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Working papers

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Abstract
We device a randomized experiment with task performance in which players directly decide as spectators/shareholders allocation criteria under ignorance or not of payoff distributions. Our main result is a strong and significant gender effect: women choose significantly more protection (that is, they choose criteria in which a part or all the total sum of money that must be allocated among participants is equally distributed) before (but not after) knowing the payoff distributions. They also reveal less overconfidence and significantly higher civicness and inequality aversion in ex post questionnaire responses. The gendered preference for protection exists not only for stakeholders but also for spectators while it disappears for both once payoff distributions are known. This makes it impossible to explain it exclusively with risk or competition aversion, while inequality aversion with ex ante overestimation of the variance of payoff distribution is consistent with our findings.

JEL code: C91, D63, J16

Keywords: Distributive Justice; Gender Effects; Risk Aversion; Competition Aversion.

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1. Introduction

The problem of justice and fair distribution of resources is central in economics as it affects a wide range of issues including, among others, rules for fiscal policies, criteria rewarding merit and wage distribution within firms.

The main conceptions of justice range from the extremes of strict egalitarianism[1] to libertarianism[2] or the entitlement theory[3] while, in the middle, a large number of theoretical contributions argue that individuals should be deemed responsible for what depends on factors under individual control so that only wealth inequalities depending on such factors may be accepted (Cappelen et al. 2007). For example, Buchanan (1986) argues that**,** with regard to the four factors determining the distribution of claims on economic income and wealth (i.e. luck, choice, effort, and birth), only differences attributable to effort are fair. Dworkin (2000) emphasizes equality but admits limited inequality that could be the consequence of the effect of single choices[4]. Roemer (1998) argues that meritocracy should be essentially based on and reward only effort.

As it is well known, concepts of justice and criteria for allocating economic resources vary significantly according to the position of the decision makers. Randomized experiments demonstrate that "stakeholders" (i.e. subjects whose decisions on the criteria for allocating resources directly affect their own payoff) decide differently from "spectators" (i.e. subjects who choose a distributive criterion that affects payoff of other players) (Konow, 2011) and that the

[1] Strict egalitarianism implies the absence of any kind of inequality in wealth distribution even when people contribute in different ways to wealth creation.

[2] Libertarianism establishes that individuals should be considered totally responsible for their contributions in producing wealth (whatever their merit in achieving them) and a fair distribution should precisely reflect the different contributions.

[3]The entitlement theory (Nozick, 1974) establishes that, if a person acquires a holding without infringing the principle of justice in acquisition, or in accordance with the principle of justice in transfer, he is entitled to the holding. This approach does not leave room to interventions aimed at preventing and/or modifying acquisitions that are in accordance with the previous principles, even if the interventions are elaborated starting from some ideas of meritocracy or need.

[4] "Individuals should be relieved of consequential responsibility for those unfortunate features of their situation that are brute bad luck, but not from those that should be seen as flowing from their own choices" (Dworkin (2000), p. 73).

presence/absence of of information about relative abilities and payoff distribution under different criteria plays a crucial role (Becchetti et al., 2011; Durante and Putterman 2007).

In this paper we wonder whether there is a gender difference in allocation criteria chosen by decision makers in different positions with/without information about their relative abilities and payoffs under different criteria.

More specifically, we start from some widely acknowledged results in the literature telling us that women generally tend to be more risk averse, less overconfident, more inequity averse and more competitive averse than men (see the section below) and test whether they are relatively more oriented toward less unequal criteria or criteria involving some form of protection, as these results would lead us to presume.

To do so we analyze data from an experiment with task performance, multiplicity of allocation criteria and variety of positions from which allocators take their decisions on the division of a sum of 210 euros among 15 individuals. More specifically, participants to the experiment are asked to perform a first task involving mainly effort and a second task involving mainly talent. The allocation criteria which can be chosen are: i) full egalitarianism (equal parts), ii) randomness, iii) "pure" talent, iv) talent plus protection (an equal division of 30 percent of the sum), v) "pure" effort, vi) effort plus protection and vii) randomness plus protection, with allocations based on talent and effort depending on participants' performance on the two respective tasks (see section 3 for the description of tasks). Decisions are taken under five different positions including those of: i) stakeholders who decide before knowing their relative payoff under different criteria and ii) may revise their decision after information is provided (that is, after performing the task and knowing relative performances and consequent payoffs); iii) stakeholders who decide for the first time already with full information; spectators iv) without and v) with information (before and after knowing the relative performance and payoffs of a group of participants for which they have to decide).

We find that the null hypothesis of absence of a gender effect is rejected since women choose relatively more criteria involving some form of protection. We then wonder what are the determinants of the relative preference for protection among those mentioned above. The puzzle here is that the gendered preference for protection exists not only for stakeholders but also for spectators while it disappears for both when they have information about relative payoff under different criteria.

The significant result on spectators leads us to exclude risk aversion and overconfidence as the only drivers of our findings. Competition aversion cannot fully explain the main result as well. In case of a general ideological aversion to competition the preference for protection should survive also after knowing the payoff distribution under different criteria. If, on the other hand, aversion has to be intended against one's own participation to competitive races, the gendered preference for protection should not be there for spectators.

Since the only difference before and after the removal of the veil of ignorance for both stakeholders and spectators is the information on payoff distributions, a form of general aversion to inequality (intended as not only toward one's own payoffs) could explain part of what we observe under the assumption that women (regardless of their spectator/stakeholder condition), without information about payoff distribution, choose relatively more protection in order to reduce payoff inequality but, after observing the payoff distribution, decide that the problem is not too severe.

The paper is divided into six sections including introduction and conclusions. In the second section we present a short survey of the literature on the gender effect on preferences. In the third section we outline our experiment design. In the fourth section we formulate our research hypotheses. In the fifth section we present and comment our descriptive and econometric findings. The sixth section concludes.

2. The literature on the gender effect on preferences

There is a growing interest among economists and policymakers on gender differences in a number of different domains and on their policy implications (for a detailed review on gender differences in preferences and economic experiments see Croson and Gneezy, 2009).

In particular, there is widespread agreement that women exhibit more risk aversion than men (Arch,1993; Holt and Laury, 2002[5]; Borghans et al., 2009; Hartog et al., 2002; Schubert et al., 1999; Powell and Ansic,1997; Dohmen et al., 2008). A candidate explanation for these findings is that women have stronger emotional reactions to risky situations, which can also affect their probability perceptions (Loewenstein et al., 2001)[6]. A second reason for gender differences in risk attitudes and in the evaluation of risk may relate to confidence. The literature finds that, under uncertain situations, men are more overconfident than women in their success (Lichtenstein et al. 1982; Deaux and Farris, 1977; Lundeberg et al., 1994).

Differently from risk aversion, results on gendered differences concerning social preferences (in particular altruism, inequality aversion, trust and reciprocity) are not unambiguous. A number of studies have demonstrated that women trust less or the same as men, while some others find women more trusting than men (Bellemare and Kröger, 2003; Bohnetn et al., 2007). Similarly, while some studies have found no gender differences in reciprocity (Clark and Sefton 2001; Cox and Deck 2006; Bohnet 2007; Innocenti and Pazienza 2006), others have found that women are more reciprocal than men (Croson and Buchan 1999; Chaudhuri and Gangadharan 2007; Snijders and Keren, 2001; Buchan et al., 2008; Schwieren and Sutter 2008; Ben-Ner et al., 2004; Eckel and Grossman, 1996, 2008).

[5] Holt and Laury (2002) find that women were more risk averse than men in low-payoff decisions; instead there were no sex differences in high-payoff decisions.

[6] In their experiments, Holt and Laury find that risk taking depends on the size of the probabilities for the lotteries' larger outcomes. Women are more risk averse in decisions with large probabilities in the gain domain and in decisions with small and medium probabilities in the loss domain.

Croson and Geezy (2009) explain these inconsistent gender differences with a greater responsiveness of women to experiment conditions, that is, to differences in economic variables such as the size of the payoffs, the price of altruism, or the repetition of the game, and psychological variables like the amount of anonymity between counterparts and the amount of anonymity between the participant and the experimenter.

