inequality affects individual well-being. First, we investigate the role of fairness. In particular, we analyze if individuals have a different valuation of inequality when it is the result from effort as opposed to luck. Second, we analyze if an individual's prospects of mobility along the income distribution affect their preferences for inequality. Third, we test whether inequality aversion depends on one's position in the income distribution. Fourth, we explore whether the effect of fairness and prospects of mobility on inequality aversion depends on one's position in the income distribution.[2]

Next, we describe with more detail the theoretical foundations for each of these mechanisms.

Fairness

The distinction between morally acceptable and unacceptable income inequality is one of the main contribution of philosophical egalitarianism (Rawls, 1971; Roemer and Trannoy, 2016). These ideas were modeled at the micro-economic level by Alesina and Giuliano (2011), who suggest that individuals care, not only about the overall level of income inequality, but also about how fair or unfair the roots of inequality are. In particular, they assume that preferences are mediated by a sense of fairness and that individuals might be affected differently by inequality when it is the result of "luck" as opposed to inequality that arises due to differential "effort".[3] In terms of the utility function described by equation (1), Alesina and Giuliano (2011) suggest two sources of heterogeneity in the inequality aversion parameter across individuals: a) individuals may differ in their fairness view (Ψ_i^{ideal}); b) individuals might assign different weights to deviations from desired levels according to the origin of inequality, e.g. $\gamma_i^{effort} \neq \gamma_i^{luck}$.

Despite differences in the formalization of the idea, the mechanism we propose is essentially the same: individuals may be affected differently depending on the source of income inequality. In our case we could write:

$$\gamma_{ij} = g_{ij}(e_{ij}|\Psi_i), \text{where } e_{ij} = \frac{\Phi_{ij}^l}{\Phi_{ij}^e} \tag{3}$$

[2] In section 6, we introduce a more general and flexible model than the one described by equation (1). We do this in order to check whether our results hold when we focus on a non-self-centered notion of inequality aversion

[3] These two types of inequality are anchored on two fundamental principles of equality of opportunity: compensation and reward (Roemer and Trannoy, 2016; Ramos and Van de gaer, 2016). The principle of compensation proposes that inequality that arises from circumstances beyond individual control is ethically unjustifiable. The principle of reward argues that inequality could be ethically legitimate when it comes from differences in effort. Alesina and Giuliano (2011) assume that the costs of inequality are mediated by a sense of fairness and that individuals dislike deviations from their ideal or desired levels of income inequality (unobservable).

where $g_{ij}(.)$ is a well-behaved function, in which g'_{ij} represents the derivative, Ψ_i is the notion of fairness of the individual i, while e_{ij} represents individual's i beliefs about the relative importance of inequality due to luck (Φ^l_j) with respect to inequality due to effort (Φ^e_j). Our main hypothesis is that inequality aversion is shaped by meritocratic considerations ($\Psi^{meritocratic}$), i.e. individuals are less willing to tolerate inequality that comes from "luck" rather than from "effort". In this case, we expect $g'(e_{ij}|\Psi_i = \Psi^{meritocratic}) > 0$, namely $g_{ij}(.)$ is an increasing function of e_{ij}.[4]

Mobility

Individuals' willingness to accept income inequality may also be affected by the degree of mobility in the income distribution. In this case, the relationship between mobility and inequality aversion is associated with two competing channels. The first mechanism implies a negative relation between income mobility and inequality aversion. The key idea is that societies with higher chances of mobility tend to be more egalitarian in the long run and this reduces inequality aversion in the short run because short-term inequalities are more likely to be corrected in the future (Shorrocks, 1978; Jäntti and Jenkins, 2015). Moreover, since income mobility could also be related to the notion of equality of opportunity (Jäntti and Jenkins, 2015; Amiel et al., 2015), if people consider income mobility as compensating at least partially, at the existing levels of income inequality, more opportunities for social mobility would imply less inequality aversion (it establishes a trade-off between preferences for mobility and inequality aversion).

However, when individuals can move along the income distribution, income dispersion also represents the range of incomes that an individual could potentially achieve. This includes movements towards the upper tail of income distribution but also towards the bottom. Hence, a less dispersed income distribution insures individuals against the risk of ending up in a low position. The key point here is that under the classic assumption of concave utility functions, potential losses have a larger effect on the level of utility than potential gains of the same magnitude. Hence, if individuals are risk averse, mobility increases inequality aversion.

Since these two potential mechanisms go in opposite directions, the theoretical prediction about the effect of mobility on inequality aversion is ambiguous; it is an empirical matter. To account for income mobility, we augment our expression in equation (3) for γ_j as follows:

[4]It is worth noticing that this framework is sufficiently general to accommodate non-meritocratic fairness views. For example, the case of a perfectly egalitarian individual is represented by $g'(e_{ij}|\Psi_i = \Psi^{egalitarian}) = 0$ and $\gamma_{ij} = g(e_{ij}|\Psi_i = \Psi^{egalitarian}) = \gamma^{max}$. By contrast, a libertarian individual ($\Psi^{libertarian}$) considers the distribution of income determined by the market as fair and would be unwilling to change it whatever its origin (luck/effort), i.e. $g'(e_{ij}|\Psi_i = \Psi^{libertarian}) = 0$ and $\gamma_{ij} = g(e_{ij}|\Psi_i = \Psi^{libertarian}) = 0$. We assess the empirical relevance of these cases in section 6.

$$\gamma_{ij} = g_{ij}(e_{ij}, m_j|\Psi_i) \tag{4}$$

where m_j represents the degree of mobility in the income distribution for society j. Higher m_j reflects that the individuals perceive higher chances of moving along the income distribution in society j.

Position

Finally, inequality aversion may also vary according to the position of the individual in the income distribution. An initial argument that supports this hypothesis is that individuals may have preferences for a relative position in the income distribution (Alpizar et al., 2001; Heffetz and Frank, 2011; Charité and Kuziemko, 2015; Hvidberg et al., 2020). The individual's degree of positionality in regards to relative income may change the marginal utility of absolute income when the individual's ranking changes, which in turn affects the trade-off between income and income inequality. As the probability of falling to the bottom of the income distribution decreases with income, anxiety about relative position would be less of a concern for middle- and upper-class individuals. In this sense, a last-place aversion effect leads to a situation in which positional concern could be most acute at the bottom of the distribution, and thus that utility may be convex with respect to the relative position (Kuziemko et al., 2014).[5]

An even more general aspect is that people may have different notions about what is meant by inequality, which would have relevant implications for measuring inequality aversion and understanding its foundations. For instance, previous studies confirm the relevance of a self-centered notion of inequality aversion. In this case, an individual's willingness to pay to reduce self-centered inequality is based on their situation relative to others (Fehr and Schmidt, 1999, 2001; Bolton and Ockenfels, 2000). As a result, an individual's position in the income distribution matters, when self-centered and non-self-centered inequality aversion are considered. Since these potential mechanisms could go in opposite directions, the theoretical prediction about the effect of position on inequality aversion is ambiguous and empirical. Therefore, we could postulate a hypothesis that inequality aversion is a normal good (inferior): i.e. inequality aversion increases (decreases) with income and persons in the upper end of the spectrum are more likely to have a higher degree of inequality aversion. Equation (4) can be augmented now as:

$$\gamma_{i,j} = g_{i,j}(e_{i,j}, m_j, p_{ij}|\Psi_i) \tag{5}$$

[5]The position in the income distribution could be also relevant when it affects the expected returns of the redistribution (Benabou and Ok, 2001; Piketty, 1995; Hirschman and Rothschild, 1973). However, our experimental design establishes a set of choices in a static world where this type of dynamic effect should not be at work.

Note that under this specification γ may vary not only between societies but also between individuals in the same society (if their position changes).

3 Experimental Design

To estimate the magnitude of inequality aversion and its foundations, we implemented an experimental survey with undergraduate students at *Universidad de la República*, the largest public university in Uruguay. The survey was implemented using an online platform, targeting the universe of first year economics and business students enrolled at the major university in Uruguay. Invitations were sent by email, participation was voluntary and there was no economic incentive to answer the survey.[6]

To estimate γ we use a survey design based on Amiel and Cowell (1992) and Carlsson et al. (2005). To analyze the role of the mechanisms described in section 2, we introduce four original information treatments. The experimental survey also includes attention and comprehension checks, a set of questions about individuals' backgrounds and socio-economic status and a final module that collects information on individual attitudes and preferences, political beliefs and self-reported preferences for redistribution.

Following previous empirical social choice research, subjects made hypothetical choices entailing no monetary consequences. This may raise concerns about the reliability of our questionnaire-based measure of inequality aversion. Individuals may simply engage in cheap talk or provide socially desirable answers. Subjects may look more prosocial compared to situations wherein the reduction of inequality comes at a personal cost. However, according to Gaertner and Schokkaert (2012), questionnaire studies are suitable when the aim of the research is to derive information about distributional norms. Moreover, there is no reason to believe that individuals would supply unreliable answers, especially if the cognitive effort required by the task is not too demanding.[7]

3.1 Eliciting Inequality Aversion

Our first goal is to reveal individual willingness to pay to reduce inequality, which in turn allow us to estimate the value of γ. Since utility is defined as a function of income and inequality, we need to define a

[6] The translated version of the introductory message to the survey can be consulted in the Online Appendix A.1.

[7] It is not entirely clear whether the use of hypothetical choices would lead to overestimation of prosocial behaviours. Ben-Ner et al. (2008) compare choices in incentivized and hypotetical dictator game experiments, showing no differences in the average amount transferred. Moreover, stake size seems to have small or insignifcant effects on behaviour in the Dictator and Ultimatum Game (Larney et al., 2019). Bauer et al. (2020) also show that a quantitative survey measure of altruism is a good predictor of choices in an incentivized experiment.

measure for inequality. To make our results comparable with the existing literature, we use the coefficient of variation: $\Phi_j = \frac{\sigma}{\bar{x}}$. [8]

In this experimental design, participants face pair-wise choices between hypothetical societies. The hypothetical societies are characterized by two dimensions that correspond to the arguments of the utility function in equation (1): income ($x_{i,j}$) and income inequality (Φ_j). To make the information easier to understand, we describe each society graphically, by using the image of a building to depict the income distribution. Figure 1 depicts the image showed to the respondents. Each building has ten floors that represent the deciles of the income distribution. Inside each floor, we include coins that represent the amount of income owned by the corresponding decile. Each representation includes also the mean, minimum and maximum income in that particular society. The image was presented together with a message that contained detailed guidance to interpret the images. The instructions explicitly mention that there are no right or wrong answers.

Instead of asking individuals which society they would choose for themselves, we ask them to choose a society for their hypothetical grandchild, sixty years from now (Carlsson et al., 2005, 2007). This is a common practice in the literature (Johansson-Stenman et al., 2002). The goal is to abstract participants from their own personal circumstances or environment at the time of making the decision (Amiel and Cowell, 1992; Johansson-Stenman et al., 2002). Since at the time of the survey, participants are not old enough to have grandchildren of their own, a necessary assumption is that participants use their own preferences when choosing a society for their grandchildren.[9] Moreover, we also need to assume that individuals internalize that the society is completely hypothetical and has nothing to do with the society in which they currently live.

To rule out poverty aversion or lexicographic strategies, the instructions explicitly mentioned that in the hypothetical societies all individuals were able to cover their basic needs. We also informed the participants that in the hypothetical societies there is no welfare state and choices are static. Finally, we mentioned that all societies had the same availability of goods and services as well as the same prices and quality. The translated instructions can be found in Figure A.1.2 in the Online Appendix (section A.1).

An additional methodological concern is that respondents might provide strategic responses. This could be motivated by 'moral satisfaction' (Kahneman and Knetsch, 1992), the desire to make a good impression

[8] The reasons usually mentioned for using this index as a measure of inequality are 1) symmetry, 2) scale-invariance and 3) it satisfies the principle of transfers (Lambert, 1992). Note that our design allows us to use any measure of inequality that satisfies the principle of anonymity and scale-invariance. As a robustness check we replicated the main analysis using as alternative measures of inequality the Gini Coefficient and the ratio P_{90}/P_{10}. The results are robust to these alternatives (see Online Appendix A.13)

[9] Our measure of inequality aversion may be affected by differences in the desired number of children across subjects. A person who does not want or is indifferent to having children might respond differently than someone who strongly wanted a large family.

on the experimenter (Gaertner and Schokkaert, 2012), signalling motives (Beshears et al., 2008), or to reinforce certain characteristics of their identity, a 'self-image concerns' (Akerlof and Kranton, 2000). To mitigate these problems, we frame the experiment as a choice between *hypothetical* societies, trying to create some distance between the choice and the current personal context. Furthermore, as the survey is online and anonymous, there is no interaction with an interviewer.[10]

We define a baseline society A and nine alternative societies B_z. Table 1 describes each of the societies in terms of their minimum, average and maximum income as well as the coefficient of variation. In all cases the income distribution is uniform. Society A is characterized by a mean income of \$30,000 and a coefficient of variation of 0.385. Each one of the type B societies has a coefficient of variation of 0.1925, which is exactly half of the coefficient reported for society A. The only difference among type B societies is the income that an individual would receive if she choose B_z over A. By changing income and holding constant the coefficient of variation, we can estimate bounds for the inequality aversion parameter for each respondent.

The following example illustrates how we identify the lower and upper bounds for γ. Individuals have to choose nine times between pairs of societies: A or B_z $\forall z \in \{1, ..., 9\}$. Let a set of choices be for instance $\{B_1, B_2, B_3, A, A, A, A, A, A\}$. This implies that $B_3 \succeq A$ and $A \succeq B_z$,$\forall z > 3$. From the preference relation $B_3 \succeq A$ and the indifference condition in equation (2), we know that: $\gamma \geq 0.05$.[11] Analogously, by $A \succeq B_z$ $\forall z > 3$ and equation (2), we know that $\gamma \leq 0.09$. The intervals for γ associated with each possible (and consistent) set of choices is reported in Table 1, column (6). It is worth noting that if individual i chooses A over B_1, she is choosing to resign part of her income to live in a more unequal society. We call individuals of this type "inequality lovers". In any other case, individuals can be defined as inequality-neutral or inequality averse.

Each participant is told what her grandchild's level of income and position in income distribution would be for each society in the pair.[12] This is depicted in Figure 1 by the red square between the buildings representing societies A and B. As we explain in Section 3.2, each individual chooses between A and B_z in three different positions; the first choice is made at the mean. This means that individuals are told both that they are going to be at the mean of the income distribution and also the total amount of money that they

[10] As a robustness check, we replicate the experiment with students in a standard in-site classroom setting. We did not find a significant difference between the online and in-site version of the experiment.

[11] From equation (2), the value of γ that makes an individual indifferent between society A and society B is $\gamma_{A,B} = \frac{ln(x_{i,a}/x_{i,B})}{ln(\Phi_a/\Phi_b)}$. By substituting the values of the example for societies A and B_3 and using the preference relation derived from the set of choices: $\gamma_{A,B} \geq \frac{ln(30000/28950)}{ln(0.385/0.1925)} = 0.05$.

[12] Instructions explicitly rule out dynamic effects as there is no uncertainty regarding individuals' future income. We introduce uncertainty in a separate treatment (mobility treatment)

would earn with certainty. All the examples presented so far are based on an individual making a choice at the mean of the income distribution.

3.2 Information Treatments

The study is also aimed at understanding the foundations of inequality aversion. Apart from uncovering the inequality aversion parameter, we assess the role of effort, luck, mobility and position in determining how inequality averse individuals are. In order to answer this question, we introduce four information treatments that allow us to go one step beyond the simple estimation of the inequality aversion parameter.

Baseline group

The first group of participants is the *control* group; it represents the baseline comparison group in most of our analysis. This group only receives the information described in Section 3.1. A sample of the message is provided in Figure A.1.2 in the Online Appendix (section A.1). All individuals (both in treatment and control groups) receive this baseline message as the second screen of the survey. The control group does not receive any information about the roots of inequality and the role of income mobility. These participants make decisions based on their own beliefs about inequality and a fair world. The difference between treatment and control groups are additional pieces of information, which are detailed in the next section.

Effort and Luck Treatments

For the second and third groups we include additional information regarding the sources of inequality. The two treatments - *effort-message* and *luck-message* - are based on the idea that inequality aversion is sensitive to a notion of fairness. This message is shown to the participants immediately after the baseline instructions and just before the first pair-wise choice between A and B_1. The *effort-* and *luck-* messages are as follows:

> ***Effort-message:***
>
> "*Next, we report some relevant information about each pair of the hypothetical societies. Please remember that both societies are identical, except for their income distribution (how income is distributed between floors) and in your grandchild's income. In this case, your grandchild's income is exactly the same as the average income. This means that your grandchild will be in the middle of the building.* ***Important****: Your grandchild's income and his/her place in the society corresponds to his/her lifelong effort relative to the others.* "
>
> ***Luck-message:***
>
> "*Next, we report some relevant information about each pair of the hypothetical societies. Please*

remember that both are identical, except for their income distribution (how income is distributed between floors) and in your grandchild's income. In this case, your grandchild's income is exactly the same as the average income. This means that your grandchild will be in the middle of the building. ***Important****: Your grandchild's income and his/her place in the society is not related to your grandchild's individual merits but is the result of luck.* "

The goal of these two information treatments is to introduce some variation in the source of income inequality to test how inequality aversion and fairness views interact with each other.[13] Our leading hypothesis for these two treatment arms is:

$$\gamma^e \leq \gamma^c \leq \gamma^l \tag{H1}$$

where γ^e, γ^c and γ^l represent the value of the inequality aversion parameter estimated for the *effort-message*, *control* and *luck-message* groups respectively. This hypothesis reflects both compensation and reward principles that motivate fairness reasoning and suggest that individuals are more likely to accept inequality when it comes from differential effort while they are more reluctant when it comes from circumstances that are beyond individual control.

Mobility Treatment

A fourth group receives the baseline instructions and an additional message with information about the chances of mobility in the hypothetical society. We call this group the *mobility-message* group. With this information treatment, the focus is on the role of income mobility in determining inequality aversion. This treatment arm is based on the idea that individuals can be more or less reluctant to accept inequality if there are chances of social mobility, as discussed in section 2. The *mobility-message* is as follows:

Mobility Message:

"*Next, we report some relevant information about each pair of the hypothetical societies. Please remember that both are identical, except for their income distribution (how income is distributed between floors) and in your grandchild's income.* ***Important****: in both societies there exists social mobility. This means that there is a chance for your grandchild to move up (higher level of income) or down (lower level of income).* "

In this case, we do not have a unique hypothesis because there are two competing channels. The chance of mobility creates uncertainty; one's attitude toward risk might affect one's decisions. While risk aversion

[13] As a robustness test, for a sub-sample of students we performed both effort and luck treatments sequentially for the same individual. In these cases, individuals made three series of choices: first without additional information (control), and second and third they received both the effort and luck treatment, in a random order. The details of this strategy are discussed in section 6.

implies a re-enforcing relationship between mobility and inequality aversion, mobility also creates the possibility of a more equal society in the long run and this has the opposite effect on inequality aversion. We will call this second mechanism "preferences for mobility" since it reflects a negative relationship between mobility and inequality aversion. There are two alternative hypotheses depending on the relative importance of each of the channels:

$$\gamma^m \geq \gamma^c \textit{ if risk aversion dominates} \tag{H2.A}$$

$$\gamma^m \leq \gamma^c \textit{ if preferences for mobility dominates} \tag{H2.B}$$

where γ^m is the inequality aversion parameter estimated on the *mobility* group.

Position Treatment

Regardless of whether an individual is part of the *effort, luck, mobility* or *control* groups, we replicate the experiment under three alternative scenarios that vary the position in the income distribution. The three scenarios are: 1) grandchild is at the mean of the income distribution, 2) grandchild is at the bottom of the income distribution and 3) grandchild is at the top of the income distribution. Note that unlike the previous treatment arms – which are designed to compare treatment vs. control group only - in this case, since all individuals are exposed to the same three scenarios, we can also compare the effect of position by each treatment arm.

The goal of the *position* treatment is to test whether individuals' inequality aversion changes with their position in the income distribution. Given the static nature of the exercise (the only exception is the mobility treatment), individuals do not anticipate any income gain from reducing inequality. We expect individuals to be less willing to pay to reduce inequality when their income is relatively low. The leading hypothesis is therefore:

$$\gamma_{min} \leq \gamma_{mean} \leq \gamma_{max} \tag{H3}$$

where γ_{min}, γ_{mean} and γ_{max} are the inequality aversion parameters estimated at the bottom, at the mean, and at the top of the distribution, respectively.

Table 2 presents a summary of all the information treatments. Tables 3 and 4 report the parameters (income, coefficient of variation and implied γ) used for the new scenarios (choice at the minimum and at the maximum). Note that in order to preserve the same range for γ, the alternative levels of income reported for societies B_z are different between the three treatment arms. Panels a. and b. in Figure 1 report one figure for each one of the positions used in the treatment arm.

3.3 Econometric Specification

With our baseline specification we estimate the effect of each message on our outcome of interest: inequality aversion. This specification allows us to test hypotheses H1 (effort and luck) and H2 (mobility) and it estimates the effect of each treatment arm using the control group as the comparison group. Since the only difference between the two is the additional piece of information shown to the treatment group, our results can be interpreted as the effect of the additional message on inequality aversion.

Consider the sample of individuals assigned to the *control* group or one of the treatment groups, indexed by t: *luck, effort* or *mobility*. The main specification is given by the following regression:

$$\gamma_i = \Gamma(\alpha + \beta D_i^t + \delta X_i + \varepsilon_i) \tag{6}$$

The outcome variable (γ_i) represents the inequality aversion parameter recovered from the set of choices of societies A and B_z made by the individuals. D_i^t is a dummy variable indicating if individual i was assigned to treatment t. Finally, Γ is a generic function that models the relationship with γ_i and X_i is a set of controls used to increase the precision of our estimates.[14]

In this regression, β is the coefficient of interest. It represents the effect of the message associated with treatment t on inequality aversion. In the case of the *effort-message* group, β can be interpreted as the effect of knowing that inequality is mostly associated with a differential lifelong effort. Analogously, β for the *luck-message* group reflects the effect of being aware that inequality is the result of idiosyncratic shocks rather than associated with individual merits. In both cases, the comparison is against a baseline scenario where participants only received a common set of instructions. Finally, β associated with the *mobility-message* group can be interpreted as the effect of allowing income mobility as compared to an alternative scenario in which the position in the income distribution is known with certainty.

Unlike H1 and H2, our test for H3 (position) does not consist of comparing the inequality aversion parameter between treatment and control groups. In this case, since all individuals make the same set of choices, we simply compare their choices at different positions. In this case, t indexes choices at the minimum, mean and maximum. The regression specification is as follows:

$$\gamma_i = \Gamma(\alpha + \beta P_i^t + \lambda I_t + \delta X_i + \varepsilon_i) \tag{7}$$

[14] We include the following control variables: sex, age, hours worked ("Work: Part time"; "Work: Full time"; does not work omitted variable), household size, household income (it is a categorical variable defined as "USD 1000 - USD 2000 per month"; "More than USD 2000 per month"; less than USD 1000 is the omitted variable): and father educational achievement (High School or other, "College or more": "Incomplete High school or less" is the omitted variable), Mother's educational achievement ("High School or other"; "College or more"; "Incomplete High school or less" is the omitted variable), a dummy variable that identifies the year of the experimental survey.

As in equation (6) the outcome variable (γ_i) represents the inequality aversion parameter recovered from the set of choices of societies A and B_z made by the individuals. P_i^t is a dummy variable indicating if the choice of individual i was was made at the mean, minimum or maximum. In this case, we also introduce treatment fixed effects in order to account for the differences that may be induced by *effort, luck* and *mobility* treatment arms. Finally, X_i is a set of controls used to increase the precision of our estimates.

For the analysis of the effect of position on (γ), our baseline estimate consists of comparing choices at the minimum or maximum versus choice at the mean, which is captured by the coefficient β. As a complementary strategy, we also report the estimates of directly comparing choices at the maximum versus at the minimum.

Since our empirical strategy only allows us to recover a range for the implied γ, our outcome variable cannot be treated as a continuous variable and a regression analysis requires making further assumptions about its distribution within each interval. Our preferred model estimates equations (6) and (7) with interval regressions. The assumption in these models is that γ is distributed normally within each interval and these regressions are estimated using maximum likelihood. We also present two alternative specifications. First, we report the results of an OLS regression, which assumes that γ is uniformly distributed within each interval.[15] However, OLS estimates may be failing to capture the real treatment effect since the extreme intervals are of infinite length. Hence, we also estimate the treatment effects using quantile regressions at the median. With this specification we estimate the treatment effect on the median of the γ distribution, instead of the effect on the mean as interval and OLS regressions. Compared to the OLS estimate, our estimated based on quantile regressions are not affected by the specific values of γ at the extremes of the distribution.

4 Data and Implementation

4.1 Data

The survey is organized in two parts. The first part is the experimental module; designed to collect all the information required to estimate the inequality aversion parameter. The randomization is automatically performed by the online survey platform with a uniform probability of being selected for each of the treatment arms ($p = 0.25$).

[15] For participants who choose society A over B_1 we can only say that $-\infty < \gamma \leq -0.09$. Analogously, for participants who choose B_9 over A, $-\infty > \gamma \geq 0.78$. In order to estimate an OLS model we need to compute a mean value for these groups. For the first group we use $\gamma = 0.09$ which corresponds to the upper bound of the interval. For the second group we use the sum of the lower bound (0.78) and the length of the widest interval ($0.27 = 0.78 - 0.51$).

In the second part, we collect additional information to help with the interpretation and discussion of our results. We collect data about socioeconomic and demographic characteristics, and we include a set of questions regarding participants' opinions, attitudes and preferences. We also collect information about individual characteristics such as age, gender, and working status (not working, working part-time or working full-time); and household level information such as the number of individuals living in the household, their mother's and father's level of education and household income.