Gendered differences on inequity aversion are less ambiguous since most of the literature on inequality aversion and gender differences (Guth et al., 2007; Eckel and Grossman,1998; Bolton and Katok, 1995; Andreoni and Vesterlund, 2001; Dickinson and Tiefenthaler, 2002; Selten and Ockenfels,1998 and Dufwenberg and Muren, 2006) shows that, while men choose efficient allocations, women are more inequality averse, preferring equal splits and more generous sharing rules when involved in dictators or ultimatum games.

These results on female inequity aversion seem to be confirmed by studies on gender preferences for redistribution, finding that women tend to be more in favour of redistribution or equal allocations than men (Durante and Putterman, 2007; Alesina and Giuliano, 2009; Major et al., 1989; Asdigian et al., 1994; Walker, 1989; Major and Adams, 1983).

Another factor which has been extensively studied is whether and why women and men react differently to the competitive environments with results mainly documenting that women tend to be more competition averse. Some studies found that men perform better under competition than women do (Gneezy et al., 2003; Geezy and Rustichini, 2004), while those focused on what happens when participants can choose incentive schemes, find that under the option between "piece rate or a winner-take-all tournament" compensation scheme, women significantly prefer the first (Niederle and Vesterlund, 2007). Similarly, several other studies suggest that women are less likely to choose to compete (Garratt et al., 2011; Vandegrift and Brown, 2005; Gupta et al. 2005) or to engage in a negotiation (Babcock and Laschever, 2003; Small et al., 2007; Bowles et al. 2005; Barryand Rynes,1991; Kray et al., 2001 and 2002; Stuhlmacher and Walters, 1999). Experimental

contributions reveal different explanations for the females' lower inclination to compete, such as their tendency to underestimate their ability, greater aversion to risk and uncertainty about their own ability (Garratt et al., 2011). Another explanation of this different behavior in competitiveness concerns the idea that societal structures affect these observed gender differences and that "nurture matters." (Bowles et al., 2007; Gneezy et al., 2006). On the opposite way, other studies argues that "nature" is important as well and genetic or hormonal differences could cause women to be less competitive than men (Colarelli et al., 2006; Bateup et al., 2002; Manning and Taylor, 2001).

Our study contributes to this literature by analyzing if a gender effect arises when subjects are asked to choose a criterion in order to allocate resources within a society. Furthermore, after testing and rejecting the null hypothesis of no gendered differences, it exploits the richness of the design in order to discriminate among different preference drivers (among those considered above) of the observed findings.

In this respect, the paper closest to ours is by Durante and Putterman (2007). These authors give subjects the opportunity to choose a tax rate in order to affect an income distribution which may be initially determined by four different methods: random, the average income of the place of origin, performance in a general SAT-like knowledge quiz and performance in a game of skill played through the computer ("Tetris"). They show that women reveal higher preference for redistribution than men both when acting as impartial spectators and when their payoff depends on their decisions.

With reference to this specific study, our contribution is novel in that it combines direct choice of allocation criteria with task performance under a variety of situations (with/without information about payoffs, stakeholder/spectator position). The opportunity to modify a distribution by asking subjects to choose a tax rate (such as in Durante and Putterman 2007) allows people to correct distributions perceived as unfair. By contrast, our experiment allows us to investigate a parallel

unexplored issue since we directly verify the preferred criterion people select to allocate a sum within a group.

3. Experimental design

In this section we illustrate in depth our experimental design by presenting the different tasks on which allocation criteria are based and the different possible positions of players (spectators/ stakeholders with/without information about payoff distribution across criteria). A further section briefly describes the socio-demographic questionnaire.

3.1 Tasks and criteria

The central task characterizing the experiment is to distribute a sum of money (S) among N participants. We planned sessions involving 15 participants and S=210 euro. In a few cases, because of lack of subjects, we had sessions with 14 subjects and S=196 or 13 subjects and S=182 (see figure 1b for details on subjects and sessions across treatments). Players have to decide how to allocate the sum by choosing among seven criteria.

Criterion 1 - LUCK. This criterion is based on a random draw. A number between 1 and 100 is randomly drawn for each participant by using the computer. The part of the total sum received by each participant is proportional to the share of her number with respect to the sum of the numbers extracted.

Criterion 2 - EQUAL. The sum is equally shared among participants.

Criterion 3 - EFFORT. Players are asked to copy information about fictitious students (enrolment number, name, surname and mark) into a file. The computer signals mistakes and waits until data are correctly copied. Each subject receives part of the sum that is proportional to the share of the number of copied data with respect to the total copied data by all participants.

Criterion 4 - TALENT. Players are asked to perform some tasks taken from the WAIS-R test[7] as well as Raven's matrices. Each player receives part of the sum that is proportional to her performance in solving the tasks.[8]

Criterion 5 - PROTECTION+LUCK. According to this criterion, 30% of the sum is equally allocated among participants, while the remaining part is distributed through random draw (as in criterion 1).

Criterion 6 - PROTECTION+EFFORT. According to this criterion, 30% of the sum is equally allocated among participants, while the remaining part is distributed on the basis of subjects' relative performance on the previously described secretarial task (as in criterion 3).

Criterion 7 - PROTECTION+TALENT. According to this criterion, 30% of the sum is equally allocated among participants, while the remaining part is distributed on the basis of subjects' relative performance on the task previously described in relation to criterion 4.

The seven criteria mimic different ideas of redistribution and, in particular, are characterized by different levels of protection.

a) Criteria LUCK, EFFORT and TALENT mimic scenarios where luck and/or meritocracy determine economic success. Moreover, they do not include any protection for subjects with poor performance (that is, there is no guaranteed minimum payoff for players who potentially could obtain a payoff equal to 0 in the distributive game).

b) The three mixed criteria – PROTECTION+LUCK, PROTECTION+EFFORT and PROTECTION+TALENT – mimic a situation in which luck or meritocracy affect wealth differences, but each citizen is provided the basic needs.

[7] The tasks are: finding missing details in pictures, putting in the right order some pictures in order to create stories with logical meaning, identifying the analogies between different pairs of words.

[8] We regard the secretarial task and the psychological test as proxies of (untalented) effort and talent respectively, even though we are aware that: i) it is not possible to exclude that ability and writing speeds required to perform the secretarial task are not affected by innate talent; ii) it is reasonable to assume that a certain level of effort is required for a good performance in the psychological test. Our choice of Raven's matrices and WAIS R-tests for the latter is based on the fact that in the psychological literature these tools are considered among the best to measure innate talent (Raven, 2000).

c) The EQUAL criterion generates a perfectly egalitarian situation where subjects receive exactly the same amount of money.

3.2 The treatments

The experiment is characterized by three treatments – STAKE, INFOSTAKE and SPECTATOR. They differ for the level of information or the involvement of subjects who select the criterion to be used in order to allocate the sum (see Figures 1a). In all treatments subjects are informed that each participant is asked to indicate her preferred criterion, but at the end of the session only one player will be randomly selected by the computer and her choice implemented.

In the STAKE treatment, subjects choose the criterion a first time under ignorance of their payoffs and can revise it after information about them. In the first stage they are instructed about the seven available criteria. Before choice, participants are provided some examples of both the secretarial task and the quiz aimed at measuring their capabilities. In the second stage, participants are asked to select the criterion they want to use in order to allocate the sum (STAKE EX ANTE). After their decision, they take part in the activities – they perform the quiz for 15 minutes and the secretarial task for further 15 minutes – while the random drawn is made by the computer. Then, results are provided: each player is informed about her relative performance on the different activities and on the complete payoffs distribution for each possible criterion. This means that each subject knows her position within the group for each possible criterion. In the third stage, players have the opportunity to either confirm their previous (STAKE EX ANTE) choice or to change the previously selected criterion (STAKE EX POST).[9] After that, the computer draws the decisive player, her ex post selected criterion is applied and the payoffs are shown.

In the INFOSTAKE treatment, subjects choose the criterion under perfect information. The only difference with respect to the STAKE treatment is that, after reading the instructions, players

[9] Notice that the we name "STAKE EX ANTE" and "STAKE EX POST" two specific choice conditions within the STAKE treatment

directly take part to the activities and choose the preferred criterion only after being informed about their actual ranking in each possible scenario.