In the final module of the survey we asked participants about their individuals' attitudes and preferences towards inequality. We first ask if they believe that income level and position in the income distribution are usually the result of personal effort or luck. Then, we asked if they consider that income inequality is a problem in Uruguay. The options ranged from "*not an issue*" to "*a very serious issue*". We also asked participants to select their level of agreement with some statements about why inequality is good or bad. In particular, we included: 1) "*Inequality is bad when it comes from luck rather than effort*", 2) "*inequality is bad because it reduces opportunities for younger people*", 3) "*inequality is bad because it increases violence*", 4) "*inequality is bad because it reduces the quality and quantity of public goods supplied*" and 5) "*inequality is good because it increases competitiveness between individuals*". Finally, we also asked whether or to what extent they trusted the government.

4.2 Subject Pool and Randomization

We sent invitations to participate in the survey to 6,082 incoming undergraduate business and economics students enrolled in the first semester for the 2018 and 2019 cohorts. 2,089 students accepted the invitation, but some of these left the survey incomplete. Hence, the final number of completed surveys was 1,576.[16] It is important to note that at the moment of accepting or declining participation, the students had not received any experimental information yet. Hence, the information contained in the information treatments could not have affected the probability of dropping out of the survey. On average, students took between 25 and 30 minutes to complete the whole survey, including time dedicated to the experimental module and time dedicated to the modules that collected additional information.[17] Table A.1.1 in the Online Appendix

[16] In addition to the original email invitation, we sent email reminders. After sending all the reminders, the total number of students that started the survey – i.e., clicked on the link and answered the first screen – was 2,302. Of these, 213 declined participate.

[17] We also sent invitations to students that started their program in the second semester of 2018 and 2019. In this case, the invitation was for participating in a slightly different experiment that we explain later (in section 6), and was used as a robustness test. The total number of second semester students that started the survey was 343, and 275 of them completed the survey. Combining the invitations sent to first- and second-semester students the total audience size was 7,379 and the total number of completed answers was 1,815.

(section A.1) provides detailed information about the distribution process.

It is worth noting that the way in which we elicit individuals' willingness to pay to reduce inequality implies that, if individuals have (at least) weakly monotonic preferences, once they stop choosing B and start choosing A, they should not go back to B again. We consider individuals whose preferences are not weakly monotonic as inconsistent. We apply the criteria in the most restrictive way: we exclude participants that make inconsistent choices in at least one of the three replications of the experiment (choices at minimum, mean and maximum). Hence, an additional restriction that we use to define our final sample is to drop individuals with inconsistent responses. [18]

Column (1) in Table A.2.2 in the Online Appendix (section A.2) reports the results of a regression of a dummy indicating inconsistency over all observable characteristics collected in the survey. The regression shows that most of the variables were not statistically significant. However, there was one exception. Female participants were on average about 6 p.p. more likely to be inconsistent as compared to male participants. Column (2) also includes a set of dummies for the treatment variable. Although participants assigned to the *mobility-message* treatment were equally likely to be inconsistent as compared to the control group, both *effort-message* and *luck-message* groups were more likely to be inconsistent compared to the control group (coefficients of 0.136 and 0.133 respectively and $pvalue<0.001$ in both cases). Note however, that there are no statistically significant differences when comparing *effort-message* and *luck-message* groups to each other. Finally, Column (3) reports the result of including the comprehension check and the attention questions. In both cases, the coefficient associated with each variable is not statistically different from zero.[19]

We dropped 531 cases due to inconsistent responses. This means that after considering all filters, our final experimental sample is made up of 954 students that completed the entire survey in a consistent way[20]. In section 6 we return to this point and we present a series of tests about the implications of this issue.

After eliminating inconsistent and incomplete answers, we test whether randomization was performed correctly. Table A.3.1 in the Online Appendix (section A.3) allows us to compare the balance in the characteristics between participants assigned to different groups.[21]. The variables included in the table correspond

[18] In section 6, we describe the comprehension and attention checks included as part of the survey and show that our main results are robust to alternative ways of handling inconsistent responses.

[19] To present more direct evidence, Table A.2.1 in the Online Appendix (section A.2) reports the distribution of the inconsistency variable by treatment arm. Furthermore, to address the potential bias associated with this problem we implemented sequential treatments of information on individuals to an alternative sub-sample of students (see section 6).

[20] More precisely, 954 students were consistent in every scenario, 401 were consistent in 2 out of 3, 106 in 1 out of 3 and 24 in none of the scenarios.

[21] We analysed the presence of bias in the sample of individuals who participated in the questionnaire. We observed women, students enrolled in economics and those with a better academic performance show a greater probability to participate. This

to the information collected in the second part of the survey. Columns (1) to (4) report the mean and the standard error (in parentheses) for different variables split by *control*, *effort-message*, *luck-message* and *mobility-message* groups. Column (5) reports the p-value of the test of the null hypothesis of equality of means across treatment arms. As expected, there is no evidence of substantial imbalances between groups for the variables collected in the survey. There are only two exceptions which are the dummies that capture whether the father or the mother have an education level of incomplete high-school. For these two variables, there is a small but statistically significant difference, driven by the *mobility* and *luck* groups respectively.

4.3 Summary Statistics

The final sample can be characterized as follows. Individuals were on average 23.8 years old and mostly female (62%). The average number of people in each household was about 3.46. As to labor market participation, about half of the individuals had not worked in the last week. Of the remaining 50%, 30% were part-time workers and 20% were full-time workers[22]. The share of parents who did not complete high-school was relatively similar to the share of parents who completed high-school level or higher. Finally, around 25% of the students lived in a household with less than USD 12,000 annual income, around 39% live in a household with earnings between USD 12,000 and USD 24,000 and the remaining 36% live in household with more than USD 24,000 annually. As a reference, the average household income per-capita for the whole country was USD 9,200 by the end of 2018 and the minimum wage was set around 5,640 USD annually.

5 Main results

5.1 Baseline Estimate for Inequality Aversion

In this section we report the baseline estimates for the inequality aversion parameter (γ). It was elicited based on equation (1), using same assumptions as Carlsson et al. (2005) (i.e: $\Phi = \frac{\sigma}{|\bar{x}|} = \frac{\sqrt{Var(x)}}{|\bar{x}|}$ and $h(.)$ is simply the identify function). It refers to choices made by participants assigned to the control group when they are at the mean, using only consistent answers (252 cases). In every case, the mean is calculated using the lower range value. Figure 2 shows the distribution of γ for this group. In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the

variables are also associated with a lower probability of drop out. This analysis is presented in the Online Appendix (section A.4)

[22] It is worth noting that being a full-time employee and a part-time student is not uncommon in Uruguay. Many of the classes taught in the University are between 7 and 11pm, hours when working students are able to attend class.

frequency of γ associated with each choice. The dashed line indicates our estimate for the median γ while the dot-dashed line represents our estimate for the mean using interval regression of γ over a constant.

The distribution of γ for the control group reveals several findings. First, most individuals are inequality averse: the inequality aversion parameter for the median individual belongs to the interval $[0.09, 0.15)$ and the estimate of the mean is 0.214. This means that, on average, individuals should be compensated with an increase of 0.214% of their personal income in order to have the same level of utility after a 1% increase in the society's income inequality.

Second, it is also worth noting that more than 20% of individuals in the control group can be categorized as 'inequality lovers' as they are willing to pay a positive amount of money to live in a more unequal society. One possible reason that could explain the existence of inequality lovers is that they prefer efficiency over equally-distributed income. In this case, individuals will be willing to resign part of their income in order to live in a more wealthy society. This is in accordance with previous studies suggesting that efficiency concerns are more frequent among undergraduate Economics and Business students (Fehr et al., 2006; Engelmann and Strobel, 2004). Alternatively, individuals could be interpreting a wider income range as offering the possibility of greater income in the future, ignoring our premise of considering their grandchild's position in the income distribution as fixed. However, as we show in section 5.3, this interpretation seems implausible since at the mean of the income distribution, individuals are, by in large, unresponsive to prospects of mobility.

Finally, about 23% of the individuals fall in the category of inequality neutral: $\gamma \in [-0.09, 0.09]$ and more than 15% of the individuals can be defined as extremely inequality averse. For the former, the interpretation of the result is that their overall level of utility does not change very much when inequality increases/decreases. This segment is slightly smaller than the one comprised of inequality lovers.

These results are in line with the findings in previous literature. For instance, Carlsson et al. (2005) estimate an average inequality aversion of 0.30 using an in-class experiment conducted at Karlstad University in Sweden. Amiel and Cowell (1999) found that inequality aversion ranges between 0.1 and 0.22 for a sample of students from the University of Melbourne (Australia) and Ruppin Institute (Israel). Finally, our results are also consistent with one of the treatments in Pirttilä and Uusitalo (2010) which found an inequality aversion below 0.5.

5.2 Treatment Effects: Effort vs. Luck

Panel a. in Figure 3 shows the distribution of γ for the *effort-message* and control groups. Solid bars represent the frequency for each interval of γ in the control group, while unfilled bars represent the same for

the treatment group. The dashed lines represent the median of each distribution. The exact p-value from the Kolmogorov Smirnov (K-S) test for identity among both distributions is presented in the explanatory notes accompanying the graph. Two results displayed in the graph are worth mentioning. First, the median of the distribution of γ for the treatment group lies in $[0, 0.05)$ which is smaller than the median for the control group ($\in [0.09, 0.15)$). Second, if we compare the frequencies of both distributions we observe that while for $\gamma > 0.09$ the frequency is larger in the control group, for $\gamma < 0.09$ the opposite is true. The K-S Test of equality between both distributions is rejected at a 10% significance level.

Table 5 reports the results of our parametric estimates. Columns (1) and (2) report the result of the OLS estimates, column (3) reports the result of a quantile regression at the median, and columns (4) and (5) report the estimates in our preferred specification based on interval regressions. Columns (1) and (4) report the results without including any control variables; columns (2), (3) and (5) report the results when including a set of control variables. The effect of the *effort-message* is not statistically significant. The sign of the effect is consistently negative across the different specifications.[23]

The differences observed when comparing the inequality aversion parameter of the *luck-message* and control groups are similar in magnitude to the differences observed when comparing the *effort-message* and control groups, but in the opposite direction. Panel b. in Figure 3 reports the distribution of γ for *luck-message* and control groups. In this case, the unfilled bars represent the distribution of γ for the *luck-message* group. The estimated median for treated participants lies in $[0.21, 0.34)$ which is slightly larger than the median for the control group. In this case, the K-S Test suggests that the null hypothesis of equality between both distributions can not be rejected at conventional levels of confidence. Table 5 reports the results of the parametric estimates. Unlike with the *effort-message* treatment, both for the OLS and interval regressions the treatment effects of the *luck-message* are statistically significant at 10% significance level. The sign of the effect is consistently positive across the different specifications used, showing a greater degree of inequality aversion when individuals receive a message framing inequality as the outcome of luck (circumstances).

One alternative way of analyzing the role of effort and luck is to compare directly the *effort-message* and *luck-message*. Panel c. in Figure 3 reports the γ distribution for *luck* and *effort* treatments. This representation allows for a cleaner comparison of inequality aversion between the two treatment arms. For very low values of γ, i.e. $\gamma <$-0.09, the frequency of participants from the effort-message group is larger than for the luck-message. However, for each interval where $\gamma \geq 0.21$, the relation is the opposite: the frequency

[23] It is worth mentioning that in the post-experimental questionnaire 65% of participants in the control group respond that income is mostly determined by effort rather than luck. This may partly explain the lack of statistically significant differences between the effort treatment and the control group.

of each interval for the luck-message group is always larger than for the effort-message group. In this case, K-S test rejects the null hypothesis of equality between both distributions at 2.5% significance level. Table 5 reports the regression results. Unlike the comparisons against the control group, these differences are statistically significant in all specifications at a 1% level. The magnitude of the difference ranges between 0.14 and 0.18. The interpretation of these results is that the income required to compensate an 1% increase in the inequality level of a particular society is 0.18% when the source of inequality is luck rather than effort. The magnitude is relevant if we consider that the average elasticity of the control groups is 0.214.

Overall, our results are consistent with H1 showing that $\gamma^e \leq \gamma^c \leq \gamma^l$. This suggests that inequality aversion may be based on a notion of fairness and individuals penalize inequality more when it comes from circumstances that are out of their control. This is also consistent with a meritocratic view where individuals are more likely to accept a differential reward when the prize is associated with individual merits.[24]

5.3 Treatment Effects: Mobility

Panel d. in Figure 3 depicts the distribution of γ both for the *mobility-message* and control groups. At a first glance, the effects of the *mobility-message* are not as clear as in the case of the *effort-message* or *luck-message*. First, while the median of the control group belongs to the interval $[0.09, 0.15)$, the median for the *mobility* treatment group belongs to $[0.15, 0.21)$, which is the immediate interval. When analyzing the frequency of each interval there seems to be a slight shift towards the right of the distribution, but the evidence is overall mixed. The results from the graphical evidence are confirmed by the regression estimates. Both for OLS and interval regressions, the coefficient associated with the treatment variable is smaller than 0.02 which is less than 50% of the treatment effect associated with the *effort-message* and *luck-message* (See Table 5).

The fact that we do not find any statistically significant effect from this treatment is in line with the theoretical predictions represented in hypotheses H2A and H2B. Behind the effect of mobility on inequality aversion there are two competing channels that may be operating simultaneously: risk aversion and preferences for mobility. One possible interpretation for this null effect is that both effects are of the same magnitude and they cancel each other out. Alternatively, if the effect of the *mobility-message* depends on the position of the individual in the income distribution, the overall null effect may be hiding heterogeneous effects. We will come back to this point in section 5.4, where we discuss heterogeneous treatment effects depending on position.

[24] Our findings are consistent with previous evidence from Durante et al. (2014). In the context of a laboratory experiment, they find that inequality concerns are greater when pretax incomes are determined by an arbitrary process rather than when they are "earned".

5.4 Treatment Effects: Position

Individuals' inequality aversion may also depend on their position in the income distribution. Since every participant in the sample chooses between alternative societies at the minimum, mean and maximum, the effect of position may be analyzed using all participants at the same time.[25]

Panels a and b in Figure 4 compare the distribution of γ (pooled sample) when choices are made at the minimum (maximum) to choices made at the mean. The results reported in panel a are very strong: changing the position of the individual from the mean to the minimum noticeably shifts the distribution of inequality aversion towards the left. First, when choices are at the minimum, the median γ belongs to the lowest interval, i.e. $(-\infty, -0.09)]$. This means that by changing the position from the mean to the minimum, the typical individual stops being inequality averse and starts being an inequality lover. This finding is also confirmed by comparing the frequencies of each distribution. For all eight intervals where $\gamma > 0$, choosing at the minimum implies a shift towards the first two intervals where $\gamma \leq 0$ compared with choices at the mean. In terms of the statistical significance of the result, the p-value of the test of equality of distributions rejects that both distributions are equal at a 1% level. These results suggest that, when choosing at the minimum, participants perceive themselves as relatively poor with respect to other individuals in their society and reduce their willingness to pay for lower income inequality.[26] Note that they have low incentives to reduce inequality because a lower inequality does not directly imply a better position or a higher absolute income[27]. We find a trade-off between the Rawlsian maximin motive and inequality aversion when comparing the implied γ from choices at the mean with those implied by choices at the minimum. These results are in line with the results obtained by Engelmann and Strobel (2004)

[25] The order of our position treatments was the same for all subjects. Hence, our results could potentially be affected by order effects. However, results from the attention checks discussed in section 6 and Online Appendix (section A.7) suggest that carryover effects due to fatigue did not play a relevant role.

[26] An alternative explanation could be that when participants are at the minimum they aim to maximize the absolute income of those individuals who are in the bottom of the distribution.

[27] Regarding the well-established negative relationship between an individual's preferences for redistribution and their own income, this result seems contradictory as low-income individuals may have higher incentives to support re-distributive policies. However, we elicit inequality aversion, which is related with preferences for redistribution but is not the same. Furthermore, in our context, each participant knows the level of income (and the position) that her grandchild would have if she was to choose either one of the two societies in a pair, and also knows that both are fixed (there are no dynamic effects). As a result, even if inequality was lower, participants would not expect any improvement in their grandchild's individual status. Finally, a Rawlsian motive for helping the least well-off is more important in this context. Unlike when participants make their choices at the mean and at the maximum, when they place their grandchild at the minimum of the income distribution, the minimum income is lower for those societies B_i with $i > 3$. Furthermore, there is likely more salience of the lowest income when choices are made at the minimum (see Table 3).

using incentivized experiments in a sample of undergraduate students studying economics and business administration.

Analogously, when comparing the implied γ from choices at the maximum with those implied by choices at the mean, there is a shift towards the right in the distribution of the inequality aversion parameter. However, this shift does not seem to be as large as the one observed in the comparison of choices at the minimum with choices at the mean. In this case, the median for γ at the maximum lies in $[0.15, 0.2)$, which is the interval immediately above the median γ at the mean. The results in terms of statistical significance confirm a shift in the distribution. The p-value test suggests that the null hypothesis is rejected at 5% significance level.

Figure 4 depicts the distribution of γ for the pooled sample of participants; i.e. regardless of their assignment to treatment. However, in order to conclude that this is actually a position effect we need to rule out whether the effect is driven exclusively by each of the treatment arms individually. Figures A.5.1 and A.5.2 in the Online Appendix (section A.5) show the distribution of γ for choices at the minimum and maximum compared to the distribution of γ at the mean for each one of the treatment arms and the control group. Panels a through d for each of these figures allow us to rule out that the position effect is driven by *control, effort, luck* or *mobility* groups individually. Overall, these results are in line with hypothesis H3 by which $\gamma_{min} \leq \gamma_{mean} \leq \gamma_{max}$. Table A.5.1 in the Online Appendix summarizes the magnitude of the position treatment effect by treatment arm. These results confirm that the effect of position is similar in direction and magnitude for all treatment arms. The only exception is in the size of the effect for the mobility group which seems to double the magnitude of the effect observed for the other treatment groups (e.g for Max vs Min the coefficient is 0.879, while for the control, effort and luck groups are respectively 0.447, 0.385 and 0.395).

Alternatively, instead of analyzing the effect of position by treatment arm, one could look for heterogeneous effects of each treatment arm by the position of the individual in the income distribution. Figure 5 reports a summary of this heterogeneity analysis. We report the coefficient of interest estimated using the specification of column (5) in Table 5. Each dot represents the point estimate of β while bars represent the 95% confidence interval.[28] From the analysis of these estimates two interesting conclusions can be drawn. First, there are no differences when analyzing the effects of the *effort-* and *luck- messages* by position of the individual in the income distribution. In both cases, the effects have the same sign and are of the similar magnitude. The meritocratic view (effort vs. luck) dominates in all cases, even when participants make their decision at the minimum, a place where the Rawlsian motive is expected to take effect.

[28] Figures A.5.3, A.5.4 and A.5.5 in Appendix depict the γ distribution for each treatment by each position.

Second, when we analyze the heterogeneity in the effect of the *mobility* treatment, we do not only observe differences in the magnitude of the effect, but we also find differences in the direction. While we observe a null effect when the choice is made at the mean (this is the result presented in Section 5.3), the effect is negative and statistically significant when the choice is made at the minimum, and positive and also statistically significant when the choice is made at the maximum. Our interpretation of this result is that at the mean, the null effect of the *mobility-message* is the result of two opposite effects that cancel each other out. However, analyzing the effect of *mobility-message* in the extremes of the income distribution unveils how each mechanism operates in isolation.

At the minimum, mobility does not pose higher chances of losing income because individuals are already at the bottom of the income distribution. Hence, the risk aversion channel plays no role–mobility increases the chances of moving, but movement can only happen upwards. In this scenario, mobility reduces inequality aversion. By contrast, when choices are made at the maximum there is no expectation of moving upwards. In this case, mobility could only mean losing income. Risk aversion is the only relevant channel and the effect of mobility on inequality aversion is positive. This means that at the top of the income distribution, mobility increases inequality aversion. Overall, these results suggest that the preferences for the mobility effect dominates when participants are at the bottom of the income distribution, while the risk aversion effect dominates when they are at the top. This confirms the advantages of our design to discriminate between alternatives drivers of inequality aversion.

6 Robustness checks and additional analysis

Correlates of inequality aversion: does γ have an economically meaningful interpretation? In order to assess the validity of γ as a measure of inequality aversion, we analyze if our estimates are correlated with a wide set of self-reported beliefs and preferences for equality and redistribution. With this aim, we used information about attitudes and beliefs collected in the last module of the survey (see Figure 6 for a summary. Section A.6 in the Online Appendix provides detailed information about this analysis). First, individuals with higher γ are significantly more pro-government, less market oriented, and more likely to consider inequality as a serious societal issue. Moreover, trust in government and self-reported left-wing ideological orientation are also positively correlated with our elicited measure of inequality aversion. Third, γ is also significantly higher for individuals who consider that inequality creates negative externalities (e.g. violence and crime). By contrast, γ is lower among individuals who believe inequality provides good incentives (e.g. effort). Finally, inequality aversion is also higher among individuals who believe that inequality is mainly the result of social circumstances beyond one's control (luck) rather than individuals'

responsibility. Overall, the evidence reported in this section suggests that our strategy correctly captures individuals' inequality aversion. The analysis also supports the idea that the roots of inequality aversion are related to both normative and instrumental motivations.

Comprehension checks and consistent answers. One potential critique to our experiment is that participants may not fully understand the proposed exercise and we may be incorrectly interpreting their responses. We address this concern in two ways. First, we introduced a comprehension check in which we showed participants two (new) alternative societies and asked them to select the more unequal society. This question allow us to test whether participants understood the information contained in the figures. Second, we introduced an attention check question. In this case, we asked participants whether they paid enough attention to the questions. To induce honest responses we argue that knowing how attentive they were while answering the questionnaire was essential for our project.[29] We conduct additional estimates restricting the sample to those who reported having paid attention and answered our comprehension check correctly. Our main results are robust across samples and conclusions remain essentially the same. Section A.7 in the Online Appendix provides detailed information about this analysis.

Another potential concern relates to our treatment of inconsistent responses. The results presented in the previous section are based on the sample of participants who responded consistently to three experimental surveys: at the mean, at the minimum, and at the maximum. This is very restrictive since it drops individuals that were consistent in two of the positions but inconsistent in a third. We considered an expanded sample that includes all consistent responses within each position. As an alternative, we also used more flexible criteria of consistency which allows an additional expansion of our baseline sample. Both expanded samples do not change the estimates of the treatment effect for any of the treatment arms in magnitude, direction, or statistical significance. Indeed, in the case of the effort (luck) message, the comparison against the control group, is now statistically significant, reinforcing our previous results. The section A.8 in the Online Appendix provides detailed information about this analysis.

Online vs. on-site experiments. Compared to previous literature, e.g., Carlsson et al. (2005); Amiel and Cowell (1999), our experiment differs in that we use an online experimental survey.[30] In order to address whether our online survey leads to a biased inequality aversion parameter compared to the on-site experimental questionnaire, we replicate our baseline experiment with a sub-sample of students in the class-

[29] Roughly 10% of subjects reported that they did not pay attention to their answers.

[30] Arechar et al. (2018) investigated this issue by replicating public good experiments online and on-site and conclude that online data quality is adequate and reliable compared to on-site, despite cooperation levels in their online sample being substantially higher than in the laboratory. Holbrook et al. (2003) uncovered biases associated with different survey methods of data collection (telephone vs. face-to-face interviews). Telephone were more likely to present themselves in a more socially desirable way than were face-to-face respondents.

room.[31] In terms of the value of the parameter γ, the results are essentially the same for the experiment at mean and maximum. We found a significant difference for the experiment at the minimum. In this case, γ is significantly higher when students took the experiment on-site. This difference is due to a greater proportion of students who always chose Society B in the on-site experiment.[32] Furthermore, the results from the information treatments remain unaffected. Overall, the fact that we do not observe major differences between two experimental settings, where subjects' perceived anonymity is plausibly different, suggests that demand effects do not play an important role in our context. Section A.9 in the Online Appendix provides detailed information about this analysis.

Non-self-centered inequality aversion. So far we have assumed that the effect of an individual's position in the income distribution on individual well-being enters in the utility function through γ. Alternatively, one could consider that position enters directly in the utility function, and that γ is position invariant. Aronsson et al. (2016) discuss the difference between these two approaches and refer to inequality aversion that is position dependent as "self-centered" inequality aversion. On the other hand, when inequality aversion is independent of the individual's position in the income distribution, it is referred to as "non-self-centered" inequality aversion. If instead of being "self-centered" inequality averse, our individuals are "not-self-centered" inequality averse, our previous estimates of the effect of position on γ could be capturing the effect of position in the overall level of utility and not an actual relation between position and γ. In order to address this concern we replicate our results using an alternative utility function where position enters directly as an argument of the function. Section A.10 in the Online Appendix discusses the strategy in detail and presents the results.

The key result is that inequality aversion is slightly higher than in the self-centered case. However, the overall conclusion remains the same: the average individual is inequality averse although there are some individuals that remain at low or even negative values for γ. Results regarding treatment effects are qualitatively similar.

Treatment effort vs. luck: within-individual analysis. In order to further test the robustness of our results, we replicated the experiment with a different sample of students selected from the same universe. This time, we introduced exogenous variation at the individual level. Since this replication was conceived as a robustness check only, we created a restricted version of the experiment with choices being made only

[31] We got 191 consistent answers in the classroom experiment.

[32] The fact that this difference was observed only for the set of choices at the minimum could mean that this extreme behavior may be related to self-image motives, which seems to occur more strongly at the minimum when questionnaires are implemented on-site. Learning may play a role as in the on-site experiment participants can see the subsequent choices (which is not possible in the online experiment).

at the mean and with two treatment groups - *effort* and *luck* - and a control group. Specifically, instead of asking participants to make repeated choices when the position changed, we ask the same individual to make a choice in different scenarios but with a change in the causes of inequality: first we ask them to choose with no additional information, then, in random order, we use the *effort-message* and finally the *luck-message*. Although the sample of individuals is considerably smaller, the results remain qualitatively the same. The distribution of γ for the control group is comparable with our baseline estimate from the full experiment. In addition, we confirm $\gamma_l > \gamma_c > \gamma_e$, which is consistent with H1 and H2 as the results from the main experiment. The section A.11 in the Online Appendix provides detailed information about this analysis.

Non-meritocratic fairness views. While our main analysis shows that inequality aversion is strongly shaped by meritocratic concerns, it does not exclude the possibility that there are individuals for whom inequality aversion is relatively insensitive to the process of inequality determination. While our experiment was not originally designed to identify different fairness views as in Almås et al. (2020), we can rely on our complementary within-subject design to check whether there are individuals for whom the level of inequality aversion does not depend on the origin of inequality. In other words, perfect egalitarians are subjects who exhibit a high level of inequality aversion in any possible scenario. Instead, we can define libertarians as subjects who are neutral to inequality irrespective of whether inequality results from effort or luck. In our framework, the perfect egalitarian and libertarian cases would correspond to $g' = 0$ for very high values of γ and for $\gamma \approx 0$, respectively.

We assess how persistent inequality aversion is to our meritocratic information treatments (luck vs. effort). We interpret a highly persistent inequality aversion parameter as suggestive of the prevalence of non-meritocratic fairness views. To do this, we compute transition matrices of individual inequality aversion. Results are summarized in Figure A.12.1 (presented in the Online Appendix (section A.12)). Overall, the dynamics of inequality aversion seems to be consistent with our meritocratic treatment effects. In Figure A.12.1.a, controls (y-axis) become less inequality averse when exposed to the effort-message (x-axis), with movements occurring mainly below the main diagonal[33]. By contrast, in Figure A.12.1.b and Figure A.12.1.c, subjects become more inequality averse when exposed to the luck-message (x-axis), with movements above the main diagonal. This is clearer in Figure A.12.1.c in which the baseline condition (y-axis) is the effort-message. The main diagonal of the transition matrix in Figure A.12.1 indicates cases of subjects holding a certain level of inequality aversion regardless of the origin of inequality. In particu-

[33] We also identify cases of persistent inequality aversion at very low and very high levels of γ in the within-individual analysis of our positional treatments (see Figure A.12.2 in the Online Appendix (section A.12)). However, as individuals were exposed to position treatments in the same order, concerns about potential order effects make the interpretation of transition matrices less clear in this case.

lar, cases of insensitive inequality-aversion for $\gamma \approx 0$ (libertarians) and $\gamma > 0.78$ (perfect egalitarians) are non-negligible[34].

Again, it is worth emphasizing the limits of this exercise. For instance, libertarians cannot be properly identified in our setting. The moral commitment of libertarians is to preserve the income distribution resulting from voluntary market transactions, which may be not clearly interpreted by subjects in our setting[35].

7 Conclusions

We elicited individuals' inequality aversion on a sample of first-year undergraduate students in economics and business enrolled at the largest university in Uruguay. We implemented a questionnaire-experimental study where we asked participants to make a sequence of choices between hypothetical societies characterized by varying levels of their income and income inequality. We also analyse the determinants of inequality aversion by using information treatments in which we randomly varied the sources of inequality (luck vs. effort), the availability of opportunities for social mobility and the position of participants in the income distribution.

Most individuals in our sample exhibited inequality-averse preferences. The inequality aversion parameter resulted to be higher among respondents who consider inequality is a problem because it is unfair or because it generates crime, violence or other negative externalities. We also found that inequality aversion is sensitive to the individual's position in the income distribution and very elastic to the notion of fairness. Inequality aversion is greater when income disparities in society emerges by luck rather than by effort, suggesting that individuals in our sample evaluate inequality through the lens of a meritocratic view. This effect is found regardless of the hypothetical grandchild's position in the income distribution. Preferences for mobility reduce inequality aversion, but only in the case of individuals positioned at the bottom end of the distribution, where risk aversion plays no role.

Similarly to other questionnaire-based studies, a potential limitation of our paper is that we relied on hypothetical questions and did not provide financial incentives for individuals to respond truthfully.Gaertner and Schokkaert (2012) notice that this problem is more relevant if the purpose of the empirical research is to predict behavior, which reflects a mixture of self-interest, norms, and signaling motives. Furthermore, Amiel et al. (2015) and Gaertner and Schokkaert (2012) argue that experimental surveys focus on individuals' opinions and ethical preferences and, hence it is unclear how and which financial incentives may be relevant

[34]Following this classification criterion, egalitarians account for 13% of subjects in this subsample. The share of libertarians is in the range of 4 to 9% depending of the transition matrix considered.

[35]It is worth noticing that in our baseline treatment inequality is framed as determined purely by the market. Subjects are told that the public sector does not provide any goods or services, which in turn are supplied by private firms.

to obtain more reliable responses. Moreover, real-world incentives are very different from the incentives in a questionnaire environment, so they would not be enough to predict individual's behavior.

Our findings on the foundations of inequality aversion have important policy implications. By triggering deeply held notions of fairness among individuals, the design, framing and public communication of redistributive policies may be important to understand the dynamics of political support (or opposition) towards these policies and the ability to build strong and stable pro-redistribution coalitions. At the micro level, the fact that we found heterogeneous effects in both the extent and degree of malleability of inequality-averse preferences may help to understand individuals' behavioural responses to taxation, social transfers and contributions to public goods. From a macro perspective, inequality aversion is a critical parameter in social utility functions commonly used to assess the welfare implications of public policies.

The paper also has implications for future research in this area. It contributes to the discussion on the appropriate methods to measure distributional preferences and study their malleability in large samples. Our online experimental survey proved to be a very flexible tool to elicit the parameter of interest on a large sample of individuals, test its sensitivity to alternative assumptions about the utility function and information treatments and implement a wide range of attention and comprehension checks. We also showed that the online nature of the experiment does not introduce significant biases, as our main findings were replicated in a conventional on-site classroom experiment. Future research could analyze how individuals' willingness to reduce inequality in other dimensions beyond income, such as health and education. Moreover, it would be interesting to test the malleability of inequality-averse preferences to different "luck" conditions (inheritance of wealth, parental education, belonging to a disadvantaged racial group, genetic endowment, etc). To summarize, our study shows that inequality-averse preferences are ubiquitous and malleable. Their malleability depends on how the framing of inequality taps into fairness notions held by individuals.

Tables and Figures

Tables

Table 1: Experimental parameters - At the mean

Society	**Min**	**Mean**	**Max**	**Inequality**	γ**: Break point**	Set of Choices
A	10000	30000	50000	0.385	$(-\infty, -0.09)$	$\{A, A, A, A, A, A, A, A, A\}$
B1	21300	31950	42600	0.1925	$[-0.09, 0)$	$\{B_1, A, A, A, A, A, A, A, A\}$
B2	20000	30000	40000	0.1925	$[0, 0.05)$	$\{B_1, B_2, A, A, A, A, A, A, A\}$
B3	19300	28950	38600	0.1925	$[0.05, 0.09)$	$\{B_1, B_2, B_3, A, A, A, A, A, A\}$
B4	18800	28200	37600	0.1925	$[0.09, 0.15)$	$\{B_1, B_2, B_3, B_4, A, A, A, A, A\}$
B5	18000	27000	36000	0.1925	$[0.15, 0.21)$	$\{B_1, B_2, B_3, B_4, B_5, A, A, A, A\}$
B6	17200	25800	34400	0.1925	$[0.21, 0.34)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, A, A, A\}$
B7	15800	23700	31600	0.1925	$[0.34, 0.51)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, A, A\}$
B8	14000	21000	28000	0.1925	$[0.51, 0.78)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, A\}$
B9	11600	17400	23200	0.1925	$[0.78, +\infty)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9\}$

Notes: First four columns present information about income distribution implied in each society. Fifth column presents the implied inequality aversion parameter assumed if the society represented in the row is chosen. Column six presents the implied range of inequality aversion. Last column presents the implied sequence of choices.

Table 2: Summary: Treatments and strategy of identification

	Participants choice at			
	Minimum	Mean	Maximum	Identification
Baseline (Control)	γ^c_{min}	γ^c_{mean}	γ^c_{max}	
Effort treatment	γ^e_{min}	γ^e_{mean}	γ^e_{max}	Effect of position
Luck treatment	γ^l_{min}	γ^l_{mean}	γ^l_{max}	(Information treatment
Mobility treatment	γ^m_{min}	γ^m_{mean}	γ^m_{max}	at individual level)
Identification	Treatment effect between groups			

Note: The elicitation of γ^z_x is based on equation (2).

Table 3: Experimental parameters - Choice at the minimum

Society	**Min**	**Mean**	**Max**	**Inequality**	**γ: Break point**	Set of Choices
A	10000	30000	50000	0.385	$(-\infty, -0.09)$	$\{A, A, A, A, A, A, A, A, A\}$
B1	10650	15975	21300	0.1925	$[-0.09, 0)$	$\{B_1, A, A, A, A, A, A, A, A\}$
B2	10000	15000	20000	0.1925	$[0, 0.05)$	$\{B_1, B_2, A, A, A, A, A, A, A\}$
B3	9650	14475	19300	0.1925	$[0.05, 0.09)$	$\{B_1, B_2, B_3, A, A, A, A, A, A\}$
B4	9400	14100	18800	0.1925	$[0.09, 0.15)$	$\{B_1, B_2, B_3, B_4, A, A, A, A, A\}$
B5	9000	13500	18000	0.1925	$[0.15, 0.21)$	$\{B_1, B_2, B_3, B_4, B_5, A, A, A, A\}$
B6	8600	12900	17200	0.1925	$[0.21, 0.34)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, A, A, A\}$
B7	7900	11850	15800	0.1925	$[0.34, 0.51)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, A, A\}$
B8	7000	10500	14000	0.1925	$[0.51, 0.78)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, A\}$
B9	5800	8700	11600	0.1925	$[0.78, +\infty)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9\}$

Notes: First four columns present information about income distribution implied in each society. Fifth column presents the implied inequality aversion parameter assumed if the society represented in the row is chosen. Column six presents the implied range of inequality aversion. Last column presents the implied sequence of choices.

Table 4: Experimental parameters - Choice at the maximum

Society	**Min**	**Mean**	**Max**	**Inequality**	**γ: Break point**	Set of Choices
A	10000	30000	50000	0.385	$(-\infty, -0.09)$	$\{A, A, A, A, A, A, A, A, A\}$
B1	26625	39938	53250	0.1925	$[-0.09, 0)$	$\{B_1, A, A, A, A, A, A, A, A\}$
B2	25000	37500	50000	0.1925	$[0, 0.05)$	$\{B_1, B_2, A, A, A, A, A, A, A\}$
B3	24125	36188	48250	0.1925	$[0.05, 0.09)$	$\{B_1, B_2, B_3, A, A, A, A, A, A\}$
B4	23500	35250	47000	0.1925	$[0.09, 0.15)$	$\{B_1, B_2, B_3, B_4, A, A, A, A, A\}$
B5	22500	33750	45000	0.1925	$[0.15, 0.21)$	$\{B_1, B_2, B_3, B_4, B_5, A, A, A, A\}$
B6	21500	32250	43000	0.1925	$[0.21, 0.34)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, A, A, A\}$
B7	19750	29625	39500	0.1925	$[0.34, 0.51)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, A, A\}$
B8	17500	26250	35000	0.1925	$[0.51, 0.78)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, A\}$
B9	14500	21750	29000	0.1925	$[0.78, +\infty)$	$\{B_1, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9\}$

Notes: First four columns present information about income distribution implied in each society. Fifth column presents the implied inequality aversion parameter assumed if the society represented in the row is chosen. Column six presents the implied range of inequality aversion. Last column presents the implied sequence of choices.

Table 5: Treatment effect - Choice at the mean, different specifications

	OLS		Quant. Reg.	Interval Reg.	
	(1)	(2)	(3)	(4)	(5)
Effort vs Control	-0.065	-0.067	-0.071	-0.078	-0.081
	(0.042)	(0.041)	(0.051)	(0.052)	(0.052)
N	464	464	464	464	464
Luck vs Control	0.077*	0.076*	0.065	0.095*	0.093*
	(0.042)	(0.042)	(0.050)	(0.051)	(0.051)
N	455	455	455	455	455
Effort vs Luck	-0.142***	-0.151***	-0.116**	-0.175***	-0.185***
	(0.043)	(0.043)	(0.054)	(0.055)	(0.054)
N	421	421	421	421	421
Mobility	0.020	0.016	0.062	0.016	0.010
	(0.037)	(0.037)	(0.050)	(0.041)	(0.041)
N	523	523	523	523	523
Controls		X	X		X
Dummy for missing		X	X		X
Median/Mean	0.202	0.202	0.121	0.208	0.208

Notes: analysis for the treatments effects at the mean is presented in this Table. Columns (1) and (2) report the result of the OLS estimates, column (3) reports the result of a quantile regression at the median, and columns (4) and (5) report the estimates in our preferred specification based on interval regressions. Columns (1) and (4) report the results without including any control variables; columns (2) (3) and (5) report the results when including a set of control variables. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table 6: Treatment effect - Position - Alternative specifications

	OLS		Quant. Reg.	Interval Reg.	
	(1)	(2)	(3)	(4)	(5)
Min vs Mean	-0.237***	-0.265***	-0.418***	-0.334***	-0.375***
	(0.020)	(0.024)	(0.036)	(0.029)	(0.035)
Max vs. Mean	0.157***	0.154***	0.138***	0.178***	0.175***
	(0.019)	(0.022)	(0.031)	(0.023)	(0.026)
Max vs. Min	0.394***	0.419***	0.560***	0.523***	0.564***
	(0.020)	(0.023)	(0.037)	(0.029)	(0.035)
Controls		X	X		X
Treatment FE	X	X	X	X	X
Median/Mean at Mean	0.211	0.211	0.121	0.221	0.221
Median/Mean at Min.	-0.026	-0.026	-0.362	-0.194	-0.194
N	1,348	1,348	1,348	1,348	1,348

Notes: Regression analysis for the position effects is presented in this Table using the pooled sample of consistent answers. Columns (1) and (2) report the result of the OLS estimates, column (3) reports the result of a quantile regression at the median, and columns (4) and (5) report the estimates in our preferred specification based on interval regressions. Columns (1) and (4) report the results without including any control variables; columns (2) (3) and (5) report the results when including a set of control variables. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

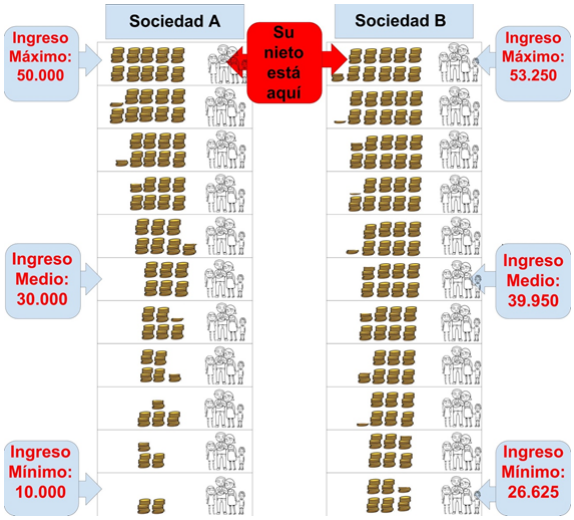
Figures

Figure 1: Information report

a. Choice at the Mean

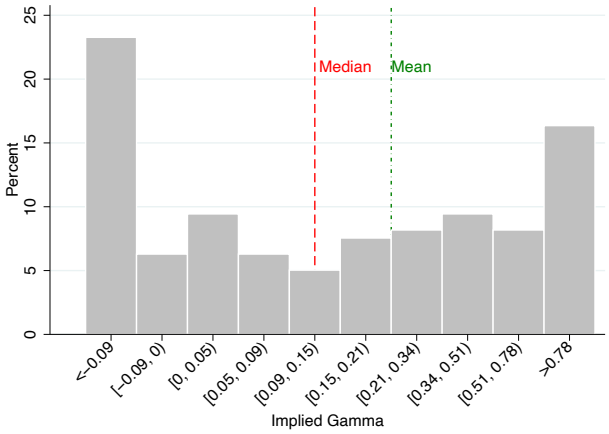
b. Choice at the Minimum

c. Choice at the Maximum



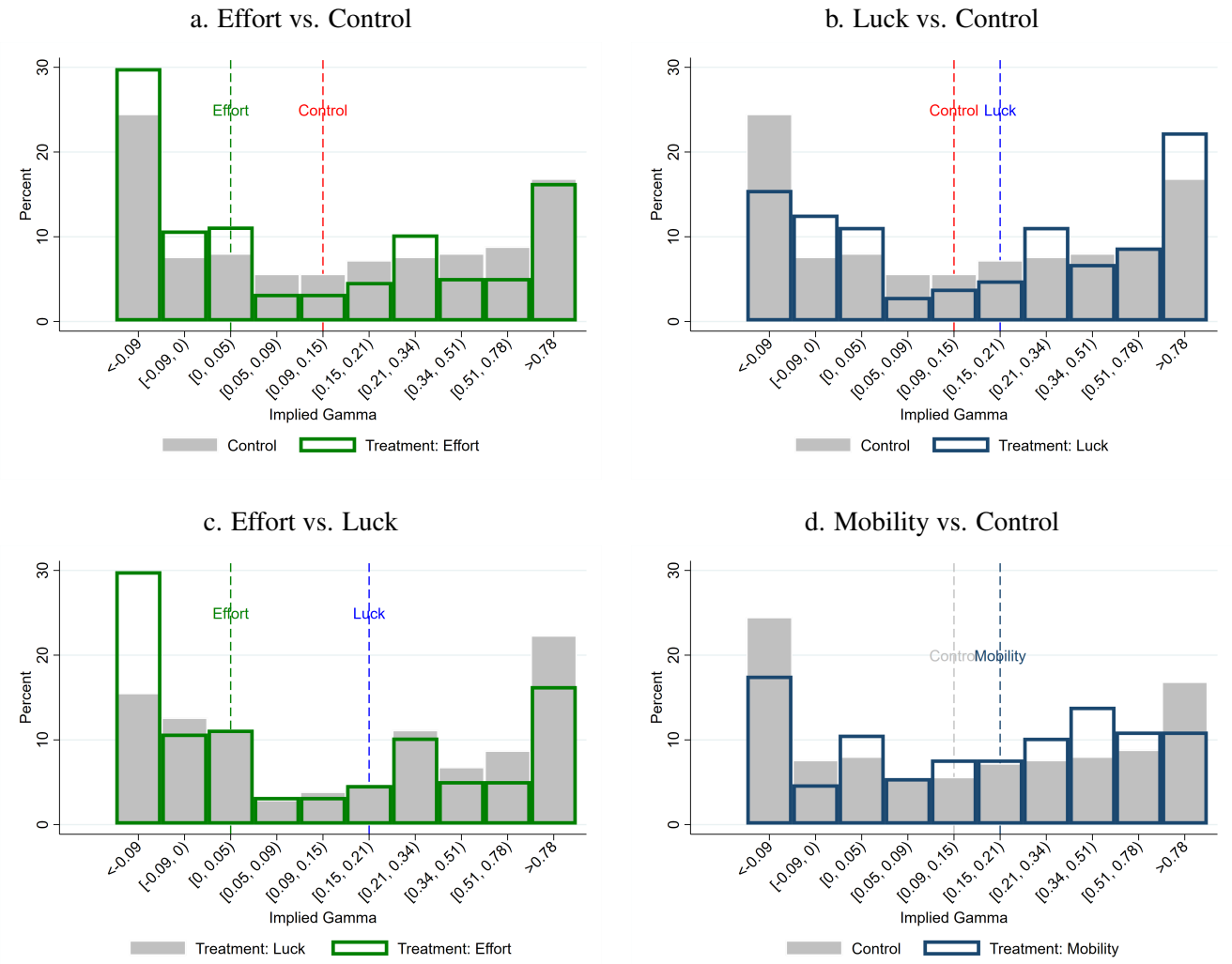
Notes: Example of the first image presented to participants in each set of choices

Figure 2: Aversion to inequality distribution - Choice at the mean, control group



Notes: This image presents the distribution of γ estimated using the control group and the choice at the mean of the income distribution. In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The dashed line indicates our estimate for the median γ while the dot-dashed line represents our estimate for the mean using interval regression of γ over a constant.

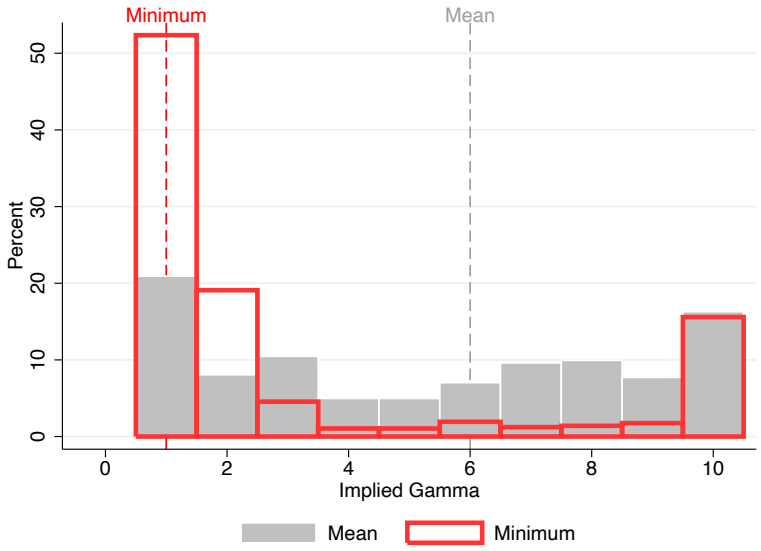
Figure 3: Aversion to inequality distribution - Choice at the mean



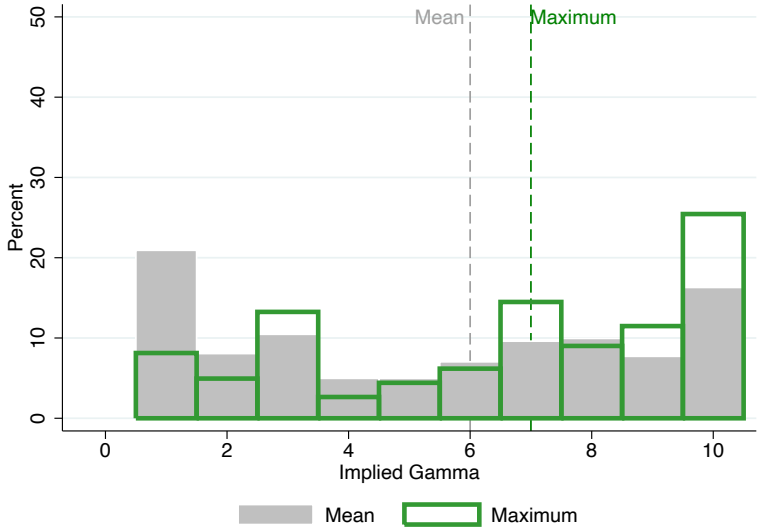
Notes: This image presents the distribution of γ estimated using the control and treatment groups indicated in each panel and the choice at the mean of the income distribution. In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The dashed line indicates our estimate for the median γ while the dot-dashed line represents our estimate for the mean using interval regression of γ over a constant. P-values Kolmogorov-Smirnov tests for equal distribution: panel a: 0.0768, panel b: 0.3014, panel c: 0.0228, panel d: 0.1515.

Figure 4: Aversion to inequality distribution - By position in income distribution

a. Mean vs. Minimum

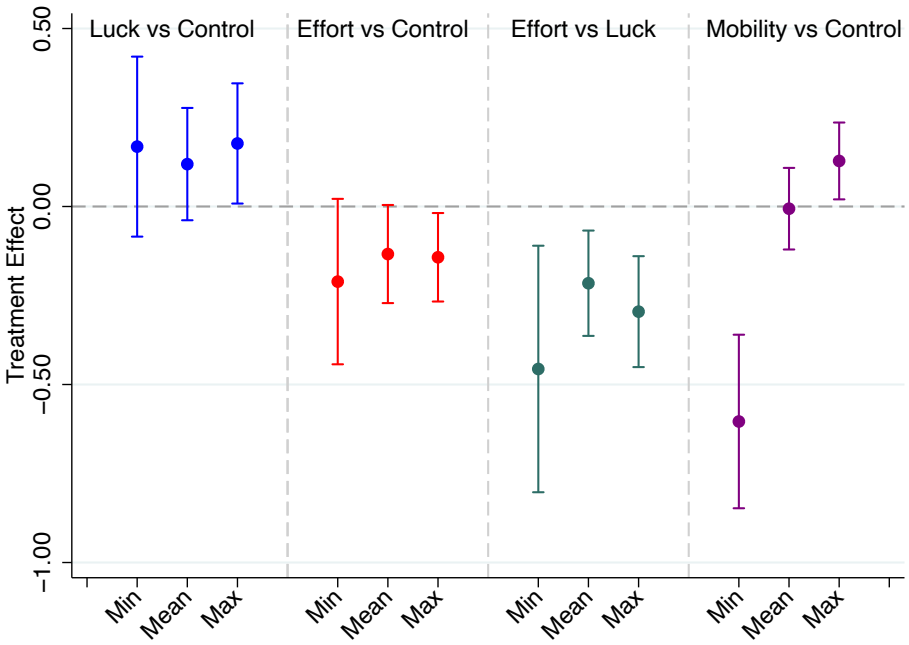


b. Mean vs. Maximum



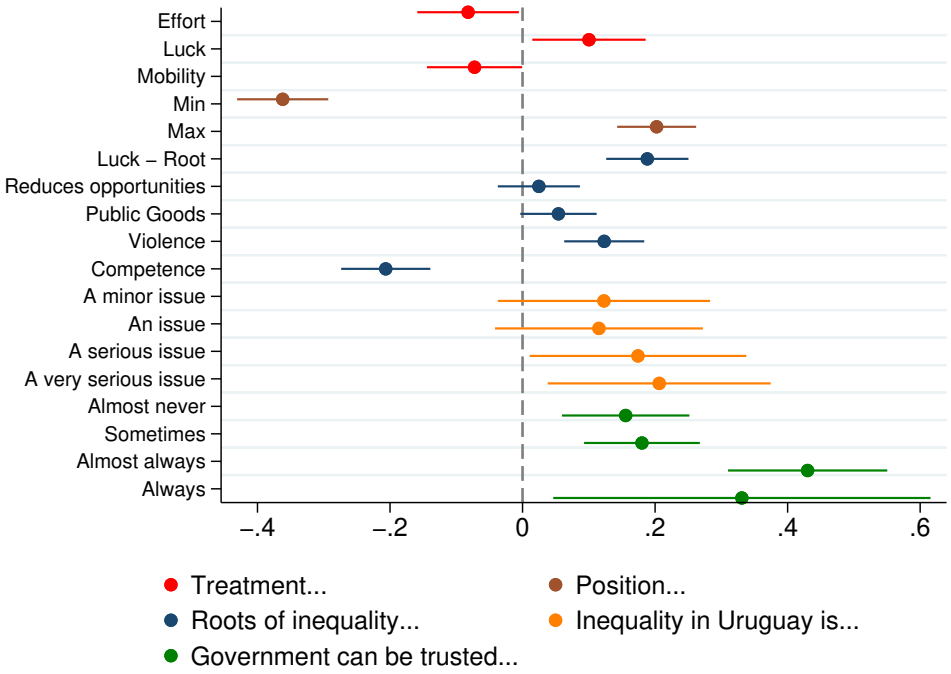
Notes: This image presents the distribution of γ estimated using the pooled sample, comparing the results for the set of choices at the mean with those of obtained for the pooled sample using the set of choices at the minimum (Panel a) and Maximum (Panel b). In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The dashed line indicates our estimate for the median γ in each position. P-values Kolmogorov-Smirnov tests for equal distribution: panel a: 0.0768, panel b: 0.3014.