Two types of participants (A-players and B-players) take part in the SPECTATOR treatment. A-players have to allocate a sum among N B-players. After reading the instructions, A and B-players take part to different activities. B-players perform both the quiz and the secretarial task. A-players choose a criterion to allocate the sum among B-players both before (SPECTATOR EX ANTE) and after knowing B-players' payoffs distribution (SPECTATOR EX POST – also in this case "SPECTATOR EX ANTE" and "SPECTATOR EX POST" represent two conditions within the SPECTATOR treatment). All the players know that A-players' decision affect B-players' payoffs only. Also in these conditions (SPECTATOR EX ANTE and EX POST) one A-player is randomly drawn at the end of the session and her choice is implemented.

In each treatment, before exiting the session, players take part in a typical Holt and Laury lottery and their propensity/aversion to risk is elicited. Finally, before receiving their payment, subjects fill in a socio-demographic questionnaire. These last two activities provide an extra payment. They are not pre-announced in order to avoid possible influence on players' decisions. We elicit beliefs about personal rank in the payoff distribution in three sessions out of six in the STAKE and SPECTATOR treatment sessions (in the SPECTATOR treatment from B-players only). More specifically, we ask subjects to declare how many players they think will have a better performance than themselves under each possible criterion and pay them on their beliefs concerning the implemented criterion through the Quadratic Scoring Rule method[10].

3.3 The questionnaire

At the end of the experiment subjects fill in a structured questionnaire of 69 questions on socio-economic aspects. The survey collects information about: a) socio-demographic characteristics (e.g.

[10] The quadratic scoring rule associated with belief elicitation is widely employed in experimental economics (see for instance Nyarko and Schotter, 2002; Offerman et al.,1996 and 2009; Bhattacharya and Pfleiderer, 1985; Holt, 1986; Selten, 1998; Huck and Weizsacker, 2002).

sex, nationality, number of family members, etc.); b) social status (family income, education etc.); c) social capital (intended as trust – both generalized and specific trust towards some institutions such as banks, the judicial system, etc., networks – e.g. number of friends, etc. -, and civicness[11] – e.g. political participation etc.); d) risk aversion. Compilation of the questionnaire lasts on average 30 minutes.

3.4 The payoffs

Players in the STAKE and in the INFOSTAKE treatment and B-players in the SPECTATOR treatment receive a payoff that consists of three elements: i) the part of the sum that the player receives on the basis of the implemented criterion; ii) the amount received for filling in the questionnaire; iii) the amount received as the result of the Holt and Laury's lottery. Players who participated in the three sessions out of six in the STAKE treatment where beliefs have been elicited and B–players in the SPECTATOR treatment have been paid also in relation to belief elicitation. For A-players in the SPECTATOR treatment the payoff consists of a show-up fee (7€), the amount received for filling in the questionnaire (3€) and the amount received as the result of the Holt and Laury's lottery.

3.5 The procedure

Overall, 265 undergraduate students of the University of Milano-Bicocca (distributed as in Figure 1b) took part in the experiment,. No student participated in more than one session. We ran all the sessions at the Experimental Economic Lab (EELAB) of the University of Milano-Bicocca, Italy. Performance and decisions are recorded through the computer and the experiment is programmed and conducted with Z-tree.[12]

Subjects entered the Lab and took a seat in front of a computer. Instructions were read aloud by an experimenter and read by participants on their computer screen. They were handed out too, in

[11] Our civicness questions are taken from the well known Knack and Kiefer (1997) measures of social capital.
[12] The program was written by Dr. Marie-Edith Bissey (the programmer of the AL.EX).

order to let people refresh the criteria before making their decisions. A set of control questions was asked in order to be sure that subjects understood the rules of the game when taking decisions.

The average duration of the experiment was 1 hour and a half for the STAKE and INFOSTAKE treatments and 2 hours for the SPECTATOR treatment. The experiment preserved anonymity among players.

4. Our research hypotheses

Based on the above mentioned literature findings, our main research hypothesis is that the relatively higher risk, inequity and competition aversion induces women to prefer relatively more criteria involving some form of protection. More specifically, we formulate for empirical testing a general hypothesis on the gendered preference for protection and three related hypotheses which, given our design, may help us to discriminate the preference factors explaining our main result.

H_0: there is no significant difference between males and females in the preference for protection, that is, no difference occurs between the two sexes in the sum of the percentage of subjects who chose criteria involving some form of protection.

More formally, if:

$$\sum P=\sum EQ+\sum PE+\sum PT+\sum PL$$

where $\sum P$ is the sum of the percentage of subjects who chose equal (EQ), protection plus effort (PE), protection plus talent (PT) and protection plus luck criteria (PL):

$$\mathbf{H_0:}\sum P_M=\sum P_F.$$

where the M and F subscripts indicate male and female gender. This hypothesis is verified by testing the null of no difference between males and females in terms of the sum of the four choices. The test is run on the five different positions of allocators (stakeholders/spectators without/with information about payoff distribution under different criteria plus ex ante informed stakeholders).

In case the null is rejected the specific design of our experiment may help us to check the role of the three main alternative explanations already considered in the literature: i) risk aversion; ii) competition aversion; iii) inequity aversion.

In order to verify the role of these factors, we formulate the following additional hypotheses.

Ho_A: risk aversion explains the gendered difference in protection.

A significant difference between males and females in the preference for protection would be consistent with risk aversion (where for risk aversion we intend aversion to the variability of one's own payoff) if the three following conditions are met:

i) *women choose significantly more than men criteria involving protection when they are stakeholders without information about relative payoffs under different criteria or:* $\sum P_{F(st.v)} > \sum P_{M(st.v)}$ (where the subscript (st) stands for the stakeholder position of the decision maker and (v) for the absence of information);

ii) *women do not choose significantly more than men criteria involving protection when they are stakeholders who have information about payoffs or:* $\sum P_{F(st.nv)} = \sum P_{M(st.nv)}$ (where (nv) stands for a decision maker position with information);

iii) *women do not choose significantly more than men criteria involving protection when they are spectators*[13] *or:* $\sum P_{M(sp.)} = \sum P_{F(sp.)}$ (where (sp) stands for spectators).

The second additional hypothesis is:

H_{0B}: competition aversion explains the gendered difference in protection.

The problem here is more complex since we need to establish whether women:

A) do not like to compete (*self-centred competition aversion*);

B) do not like in general that people compete (*generalized competition aversion*)[14] ;

[13] Choices under the condition of spectators do not involve any effects on allocators' payoffs. As a consequence the gendered preference for protection in this case cannot be attributed to risk aversion.

C) are ideologically against the idea that their results should depend from competition (*self-centred ideological competition aversion*);

D) are ideologically against the idea that results of anyone should depend from competition (*generalised ideological competition aversion*).

Based on these definitions, a gender effect related to the preference for protection would be consistent with *self-centred competition aversion* (case A) if the following three conditions are verified:

i) *women choose significantly more than men criteria involving protection when they are stakeholders without information about payoff distribution under different criteria* or: $\sum P_{F(st.v)} > \sum P_{M(st.v)}$;

ii) *women do not choose significantly more than men criteria involving protection when they are spectators* or: $P_{M(sp.)} = \sum P_{F(sp.)}$.

iii) *women do not choose significantly more than men criteria involving protection when they are stakeholders with information about payoff distribution across criteria or* $\sum P_{F(st.nv)} = \sum P_{M(st.nv)}$;

Alternatively, for consistency with *generalised competition aversion* (case B), the following two conditions should be verified:

i) *women choose significantly more than men criteria involving protection when they are stakeholders without information about payoffs* or: $\sum P_{F(st.v)} > \sum P_{M(st.v)}$;

ii) *women do not choose significantly more than men criteria involving protection when they are stakeholders with payoff information or:* $\sum P_{F(st.nv)} = \sum P_{M(st.nv)}$; [15]

[14] Generalized competition aversion may be the result of individual competition aversion being common knowledge and altruism. If an individual is personally averse to competition, believes that also other players are, and has other players' payoff in her utility function then we fall into generalized competition aversion.

[15] Note that cases A (*self-centred competition aversion*) and B (*generalized competition aversion*) are observationally equivalent.

iii) *women do not choose significantly more than men criteria involving protection when they are spectators* $\sum P_{M(sp.)}=\sum P_{F(sp.)}$.