Figure 5: Treatment effect - By position in income distribution



Notes: In this figure we report the coefficient of interest estimated using the specification of column (5) in Table 5 for each treatment and position. Each dot represents the point estimate while bars represent the 95% confidence interval.

Figure 6: Interpreting Gamma - Intervals regression



Note: in this image we present interval regression (our preferred specification) estimates where the dependent variable is γ. The full estimates are reported in specification I of Table A.6.1 in the Online Appendix. All regressions are based on our main sample, including the elicited γ for the three series of choices (607 participants with three observation for each). This figure includes the following control variables: individuals characteristics (sex and age), socioeconomic background (hours worked, household size, household income and parental educational achievement). To consider household income we use the perceptions of participants about their household position in the distribution of income (10 deciles). In all cases, estimates include dummy variables identifying the experimental treatment (effort, luck, mobility, minimum and maximum) and a dummy variable that identifies the year of the experimental survey.

References

Akerlof, G. and Kranton, R. E. (2000). Economics and identity. The Quarterly Journal of Economics, 115(3):715–753.

Alesina, A. and Angeletos, G. M. (2005). Fairness and redistribution. American Economic Review, 95(4):960–980.

Alesina, A. and Giuliano, P. (2011). Preferences for Redistribution. In Handbook of social economics, volume 1, pages 93–131. Elsevier.

Alesina, A. and Giuliano, P. (2015). Culture and institutions. Journal of Economic Literature, 53(4):898–944.

Alesina, A., Glaeser, E., and Sacerdote, B. (2001). Why doesn't the us have a european-style welfare system? Working Paper 8524, National Bureau of Economic Research.

Alesina, A., Stantcheva, S., and Teso, E. (2018). Intergenerational Mobility and Preferences for Redistribution. American Economic Review.

Almås, I., Cappelen, A. W., and Tungodden, B. (2020). Cutthroat capitalism versus cuddly socialism: Are americans more meritocratic and efficiency-seeking than scandinavians? Journal of Political Economy, 128(5):1753–1788.

Alpizar, F., Carlsson, F., and Johansson-Stenman, O. (2001). How Much Do We Care About Absolute Versus Relative Income and Consumption? Technical Report 63.

Amiel, Y., Bernasconi, M., Cowell, F., and Dardanoni, V. (2015). Do we value mobility? Social Choice and Welfare, (2):231–255.

Amiel, Y. and Cowell, F. (1999). Thinking About Inequality: Personal Judgement and Income Distributions. Cambridge University Press.

Amiel, Y., Cowell, F., and Gaertner, W. (2009). To be or not to be involved: a questionnaire-experimental view on harsanyi's utilitarian ethics. Social Choice and Welfare, 32(2):299–316.

Amiel, Y. and Cowell, F. A. (1992). Measurement of income inequality: Experimental test by questionnaire. Journal of Public Economics, 47(1):3–26.

Andreoni, J., Erard, B., and Feinstein, J. (1998). Tax Compliance. Journal of Economic Literature, 36(2):818–860.

Arechar, A. A., Gächter, S., and Molleman, L. (2018). Conducting interactive experiments online. Experimental Economics, 21:99–131.

Aronsson, T. and Johansson-Stenman, O. (2018). Paternalism against veblen: Optimal taxation and non-respected preferences for social comparisons. American Economic Journal: Economic Policy, 10(1):39–76.

Aronsson, T., Johansson-Stenman, O., and Wendner, R. (2016). Redistribution through Charity and Optimal Taxation when People are Concerned with Social Status. Technical Report 642, University of Gothenburg, Department of Economics.

Atkinson, A. B. (1970). On the measurement of inequality. Journal of Economic Theory, 2(3):244–263.

Bauer, M., Chytilová, J., and Miguel, E. (2020). Using survey questions to measure preferences: Lessons from an experimental validation in kenya. European Economic Review, 127:103493.

Ben-Ner, A., Kramer, A., and Levy, O. (2008). Economic and hypothetical dictator game experiments: Incentive effects at the individual level. The Journal of Socio-Economics, 37(5):1775–1784.

Benabou, R. and Ok, E. A. (2001). Social mobility and the demand for redistribution: The POUM hypothesis. Quarterly Journal of Economics.

Beshears, J., Choi, J., Laibson, D., and Madrian, B. (2008). How Are Preferences Revealed? Journal of Public Economics, 92:1787–1794.

Bolton, G. E. and Ockenfels, A. (2000). Erc: A theory of equity, reciprocity, and competition. The American Economic Review, 90(1):166–193.

Brennan, G., González, L. G., Güth, W., and Levati, M. V. (2008). Attitudes toward private and collective risk in individual and strategic choice situations. Journal of Economic Behavior Organization, 67(1):253 – 262.

Breza, E., Kaur, S., and Shamdasani, Y. (2017). The Morale Effects of Pay Inequality*. The Quarterly Journal of Economics, 133(2):611–663.

Burone, S. and Lado, M. (2016). Efectos del centro educativo secundario en las trayectorias estudiantiles de fcea. una aplicación del análisis de supervivencia," documentos de investigacion estudiantil. Instituto de Economia - IECON (students working papers).

Burone, S. and Leites, M. (2021). Self-centered and non-self-centered inequality aversion matter: Evidence from uruguay based on an experimental survey. Journal of Economic Inequality, 19:265–291.

Cappelen, A. W., Konow, J., Sørensen, E. , and Tungodden, B. (2013). Just luck: An experimental study of risk-taking and fairness. American Economic Review, 103(4):1398–1413.

Cappelen, A. W., Mollerstrom, J., Reme, B.-A., and Tungodden, B. (2019). A Meritocratic Origin of Egalitarian Behavior. Discussion Paper Series in Economics 9/2019, Norwegian School of Economics, Department of Economics.

Cappelen, A. W., Nygaard, K., Sørensen, E. , and Tungodden, B. (2015). Social preferences in the lab: A comparison of students and a representative population. The Scandinavian Journal of Economics, 117(4):1306–1326.

Card, D., Mas, A., Moretti, E., and Saez, E. (2012). Inequality at work: The effect of peer salaries on job satisfaction. American Economic Review, 102(6):2981–3003.

Carlsson, F., Daruvala, D., and Johansson-Stenman, O. (2005). Are People Inequality-Averse, or Just Risk-Averse? Economica, 72(287):375–396.

Carlsson, F., Gupta, G., and Johansson-Stenman, O. (2009). Keeping up with the Vaishyas? Caste and relative standing in India. Oxford Economic Papers, 61(1):52–73.

Carlsson, F., Nam, P. K., Linde-Rahr, M., and Martinsson, P. (2007). Are Vietnamese farmers concerned with their relative position in society? Journal of Development Studies, 43(7):1177–1188.

Charité, Jimmy, F. R. and Kuziemko, I. (2015). Reference points and redistributive preferences: Experimental evidence. NBER Working Papers 21009, National Bureau of Economic Research, Inc.

Charness, G. and Rabin, M. (2002). Understanding Social Preferences with Simple Tests. The Quarterly Journal of Economics, 117(3):817–869.

Clark, A. E. and D'Ambrosio, C. (2015). Attitudes to Income Inequality: Experimental and Survey Evidence. In Atkinson, A. B. and Bourguignon, F., editors, Handbook of Income Distribution, volume 2 of Handbook of Income Distribution, pages 1147–1208. Elsevier.

Cohn, A. and Maréchal, M. A. (2016). Priming in economics. Current Opinion in Psychology, 12:17 – 21. Social priming.

Cowell, F. A. and Schokkaert, E. (2001). Risk perceptions and distributional judgments. European Economic Review, 45(4):941–952.

Cullen, Z. and Perez-Truglia, R. (2018). How much does your boss make? the effects of salary comparisons. Working Paper 24841, National Bureau of Economic Research.

Durante, R., Putterman, L., and van der Weele, J. (2014). Preferences for redistribution and perception of fairness: An experimental study. Journal of the European Economic Association, 12(4):1059–1086.

Engelmann, D. and Strobel, M. (2004). Inequality aversion, efficiency, and maximin preferences in simple distribution experiments. American Economic Review, 94(4):857–869.

Fehr, E., Naef, M., and Schmidt, K. M. (2006). Inequality aversion, efficiency, and maximin preferences in simple distributionexperiments: Comment. The American Economic Review, 96(5):1912–1917.

Fehr, E. and Schmidt, K. M. (1999). A Theory of Fairness, Competition, and Cooperation. The Quarterly Journal of Economics, 114(3):817–868.

Fehr, E. and Schmidt, K. M. (2001). Theories of Fairness and Reciprocity-Evidence and Economic Applications. Econometric Society Monographs, Eighth World Congress.

Fleurbaey, M. and Maniquet, F. (2018). Optimal Income Taxation Theory and Principles of Fairness. Journal of Economic Literature, 56(3):1029–1079.

Fong, C. (2001). Social preferences, self-interest, and the demand for redistribution. Journal of Public Economics, 82:225–246.

Frank, R. H. (2005). Positional externalities cause large and preventable welfare losses. American Economic Review, 95(2):137–141.

Gaertner, W. and Schokkaert, E. (2012). Empirical social choice: Questionnaire-experimental studies on distributive justice. Economics and Philosophy, 28(3):443–450.

Georgiadis, A. and Manning, A. (2012). Spend it like beckham? inequality and redistribution in the uk, 1983-2004. Public Choice, 151(3/4):537–563.

Harsanyi, J. C. (1953). Cardinal utility in welfare economics and in the theory of risk-taking. Journal of Political Economy, 61(5):434–435.

Heffetz, O. and Frank, R. H. (2011). Preferences for status: Evidence and economic implications. In Handbook of social economics, volume 1, pages 69–91. Elsevier.

Henrich, J., Heine, S. J., and Norenzayan, A. (2010). The weirdest people in the world? Behavioral and Brain Sciences, 33(2-3):61–83.

Hirschman, A. O. and Rothschild, M. (1973). The changing tolerance for income inequality in the course of economic development with a mathematical appendix. The Quarterly Journal of Economics.

Holbrook, A. L., Green, M. C., and Krosnick, J. A. (2003). Telephone versus face-to-face interviewing of national probability samples with long questionnaires: Comparisons of respondent satisficing and social desirability response bias. Public Opinion Quarterly, 67(1):79–125.

Hopkins, E. (2008). Inequality, Happines and Relative Concerns: What Actually is their Relationship. The Journal of Economic Inequality, 6(4):351–372.

Hvidberg, K. B., Kreiner, C., and Stantcheva, S. (2020). Social position and fairness views. Working Paper 28099, National Bureau of Economic Research.

Johansson-Stenman, O., Carlsson, F., and Daruvala, D. (2002). Measuring Future Grandparents" Preferences for Equality and Relative Standing. Economic Journal, 112(479):362–383.

Jäntti, M. and Jenkins, S. P. (2015). Income mobility. In Handbook of income distribution, volume 2, pages 807–935. Elsevier.

Kahneman, D. and Knetsch, J. (1992). Valuing public goods: The purchase of moral satisfaction. Journal of Environmental Economics and Management, 22(1):57–70.

Karadja, M., Mollerstrom, J., and Seim, D. (2015). Richer (and holier) than thou? the effect of relative income improvements on demand for redistribution. SSRN Electronic Journal.

Kroll, Y. and Davidovitz, L. (2003). Inequality Aversion versus Risk Aversion. Economica, 70(277):19–29.

Kuziemko, I., Buell, R. W., Reich, T., and Norton, M. I. (2014). "last-place aversion": Evidence and redistributive implications *. The Quarterly Journal of Economics, 129(1):105–149.

Lambert, P. J. (1992). The Distribution and Redistribution of Income, pages 200–226. Macmillan Education UK, London.

Larney, A., Rotella, A., and Barclay, P. (2019). Stake size effects in ultimatum game and dictator game offers: A meta-analysis. Organizational Behavior and Human Decision Processes, 151:61–72.

Luttmer, E. F. P. and Singhal, M. (2014). Tax morale. Journal of Economic Perspectives, 28(4):149–68.

McCoy, S. K. and Major, B. (2007). Priming meritocracy and the psychological justification of inequality. Journal of Experimental Social Psychology, 43(3):341 – 351.

Piketty, T. (1995). Social Mobility and Redistributive Politics. The Quarterly Journal of Economics, 110(3):551–584.

Piketty, T., Saez, E., and Stantcheva, S. (2014). Optimal taxation of top labor incomes: A tale of three elasticities. American Economic Journal: Economic Policy, 6(1):230–71.

Pirttilä, J. and Uusitalo, R. (2010). A 'Leaky Bucket' in the Real World: Estimating Inequality Aversion using Survey Data. Economica, 77(305):60–76.

Ramos, X. and Van de gaer, D. (2016). Approaches to inequality of opportunity: Principles, measures and evidence. Journal of Economic Surveys, 30(5):855–883.

Rawls, J. (1971). A theory of justice. Belknap Press of Harvard University Press, Cambridge, Mass.

Roemer, J. E. and Trannoy, A. (2016). Equality of opportunity: Theory and measurement. Journal of Economic Literature, 54(4):1288–1332.

Schwarze, J. and Härpfer, M. (2007). Are people inequality averse, and do they prefer redistribution by the state?: Evidence from german longitudinal data on life satisfaction. The Journal of Socio-Economics, 36(2):233 – 249.

Shorrocks, A. F. (1978). The Measurement of Mobility. Econometrica, 46(5):1013–1024.

Thaler, R. H. (2016). Behavioral economics: Past, present, and future. American Economic Review, 106(7):1577–1600.

Traub, S., Seidl, C., and Schmidt, U. (2009). An experimental study on individual choice, social welfare, and social preferences. European Economic Review, 53(4):385–400.

Traub, S., Seidl, C., Schmidt, U., and Levati, M. (2005). Friedman, harsanyi, rawls, boulding – or somebody else? an experimental investigation of distributive justice. Social Choice and Welfare, 24:283–309.

Appendices

A Online Appendix

A.1 Details of the Experimental Survey

Figure A.1.1: Screenshot of introductory message

Research about preferences for redistribution (FCEA - UdelaR)

The information collected in this survey will be kept confidential and only used for an academic purpose.

Filling the survey takes between 10 and 15 minutes. The questionnaire is comprised of two parts. The first one collects a series of choices under alternative scenarios. The second part contains a brief set of background question.

We appreciate the time you will devote to complete the survey. Your participation allows us to carry out this research project. From all our team, we truly thank you and hope you enjoy being part of this research.

- I want to participate in the survey and I am older than 18 years old
- I do not want to participate in the survey
- I want to participate in the survey, but I am younger than 18 years old

Figure A.1.2: Screenshot of baseline instructions

Instructions

- Next, we ask you to make a series of choices

- Imagine that 60 years have passed, you are no longer alive, and you have the chance to choose in which society your only grandchild will live.

- In these societies, the public sector does not provide any goods or services like education, health or housing. These are exclusively supplied by the private sector. All goods and services are of the same quality and the same quantity of goods is available in each one of the societies.

- Income distribution in each society is represented by a building. This means that individuals living in the highest floor are the ones who have more income and individuals living in the lowest floor are the ones who have less income. In addition, individuals' income increases proportionally when moving upwards. In each floor, there is the same number of individuals, and therefore any individual (except your grandchild) has the same chance of locating at any of the floors and reaching the corresponding level of income.

- Each choice is independent of previous or subsequent choices.

- There are no wrong or right answers. We ask you to carefully think in each case which is your preferred alternative.

Table A.1.1: Survey data collection process

Experiment	Main Experiment	Main Experiment	Within Experiment	Within Experiment
Audience Size	2956	3126	638	659
Date	28/05/2018	29/08/2019	16/10/2018	12/11/2019
Reminder	15/06/2018 20/08/2018	16/09/2019	04/12/2018	05/12/2019 23/12/2019
Surveys started	1486	816	126	217
Surveys Finished	1052	737	67	208
Rejections	191	22	16	20
Response Rate	82%	97%	76%	90%
Rejection Rate	18%	3%	24%	10%
Details	1st Gen 2018	1st Gen 2019	2nd Gen 2018	2nd Gen 2019

Notes: Details of number of participants, reminder, dates, rate of response/rejection and number of surveys started and finished in each wave of the survey .

A.2 Analysis of inconsistent responses

Table A.2.1: Distribution of inconsistent answers (main experiment)

Treatment	Consistent	Inconsistent	% Inconsistent
Control	238	108	31.21
Effort	203	151	42.65
Luck	197	138	41.19
Mobility	268	118	30.56
Total	906	515	36.24

Notes: Consistent and inconsistent answers by treatment arm.

Table A.2.2: Determinants of reporting consistent answers

	Dep. Var: Dummy = 1 if inconsistent		
	(1)	(2)	(3)
Age	-0.004*	-0.003	-0.003
	(0.002)	(0.002)	(0.002)
Female	0.064**	0.067**	0.068**
	(0.031)	(0.031)	(0.031)
Number of HH members	0.000	-0.001	-0.001
	(0.010)	(0.009)	(0.010)
Work: Part Time	-0.004	-0.005	-0.005
	(0.038)	(0.037)	(0.037)
Work: Full Time	-0.046	-0.051	-0.050
	(0.043)	(0.044)	(0.043)
Father: High School or other	0.019	0.011	0.010
	(0.035)	(0.034)	(0.035)
Father: College or more	0.025	0.006	0.002
	(0.058)	(0.057)	(0.058)
Mother: High School or other	-0.040	-0.027	-0.026
	(0.036)	(0.035)	(0.035)
Mother: College or more	-0.103*	-0.083	-0.082
	(0.055)	(0.055)	(0.054)
USD 1000 - USD 2000	-0.010	-0.013	-0.012
	(0.040)	(0.039)	(0.039)
More than USD 2000	-0.038	-0.043	-0.040
	(0.042)	(0.041)	(0.042)
Treated: Effort	-0.031	-0.033	-0.043
	(0.030)	(0.030)	(0.031)
Treated: Luck		0.136***	0.133***
		(0.042)	(0.042)
Treated: Mobility		0.133***	0.135***
		(0.043)	(0.043)
Understands		0.004	0.005
		(0.041)	(0.039)
Attention			-0.019
			(0.034)
Year 2019			0.107
			(0.068)
Constant	0.440***	0.376***	0.284***
	(0.070)	(0.075)	(0.108)
N	1016	1014	1014

Notes: In the three specifications the dependent variable is a dummy to indicate inconsistency in the responses. The different columns differ in the regresors included in the model as indicated by the rows. Omitted category (all dummies = 0) corresponds to: does not work, father education high school or less, mother education high school or less, household income less than USD 1000 monthly and assigned to control group. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table A.2.3: Samples size according to alternatives definitions of consistent answers

Position	Start the experiment (Total participants)	Always consistent (I)	Only in this position (II)	Sample II (I+II)	Adjusted consistent (III)	Sample III (I+II+III)
At the mean	1,480	906	135	1,041	143	1,184
At the minimum	1,444	906	104	1,010	70	1,080
At the maximum	1,422	906	222	1,128	72	1,200

Notes: In this table we present detailed information about the number of consistent responses varying the definition of consistency. In A.8.5 in the on-line Appendix we describe the criteria used to define adjusted consistent responses.

A.3 Balance checks by treatment arm

Table A.3.1: Balance of individual characteristics across treatments

	Control (1)	Effort (2)	Luck (3)	Mobility (4)	p-value test (5)
Age of the respondent	24.12	24.16	23.85	23.32	0.35
	(0.28)	(0.27)	(0.26)	(0.22)	
Dummy: 1=female	0.61	0.66	0.59	0.64	0.52
	(0.02)	(0.02)	(0.02)	(0.01)	
Number of people in the Household	3.36	3.33	3.64	3.53	0.55
	(0.05)	(0.05)	(0.06)	(0.05)	
Dummy work condition: 1=Does not work	0.49	0.45	0.49	0.50	0.53
	(0.02)	(0.02)	(0.02)	(0.02)	
Dummy work condition: 1=Works part-time	0.32	0.32	0.32	0.30	0.46
	(0.02)	(0.02)	(0.02)	(0.01)	
Dummy work condition: 1=Works Full-Time	0.19	0.23	0.20	0.20	0.13
	(0.01)	(0.01)	(0.01)	(0.01)	
Dummy father education: 1=Incomp. High-School or less	0.49	0.50	0.52	0.57	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	
Dummy father education: 1=High School and others	0.39	0.40	0.34	0.31	0.09
	(0.02)	(0.02)	(0.02)	(0.01)	
Dummy father education: 1=Comp. College or more	0.11	0.10	0.14	0.11	0.43
	(0.01)	(0.01)	(0.01)	(0.01)	
Dummy mother education: 1=Incomp. High-School or less	0.47	0.50	0.58	0.50	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	
Dummy mother education: 1=High School and others	0.38	0.35	0.30	0.34	0.09
	(0.02)	(0.02)	(0.02)	(0.01)	
Dummy mother education: 1=Comp. College or more	0.15	0.15	0.12	0.16	0.78
	(0.01)	(0.01)	(0.01)	(0.01)	
Dummy household income: 1= $<$ 1000 Month.	0.24	0.25	0.23	0.30	0.26
	(0.02)	(0.02)	(0.02)	(0.02)	
Dummy household income: 1=Between 1000-2000 Month.	0.39	0.35	0.40	0.37	0.78
	(0.02)	(0.02)	(0.02)	(0.02)	
Dummy household income: 1= $>$ 2000 Month.	0.37	0.39	0.37	0.33	0.15
	(0.02)	(0.02)	(0.02)	(0.02)	
Observations	311	302	294	361	

Notes: Information about balance in observable characteristics of the sample of participants assigned to each treatment is presented in this table. Mean for each treatment is presented in each row. Standard errors in parenthesis. P-value for mean test is presented in the last column (H_0=$Mean_{Control}$=$Mean_{Effort}$=$Mean_{Luck}$=$Mean_{Mobility}$) .

A.4 Propensity to participate in the survey

Using students' records provided by the University (gender, age, the program of study, student performance, and academic background), we estimate a binary response model where the dependent variable equals one if the individual completed the survey, and zero otherwise. However, this analysis has limitations. Due to changes in contact information, there are 839 individuals for whom is not possible to associate the invitation sent with the administrative records. Among these 839 individuals, 215 (25.6%) completed the survey. The propensity to change the contact information is greater among students who did not drop out and enrolled earlier (during 2018). The first invitation was sent 2-3 months after enrollment to the widest possible audience. The first factor associated with a greater probability of completing the survey is to continue studying. However, the dropout rate during the first weeks is high at the University in Uruguay (roughly 30%). Dropouts are correlated with the institution where the individual completed secondary school and the socioeconomic level of the household. To control for this potential problem, we restricted the analysis to active students who approved at least one exam. This excludes 2210 students to whom an invitation was sent, including 479 students who actually completed the survey.[1]

3510 students approved at least one exam and could be merged with our data. This includes 1433 students who completed the survey. We estimated a Probit model to identify the individual characteristics correlated with the completion of the survey. The results are presented in Table A.4.1. Most variables are not statistically significant, though there are few exceptions. Among active students, the composition of the sample of participants seems to have a bias towards women (marginal effect: 0.14), individuals who are enrolled in Economics and approved more courses. The fact that women were more likely to complete the survey may lead to overestimating inequality aversion, as women have greater preferences for redistribution Alesina and Giuliano (2011). Durante et al. (2014) show that the demand for redistribution of women is less sensitive to the income determination process than men. Hence, the higher share of women in our sample may lead to underestimating the effort vs. luck effect. It is worth noticing, however, that the overrepresentation of women is inherent to the use of students from Facultad de Ciencias Económicas y Administración as the sample frame as in this population participation is higher for women than for men.

We also found a positive effect on the number of courses approved, although there were no significant differences in average scores. An F-test does not allow rejecting joint significance. This suggests that our sample may be biased towards students with better academic performance.

It is worth noticing that all the variables that were shown to have an effect on the probability of complet-

[1] As a robustness check, we also conduct the analysis excluding these 479 individuals who are no longer attending university. Results are presented on section A.14. Results remain qualitatively unchanged.

ing the survey have been associated with a lower probability of dropout in previous studies. For instance, Burone and Lado (2016) found that being enrolled in Economics and being female is associated with a lower probability of dropout. Hence, the greater likelihood of completing the survey observed for these groups could be masking the effect of these variables on dropout decisions. Moreover, it is important to note that all our treatments arms showed to be balanced in observable characteristics (see Table A.3.1 in the Online Appendix (section A.3)).

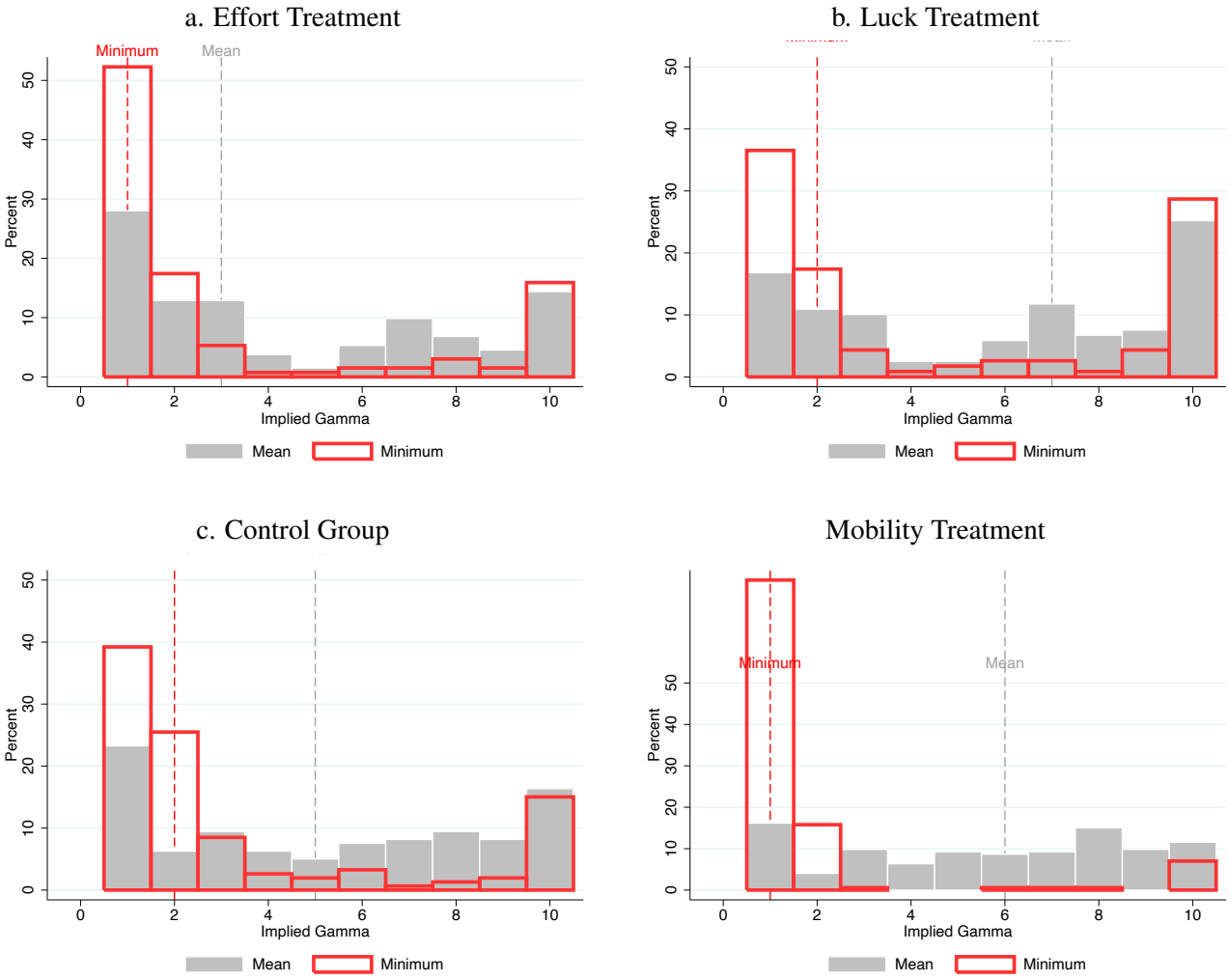
Table A.4.1: Propensity to participate in the survey

	(1)	(2)
Probit Model	Coef.	Margins
Female	0.401***	0.148***
	(0.0463)	(0.0165)
Age	-0.0308	-0.0114
	(0.0251)	(0.00929)
Age square	0.000776*	0.000287*
	(0.000440)	(0.000163)
Bachelor economics	0.128*	0.0481*
	(0.0678)	(0.0255)
Bachelor administration	0.000798	0.000295
	(0.0725)	(0.0268)
Bachelor (tec.) admin.	-0.0724	-0.0265
	(0.0728)	(0.0265)
Exams approved	0.0224***	0.00828***
	(0.00332)	(0.00120)
Average score	0.00297	0.00110
	(0.0115)	(0.00424)
Region of origin	included	x
Constant	-0.580	
	(0.373)	
Observations	3,260	3,260

Notes: to capture the effect of the region of origin, we included 18 dummies (one for each department plus the intercept). The only region whose associated dummy was significantly different from zero was Rio Negro, which was significant at 5% of confidence with a marginal effect of 0.181.

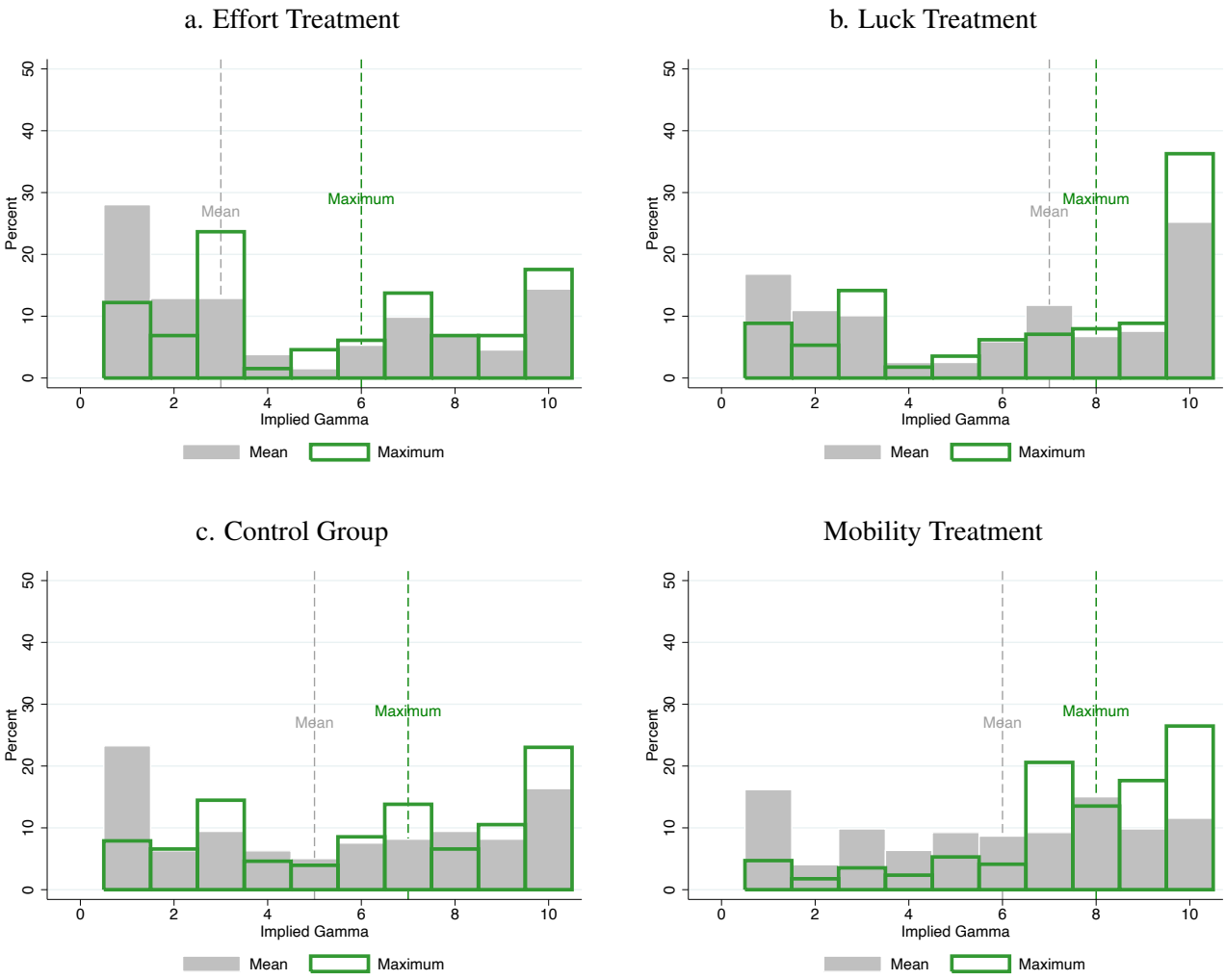
A.5 Heterogeneous Distribution of Inequality Aversion by Position in the Income Distribution

Figure A.5.1: Heterogeneous responses by position, minimum vs. mean by treatment arm



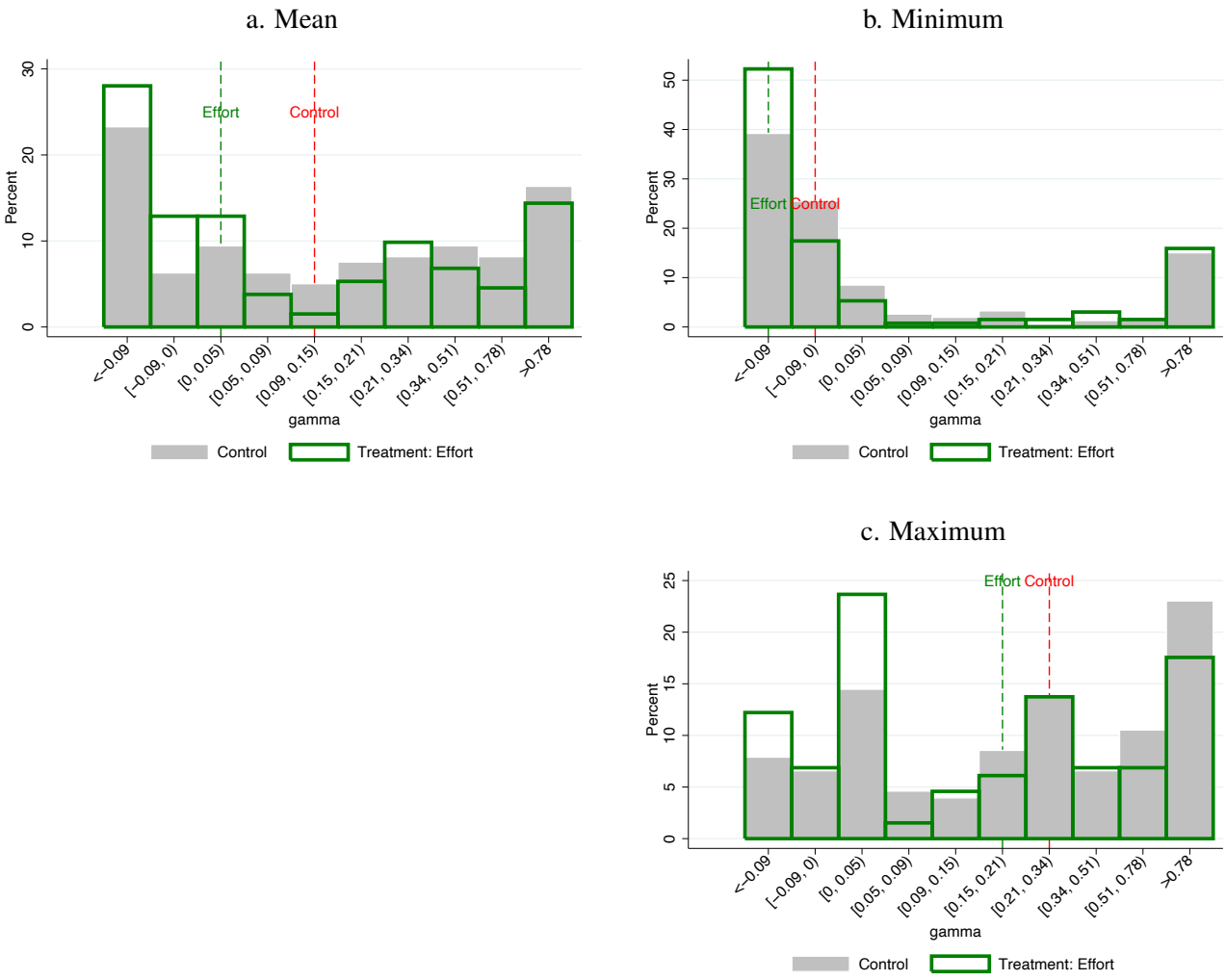
Notes: This image presents the distribution of γ estimated using the main sample, comparing the results for the set of choices at the mean with those of obtained using the set of choices at the minimum. Inequality aversion parameter is based on equation 2. It presents the comparison for the four treatment arm: Effort (Panel a), Luck (Panel b), Control (Panel c) and Mobility (Panel d. In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The grey line indicates the distribution of γ when participants choose at the mean while the red line represents the distribution of γ when participants choose at the minimum. P-values Kolmogorov-Smirnov tests for equal distribution: panel a: 0.000, panel b: 0.000, panel c: 0.000, panel d: 0.000.

Figure A.5.2: Heterogeneous responses by position, maximum vs. mean by treatment arm



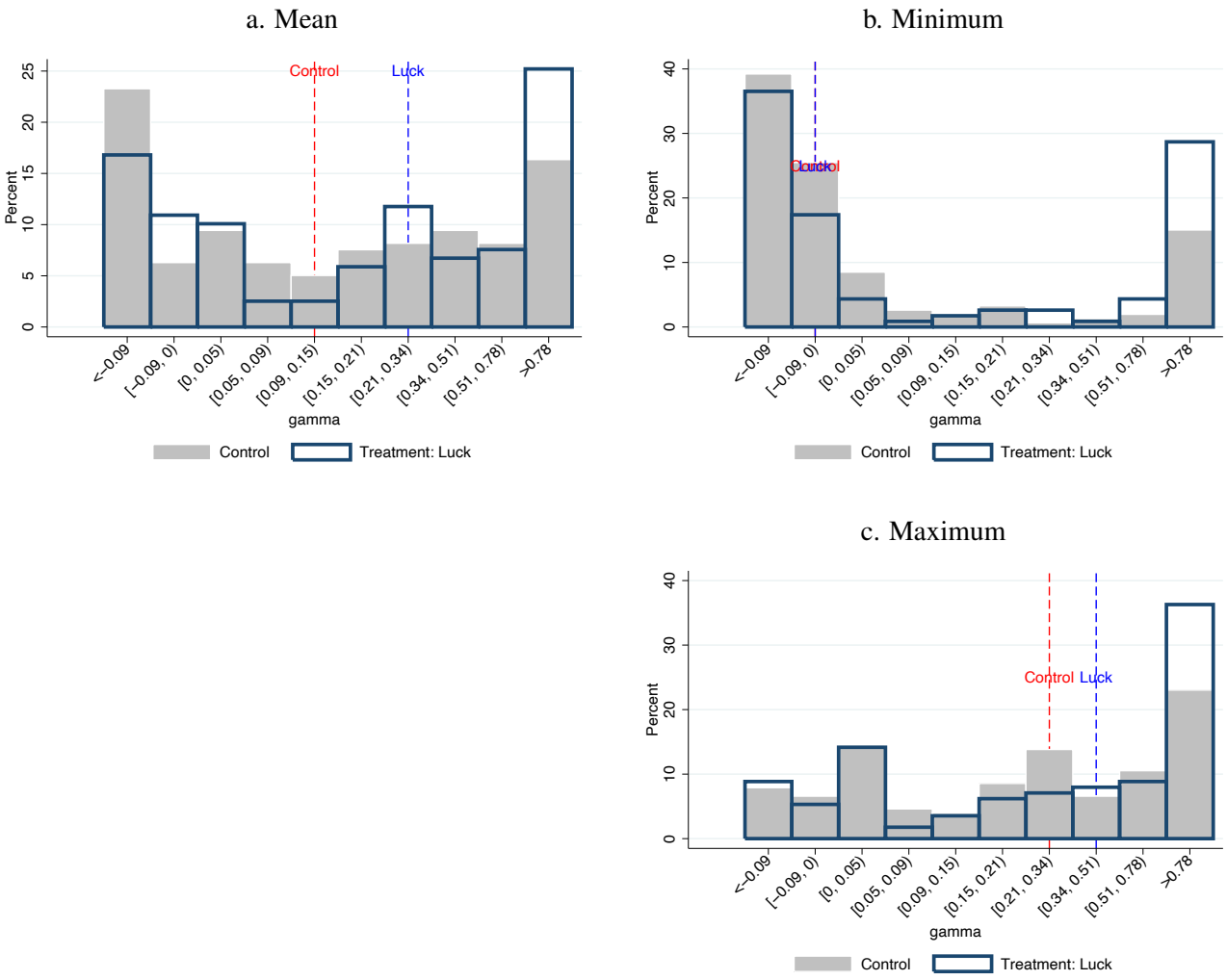
Notes: This image presents the distribution of γ estimated using the main sample, comparing the results for the set of choices at the mean with those of obtained using the set of choices at the maximum. Inequality aversion parameter is based on equation 2. It presents the comparison for the four treatment arm: Effort (Panel a), Luck (Panel b), Control (Panel c) and Mobility (Panel d. In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The grey line indicates the distribution of γ when participants choose at the mean while the green line represents the distribution of γ when participants choose at the maximum. The dashed line indicates our estimate for the median γ. P-values Kolmogorov-Smirnov tests for equal distribution: panel a: 0.0002, panel b: 0.0349, panel c: 0.0002 , panel d: 0.000.

Figure A.5.3: Treatment effect by position - Effort vs control



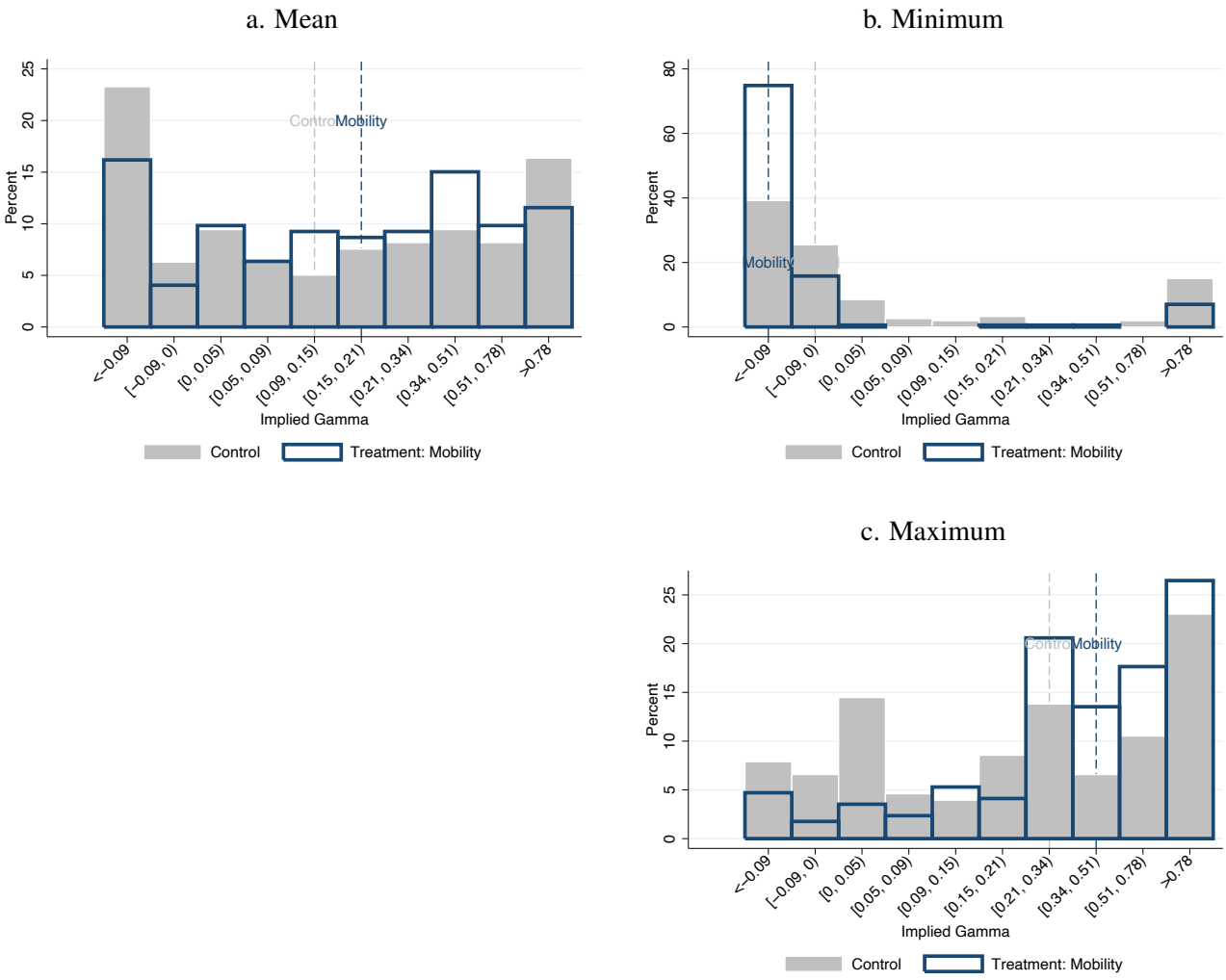
Notes: This image presents the distribution of γ estimated using the main sample, comparing the results based on effort treatment with those of obtained using the control group. Inequality aversion parameter is based on equation 2. It presents the comparison for the three position arm: Mean (Panel a), Minimum (Panel b) and Maximum (Panel c). In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The green line indicates the distribution of γ for the effort treatment while the grey line represents the distribution of γ for the control group. The dashed line indicates our estimate for the median γ. P-values Kolmogorov-Smirnov tests for equal distribution: panel a: 0.0768, panel b: 0.2009, panel c: 0.0065.

Figure A.5.4: Treatment effect by position - Luck vs control



Notes: This image presents the distribution of γ estimated using the main sample, comparing the results based on luck treatment with those of obtained using the control group. Inequality aversion parameter is based on equation 2. It presents the comparison for the three position arm: Mean (Panel a), Minimum (Panel b) and Maximum (Panel c). In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The blue line indicates the distribution of γ for the effort treatment while the grey line represents the distribution of γ for the control group. The dashed line indicates our estimate for the median γ. P-values Kolmogorov-Smirnov tests for equal distribution: panel a: 0.3014, panel b: 0.0317, panel c: 0.8528.

Figure A.5.5: Treatment effect by position - Mobility vs. control



Notes: This image presents the distribution of γ estimated using the main sample, comparing the results based on mobility treatment with those of obtained using the control group. Inequality aversion parameter is based on equation 2. It presents the comparison for the three position arm: Mean (Panel a), Minimum (Panel b) and Maximum (Panel c). In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The blue line indicates the distribution of γ for the effort treatment while the grey line represents the distribution of γ for the control group. The dashed red line indicates our estimate for the median γ.P-values Kolmogorov-Smirnov tests for equal distribution: panel a: 0.000, panel b: 0.000.

Table A.5.1: Treatment effect - Position - By treatment arm

	Control	Effort	Luck	Mobility
	(1)	(2)	(3)	(4)
Min vs Mean	-0.253***	-0.301***	-0.241***	-0.592***
	(0.067)	(0.077)	(0.080)	(0.052)
N	356	290	284	418
Max vs. Mean	0.191***	0.105**	0.123**	0.241***
	(0.056)	(0.053)	(0.061)	(0.038)
N	356	290	284	418
Max vs. Min	0.447***	0.385***	0.395***	0.879***
	(0.063)	(0.065)	(0.087)	(0.059)
N	356	290	284	418
Controls	X	X	X	X
Treatment FE	X	X	X	X
Median/Mean at Mean	0.208	0.130	0.304	0.235
Median/Mean at Min.	-0.050	-0.179	0.096	-0.627

Notes: Results based on interval regressions. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

A.6 Correlates of Inequality Aversion: Does γ Have an Economically Meaningful Interpretation?

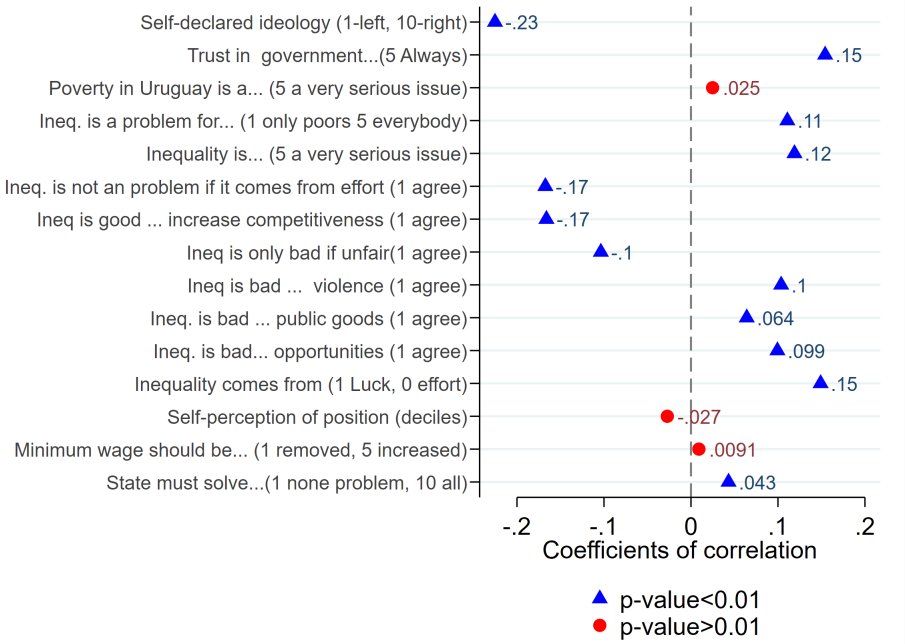
In order to assess the validity of γ as a measure of inequality aversion, we analyze if our estimates are correlated with a wide set of variables associated with preferences for equality and redistribution. With this aim, we used information about attitudes and beliefs collected in the last module of the survey

We use the coefficient of correlation and explore the direction and statistical significance of that relationship (see Figure A.6.1).