This is because generalized competition aversion implies that a player chooses protection if her choice reduces the probability that players actually run competitive races or suffer from the fact that their payoffs will depend from competition. This is the case only when decision players are stakeholders but not when they are spectators. If a player is a stakeholder and selects a criterion involving protection she knows that this will reduce the probability that results will depend on competition. On the other hand, if she is a spectator, her decision will not be known to the players who perform the tasks in the SPECTATOR treatment (B-players). As a consequence, spectators' decision will not affect B-players' beliefs about how much their payoff will depend on competition in the tasks and, consequently, it will not be able to avoid the disutility associated with competition for them.

For consistency with *ideological self-centred competition aversion* (case C) the following conditions should be verified:

i) *women choose significantly more than men criteria involving protection when they are stakeholders (with or without information about payoffs under different criteria)* or: $\sum P_{F(st.)}>\sum P_{M(st.)}$;

ii) *women do not choose significantly more than men criteria involving protection when they are spectators (with or without information about payoffs under different criteria)* or: $\sum P_{M(sp.)}=\sum P_{F(sp.)}$.

Finally, for consistency with *ideological generalised competition aversion* (case D) the gendered preference for protection should apply to all treatments or: $\sum P_{F(.)}>\sum P_{M(.)}$.

The third additional hypothesis is:

Ho_C: a form of inequity aversion explains the gendered difference in protection

Again, we need to establish here whether women:

A) are self-centred inequity averse[16] (*self-centred inequity aversion*);

B) do not like that them or also others find themselves in an unequal payoff distribution (*generalised inequity aversion*)[17].

In case (A), women suffer more than men for eventual differences between their own and other players' payoff. In particular, considering two standard models of inequity aversion, women suffer more than men i) when their payoff is either higher or lower than the payoff of the other players, with more disutility due to the presence of better-off subjects (Fehr and Schmidt, 1999); ii) when their payoff is different from the average payoff (Bolton and Ockenfels, 2000).

The difference is that in the model by Fehr and Schmidt a player compares her payoff to each of the other players. Consequently, subjects' utility decreases as the distribution of payoffs diverges from the egalitarian distribution. In the model by Bolton and Ockenfels the comparison is with the average income.

More specifically, according to Fehr and Schmidt, each subject *i* compares her own payoff to the payoff of each other subject, being her utility function:

$$U_i(x_{1,\dots,}x_N) = x_i - \frac{\alpha_i}{N-1}\sum_{j\neq i}\max\{x_j - x_i, 0\} - \frac{\beta_i}{N-1}\sum_{j\neq i}\max\{x_i - x_j, 0\}$$

where: x is the individual payoff, α_i is a parameter of envy, β_i is a parameter of altruism and $0 \leq \beta_i < 1$ and $\alpha_i \geq \beta_i$, since the disutility that comes from a position of disadvantage is higher than the disutility that comes from a position of advantage[18];

If the model by Fehr and Schmidt holds, we need that:

[16] In what follows, for "self-centred inequity averse players" we will intend players whose utility decreases when the difference between their own and the other players' payoff increases.

[17] For "non-self-centred inequity averse players" we therefore intend players whose utility decreases when the difference both between their own and the other players' payoff and among the other players' payoffs increases.

[18] Note that: $\partial U_i / \partial x_j \geq 0$ iff $x_i \geq x_j$ since an increase in other people's income is positive if and only if they have a lower level of income with respect to subject *i*. For a more detailed explanation of the parameters see Fehr and Schmidt (1999), pp. 823-4.

i) *women choose significantly more than men the equal distribution when they are stakeholders (with or without payoff information)* or $\sum EQ_{F(st.)} > \sum EQ_{M(st.)}$;

ii) *women do not choose significantly more than men protection when they are spectators (with or without payoff information)* or: $\sum P_{F(sp.)} = \sum P_{M(sp.)}$.

This is due to the fact that: i) when inequity averse women are stakeholder, they maximize their utility if the sum is equally distributed among subjects, no matter their real or expected relative performance; ii) inequity aversion cannot explain women's preference for protection when they are spectators since spectators' decision on the distributive criterion does not affect their own payoff.

According to Bolton and Ockenfels, subject *i*'s *motivation function*[19] is:

$U_i = U_i(x_i, \sigma_i)$

where :

$$\sigma_i = \begin{cases} \dfrac{x_i}{\sum_{j=1}^{N} x_j} & if \sum_{j=1}^{N} x_j \neq 0 \\ \dfrac{1}{N} & if \sum_{j=1}^{N} x_j = 0 \end{cases}$$

where σ is the inequality parameter which enters negatively the utility function.

If the model by Bolton and Ockenfels holds, the following conditions should be verified:

i) *women choose significantly more than men the equal distribution when they are stakeholders and think their performance in the different activities is under the average standard* or $\sum EQ_{F(st.)} > \sum EQ_{M(st.)}$;

ii) *women choose significantly more than men criteria involving protection when they are stakeholders and think their performance in the different activities is above the average standard* or $\sum P_{F(st.)} > \sum P_{M(st.)}$;

iii) *women do not choose significantly more than men criteria involving protection when they are spectators* or: $\sum P_{F(sp.)} = \sum P_{M(sp)}$.

[19] Bolton and Ockenfels call it *motivation function* to emphasize the fact that it represents the 'objectives that motivate behavior' (Bolton and Ockenfels, 2000, p.5).

For *generalised (non-self-centred) inequity aversion* we need that women choose significantly more than men criteria involving protection both when they are stakeholders or: $\sum P_{F(st.)} > \sum P_{M(st.)}$ and spectators or: $\sum P_{F(sp.)} > \sum P_{M(sp.)}$.

5. Experimental Evidence

Here below we provide descriptive findings on our main variables, non parametric tests of our main and related hypotheses and an econometric robustness check.

5.1 Descriptive findings on socio-demographic variables

Tables 1 and 2 provide legend and summary descriptive findings (overall sample and gender split) for the main socio-demographic controls used in our empirical analysis for all participants to the experiments (including those in the spectator treatment who do not choose the criterion). The average household size is of 3.9 members for both males and females, while around 52% (60%) and 68% (65%) of males (females) have respectively a mother or father with a university degree. Female students exhibit superior high school leaving performance with around 83 (out of 100) against the 78 male average. Average score at university exams is however the same (25) for both sexes (18 is pass and 30 the top mark according to the Italian grading system). Only around 5 percent of experiment participants have an Erasmus[20] experience, while 19 percent of males declare that they have lived abroad for at least more than 1 month against 24 percent of women.

Finally, in a restricted number of treatments we ask participants to formulate beliefs about their performance before knowing their relative ranking only in a few treatments. We therefore have only 41 female and 60 male observations on this point. What we measure here is the difference between the expected and the actual ranking in any of the possible selected allocation criteria. Our findings demonstrate that, for any criterion chosen, males are always slightly more overconfident than

[20] ERASMUS stands for European Region Action Scheme for the Mobility of University Students. The variable picks up students who have spent a semester in a foreign University

females, with the maximum distance being equal to one position in the rank (in the effort plus protection criterion).

To check balancing properties we start by verifying that there are no significant differences in the gender split between each of the three treatments and the rest of the treatments and find that this is the case (see Table 3, first line). In addition we verify whether, within each treatment, socio-demographic variables are balanced between sexes and find that this is condition is met as well (Table 3).[21]

5.2 The results

Our findings document that the null hypothesis of absence of a gender effect is rejected. We find that *women prefer allocation criteria involving protection significantly more than men, even though this evidence is confirmed only when the decision is made without information about payoff distribution under the different criteria, regardless of player's direct involvement (in both the stakeholder and spectator position).*

5.2.1 Description. Figure 3 shows the gender differences in the choice of distribution criteria according to different conditions and roles of decision makers, while in Table 4 we test whether the observed gendered differences on allocation criteria at descriptive level are statistically significant. First of all, we document a huge difference between sexes for stakeholders without information about payoffs under different criteria (STAKE EX ANTE). The share of women choosing talent plus protection is about 27 points higher than that of males (46 against 19 percent), 11 points higher when choosing full egalitarianism and also slightly higher when choosing effort plus protection. When we sum these three differences we find that the gendered preference for protection generates overall almost a 40 percent point difference. A series of Chi square tests confirm that the

[21] For continuous variables we test - through nonparametric statistics - between-subject differences in the median (Mann-Whitney test), while for dichotomous variables we test the differences in proportions (Chi square test).

differences between sexes in choosing talent, talent plus protection and criteria which involve some form of protection are highly significant (p-value <0.01) for stakeholders without information about payoffs. The scenario changes once the information is provided (STAKE EX POST) - the gendered preference for protection falls to 9 points and it is no more significant at that level. This is due to a sharp drop in the gendered difference of the talent plus protection choice. Both men and women choose significantly more luck when such choice maximizes their own payoff. The difference between sexes on the fully egalitarian choice (more females than males) is the one which seems to be less affected by the presence/absence of information about payoffs under different criteria .