First, it is expected that people with lower inequality aversion report lower preferences for redistribution, a relationship that is partially confirmed in our data. Those with higher γ prefer a more active government and are less market oriented (p-value$<$0.01). However, γ is not significantly correlated with preferences for minimum wage policies. Furthermore, the inequality aversion parameter is not correlated with self-

perception about the position in the income distribution, which in general is negatively correlated with preferences for redistribution.

Figure A.6.1: Interpretation of γ: correlation coefficients



Notes: Inequality aversion parameter is based on equation 2. These coefficients were estimated using the baseline sample. Coefficients were estimated using interval regression.

Second, we find that γ is significantly larger for those who believe that inequality is a relevant issue. To assess this we use two questions. The first one asks directly if inequality is an issue specifically in Uruguay while the second asks whether inequality is an issue for some social groups or all of society. As Figure A.6.1 shows, in both cases we find a positive and significant correlation between our estimates of γ and those who consider inequality to be an important issue. However, gamma is not significantly correlated with beliefs that poverty is a problem.

Third, we explore the correlation between the magnitude of inequality aversion and some beliefs about the consequences of inequality. On one hand, we explore alternative mechanisms related to negative externalities such as public services, violence and crime, and the generation of opportunities. On the other hand, we explore some potential positive externalities related with the incentive effect of inequality. In all cases the correlation coefficients are significant (p-value$<$0.01), and the signs are consistent with our interpretation of γ since people that tend to consider inequality as a "bad" are usually the more inequality averse, while individuals that consider inequality as a "good" usually demonstrate lower levels of inequality aversion (See

Figure A.6.1).

Finally, we also analyze the correlation between our estimates of γ and individuals' perceptions about the role of luck and effort. We find that those who believe that inequality is usually the result of circumstances beyond one's control rather than individuals' responsibility are more inequality averse. Also, those who had higher trust in the government and who self-declare as left-wing, present a positive and significant correlation with the inequality aversion parameter.

We also carry out a multiple regression analyses to explore the correlation of our estimates of inequality aversion with information about attitudes and beliefs collected in the last module of the survey. The aim is to explore whether the magnitude of inequality aversion is associated with fairness and instrumental rationale. The first mechanism is related to our information treatments but also we consider some additional variables. The second mechanism is related to beliefs about positive (or negative) externalities of inequality with potential gains (or loses) in term of aggregate level of social well-being.

Table A.6.1 reports the estimates based on interval regressions using as dependent variable γ. [2] All regressions are based on our main sample, including the elicited γ for the three series of choices (607 participants with three observation for each).

Our preferred specification is reported in column I and the magnitude of our coefficients of interest and their significance are reported in the Figure 6 in the main text. This figure includes the following control variables: individuals characteristics (sex and age), socioeconomic background (hours worked, household size, household income and parental educational achievement). To consider household income we use the perceptions of participants about their household position in the distribution of income (10 deciles). In all cases, estimates include dummy variables identifying the experimental treatment (effort, luck, mobility, minimum and maximum) and a dummy variable that identifies the year of the experimental survey.

On the one hand, we confirm the direction and significance of our information treatments (all coefficients are statistically significant at 5%).In this case, we incorporate all the treatments together, controlling by position and the mentioned covariables. Two additional results stand out. First, although the coefficients of effort and luck are significant, their economic magnitude is much lower than the coefficient of position. This suggests that self-interest motives have a greater effect than normative ones. Second, the mobility treatment presents a negative and significant effect. Namely, when the effect of position is controlled, the channel preferences for mobility dominates over risk aversion.

In addition, we confirm that inequality aversion is strongly correlated to individual beliefs about the role of luck and effort (p-value$<$0.01). In general, those who believe that inequality is usually the result of

[2] Estimates based on OLS and quantile regression produce analogous results but are not shown for reasons of space

unmanageable circumstances rather than individual merits are more inequality averse. This is true for every treatment arm and every position. This finding is consistent with our results from the *effort-message* and *luck-message* where we find a positive (negative) relation between inequality aversion and luck (effort).

On the other hand, the main result of this section is that we confirm the relation between inequality aversion and some beliefs about the consequences of inequality. Some people believe that inequality is "bad" due to negative externalities related to the quality of public services (+0.05; p-value$<$0.1) and social violence (+1.22; p-value $<$0.01). Those people are more inequality averse. On other hand, some individuals believe that inequality yields positive externalities due to the competition and incentive effect (-2.13; p-value$<$0.01).

Finally γ is significantly larger in those who believe that inequality is a relevant issue in society. As Figure 6 shows, we find a positive correlation between our estimates of γ and persons who consider inequality an issue. Furthermore, even though we cannot rule out that the magnitude of the effect is the same across categories, there is a positive gradient in the point estimates between our estimates of γ and how severe the individual thinks that the problem of inequality is.[3] We also find that a greater trust in government is related to less aversion to inequality.

With regard to individual characteristics, most of the variables are not statistically significant. We find that age is positively correlated with γ. Furthermore, individuals with more educated parents and who perceive themselves as in a higher position in the income distribution are more likely to demonstrate a lower inequality aversion. We also consider individuals' self-reported ideology on a left-right scale (Column 2 and 3 in Table A.6.1 in the Online Appendix) and household income reported within ranges (Column 3). As expected, we find that γ tends to be lower for participants identified with moderate to right-wing ideology. Finally, household income is not statistically significant, but the perceived position in the income distribution remains significant.

When we drop all of the individual control variables, the main results remain unchanged (Column 4 in Table A.6.1), which suggest the robustness of our result. Finally, we replicate the same specification using an additional sample in which we carried out the fairness treatment at individual level (sample of within treatment experiment). In general, we confirm our main results: the magnitude and direction of coefficients are consistent but the statistical significance is weaker, which surely is related with the smaller sample size (see Figure A.11.2 and Table A.11.5 in the Online Appendix).

Overall, the evidence reported in this section suggests that our strategy correctly captures individuals' inequality aversion. The analysis also support the idea that the roots of inequality aversion are related both

[3]The result remains unchanged whether we use the alternative question: "inequality is an issue for some social groups..."

normative and instrumental motivations.

Table A.6.1: Interpreting Gamma - Intervals regression. Estimates based on main sample (pooled data)

	(1)			(2)			(3)			(4)		
	coef		tstat	coef		tstat	coef		tstat	coef		tstat
Luck - Root	0.186	***	6.459	0.159	***	5.618	0.159	***	5.591	0.177	***	6.471
Reduces opportunities	0.007		0.233	-0.006		-0.199	-0.007		-0.258	-0.005		-0.164
Public Goods	0.050	*	1.858	0.051	*	1.915	0.050	*	1.877	0.067	**	2.556
Violence	0.122	***	4.385	0.112	***	4.117	0.113	***	4.162	0.126	***	4.693
Competence	-0.213	***	-6.681	-0.189	***	-6.019	-0.190	***	-6.059	-0.219	***	-7.239
Inequality is a minor issue	0.067		0.916	0.098		1.351	0.098		1.345	0.078		1.135
Inequality is an issue	0.080		1.104	0.100		1.385	0.097		1.340	0.095		1.410
Inequality is a serious issue	0.129	*	1.718	0.137	*	1.851	0.132	*	1.765	0.136	*	1.954
Inequality is a very serious issue	0.157	**	2.022	0.139	*	1.803	0.134	*	1.741	0.184	**	2.545
Trust in Govt: Almost never	0.146	***	3.445	0.120	***	2.931	0.120	***	2.941	0.161	***	3.928
Trust in Govt: Sometimes	0.197	***	5.013	0.132	***	3.404	0.130	***	3.335	0.221	***	5.921
Trust in Govt: Almost always	0.461	***	8.332	0.314	***	5.521	0.313	***	5.488	0.475	***	9.050
Trust in Govt: Always	0.359	**	2.546	0.191		1.298	0.184		1.238	0.334	**	2.261
Treatment: Effort	-0.076	**	-2.132	-0.081	**	-2.342	-0.079	**	-2.288	-0.071	**	-2.032
Treatment: Luck	0.110	***	2.785	0.095	**	2.473	0.097	**	2.484	0.092	**	2.425
Treatment: Mobility	-0.081	**	-2.429	-0.084	**	-2.523	-0.083	**	-2.506	-0.084	***	-2.640
Position: Minimum	-0.341	***	-10.678	-0.339	***	-10.776	-0.339	***	-10.777	-0.345	***	-11.022
Position: Maximum	0.204	***	7.317	0.203	***	7.428	0.203	***	7.437	0.199	***	7.292
Age of the respondent	0.003	*	1.822	0.004	**	2.246	0.004	**	2.224			
Dummy for female	-0.002		-0.087	-0.006		-0.221	-0.005		-0.190			
Number of people in the HH	-0.008		-1.001	-0.007		-0.860	-0.005		-0.693			
Hours Worked = 1, Works part-time	0.033		1.009	0.026		0.817	0.021		0.639			
Hours Worked = 2, Works Full-Time	0.053		1.417	0.038		1.025	0.035		0.930			
Father's Education = 2, High School and others	-0.006		-0.199	-0.013		-0.442	-0.010		-0.336			
Father's Education = 3, Completed College or more	-0.092	**	-2.079	-0.116	***	-2.672	-0.115	***	-2.630			
Mother's Education = 2, High School and others	0.053	*	1.737	0.056	*	1.898	0.058	*	1.927			
Mother's Education = 3, Completed College or more	0.062		1.438	0.074	*	1.748	0.082	*	1.895			
Perceived position (decil 4, 5 and 6)	-0.061		-1.475	-0.060		-1.513	-0.055		-1.359			
Perceived position (decil 7, 8, 9 and 10)	-0.107	**	-2.049	-0.101	**	-1.999	-0.095	*	-1.811			
Year of the survey	-0.038		-1.406	-0.039		-1.460	-0.040		-1.500	-0.017		-0.659
Ideology: Center (5)				-0.196	***	-5.245	-0.197	***	-5.241			
Ideology: right (¿ 5)				-0.247	***	-6.516	-0.247	***	-6.487			
Missing in ideology				-0.218	***	-5.494	-0.216	***	-5.381			
HH Income = 2, Between 1000 and 2000 USD Monthly							0.002		0.051			
HH Income = 3, More than 2000 Monthly							-0.012		-0.308			
Missing in HH Income							-0.047		-1.008			
Constant	-0.179	*	-1.745	0.040		0.382	0.045		0.427	-0.180	**	-2.341
Observations	1,821			1,821			1,821			1,929		

Notes: Inequality aversion parameter is based on equation 2 using the pooled main sample of consistent answers. Coefficients were estimated using interval regression. It excludes participants that make inconsistent choices in at least one of the three replications of the experiment (Control, Effort, Luck). Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

A.7 Understanding and Comprehension Checks

One potential critique of our experiment is that participants may not fully understand the exercise proposed and we may be incorrectly interpreting their responses. In this regard, since the experiment was carried out with undergraduate college students, we believe that our participants were better equipped to understand the game's instructions than the general population.[4] In order to address this concern more formally, our experimental questionnaire included two specific questions that aimed to analyze how accurate and trustworthy participants' responses were. First, we introduced a comprehension check. This question presented the participants with two (new) alternative societies; they were asked to select the society with a more unequally distributed income. With this question we wanted to test if participants understood the way in which information was displayed. Second, we also introduced an attention check question. In this case, we asked the respondent to be completely honest about whether they paid enough attention to the questions. To induce honest responses we argue that knowing how attentive they were while answering the questionnaire was essential for our project. One potential critique to this question is that students will avoid answering that they were not paying attention. However, we find that 10% of them self-reported that they did not pay attention to their answers. We conduct additional estimates restricting the sample to those who reported having paid attention and answered our comprehension check correctly. Our main results are robust across samples and conclusions remain essentially the same.

Tables A.7.1 and A.7.2 replicate our main estimates using three different samples (Panel A and B report OLS and intervals regressions respectively). In each case, column (1) reports the baseline result of Table 5 again for easier comparison. Column (2) restricts the sample to those who self-reported as having paid attention when answering the survey. Column (3) reports the result of restricting the sample to those who answered the comprehension question correctly. Column (4) uses the intersection of columns (2) and (3) and restricts the sample to those who paid attention and answered the comprehension check correctly. Two conclusions can be drawn from these tables. First, restricting the sample to those who reported having paid attention does not change the estimates of the treatment effect for any of the treatment arms neither in magnitude, direction or statistical significance. Second, when we restrict the sample to those who answered our comprehension check correctly and compare this group to the full sample, the magnitude of the reported effects is larger for all treatments except the position treatment. However, the differences are not economically relevant. Moreover, despite the differences, the main conclusion from this robustness test is that the

[4] In addition, we show in section 6, our estimates of γ are consistent with individual views about inequality. Specifically, we find that inequality aversion is larger for those who see inequality as a "bad" while it is smaller for those who see inequality as a "good". This suggests that participants actually understood the game and gives more credibility to our results.

results are robust across samples and conclusions remain essentially the same.

Table A.7.1: Robustness checks: paid attention and understood the experiment

Panel A: OLS regression

	Full Sample	Serious	Understood	Both
	(1)	(2)	(3)	(4)
Effort vs Control	-0.067	-0.064	-0.057	-0.082
	(0.041)	(0.046)	(0.047)	(0.052)
N	464	383	357	312
Luck vs Control	0.076*	0.086*	0.114**	0.106**
	(0.042)	(0.046)	(0.045)	(0.047)
N	455	394	344	312
Effort vs Luck	-0.151***	-0.162***	-0.176***	-0.203***
	(0.043)	(0.048)	(0.050)	(0.053)
N	421	341	303	258
Mobility	0.016	0.027	0.009	0.012
	(0.037)	(0.039)	(0.040)	(0.042)
N	523	465	394	363
Controls	X	X	X	X
Median/Mean	0.202	0.218	0.197	0.220

Notes: continues in next page.

Panel B: interval regression

	Full Sample	Serious	Understood	Both
	(1)	(2)	(3)	(4)
Effort vs Control	-0.081	-0.077	-0.066	-0.093
	(0.052)	(0.057)	(0.058)	(0.061)
N	464	383	357	312
Luck vs Control	0.093*	0.102*	0.126**	0.113**
	(0.051)	(0.054)	(0.051)	(0.053)
N	455	394	344	312
Effort vs Luck	-0.185***	-0.190***	-0.204***	-0.222***
	(0.054)	(0.058)	(0.059)	(0.060)
N	421	341	303	258
Mobility	0.010	0.022	0.002	0.005
	(0.041)	(0.043)	(0.042)	(0.044)
N	523	465	394	363
Controls	X	X	X	X
Median/Mean	0.208	0.228	0.203	0.231

Notes: Panel A and B presents regression analysis by OLS and Interval Regression for the treatments effects at the mean using different samples of individuals according to the criteria indicated in the heading of the columns. Serious refer to those participants who answered that they responded seriously to the questionnaire. Understood only includes those who answer correctly our question to check if they understood which society is more unequal. Both refers to the sample restricted to those who at the same time answered that they answered seriously and they correctly completed our chock of understanding the task. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table A.7.2: Robustness checks: paid attention and understood the experiment − Position

Panel A: OLS regression

	Full Sample	Serious	Understood	Both
	(1)	(2)	(3)	(4)
Min vs Mean	-0.265***	-0.266***	-0.269***	-0.269***
	(0.024)	(0.025)	(0.027)	(0.027)
N	1,348	1,284	1,016	968
Max vs. Mean	0.154***	0.156***	0.141***	0.142***
	(0.022)	(0.023)	(0.024)	(0.025)
N	1,348	1,284	1,016	968
Max vs. Min	0.419***	0.422***	0.409***	0.411***
	(0.023)	(0.024)	(0.026)	(0.027)
N	1,348	1,284	1,016	968
Controls	X	X	X	X
Treatment FE	X	X	X	X
Median/Mean at Mean	0.202	0.218	0.205	0.231
Median/Mean at Min.	-0.026	-0.016	-0.030	-0.023

Notes: continues in next page.

Panel B: interval regression

	Full Sample	Serious	Understood	Both
	(1)	(2)	(3)	(4)
Min vs Mean	-0.375***	-0.379***	-0.356***	-0.359***
	(0.035)	(0.036)	(0.036)	(0.038)
N	1,348	1,284	1,016	968
Max vs. Mean	0.175***	0.179***	0.152***	0.154***
	(0.026)	(0.027)	(0.027)	(0.028)
N	1,348	1,284	1,016	968
Max vs. Min	0.564***	0.571***	0.514***	0.520***
	(0.035)	(0.036)	(0.035)	(0.037)
N	1,348	1,284	1,016	968
Controls	X	X	X	X
Treatment FE	X	X	X	X
Median/Mean at Mean	0.219	0.248	0.214	0.242
Median/Mean at Min.	-0.194	-0.189	-0.174	-0.163

Notes: Panel A and B presents regression analysis by OLS and Interval Regression for the position treatments using different samples of individuals according to the criteria indicated in the heading of the columns. Serious refer to those participants who answered that they responded seriously to the questionnaire. Understood only includes those who answer correctly our question to check if they understood which society is more unequal. Both refers to the sample restricted to those who at the same time answered that they answered seriously and they correctly completed our chock of understanding the task. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

A.8 Robustness Test: an Expanded Sample of Consistent Responses

The results presented in the previous section are based on the sample of participants who responded consistently to three experimental surveys: at the mean, at the minimum and at the maximum. This implies a very demanding criteria because it drops the responses of participants that are consistent in two positions but were inconsistent in a third. In order to assess the robustness of our results and the potential biases associated with inconsistent responses, we consider an expanded sample that incorporates all consistent responses in each position (regardless of whether the participant was consistent in the series of responses in the other positions). This modification does not change the estimates of the treatment effect for any of the treatment arms in magnitude, direction or statistical significance.

This strategy allows us for a clean comparison of inequality aversion between the three treatment arms (*effort*, *luck* and *mobility*), but it is not possible to apply in the case of position treatment (because the number of observations becomes unbalanced). This strategy allows us to retrieve at least 100 responses for each of the treatments (see Table A.2.3 in section A.1). Furthermore, we incorporate a dummy variable, which identifies those individuals that provided inconsistent responses when they make a series of choices in another position.

Tables A.8.2, A.8.3 and A.8.4 in Section A.8 report the results of the main treatments for the described samples (these estimates replicate the specification presented in Table 5.

Two conclusions can be drawn from these tables. First, expanding the sample to include those who made inconsistent responses does not change the estimates of the treatment effect for any of the treatment arms in magnitude, direction or statistical significance. Second, the results confirm the same pattern in the three positions and the asymmetric response to the mobility treatment when the position varies. Finally, the coefficients of the dummy variable that identifies those participants that provide inconsistent responses in the alternative series are not statistically significant in any case.

As an alternative, we also use a more flexible definition of consistent responses, which allows an additional expansion of our baseline sample. As we have described in section 4.2 some respondents make inconsistent responses in the experimental survey. However, we identify different degrees of inconsistency. We incorporate a simple assumption to recover some responses. Table A.8.1 presents the criteria used to recover these cases (basically we recover the participants who perform a single inconsistency) and Table A.2.3 describes the number of responses recovered (between 142, 70 cases and 72, depending on the position in the sequence of choices). Furthermore, we incorporate a dummy variable, which identifies those individuals whose responses were adjusted in order to obtain consistency.

Table A.8.1: Criteria used to identify γ among inconsistent responses

Assigned γ	Set of Choices (only inconsistent responses)
$(-\infty, -0.09)$	$\{A, A, B_3, A, A, A, A, A, A\}$
	$\{A, A, A, B_4, A, A, A, A, A\}$
	$\{A, A, A, A, B_5, A, A, A, A\}$
	$\{A, A, A, A, a, B_6, A, A, A\}$
	$\{A, A, A, A, A, A, B_7, A, A\}$
	$\{A, A, A, A, A, A, A, B_8, A\}$
	$\{A, A, A, A, A, A, A, A, B_9\}$
[0,0.05)	$\{A, B_2, A, A, A, A, A, A, A\}$
$[0.05, 0.09)$	$\{A, B_2, B_3, A, A, A, A, A, A\}$
	$\{B_1, A, B_3, A, A, A, A, A, A\}$
$[0.09, 0.15)$	$\{A, B_2, B_3, B_4, A, A, A, A, A\}$
	$\{B_1, B_2, A, B_4, A, A, A, A, A\}$
$[0.15, 0.21)$	$\{A, B_2, B_3, B_4, B_5, A, A, A, A\}$
	$\{B_1, B_2, B_3, A, B_5, A, A, A, A\}$
$[0.21, 0.34)$	$\{A, B_2, B_3, B_4, B_5, B_6, A, A, A\}$
	$\{B_1, B_2, B_3, B_4, A, B_6, A, A, A\}$
$[0.34, 0.51)$	$\{A, B_2, B_3, B_4, B_5, B_6, B_7, A, A\}$
	$\{B_1, B_2, B_3, B_4, B_5, A, B_7, A, A\}$
$[0.51, 0.78)$	$\{A, B_2, B_3, B_4, B_5, B_6, B_7, B_8, A\}$
	$\{B_1, B_2, B_3, B_4, B_5, B_6, A, B_8, A\}$
$[0.78, +\infty)$	$\{A, B_2, B_3, B_4, B_5, B_6, B_7, B_8, B_9\}$
	$\{B_1, A, B_3, B_4, B_5, B_6, B_7, B_8, B_9\}$
	$\{B_1, B_2, A, B_4, B_5, B_6, B_7, B_8, B_9\}$

Notes: This criteria is used to define adjusted consistent responses in the sample III (see A.2.3). The consistent responses followed the presented values in Table 1. The rest of the responses were excluded.

Our results are presented in Tables A.8.5 and A.8.6 in Section A.8. First, compared with the results of our main specification (Table 5, does not change the estimates of the treatment effect for any of the

treatment arms in magnitude, direction or statistical significance. In fact, in the case of the effort message, the comparisons against the control group, are statistically significant at a 10 % level. There results are consistent with H1 that suggested that $\gamma^e < \gamma^c < \gamma^l$. Second, this robustness check also confirms the results with respect to positional treatment. Again the coefficients and their statistical significance do not change with respect to those presented in Table 6. We find a small difference when comparing the implied γ from choices at the maximum with those implied by choices at the mean, in which there is a slight decline in the coefficient compared with the baseline result, but it maintains its significance. Third, in general, the dummy variables that identify inconsistent responses are not statistically significant.