These last findings are paralleled by an analogous lack of significance in gender differences for stakeholders who can take their first decision by being fully informed. In the treatment in which stakeholders choose only after having full information (INFOSTAKE) women still maintain a 9 point lead in terms of criteria involving some form of protection but, surprisingly, are more in favor of talent than men. However, this difference too is not significant.

Finally, the difference among sexes in the choice of criteria which involve some form of protection is confirmed also for spectators without (but not with) information about payoff distribution across different criteria (SPECTATOR EX ANTE). In fact, the overall gendered difference in protection remains huge (around 32 points) and statistically significant (Chi square test, p-value = 0.001).

In the SPECTATOR EX POST condition, women choose significantly more frequently criteria that involve effort, but less talent (Chi square test, p-value = 0.056 and p-value = 0.042 respectively).

Note that, when we aggregate fully informed choices (stakeholders and spectators with information about payoffs) we have more observations and find that women reward significantly less effort (p-value = 0.012). On the other hand, by aggregating uninformed choices (stakeholders and spectators without information about payoffs), all results on the gendered difference in

protection are reinforced and we also find a significantly stronger preference of women for full egalitarianism (p-value < 0.074).[22]

5.2.2 Econometric findings (robustness check). As a final check, we run probit regressions for both each j-th individual[23] and combined[24] criterion/a on the complete sample. In this way we may have a general idea of the overall impact of the gender effect net of the absence of information and of (net of) that of the given player's position (stakeholder or spectator). Results are displayed in Tables 5.1 and 6.1.

Our base probit specification is:

$$CHOICE_{ij}=\alpha_{0j} + \alpha_1 STAKEHOLDER_{ij} + \alpha_2 EXANTE_{ij} + \alpha_3 INFOSTAKE_{ij} + \sum_l \gamma_l CONTROLS_{lij} + \varepsilon_{ij} \quad (1)$$

where $STAKEHOLDER_{kij}$ is a dummy variable equal to 1 if the i-th allocator is a stakeholder (her/his payoff is affected by her/his decision); $EXANTE_{kij}$ is a dummy variable equal to 1 if the choice is made without information; $INFOSTAKE_{kij}$ is a dummy variable equal to 1 if the choice is made by an ex ante informed stakeholder; $CONTROLS_{lij}$ are socio-demografic controls and include: a gender dummy, age, the number of household members and a dummy for students having no brothers or sisters, the average score at university exam, the score at the school leaving exam, two dummies taking value one if the mother (the father) has at least a high school degree, a dummy for those attending religious services, a dummy for worker students, for those who volunteer and two discrete qualitative variables measuring the town size and income. By construction the benchmark for reading coefficient results is the presumed more impartial condition, that is, the condition of spectator with veil of ignorance. Note that the INFOSTAKE variable may also be read as the

[22] The observed gendered difference seems to indicate that women prefer less unequal payoff distributions when they are under ignorance of relative payoffs under different criteria. This interpretation is reinforced if we analyze people's choices through the Gini's coefficient. In such case we find that women without payoff information – in the STAKE EX ANTE and in the SPECTATOR EX ANTE treatments – significantly opt for a more egalitarian society (p = 0.007 and p = 0.068 respectively).

[23] Luck, pure effort, pure talent, protection plus effort, protection plus talent and equal.

[24] Protection, at least effort, at least talent and desert

interaction between the stakeholder and the presence of information (which is not exactly the interaction between the STAKEHOLDER and the INFOSTAKE variable if we assume that for stakeholders receiving information after having chosen also without information is not exactly the same as the presence of information from the beginning).

General findings of estimates in Table 5.1 show that:

i) Receiving information ex post (i.e. after having also chosen without information) has positive and significant effects on luck and pure effort choices while reducing the protection plus talent choice;

ii) the condition of choosing ex ante by being already informed leads stakeholders to choose significantly less protection plus effort and more luck;

iii) the stakeholder condition leads to choose significantly more talent, effort and significantly less protection plus talent;

iv) the gender effect here is significant on choices involving protection plus talent (male gender reduces by 17 percent the probability of such choices).

Estimates on combined criteria from Table 6.1 document that:

i) Receiving information (ex post) has significant and negative effects on choices involving protection, talent and desert; the condition of choosing ex ante by being already informed leads stakeholders to choose significantly more protection, at least effort and desert;

ii) the stakeholder condition adds to it an independent negative effect on choices involving protection;

iii) the gender effect here is significant on choices involving protection (male gender reduces by 26 percent the probability of such choices).

In Tables 5.2 and 6.2 we interact the gender dummy with the treatment variables (receiving information, condition of ex ante informed stakeholder and stakeholder dummy). What we find here

is that the interaction between the absence of information and the male gender leads to a 31 percent reduction in the probability of choosing criteria involving some form of protection.

We now wonder whether the observed findings on gendered differences find correspondence in differences in questionnaire responses on civicness, inequity aversion and other questions on values (see Table 8). We therefore estimate a model in which the dependent variable is the extent of consensus to the value item in the questionnaire and explanatory factors are the gender dummy plus all standard socio-demographic controls. What we find here is that women declare significantly:

i) higher social capital by justifying significantly less actions such as evading taxes, jumping queues and failing to report when accidentally damaging a parked vehicle;

ii) higher inequity aversion by asking for a significantly higher redistribution of world income and being more in favour of a limit of wealth in order to contrast poverty;

iii) higher tendency to accept income distribution based on effort (Table 7).

In our final robustness check we therefore introduce in the specification tested in Table 6.2 column 1 (where the dependent variable is protection), the answers to qualitative items on social capital, inequity aversion and justice and distribution criteria for which we have found a significant gender difference in Table 8. We find (Table 8) that the gender effect interacted with the absence of information (EXANTEMALE) remains positive and significant. This implies that the relatively stronger social capital and inequity aversion expressed by women in the questionnaire are not enough to explain the gender preference for protection or that such preference persists after correcting for value judgments of participants to the experiment.

5.2.3 Comments and interpretation on Hypothesis testing. Nonparametric tests reject our H_0 hypothesis about of no difference between sexes concerning preferences for protection, at least when we look at the decision without information both when subjects are stakeholders (Table 4 column 3) and when they act as impartial spectators (column 6). This tendency is also confirmed

when we aggregate different conditions by distinguishing between choices taken under full information (column 5) or under NO information (column 2).

In order to disentangle among different possible explanations of women's preferences for protection, we consider our H_{0A} – H_{0C} hypotheses.

Hypothesis H_{0A} tells us that, to consider risk aversion an appropriate explanation of this tendency, we should find the effect to disappear in the spectator treatment when women's choice of allocation criteria does not affect their own payoff. Since this is not the case, the experimental evidence confirms that risk aversion may not be taken as (the only) explanation for the decision of women to opt for protection significantly more than men. In fact, risk aversion cannot have any role in the spectator treatments.

Hypothesis H_{0B} takes into consideration the explanation related to competition aversion and considers four possible variants. None of them can be supported by our data. Women participating to our experiment are not characterized by neither *self-centred* nor *generalised competition aversion* since the gendered preference for protections exists also for spectators. They do not have a *general ideological aversion* for the idea that payoff could be decided on the basis of a competitive challenge since the gendered difference disappears once we provide information (ex post).

Hypothesis H_{0C} tells us that they are characterised by neither *self-centred* nor *generalized inequity aversion*. The first problem is that, according to the former, no gendered difference should exist among spectators, while the latter predicts a systematic difference in all cases. A second issue is that no change should occur when the information is provided (ex post) among stakeholders.

The only possibility which is compatible with our findings is that women expect a level of inequality in payoffs which is above the one they verify after receiving information about payoffs under different criteria. Hence our findings can be still compatible with generalized inequality aversion under such assumption.