Table A.8.2: Treatment effect - Between individuals experiment when making choices at the mean (all consistent responses)

	OLS	Quant. Reg.	Interval Reg.
Effort vs Control	-0.051	-0.065*	-0.061
	(0.036)	(0.039)	(0.043)
If inconsistent in others	0.003	0.051	-0.005
	(0.041)	(0.050)	(0.048)
N	579	579	579
Luck vs Control	0.089**	0.064	0.095**
	(0.037)	(0.046)	(0.043)
If inconsistent in others	-0.004	0.036	-0.032
	(0.042)	(0.058)	(0.047)
N	562	562	562
Effort vs Luck	-0.151***	-0.129***	-0.157***
	(0.037)	(0.044)	(0.045)
If inconsistent in others	0.013	0.014	0.005
	(0.041)	(0.053)	(0.049)
N	533	533	533
Mobility	0.012	0.054	0.012
	(0.033)	(0.038)	(0.037)
If inconsistent in others	-0.038	-0.025	-0.051
	(0.042)	(0.052)	(0.047)
N	623	623	623
Controls	X	X	X
Dummy for missing	X	X	X
Median/Mean	0.202	0.121	0.208

Notes: Inequality aversion parameter is based on equation 2 and the sample of between treatment experiments. It includes participants that make consistent choices at the mean, but inconsistent choices in the other positions. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table A.8.3: Treatment effect - Between individuals experiment when making choices at the minimum (all consistent responses)

	OLS	Quant. Reg.	Interval Reg.
Effort vs Control	-0.045	-0.059	-0.082
	(0.037)	(0.061)	(0.062)
If inconsistent in others	0.021	0.028	0.023
	(0.044)	(0.072)	(0.069)
N	596	596	596
Luck vs Control	0.095**	-0.000	0.138**
	(0.040)	(0.038)	(0.067)
If inconsistent in others	-0.030	-0.000	-0.078
	(0.046)	(0.044)	(0.076)
N	595	595	595
Effort vs Luck	-0.138***	-0.120**	-0.226***
	(0.040)	(0.060)	(0.071)
If inconsistent in others	-0.044	-0.023	-0.076
	(0.043)	(0.066)	(0.075)
N	575	575	575
Mobility	-0.216***	-0.317***	-0.489***
	(0.032)	(0.026)	(0.072)
If inconsistent in others	0.001	0.000	-0.050
	(0.038)	(0.032)	(0.080)
N	659	659	659
Controls	X	X	X
Dummy for missing	X	X	X
Median/Mean	0.202	0.121	0.208

Notes: Inequality aversion parameter is based on equation 2 and the sample of between treatment experiments. It includes participants that make consistent choices at the minimum, but inconsistent choices in other positions. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table A.8.4: Treatment effect for informational treatments between groups when respondents make choices at the maximum (all consistent responses)

	OLS	Quant. Reg.	Interval Reg.
Effort vs Control	-0.142***	-0.155***	-0.150***
	(0.031)	(0.036)	(0.035)
If inconsistent in others	-0.025	0.004	-0.064*
	(0.035)	(0.042)	(0.037)
N	611	611	611
Luck vs Control	-0.001	-0.046	0.007
	(0.034)	(0.054)	(0.040)
If inconsistent in others	-0.003	0.025	-0.028
	(0.037)	(0.061)	(0.044)
N	598	598	598
Effort vs Luck	-0.153***	-0.118***	-0.163***
	(0.032)	(0.044)	(0.038)
If inconsistent in others	-0.039	0.000	-0.073*
	(0.034)	(0.046)	(0.038)
N	597	597	597
Mobility	0.085***	0.113**	0.100***
	(0.030)	(0.045)	(0.034)
If inconsistent in others	0.023	0.051	-0.009
	(0.035)	(0.054)	(0.039)
N	660	660	660
Controls	X	X	X
Dummy for missing	X	X	X
Median/Mean	0.202	0.121	0.208

Notes: Inequality aversion parameter is based on equation 2 and the sample of between treatment experiments. It includes participants that make consistent choices at the maximum, but inconsistent choices in other positions. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table A.8.5: Treatment effect - Between individuals experiment when consistent responses are adjusted

	OLS		Quant. Reg.
Interval Reg.			
	(1)	(2)	(3)
Effort vs Control	-0.060*	-0.054*	-0.068*
	(0.035)	(0.030)	(0.040)
If adjusted response	-0.027	0.017	-0.029
	(0.056)	(0.052)	(0.064)
N	572	572	572
Luck vs Control	0.078**	0.075**	0.084**
	(0.036)	(0.037)	(0.040)
If adjusted response	-0.036	-0.031	-0.039
	(0.054)	(0.059)	(0.060)
N	568	568	568
Effort vs Luck	-0.143***	-0.123***	-0.154***
	(0.034)	(0.031)	(0.037)
If adjusted response	-0.057	-0.021	-0.064
	(0.040)	(0.042)	(0.044)
N	562	562	562
Mobility	0.018	0.082**	0.013
	(0.033)	(0.038)	(0.035)
If adjusted response	-0.034	-0.102	-0.036
	(0.056)	(0.067)	(0.060)
N	622	622	622
Controls	X	X	X
Median/Mean	0.192	0.121	0.199

Notes: Inequality aversion parameter is based on equation 2 and the sample of between treatment experiments. It includes participants that make inconsistent choices, whose responses are adjusted. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table A.8.6: Treatment effect position - when consistent responses are adjusted

	OLS		Quant. Reg.	Interval Reg.	N
	(1)	(2)	(3)	(4)	
Min vs Mean	-0.236***	-0.234***	-0.229***	-0.243***	1,956
	(0.015)	(0.014)	(0.023)	(0.016)	
If adjusted response	0.009	0.083	-0.025	0.013	
	(0.018)	(0.303)	(0.025)	(0.019)	
Max vs. Mean	0.160***	0.161***	0.108***	0.146***	2,147
	(0.013)	(0.012)	(0.011)	(0.012)	
If adjusted response	-0.071***	-0.080	-0.064***	-0.063***	
	(0.015)	(0.106)	(0.013)	(0.014)	
Max vs. Min	0.331***	0.331***	0.305***	0.334***	
	(0.015)	(0.014)	(0.027)	(0.016)	1,953
If adjusted response	0.071***	0.194	0.019	0.081***	
	(0.022)	(0.138)	(0.033)	(0.023)	
Controls		X	X	X	
Treatment FE	X				
Median/Mean at Mean	0.150	0.150	0.070	0.098	
Median/Mean at Min.	-0.029	-0.029	-0.362	-0.226	

Notes: Inequality aversion parameter is based on equation 2 and the sample of between treatment experiments. It includes participants that make inconsistent choices, whose responses are adjusted. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

A.9 Online vs. On-site Experiments

Compared to previous literature, e.g. Carlsson et al. (2005); Amiel and Cowell (1999), our experiment differs in that we use an online experimental survey. In order to address whether our online survey generates a bias in the inequality aversion parameter regarding when participants answered the experimental questionnaire on site, we replicate our baseline experiment with a sub-sample of students in the classroom. [5]

[5] Arechar et al. (2018) investigate this issue by replicating public goods experiment online and on-site and conclude that online data quality is adequate and reliable compared to on-site, despite cooperation levels in their online sample being substantially higher

Specifically, we replicated the parts of the experiment that are needed to calculate the inequality aversion parameter in the control group at the mean, minimum and maximum. In terms of the value of γ, the results are essentially the same for the experiment at mean and maximum.[6] We found a significant difference for the experiment at the minimum. In this case, γ is significantly higher when students took the experiment on-site. This difference is due to a greater proportion of students who always chose Society B in the on-site experiment. [7]. The information treatments effects remain affected.

We summarize these results in Figure A.9.1 in the Appendix, comparing this results to those from the sub-sample of students who took part in the online experiment assigned to the control group. As can be observed, despite minor differences in the distribution, there is no evidence of significant differences between the answers at the mean or at the maximum, no matter if the experiment took place online or on-site. [8]

Nevertheless, we found a significant difference for the experiment at the minimum. In this case, γ is significantly higher when students took the experiment on-site. This difference is due to a greater proportion of students who always chose Society B in the on-site experiment.[9] Despite this result, which seems to be a particularity of the experiment at the minimum, results do not seem to be affected in general. The information treatments effect in particular seems to be unaffected.

A.10 Non-self-centered Inequality Aversion

So far we have assumed that the effect of an individual's position in the income distribution on individual well-being enters in the utility function through γ. Alternatively, one could consider that position enters directly in the utility function and that γ is position invariant. Aronsson et al. (2016) discuss the difference between these two approaches and refer to inequality aversion that is position dependent as "self-centered"

than in the laboratory. Holbrook et al. (2003) studied how the method of survey data collection generates biases, particularly in regards to face-to-face interviewing and telephone interviewing. Telephone respondents indicated a lower level of satisfaction with the interview, and greater suspicion. Furthermore they are more likely to present themselves in a more socially desirable image than were face-to-face respondents.

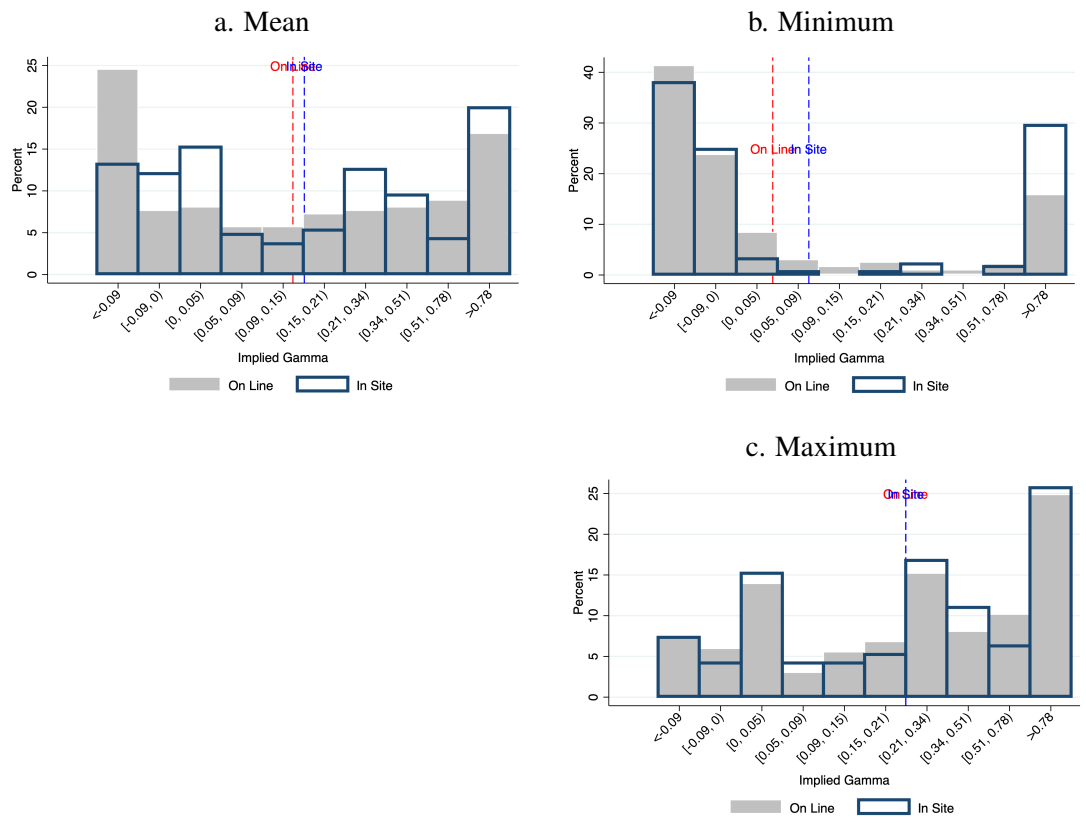
[6] The number of consistent answers in the classroom experiment ascends to 191.

[7] The fact that this difference was observed only for the set of choices at the minimum could mean that this extreme behavior may be related to self-image motives, which seems to occur more strongly at the minimum when questionnaires are implemented on-site. The difference might be explained by a learning effect and that in the case of on-site participants can see the subsequent choices (which is not possible in the online experiment).

[8] We present p-value for mean test at the bottom of the graphics. We also developed a K-S test and obtain the same conclusions.

[9] The fact that this difference was observed only for the set of choices at the minimum could mean that this extreme behavior may be related to self-image motives, which seems to occur more strongly at the minimum when questionnaires are implemented on-site. The difference might be explained by a learning effect and that in the case of on-site participants can see the subsequent choices (which is not possible in the online experiment).

Figure A.9.1: Aversion to inequality distribution - Online vs on-site experiment



This image presents the distribution of γ, comparing the results for our online experiment with the on-site experiment previously carried by Burone and Leites (2021) using the set of choices at the mean (Panel a), minimum (Panel b) and Maximum (Panel c). In the *x-axis* we report the implied value of γ associated with different alternative choices of A and B_z. On the *y-axis* we report the frequency of γ associated with each choice. The dashed line indicates our estimate for the median γ. On footnote the p-value of a mean test for each sample is presented. P-values Kolmogorov-Smirnov tests for equal distribution: panel a: 0.211, panel b: 0.009, panel c: 0.952.

inequality aversion. On the other hand, when inequality aversion is independent of the individual's position in the income distribution, it is referred to as "non-self-centered" inequality aversion. If instead of a "self-centered" inequality aversion our individuals respond to a "not-self-centered" version of inequality aversion, our previous estimates of the effect of position on γ could be capturing the effect of position in the overall level of utility and not an actual relation between position and γ. In order to address this concern we replicate our results using an alternative utility function where position enters directly as one of its arguments.

We use the model and strategy proposed in Burone and Leites (2021) to estimate non-self-centered inequality aversion. In this section we first briefly present the model and strategy, and then we summarize the main results of our information treatment when we use this strategy.

The key result is that inequality aversion is slightly higher than in the self-centered case. However, the overall conclusion remains the same: the average individual is inequality averse although there are some individuals that remain at low or even negative values for γ. Results regarding treatment effects are qualitatively similar.

Model

Burone and Leites (2021) start from a utility function at the individual level that allows to distinguis non-self-centered and self-centered inequality aversion. Inspired in the inequality aversion model proposed by (Fehr and Schmidt (1999), the authors parametrize the self-centered notion of inequality aversion. In this case, individual's utility function depends on the difference between an individual's i income and the income of all other individuals in society j. It also introduces different weights depending on the sign of the difference. This allows them to isolate the role of the position and to focus on non-self-centered inequality aversion. They rewrite (1) and consider a self-centered inequality notion as:

$$U_{ij}(x_{ij}, \Phi_j, \hat{\gamma}_{ij}^{nsc}, \hat{\beta}_{ij}, \hat{\alpha}_{ij}) = (x_{ij})[RD]^{-\hat{\alpha}}[RA]^{-\hat{\beta}}(\Phi_j)^{-\hat{\gamma}^{nsc}} \tag{8}$$

where

$$\text{RD}=\begin{cases} \left[\frac{\int_{x_{ij}}^{x_{jmax}}(x-x_{ji})f(x_j))dx}{x_{ij}}\right] & if \quad x_{ij} < x_{jmax} \\ 1 & if \quad x_{ij} = x_{jmax} \end{cases}$$

$$RA=\begin{cases} \left[\frac{\int_{x_{jmin}}^{x_{ij}}(x_{ij}-x)f(x_j)dx}{x_{ij}}\right] & if \quad x_{ij} > x_{jmin} \\ 1 & if \quad x_{ij} = x_{jmin} \end{cases}$$

where $f(x_j)$ represents the density function of income in society j, $x_{j,max}$ and $x_{j,min}$ represent its maximum and minimum income levels; RA and RD stand for relative affluence and relative deprivation, respectively.[10] Note that α represents the weight applied to the average differences of income with those

[10] In eqation (8) the individual's utility function incorporates the aggregated distance between the individual and the income of

who are above individual i in the income distribution (RA), while β represents the weight applied to the differences of i with those who are below (RD). The first argument of the function U_i is the individual's i income (x_{ij}). While the last component of equation 8 is the non-self-centered aversion component as Φ is a measure of inequality in society j which does not depend of position (we use the variation coefficient).

In our context, we can observe that when equations 1 and 2 assume that α and β are zero, then the individual's inequality aversion parameter varies according to its position in the income distribution. This motivates the position treatment that we presented previously. But now equation (8) allows that $\alpha \neq 0$ and $\beta \neq 0$ and propose an alternative version of γ^{nsc}: non-self-centered inequality aversion.

From equation 8, the conditions of indifference for individual i between two alternatives societies A and B can be written as:

$$\gamma^{nsc}_{i,j,A,B} = \frac{\ln(\frac{x_{i,A}}{x_{i,B}}) - (\alpha+\beta)\left[\ln(\frac{x_{max,B}-x_{i,B}}{x_{i,B}} / \frac{x_{max,A}-x_{i,A}}{x_{i,A}})\right]}{\Phi_B/\Phi_A} \tag{9}$$

If we know the choices made for individuals between societies A and B in three different positions, and if society's values (i.e: $f(x)$, x_{max} and x_{min}) are known (as we do in the context of the questionnaire made), solving for each position where individuals have to choose, we can derivate:

When $x_i = x_{mean}$:

$$\gamma^{nsc}_{i,j,A,B}(e_j, M_j, \hat{\beta}, \hat{\alpha}) == \frac{\log(\overline{x_B}/\overline{x_A}) - \alpha \log\left(\frac{(x_{maxB}-\overline{x_B})/\overline{x_B}}{(x_{maxA}-\overline{x_A})/\overline{x_A}}\right) - \beta \log(x_{maxB}/x_{maxA})}{\log(\Phi_B/\Phi_A)}$$

When $x_i = x_{min}$:

$$\gamma^{nsc}_{i,j,A,B} i,j(e_j, M_j, \hat{\beta}, \hat{\alpha}) == \frac{\log(x_{minB}/x_{minA}) - \alpha \log\left(\frac{(x_{maxB}-x_{minB})/x_{minB}}{(x_{maxA}-x_{minA})/x_{minA}}\right) - \beta \log(x_{maxB}/x_{maxA})}{\log(\Phi_B/\Phi_A)}$$

When $x_i = x_{max}$:

$$\gamma^{non-self-centered}_{i,j,A,B}(e_j, M_j, \hat{\beta}, \hat{\alpha}) == \frac{\log(x_{maxB}/x_{maxA}) - \beta \log(x_{maxB}/x_{maxA})}{\log(\Phi_B/\Phi_A)}$$

We obtain three equations which represent the indifference preferences between society A and B_j for the three positions. We get a system of non-linear equations that can be solved. Doing this, we get $\gamma^{nsc}_{i,j}(e_j, M_j, \hat{\beta}, \hat{\alpha})$ for each individual, a parameter that captures unbiased inequality aversion, taking into account position and combining all choices made for participants. The system allows us to identify the values of $\hat{\gamma}^{nsc}$, $\hat{\beta}$, and $\hat{\alpha}$ that are compatible with the preferences of individuals. The parameters are estimated

others separately. Fehr and Schmidt (1999) considers the distribution of payoffs between two players in the experimental game. In this case, following Hopkins (2008) the utility function considers multiple individuals.

based on a situation of indifference among the societies A and B_j, which implies an assumption. However, Burone and Leites (2021) discuss the implication of this assumption and used simulations to demonstrate that this strategy provides an accurate measure of $\gamma^{nsc}_{i,j,A,B}$.

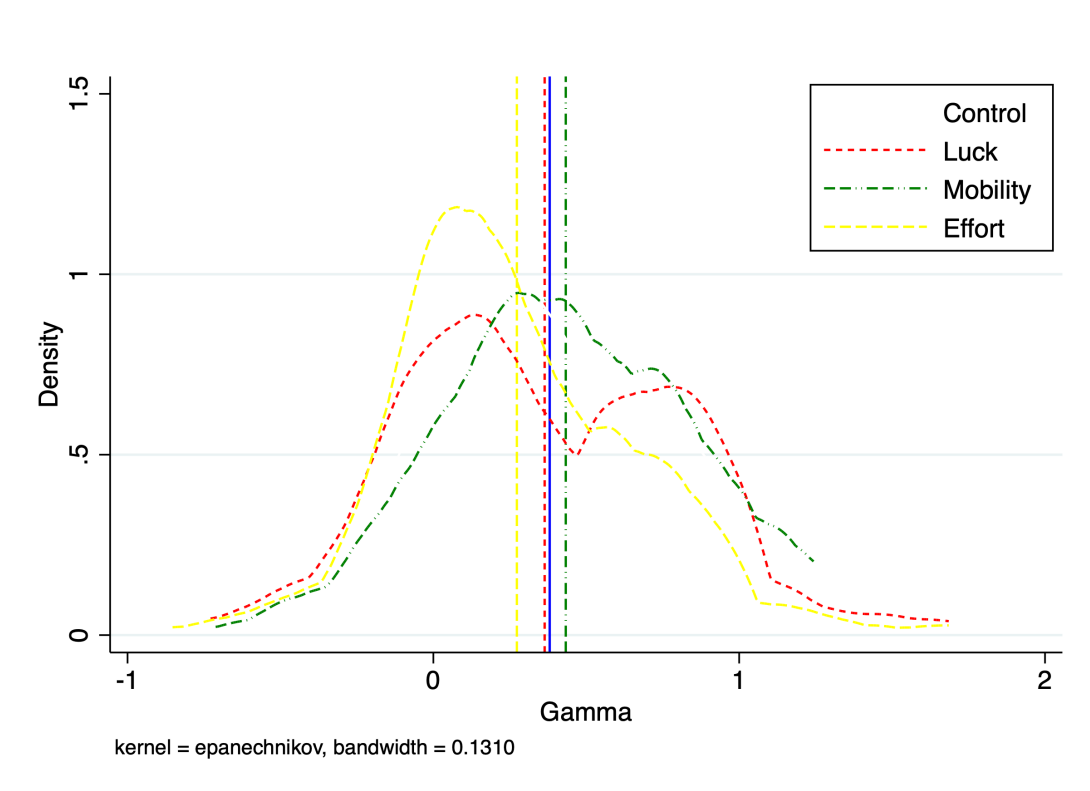
In this case, γ^{nsc} is unique for each individual (it is insensitive to a change in individual's position at income distribution). Because each individual makes a series of choices three times (one time in each position), we have a system with three unknowns and three equations. With some additional assumptions, we can recover the parameter $\hat{\gamma}^{nsc}_{i,j}(e_j, M_j, \hat{\beta}, \hat{\alpha})$. As shown in Burone and Leites (2021), this strategy relies on estimating γ^{nsc} values in an almost continuous support, which is an advantage compared to the process utilized for our baseline estimate. For this reason, in this case estimates are based on OLS regressions.

Results

Figure A.10.1 replicates the estimate of γ distribution in a not-self-centered version (γ^{nsc}) of the individual utility function.[11] The key result is that inequality aversion is slightly higher than in the self-centered case. However, the overall conclusion remains the same: the average individual is inequality averse although there are some individuals that remain at low or even negative values for γ^{nsc}. Table A.10.1 reports the replicated estimates of our main results. A comparison between these results and those presented in Table 5 show that although the magnitude of the effects is slightly larger, the overall conclusions remain the same. Another result from these comparisons is noteworthy. Effort treatments significantly reduce aversion to inequality, and this difference is significant when the effect of effort is compared against any of the other treatments or against the control group. For instance, the meritocratic view dominates when we consider a "not-self-centered" concept of inequality aversion, which is consistent with the previous result that meritocratic view dominates regardless of individuals' position. These results also confirm the importance of position in individuals' willingness to sacrifice income for equality. Finally, when a "not-self-centered" concept of inequality aversion is considered, mobility treatment has not a significant effect on individuals' willingness to sacrifice income for equality. Again, the effect of the channels mobility preferences and risk aversion seem to cancel each other out.

[11] As this utility function assumed the support of γ^{nsc}) as almost continuous, we prefer to present Kernel Density Estimations rather than discrete histograms

Figure A.10.1: Kernel density estimation. Treatment effect for non self-centered inequality aversion



Notes: Kolmogorov Smirnov Test for equal distribution was carried for each treatment one to one. The null hypothesis of equal distribution was rejected with 97,5% confidence for all treatments except: Control vs Luck and Control vs Mobility.

Table A.10.1: Treatment effect - Not self centered inequality aversion

	OLS	
	(1)	(2)
Effort vs Control	-0.107***	-0.117***
	(0.040)	(0.039)
N	441	441
Luck vs Control	-0.016	-0.023
	(0.043)	(0.045)
N	435	435
Effort vs Luck	-0.091**	-0.093**
	(0.043)	(0.042)
N	400	400
Mobility	0.053	0.056
	(0.037)	(0.038)
N	506	506
Controls		X
Dummy for missing		X

Notes: Regression analysis by OLS for the treatments effects is presented in this Table using an alternative definition of inequality aversion which accounts for self centred and non self centered inequality aversion as explained in this section (i.e: according to equation (8)). Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

A.11 Treatment Effort vs. Luck: Within-individual Analysis

In order to further test the robustness of our results, we replicated the experiment with a different sample of students selected from the same universe. This time, we introduced exogenous variation at the individual level. Since this replication was conceived as a robustness check only, we created a restricted version of the experiment with choices being made only at the mean and with two treatment groups - *effort* and *luck* - and a control group. Specifically, instead of asking participants to make repeated choices when the position

changed, we ask the same individual to make a choice in different scenarios but with a change in the causes of inequality: first we ask them to choose with no additional information, then, in random order, we use the *effort-message* and finally the *luck-message*. Although the sample of individuals is considerably smaller, the results remain qualitatively the same. The distribution of γ for the control group is comparable with our baseline estimate from the full experiment. Second, we confirm $\gamma_l > \gamma_c > \gamma_e$, which is consistent with H1 and H2 as the results from the main experiment.

Table A.1.1 describes the process of data collection for this sample. Tables A.11.1 and A.11.2 respectively summarize the consistency of responses and presents an analysis of consistency over observable variables. Results are similar to the between treatment experiment. An advantage of this strategy compared with the between treatment is that it avoids the problems of imbalance by treatment arm.

In this case, although the sample of individuals is considerably smaller, the results remain qualitatively the same. First, Panel a in Figure A.11.1 of the Appendix shows the distribution of γ for the control group, which is comparable with our baseline estimate from the full experiment. For this sample the number of 'equality lovers' is slightly higher. As a result the summary statistics rise to higher levels of aversion (0.306 vs 0.202 and 0.339 vs 0.208 in the case of the mean and median respectively).

Second, the effect of the treatment of information on the median and on the distribution is also consistent with the results from the main experiment. In Figure A.11.1 Panel b, c and d we report respectively the distribution of γ for luck-message vs control group, effort-message vs control group and effort-message vs luck-message groups. Overall these results are consistent with our baseline results, which are presented in section 5 and the distributions of γ shift in the expected direction. When we replicate the specification of the Table 5 using this sample, we find that the magnitude and directions of the effects are unchanged (Table A.11.3). The effect of the luck-message vs control group is still negative, but unlike the baseline estimates, in this case it shows a statistically significant incidence and a coefficient of greater magnitude (-0.165 vs -0.065 for the OLS estimates). While for the effort-message the magnitude of the coefficient is almost identical with baseline results, it is not statistically significant. Finally, when we directly compare the effect of effort-message and luck-message the differences are statistically significant in all specifications at a 1% level. The magnitude of the differences is between -0.225 and -0.298, which is slightly higher than the difference that we find in the baseline estimates presented in Table 5 (-0.142 and -0.185). Finally, Table A.11.4 replicates our main estimates using the same three samples presented in Table A.7.1 in the Appendix. They restrict the sample to those who self-reported having paid attention, those who answered the comprehension question correct and those who did both of the above. The conclusions remain unchanged.

In sum, when we carried out an additional strategy based on three fairness treatment at individual level

in this additional sample we confirm $\gamma_l > \gamma_c > \gamma_e$, which is also consistent with H1 and H2 as the results from the main experiment.

Table A.11.1: Distribution of inconsistent answers - By treatment arm (within individual sample)

Treatment	Consistent	Inconsistent	% Inconsistent
Control	158	30	15.96
Effort	164	24	12.77
Luck	165	23	12.23

Notes: Based on the sample of students that participate in the survey and receive the informational treatment at individual level (sample of within treatment experiment).