Finally, consider that both Fehr and Schmidt's theory and Bolton and Ockenfels' model predict that inequity-averse subjects should prefer the equal redistribution of resources – in all cases according to the former, in case of payoffs under the average according to the latter. On the other hand, our experimental evidence suggests that people prefer mixed criteria involving protection. However, we think this would not be enough to completely reject the hypothesis that inequity aversion matters. In fact, a soft interpretation of self-centred inequity aversion models would override this last objection. That is, if we consider that subjects are self-centred inequity averse concerning specific issues only. For instance, I do not want any difference in health and instruction provision, but I do not care whether a small sample can afford buying a big car. In that case, it would be possible that either protection plus effort, protection plus talent or protection plus luck are chosen by inequity-averse subjects.

6. Conclusions

Do criteria of justice differ across sexes? In our randomized experiment with task performance we aim to answer this question. Participants to the experiment choose among a multiplicity of allocation criteria with different roles (stakeholders or spectators) without/with information about rankings and payoffs related to the different tasks. Based on the state of art of the literature of gender and preferences our main hypothesis is that relatively higher risk and inequity aversion, combined with lower overconfidence and competition aversion (typically found in this literature), all move toward a significantly higher women preference for criteria involving some form of protection.

We find strong empirical results in support of this assumption since the null of no gendered difference in the relative preference for protection is strongly rejected with both non parametric tests and econometric robustness checks which follow. The puzzle is that the gendered difference is

significant for both stakeholders and spectators but only when they choose without information about payoff distribution under different criteria.

We try to discriminate which preference structure may be compatible with our findings. We find that our results cannot be entirely explained neither by risk aversion (the gendered preference exists also for spectators), nor by competition aversion when we consider four different variants of it. The disappearance of the gendered effect for spectators and stakeholders when they receive information (ex post) might be however compatible with the assumption of aversion toward inequality which is discovered to be not too large after the information is provided (ex post) and women may observe payoff distribution.

A main policy suggestions stemming from our experiment is that, the spectator condition and the absence of information about personal payoffs have two positive independent effects on the likelihood that individuals choose some form of protection and do not maximize their own interest when choosing allocation criteria. The gender effect adds an important qualification to this point. Appointing women for taking such decision has a third important and independent impact if individual or political parties goal is to increase protection.

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Figure 1a Experimental design and procedure

STAKE	INFOSTAKE	SPECTATOR	
		SUBJECT A	SUBJECT B
Instructions	*Instructions*		*Instructions*
Control Questions	*Control Questions*		*Beliefs elicitation*
Choice of the criterion	*Test and Secretarial Task*		*Test and Secretarial Task*
*Beliefs elicitation**	*Results*	*Instructions*	*Questionnaire*
Test and Secretarial Task	*Choice of the criterion*	*Control Questions*	
Results	*Risk Aversion (Holt&Laury)*	*Choice of the criterion*	
Choice of the criterion II	*Questionnaire*	*Results*	*Results*
Risk Aversion (Holt&Laury)		*Choice of the criterion II*	
Questionnaire		*Risk Aversion (Holt&Laury)*	*Risk Aversion (Holt&Laury)*
		Questionnaire	

*** in 3 sessions only**

Figure 1b Experimental observations

	Observations			Subjects for session	Ignorance of payoff distribution under different criteria	Information about payoff distribution under different criteria	Beliefs elicitation
	Tot.	Female	Male				
STAKE	*87*	*35*	*52*	*15 subjects in 4 sessions, 14 in a session 13 in a session*	*YES*	*YES*	*YES for 42 subjects*
INFOSTAKE	*59*	*22*	*37*	*15 subjects in 3 sessions, 14 in a session*	*NO*	*YES*	*NO*
SPECTATOR SUBJECT A	*60*	*23*	*37*	*15 subjects in 4 sessions 15 subjects in 3 sessions, 14 in a session*	*YES*	*YES*	*NO*
SPECTATOR SUBJECT B	*59*	*25*	*34*		-	-	*YES*

Table 1 Variable legend

Year	Year of birth	Civic1	Variable measuring how justifiable is, according to the respondent, enjoying public benefits without entitlements (it takes integer values from 1 to 10. The same is true for the following "Civic" variables)
Male	Dummy variable (DV) taking value one if the respondent is a male	Civic2	Variable measuring how justifiable is, according to the respondent, avoiding a fare on public transport
LoneChild	DV taking value one if the respondent has no brothers or sisters	Civic3	Variable measuring how justifiable is, according to the respondent, tax evasion
House Members	Total number of respondent's household members	Civic4	Variable measuring how justifiable is, according to the respondent, keeping money you obtain by accident when it would the rightful owner
Townsize	Discrete qualitative variable for town size: 1:0-10.000 inhabitants; 2:10.001-25.000 inhabitants; 3:25.001-50.000 inhabitants; 4:50.001-100.000 inhabitants; 5:100.001-300.000 inhabitants; beyond 300.000 inhabitants;	Civic5	Variable measuring how justifiable is, according to the respondent, failing to report damage you've done accidentally to a parked vehicle
		Civic6	Variable measuring how justifiable, according to the respondent, is jumping queues
Reader	Variable measuring how many times in a week the respondent reads newspapers (it takes integer values from 1 to 5).	Inequity1	Variable measuring the general agreement of the respondent with several possible options of income redistribution (it takes integer values from 1 to 5 corresponding respectively to: nothing, such to reduce of 25%, 50%, 75%, 100%, the difference between rich and poor people).
Risk	Variable measuring the general willingness of the respondent in taking risk (it takes integer values from 1 to 10)	Inequity2	Variable measuring the general agreement of the respondent with several, increasing for higher income, possible options of tax rates (it takes integer values from 1 to 5).
Catholic	DV taking value one if the respondent is Catholic	Inequity3	Variable measuring the general agreement of the respondent with a superior bound for the income of reach people until there are poorest people in the world (it takes integer values from 1 to 10).
Church Attendance	Variable measuring how many times in a year the respondent usually attends a religious service	Naz1	Variable measuring the general agreement of the respondent with giving more to whom contribute more at the total wealth (it takes integer values from 1 to 10)
Volunteer	DV taking value one if the respondent is engaged in social activities as volunteer	Naz2	Variable measuring the general agreement with income distribution according to individual needs (it takes integer values from 1 to 10)
Married Parents	DV taking value one if the respondent's parents are married	Naz3	Variable measuring the general agreement of the respondent that justice, fairness and equality are the most important feature of a society (it takes integer values from 1 to 10)
Mother Education	DV taking value one if the respondent's mother has at least high school education	Naz4	Variable measuring the general moral agreement of the respondent with the fact that children of the rich inherit a lot of money and children of the poor nothing (it takes integer values from 1 to 10)
Father Education	DV taking value one if the respondent's father has at least high school education	Naz5	Variable measuring the general agreement that managers must chosen among the best worker (it takes integer values from 1 to 10)
Income	Income level of the respondent's household	Naz6	Variable measuring the general agreement with income distribution based on effort (it takes integer values from 1 to 10)
MathGrade	The average score of the respondent's school leaving examination	Naz7	Variable measuring the general agreement with equal splits among work team members (it takes integer values from 1 to 10)
AvgExam Score	Average score of university exams	Naz8	Variable measuring the general agreement with job promotions based on effort (it takes integer values from 1 to 10)
Erasmus	DV taking value one if the respondent has an Erasmus experience	Naz9	Variable measuring the general agreement with giving more according to needs despite low effort (it takes integer values from 1 to 10)
LiveAbroad	DV taking value one if the subject declared that she has lived abroad for at least more than 1 month in the past	Naz10	Variable measuring the general agreement with no hiring workers despite their needs(it takes integer values from 1 to 10)
Student Worker	DV taking value one if the student is also a worker	Naz11	Variable measuring the general agreement of the respondent with equal split of a bonus among team members unrelated to their individual contributions/efforts (it takes integer values from 1 to 10)

Table 2. Descriptive statistics

Variable	Obs			Mean			Std.Dev.			Min			Max		
	full	male	female	full	male	female	full	male	female	full		female	full	male	female
Year	265	60	105	1987.287	1987.287	1987.6	2.604	2.92	2.003	1970	1970	1981	1991	1991	1991
LoneChild	265	160	105	0.132	0.156	0.095	0.339	0.364	0.295	0	0	0	1	1	1
House Members	265	160	105	3.894	3.944	3.819	1.344	1.299	1.413	1	1	1	11	11	10
Town Size	265	160	105	3.298	3.337	3.238	1.842	1.836	1.858	1	1	1	6	6	6
Reader	265	160	105	2.724	2.856	2.524	1.259	1.317	1.144	1	1	1	5	5	5
Risk	262	159	103	5.935	5.924	5.951	1.938	1.874	2.041	1	1	1	10	10	10
Catholic	261	157	104	0.636	0.675	0.577	0.482	0.47	0.496	0	0	0	1	1	1
Church Attendance	264	160	104	2.189	2.237	2.115	1.246	1.1.60	1.16	1	1	1	5	5	5
Volunteer	264	159	105	0.273	0.283	0.257	0.455	0.466	0.439	0	0	0	2	2	1
Married Parents	261	159	102	0.87	0.899	0.823	0.337	0.302	0.383	0	0	0	1	1	1
Mother HighEducation	265	160	105	0.619	0.681	0.523	0.486	0.467	0.502	0	0	0	1	1	1
FatherHighEducation	265	160	105	0.634	0.65	0.609	0.483	0.478	0.49	0	0	0	1	1	1
Income	253	156	97	2.549	2.647	2.391	1.059	1.064	1.036	1	1	1	5	5	5
MathGrade	252	155	97	78.349	75.684	82.608	12.142	11.368	12.181	43	43	60	100	100	100
AvgExamScore	258	158	100	25.05	24.594	25.77	3.281	3.721	2.264	20	20	20	30	30	30
Erasmus	263	159	104	0.046	0.044	0.048	0.209	0.206	0.215	0	0	0	1	1	1
LivAbroad	257	157	100	0.21	0.191	0.24	0.408	0.394	0.429	0	0	0	1	1	1
Stud Worker	265	160	105	0.321	0.287	0.371	0.468	0.454	0.485	0	0	0	1	1	1
civic1	264	159	105	2.379	2.339	2.438	2.391	2.348	2.464	1	1	1	10	10	10
civic2	264	159	105	3.757	3.930	3.495	2.254	2.365	2.057	1	1	1	10	10	10
civic3	264	159	105	2.276	2.540	1.876	1.857	2.110	1.298	1	1	1	10	10	6
civic4	263	159	104	6.49	6.704	6.163	2.411	2.509	2.225	1	1	1	10	10	10
civic5	264	159	105	3.25	3.566	2.771	2.059	2.174	1.777	1	1	1	10	10	8
civic6	264	159	105	3.178	3.314	2.971	2.23	2.267	2.168	1	1	1	10	10	9
inequity1	263	159	104	2.962	2.90	3.048	1.08	1.151	.9591	1	1	1	5	5	5
inequity2	263	159	104	2.426	2.459	2.375	0.874	0.898	0 .838	1	1	1	4	4	4
inequity3	264	159	105	5.784	5.320	6.485	2.91	3.017	2.598	1	1	1	10	10	10
naz1	263	159	104	7.323	7.408	7.192	1.935	1.965	1.890	1	2	1	10	10	10
naz2	263	159	104	6.825	6.798	6.865	1.793	1.844	1.718	1	1	3	10	10	10
naz3	263	159	104	8.483	8.465	8.509	1.579	1.656	1.461	2	2	5	10	10	10
naz4	264	160	104	5.67	5.53	5.884	2.61	2.691	2.478	1	1	1	10	10	10
naz5	264	160	104	8.424	8.675	8.038	1.66	1.511	1.805	3	4	3	10	10	10
naz6	264	160	104	8.117	7.962	8.355	1.624	1.678	1.513	2	2	4	10	10	10
naz7	264	160	104	4.803	5.069	4.394	2.836	2.804	2.850	1	1	1	10	10	10
naz8	264	160	104	8.007	7.937	8.115	1.737	1.714	1.775	1	1	2	10	10	10
naz9	263	159	104	5.099	5.245	4.875	2.076	2.014	2.157	1	1	1	10	10	10
naz10	263	159	104	5.304	5.559	4.913	2.165	2.145	2.145	1	1	1	10	10	10
naz11	263	159	104	6.897	6.836	6.990	2.465	2.487	2.439	1	1	1	10	10	10

Table 3. Balancing properties

Variables	STAKE (1) (Means)	INFOSTAKE (2) (Means)	SPECTATOR (3) (Means)	Mann-Whitney or $\chi 2$ test* H0: (1) = (2) (P-value)	Mann-Whitney or $\chi 2$ test* H0: (1) = (3) (P-value)	Mann-Whitney or $\chi 2$ test* H0: (2) = (3) (P-value)
Male	0 .598	0.627	0.597	(0.721)	(0.817)	(0.906)
Year	1987.023	1987.288	1987.479	-0.152	1.236	1.500
				(0.879)	(0.216)	(0.134)
LoneChild	0.103	0.203	0.117	0.193	0.041	0.429
				(0.661)	(0.840)	(0.513)
FamilyMembers	3.988	4.000	3.773	0.637	-1.265	-1.899
				(0.524)	(0.206)	(0.058)
TownSize	3.218	3.373	3.319	0.617	0.058	-0.453
				(0.537)	(0.954)	(0.650)
Reader	2.873	2.729	2.613	-1.107	-2.687	-1.334
				(0.268)	(0.001)	(0.182)
Risk	6.081	5.763	5.914	-1.567	-0.459	1.237
				(0.117)	(0.646)	(0.216)
Catholic	0.706	0.627	0.590	0.092	0.386	0.059
				(0.762)	(0.535)	(0.808)
ChurchAttendance	2.372	2.000	2.151	4.253	3.264	0.777
				(0.373)	(0.515)	(0.942)
Volunteer	0.322	0.305	0.220	0.747	2.454	0.606
				(0.688)	(0.293)	(0.436)
MarriedParents	0.873	0.875	0.864	4.458	0.172	5.593
				(0.035)	(0.678)	(0.018)
MotherHighEducation	0.609	0.576	0.647	2.421	0.793	0.708
				(0.120)	(0.373)	(0.400)
FatherHighEducation	0.644	0.593	0.647	1.031	0.001	1.241
				(0.310)	(0.972)	(0.265)
Income	2.553	2.526	2.558	0.285	-0.702	-1.103
				(0.776)	(0.483)	(0.270)
MathGrade	78.927	78.232	77.991	0.896	-0.222	-1.161
				(0.370)	(0.825)	(0.246)
AvgExamScore	25.271	24.974	24.922	-0.395	-1.354	-0.787
				(0.693)	(0.176)	(0.431)
Erasmus	0.046	0.068	0.034	0.005	0.617	0.417
				(0.941)	(0.432)	(0.519)
LiveAbroad	0.247	0.186	0.195	0.993	1.434	0.000
				(0.319)	(0.231)	(0.996)
StudWorker	0 .310	0.288	0.344	0.146	0.098	0.016
				(0.702)	(0.754)	(0.900)

*For continuous variables we test - through nonparametric statistics - between-subject differences in the median (Mann-Whitney test), while for dichotomous variables we test the differences in proportions (Chi square test).

Figure 3. Impact of gender differences on players' choices in different treatments