Table A.11.2: Effort vs luck treatment at individual level: regression of consistency over observable variables (within individual sample)

	Dep. Var: Dummy for Consistency	
	(1)	(2)
Age of the respondent	0.004	0.002
	(0.004)	(0.003)
Missing Age	-0.079	0.103
	(0.156)	(0.151)
Female	0.106	0.096
	(0.072)	(0.072)
Number of HH members	-0.007	-0.006
	(0.024)	(0.024)
Missing number of HH members	0.303	-0.004
	(0.304)	(0.302)
Work: Part Time	-0.114	-0.089
	(0.089)	(0.089)
Work: Full Time	-0.248***	-0.218**
	(0.090)	(0.089)
Father: High School or other	0.085	0.077
	(0.074)	(0.075)
Father: College or more	0.017	0.028
	(0.118)	(0.120)
Mother: High School or other	-0.023	-0.018
	(0.074)	(0.072)
Mother: College or more	-0.079	-0.058
	(0.143)	(0.147)
USD 1000 - USD 2000	-0.131	-0.132
	(0.084)	(0.083)
More than USD 2000	0.019	0.042
	(0.089)	(0.088)
Understands		-0.039
		(0.092)
Attention		0.264**
		(0.107)
Constant	0.276*	0.052
	(0.148)	(0.213)
Observations	187	186

Notes: Based on te sample of within treatment experiment. In the three specifications the dependent variable is a dummy to indicate consistency in the questionnaire. The different columns differ in the regressors included in the model as indicated by the rows. Omitted category (all dummies = 0) corresponds to: does not work, father education high school or less, mother education high school or less, household income less than USD 1000 monthly and assigned to control group. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table A.11.3: Treatment effect - Effort vs luck treatment at individual level, different Specifications

	OLS		Quant. Reg.	Interval Reg.	
	(1)	(2)	(3)	(4)	(5)
Effort vs Control	-0.165***	-0.165***	-0.132*	-0.199***	-0.200***
	(0.027)	(0.052)	(0.072)	(0.070)	(0.063)
N	260	260	260	260	260
Luck vs Control	0.060	0.060	0.031	0.087	0.091
	(0.038)	(0.054)	(0.091)	(0.077)	(0.071)
N	260	260	260	260	260
Effort vs Luck	-0.225***	-0.225***	-0.195**	-0.295***	-0.298***
	(0.039)	(0.054)	(0.081)	(0.077)	(0.071)
N	260	260	260	260	260
Controls	FE	C	C		c
Median/Mean	0.306	0.306	0.185	0.339	0.339

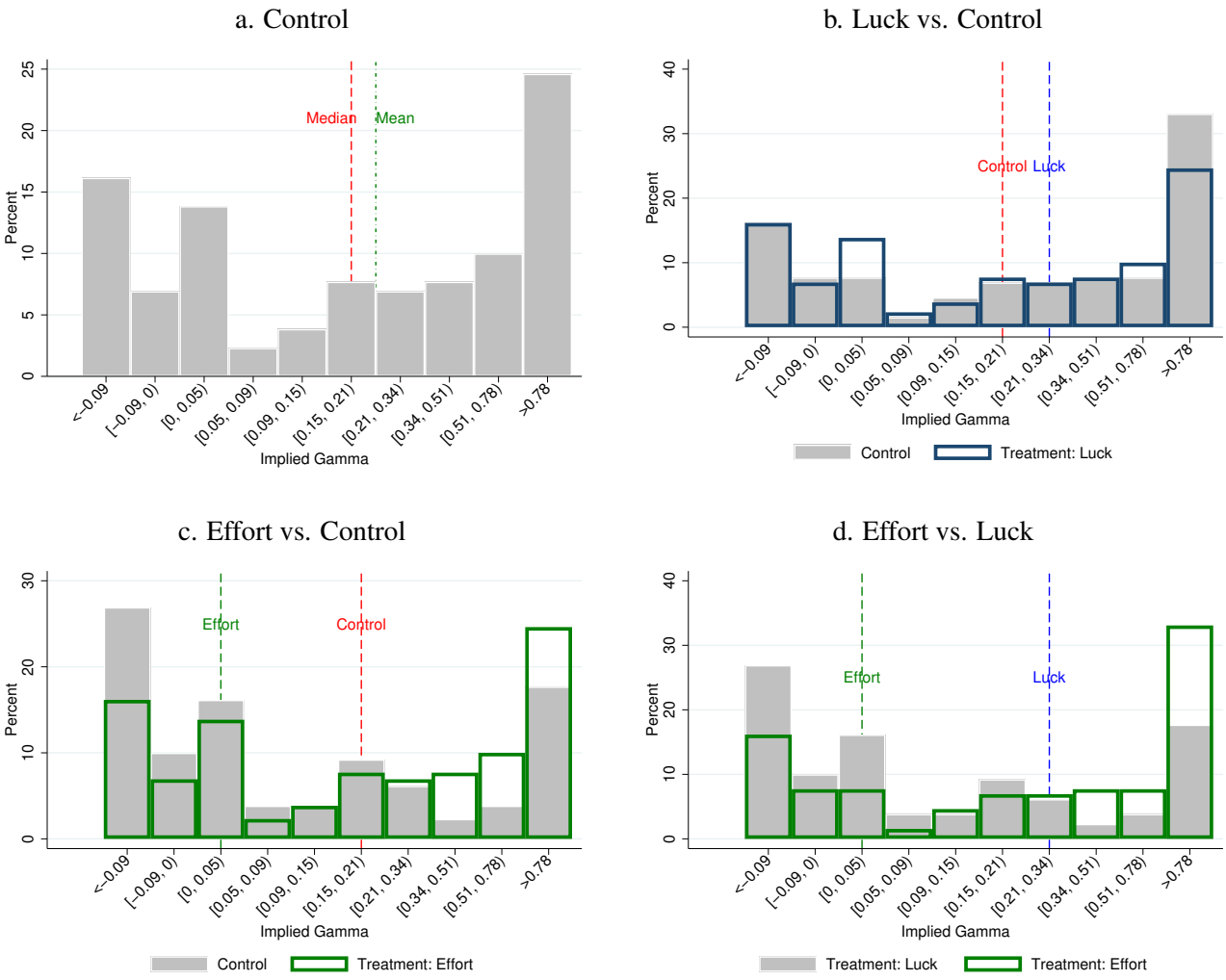
Notes: Inequality aversion parameter is based on equation 2 and the sample of students in which we applied the fairness treatment at individual level (sample of within treatment experiment). It excludes participants that make inconsistent choices in at least one of the three replications of the experiment (Control, Effort, Luck). It includes the responses of 130 individuals and 390 observations of gamma. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Table A.11.4: Robustness checks: paid attention and understood the experiment. Interval regressions (within individual sample)

	Full Sample	Serious	Understood	Both
	(1)	(2)	(3)	(4)
Effort vs Control	-0.200***	-0.211***	-0.185***	-0.196***
	(0.063)	(0.067)	(0.068)	(0.073)
N	260	236	216	192
Luck vs Control	0.091	0.084	0.087	0.078
	(0.071)	(0.076)	(0.077)	(0.083)
N	260	236	216	192
Effort vs Luck	-0.298***	-0.303***	-0.277***	-0.281***
	(0.071)	(0.076)	(0.077)	(0.084)
N	260	236	216	192
Controls	X	X	X	X
Median/Mean	0.438	0.458	0.430	0.452

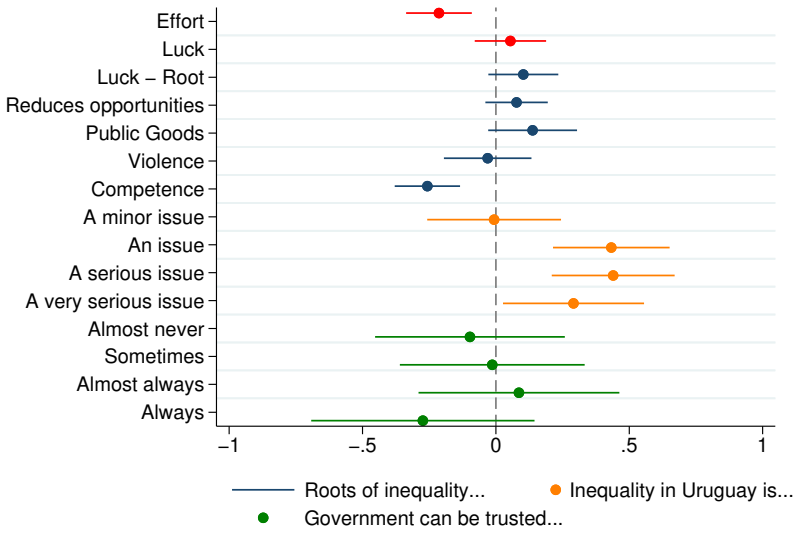
Notes: Inequality aversion parameter is based on equation 2 and sample of students in which we applied the fairness treatment at the individual level (sample of within treatment experiment). It excludes participants that make inconsistent choices in at least one of the three replications of the experiment (Control, Effort, Luck). Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

Figure A.11.1: Aversion to inequality distribution - Effort vs luck treatment at individual level (within individual sample)



Notes: Inequality aversion parameter is based on equation 2 and the sample of students in which we applied the fairness treatment at individual level. It excludes participants that make inconsistent choices in at least one of the three replications of the experiment (control, Effort, Luck). It includes the responses of 130 individuals and 390 observations of gamma. Panel a includes responses based on control group. Panel b includes responses based on control group and treatment luck. Panel c includes responses based on control group and treatment effort. Panel d includes responses based on treatments effort and luck.P-values Kolmogorov-Smirnov tests for equal distribution: panel b: 0.7427, panel c: 0.0162, panel d: 0.0004.

Figure A.11.2: Interpreting Gamma - Intervals regression. Estimates based on fairness treatment at individual level



Notes: These coefficients were estimated using interval regression and the sample of students that participate participate at informational treatment at individual level. The full estimates are reported in specification I of Table A.11.5 in the Online Appendix (section A.6).

Table A.11.5: Interpreting γ. Interval regression estimates based on fairness treatment at individual level (within individual sample).

	(I)			(II)			(III)			(IV)		
	coef		tstat	coef		tstat	coef		tstat	coef		tstat
Luck - Root	0.060		0.850	0.096		1.328	0.111		1.541	0.141	**	2.258
Reduces opportunities	0.061		0.986	0.068		1.097	0.090		1.507	0.073		1.179
Public Goods	0.145	*	1.750	0.121		1.430	0.135		1.587	0.185	**	2.395
Violence	-0.011		-0.127	0.025		0.303	0.015		0.175	-0.087		-1.033
Competence	-0.243	***	-3.550	-0.258	***	-3.740	-0.270	***	-4.102	-0.302	***	-4.326
Inequality is a minor issue	0.021		0.160	0.109		0.778	0.032		0.228	-0.044		-0.398
Inequality is an issue	0.379	***	3.247	0.453	***	3.841	0.493	***	4.129	0.260	***	2.830
Inequality is a serious issue	0.348	***	2.827	0.432	***	3.451	0.473	***	3.819	0.296	***	2.702
Inequality is a very serious issue	0.334	**	2.354	0.410	***	2.868	0.361	**	2.533	0.290	**	2.458
Trust in Govt: Almost never	-0.036		-0.194	-0.076		-0.389	-0.144		-0.769	-0.055		-0.289
Trust in Govt: Sometimes	0.036		0.191	0.044		0.226	0.006		0.031	-0.002		-0.010
Trust in Govt: Almost always	0.132		0.650	0.142		0.679	0.116		0.588	0.124		0.629
Trust in Govt: Always	-0.232		-1.116	-0.188		-0.845	-0.127		-0.587	-0.369	*	-1.694
Treatment: Effort	-0.212	***	-3.297	-0.212	***	-3.319	-0.213	***	-3.437	-0.213	***	-3.067
Treatment: Luck	0.056		0.796	0.054		0.780	0.051		0.766	0.052		0.710
Age of the respondent	-0.010	**	-2.298	-0.011	***	-2.657	-0.011	***	-2.653			
Dummy for female	-0.009		-0.108	0.021		0.254	0.040		0.494			
Number of people in the HH	0.058	**	2.478	0.072	***	2.998	0.052	**	2.133			
Hours Worked = 1, Works part-time	0.224	***	2.828	0.255	***	3.105	0.261	***	3.263			
Hours Worked = 2, Works Full-Time	0.204	**	2.128	0.198	**	2.091	0.149		1.604			
Missing data in Hours Worked = 3	-2.097	***	-7.481	-1.997	***	-7.101	-1.800	***	-6.147			
Father's Education = 2, High School and others	-0.229	***	-3.226	-0.223	***	-3.267	-0.199	***	-3.022			
Father's Education = 3, Completed College or more	0.062		0.505	0.104		0.833	0.089		0.743			
Missing data in father's Education	-0.251		-1.473	-0.364	**	-2.049	-0.310		-1.507			
Mother's Education = 2, High School and others	0.065		0.973	0.070		1.046	0.025		0.371			
Mother's Education = 3, Completed College or more	0.052		0.405	0.031		0.248	0.019		0.156			
Missing data in Mothers' Education	0.163		0.456	0.098		0.273	0.147		0.410			
Perceived position (decil 4, 5 and 6)	-0.007		-0.071	-0.010		-0.110	-0.010		-0.099			
Perceived position (decil 7, 8, 9 and 10)	-0.132		-1.056	-0.140		-1.092	-0.162		-1.184			
Year of the survey	-0.047		-0.666	-0.041		-0.551	-0.010		-0.153	0.022		0.324
Ideology: Center (5)				0.193	**	2.214	0.227	**	2.431			
Ideology: right (>5)				0.112		1.262	0.097		1.156			
Missing in ideology				-0.012		-0.101	0.135		1.101			
HH Income = 2, Between 1000 and 2000 USD Monthly							-0.157	*	-1.783			
HH Income = 3, More than 2000 Monthly							0.118		1.119			
Missing in HH Income							0.220	*	1.713			
Constant	0.027		0.096	-0.199		-0.663	-0.144		-0.487			
Observations	315			315			315			315		

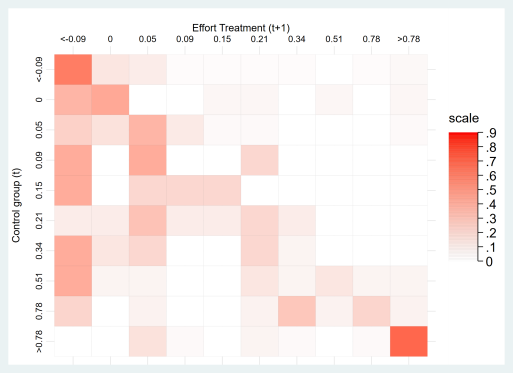
Notes: Inequality aversion parameter is based on equation 2 and sample of students in which we applied the fairness treatment at the individual level. Coefficients were estimated using interval regression. It excludes participants that make inconsistent choices in at least one of the three replications of the experiment (Control, Effort, Luck). Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

A.12 Non-meritocratic fairness views

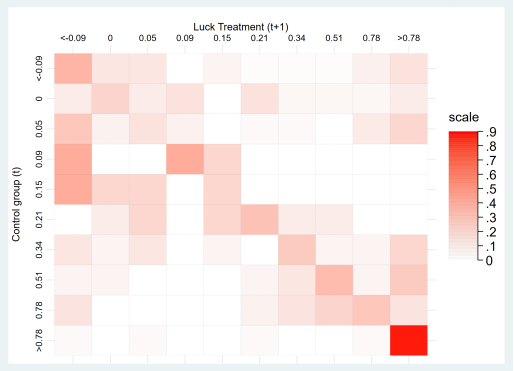
.

Figure A.12.1: Matrix transition of individuals aversion to Inequality (choice at the mean)

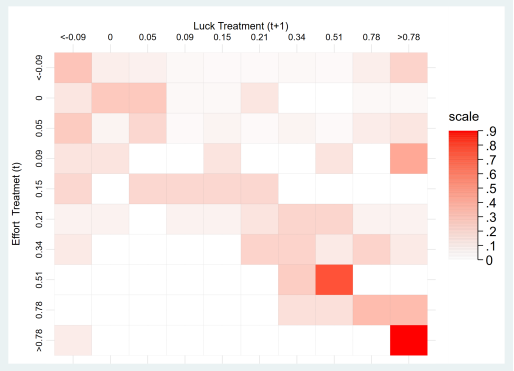
a. Control vs effort



b. Control vs luck



c. Effort vs luck

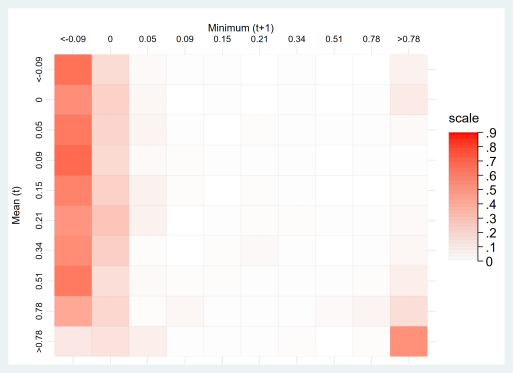


Notes: This image describes individuals movements (and their γ) when they choice under alternative treatments. We created these transition matrices to represent the probability of transition between a pre-level and post level of inequality aversion parameter. The Y-axis represents the previous choice and the x-axis represents the next decision. The diagonal of the matrix represents the persistence of individuals in each of the 10 levels of γ under the two treatment considered. In (a) each row in the matrix represents the γ under control treatment, while each column represents the γ under effort treatment, conditional to the individual's γ under control treatment. In (b) each row in the matrix represents the γ under control treatment, while each column represents the γ under luck treatment, conditional to the individual's γ under control treatment. In (c) each row in the matrix represents the γ under effort treatment, while each column represents the γ under luck treatment, conditional to the individual's γ under effort treatment.

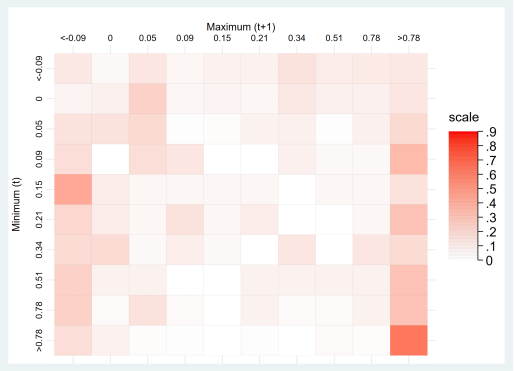
.

Figure A.12.2: Matrix transition of individuals aversion to inequality when individuals choose at different position

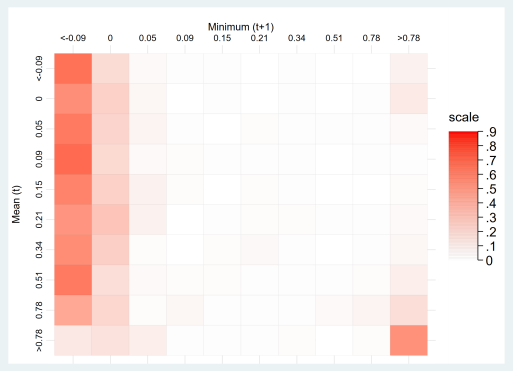
a. Mean vs Minimum



b. Minimum vs Maximum



c. Mean vs Maximum



Notes: Sample of within treatment experiment. This image describes individuals movements (and their γ) when their grandchild is in alternative position in the income distribution. We created these transition matrices to represent the probability of transition between a pre-level (Y-axis) and post level (x-axis) of inequality aversion parameter. The Y-axis represents the previous choice and the x-axis represents the next decision. The diagonal of the matrix represents the persistence of individuals in each of the 10 levels of γ under the two treatments considered. In (a) each row in the matrix represents the γ when the grandchild is located at the mean of the income distribution, while each column represents the γ the grandchild is located at the minimum of the income distribution, conditional to the individual's γ at the mean. In (b) each row represents the γ when the grandchild is located at the minimum of the income distribution, while each column represents the γ the grandchild is located at the maximum of the income distribution, conditional to the individual's γ at the minimum. In (c) each row in the matrix represents the γ when the grandchild is located at the mean of the income distribution, while each column represents the γ the grandchild is located at the maximum of the income distribution, conditional to the individual's γ at the mean.

.

A.13 Alternative Measures of Inequality Aversion

As a robustness check we replicated the main analysis varying the index used to measure inequality among societies. Technically, we can use any measure of inequality that does not depend on the position of the individual. Here we present this analysis using two alternative measures. The Gini coefficient (section A.13.1) and the ratio between the percentile 90 and the percentile 10 (section A.13.2). These three indexes (Gini, p90/p10 and Coefficient of variation) have different sensitivity to the tails of the distribution. From this robustness analysis we conclude that the qualitative results do not vary with the index of inequality used.

A.13.1 Alternative Inequality Measure: Gini Coefficient

Due to the extended use of the Gini Coefficient in applied work, we replicated the analysis using this measure of inequality. Note that this index, also satisfies the Pigou-Dalton and the scale-invariance conditions. While in terms of relative sensitivity the Coefficient of Variation is equally sensitive at all levels, the Gini coefficient is a rank dependent measure.

The main results are replicated in Table A.13.1. As can be seen, the main results and conclusions do not vary qualitatively due to the use of the Gini as a measure of inequality (compared to our main results presented in Table 5).

Table A.13.1: Treatment effect - Choice at the mean. Different specifications. Inequality measure: Gini.

	OLS		Quant. Reg.	Interval Reg.	
	(1)	(2)	(3)	(4)	(5)
Effort vs Control	-0.078	-0.079	-0.111	-0.093	-0.097
	(0.052)	(0.051)	(0.069)	(0.065)	(0.064)
N	463	463	463	463	463
Luck vs Control	0.095*	0.101*	0.071	0.119*	0.124*
	(0.052)	(0.053)	(0.074)	(0.063)	(0.064)
N	455	455	455	455	455
Effort vs Luck	-0.173***	-0.194***	-0.165**	-0.214***	-0.235***
	(0.054)	(0.054)	(0.072)	(0.068)	(0.067)
N	420	420	420	420	420
Mobility	0.028	0.021	0.092	0.023	0.015
	(0.045)	(0.046)	(0.059)	(0.051)	(0.051)
N	522	522	522	522	522
Controls		X	X		X
Median/Mean	0.251	0.251	0.149	0.261	0.261

Notes: analysis for the treatments effects at the mean using the Gini as a measure of inequality is presented in this Table. Columns (1) and (2) report the result of the OLS estimates, column (3) reports the result of a quantile regression at the median, and columns (4) and (5) report the estimates in our preferred specification based on interval regressions. Columns (1) and (4) report the results without including any control variables; columns (2) (3) and (5) report the results when including a set of control variables. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

A.13.2 Alternative Inequality Measure: P90/P10

As an alternative measure of inequality we also used the ratio between the 90 percentiles and the 10 percentile of the income distribution. Note that this measure shows a great sensitivity to changes on the tails of the distribution but it only satisfies the Pigou-Dalton condition in a weak sense (is not sensitive to Pigou-Dalton transfers that occur between individuals who are not on other percentiles of the distribution).

The main results are replicated in Table A.13.2. As can be seen, the main results and conclusions do not

vary qualitatively due to the use of this inequality measure (compared to results presented on Table 5.

Table A.13.2: Treatment effect - Choice at the mean. Different specifications. Inequality measure: ratio P90/P10.

	OLS		Quant. Reg.	Interval Reg.	
	(1)	(2)	(3)	(4)	(5)
Effort vs Control	-0.068	-0.069	-0.096	-0.081	-0.084
	(0.045)	(0.045)	(0.060)	(0.057)	(0.056)
N	463	463	463	463	463
Luck vs Control	0.083*	0.088*	0.062	0.104*	0.109*
	(0.045)	(0.046)	(0.064)	(0.055)	(0.056)
N	455	455	455	455	455
Effort vs Luck	-0.151***	-0.169***	-0.143**	-0.187***	-0.206***
	(0.047)	(0.047)	(0.063)	(0.059)	(0.059)
N	420	420	420	420	420
Mobility	0.024	0.018	0.080	0.020	0.013
	(0.039)	(0.040)	(0.051)	(0.045)	(0.045)
N	522	522	522	522	522
Controls		X	X		X
Median/Mean	0.218	0.218	0.130	0.225	0.225

Notes: analysis for the treatments effects at the mean using the P90/P10 ratio as a measure of inequality is presented in this Table. Columns (1) and (2) report the result of the OLS estimates, column (3) reports the result of a quantile regression at the median, and columns (4) and (5) report the estimates in our preferred specification based on interval regressions. Columns (1) and (4) report the results without including any control variables; columns (2) (3) and (5) report the results when including a set of control variables. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.

A.14 Restricted Sample. Individuals who continue studying

As a robustness check we run our main analysis excluding 479 individuals who were identified as students who dropped out during the fist semester but completed the survey. Restricting the sample to those students who passed at least one exam during their first year of University, we replicated the main analysis. Results are robust to the exclusion of these individuals. The main results are presented in Table A.14.1.

Table A.14.1: Treatment effect - Choice at the mean, different specifications. Restricted sample: students who approved at least one exam

	OLS		Quant. Reg.	Interval Reg.	
	(1)	(2)	(3)	(4)	(5)
Effort vs Control	-0.022	-0.034	-0.056	-0.024	-0.041
	(0.047)	(0.047)	(0.060)	(0.059)	(0.058)
N	362	362	362	362	362
Luck vs Control	0.106**	0.101**	0.041	0.129**	0.119**
	(0.046)	(0.048)	(0.069)	(0.056)	(0.057)
N	366	366	366	366	366
Effort vs Luck	-0.129***	-0.140***	-0.114*	-0.156***	-0.167***
	(0.048)	(0.049)	(0.066)	(0.060)	(0.060)
N	338	338	338	338	338
Mobility	0.042	0.037	0.092*	0.040	0.035
	(0.041)	(0.043)	(0.048)	(0.046)	(0.047)
N	397	397	397	397	397
Controls		X	X		X
Median/Mean	0.186	0.186	0.121	0.188	0.188

Notes: analysis for the treatments effects at the mean excluding students who drop-out university is included in this Table. Columns (1) and (2) report the result of the OLS estimates, column (3) reports the result of a quantile regression at the median, and columns (4) and (5) report the estimates in our preferred specification based on interval regressions. Columns (1) and (4) report the results without including any control variables; columns (2) (3) and (5) report the results when including a set of control variables. Robust standard errors in parentheses. *, **, and *** indicate significance at 10%, 5%, and 1% level, respectively.