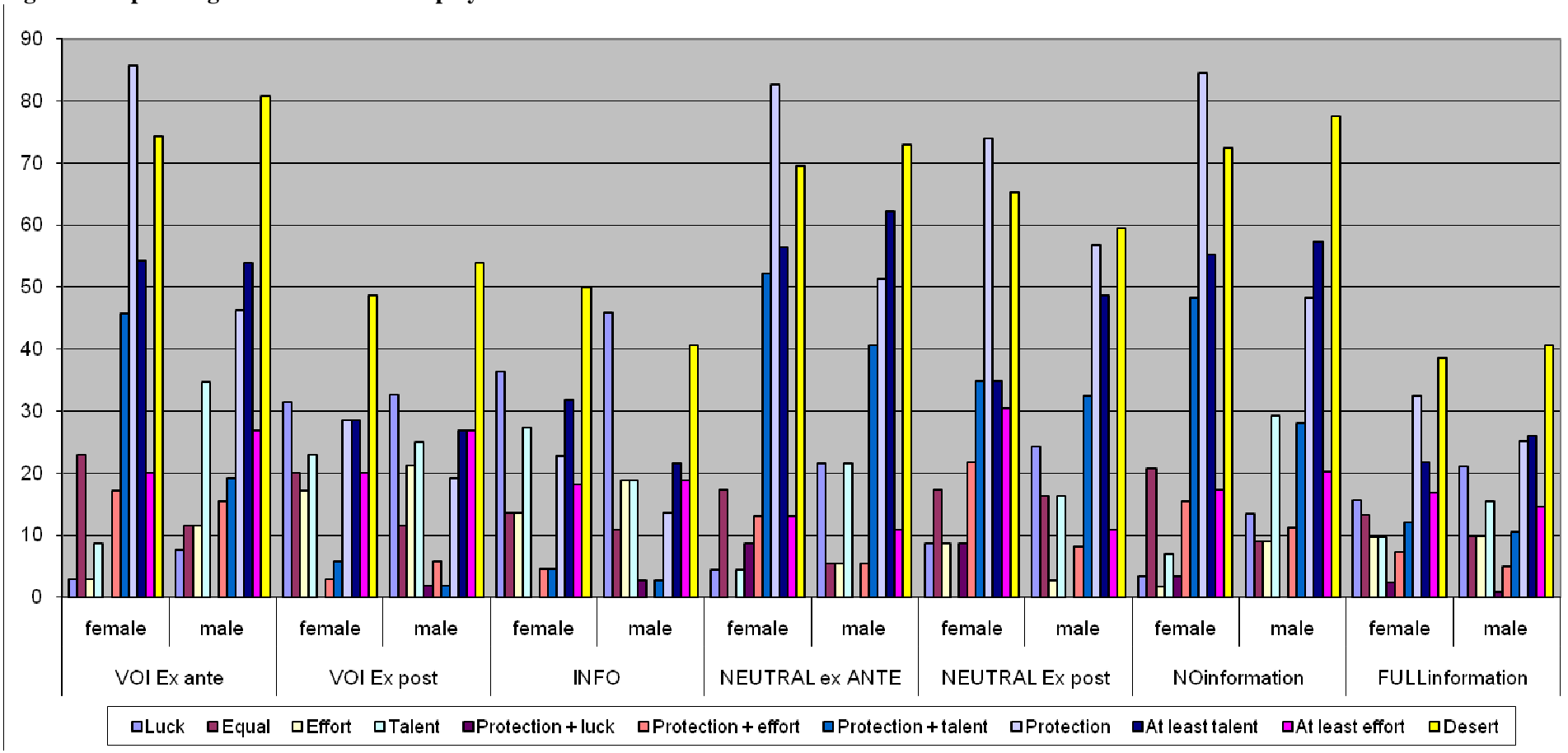

Table 4 The significance of the impact of gender differences on players' choices in different treatments

	H0: male = female FULL INFO	H0: male = female NO INFO	H0: male = female STAKE EX ANTE	H0: male = female STAKE EX POST	H0: male = female INFOSTAKE	H0: male = female SPECTATOR EX ANTE	H0: male = female SPECTATOR EX POST
Overall distribution	3.783 (0.706)	26.379*** (0.000)	0.903 (0.342)	3.156 (0.789)	3.470 (0.748)	13.560** (0.035)	11.867* (0.065)
Random (1)	1.418 (0.234)	4.104** (0.043)	0.903 (0.342)	0.015 (0.902)	0.519 (0.471)	3.319* (0.068)	2.314 (0.128)
Protection Effort (2)	1.316 (0.251)	0.572 (0.450)	0.048 (0.827)	0.404 (0.525)	1.711 (0.191)	1.083 (0.298)	2.281 (0.131)
Protection + talent (3)	0.320 (0.572)	6.206** (0.013)	7.002*** (0.008)	0.903 (0.342)	0.143 (0.705)	0.776 (0.379)	0.035 (0.851)
Protection + luck (4)	0.214 (0.644)	3.111 (0.078)	No observations	0.681 (0.409)	0.605 (0.437)	3.328* (0.068)	3.328* (0.068)
Talent (5)	0.307 (0.579)	10.767*** (0.001))	7.749*** (0.005)	0.052 (0.819)	0.560 (0.454)	3.319* (0.068)	4.272** (0.042)
Effort (6)	0.069** (0.012)	3.224** (0.073)	2.131 (0.144)	0.214 (0.644)	0.273 (0.601)	1.286 (0.257)	1.072 (0.300)
Equal (7)	0.907 (0.341)	4.090** (0.043)	1.985 (0.159)	1.178 (0.278)	0.105 (0.746)	2.264 (0.132)	0.014 (0.905)
Combination of choices							
Protection (2) + (3) + (4) + (7)	3.270* (0.070)	23.904*** (0.000)	13.906*** (0.000)	0.628 (0.428)	0.385 (0.535)	10.188*** (0.001)	4.265 (0.032)
At least talent (3) + (5)	0.006 (0.940)	0.065 (0.799)	0.0002 (0.968)	0.028 (0.866)	0.757 (0.384)	0.188 (0.665)	1.110 (0.292)
At least effort (2) + (6)	0.209 (0.647)	0.203 (0.653)	0.547 (0.459)	0.548 (0.459)	0.005 (0.944)	0.069 (0.793)	3.648* (0.056)
Desert (2) + (3) + (5) + (6)	0.092 (0.762)	0.497 (0.481)	0.515 (0.473)	0.233 (0.629)	0.501 (0.479)	0.081 (0.776)	0.199 (0.656)

*** p<0.01, ** p<0.05, * p<0.1 Chi square tests

Full information= treatments where subjects have full information about their payoffs across criteria, that is the INFOSTAKE, the STAKE ex post and the SPECTATOR ex post treatments;
NO information= treatments where subjects have no information at all about their payoffs across criteria, that is the STAKE ex ante and the SPECTATOR ex ante treatments.

Table 5.1 The effect of ignorance on payoff distribution and stakeholdership on players' choices

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Luck	Pure effort	Pure talent	Protection plus effort	Protection plus talent	Equal
EXANTE	-0.179***	-0.082**	-0.01	0.046	0.223***	-0.016
	(0.045)	(0.035)	(0.047)	(0.030)	(0.049)	(0.034)
INFOSTAKE	0.151*	-0.041	-0.014	-0.065***	-0.067	-0.019
	(0.083)	(0.039)	(0.072)	(0.020)	(0.066)	(0.041)
STAKEHOLDER	0.028	0.095***	0.133**	-0.007	-0.286***	0.043
	(0.062)	(0.034)	(0.055)	(0.030)	(0.085)	(0.033)
Male	0.086	0.039	0.072	-0.01	-0.175***	-0.036
	(0.053)	(0.034)	(0.058)	(0.030)	(0.064)	(0.043)
Observations	267	244	267	254	267	267

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Regressors include the following variables as listed in Table 2: *Year, Male, LoneChild, HouseMembers,Townsize, Reader, Risk Catholic, ChurchAttendance, Volunteer, MarriedParents, MotherEducation, FatherEducation, Income, MathGrade, AvgExamScore, Erasmus, LivAbroad, StudentWorker*.

Table 5.2 The effect of ignorance and stakeholdership on players' choices

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Luck	Pure effort	Pure talent	Protection plus effort	Protection plus talent	Equal
EXANTE	-0.254***	-0.160**	-0.121	0.069	0.343***	-0.017
	(0.090)	(0.071)	(0.088)	(0.047)	(0.089)	(0.054)
INFOSTAKE	0.071	-0.053	0.021	0.006	-0.046	-0.027
	(0.127)	(0.066)	(0.127)	(0.091)	(0.121)	(0.062)
EXANTEMALE	0.144	0.164	0.19	-0.018	-0.130**	0.003
	(0.161)	(0.143)	(0.135)	(0.053)	(0.054)	(0.073)
INFOMALE	0.111	0.035	-0.055		-0.023	0.016
	(0.172)	(0.140)	(0.127)		(0.154)	(0.111)
STAKEHOLDER	0.012	0.095	0.260***	-0.066	-0.239*	0.047
	(0.107)	(0.065)	(0.079)	(0.085)	(0.136)	(0.053)
STAKEHOLDERMALE	0.022	-0.006	-0.261*	0.093	-0.059	-0.008
	(0.131)	(0.118)	(0.155)	(0.104)	(0.119)	(0.085)
Male	0.022	0.006	0.206*	-0.034	-0.033	-0.033
	(0.108)	(0.106)	(0.110)	(0.074)	(0.111)	(0.091)
Observations	267	244	267	222	267	267

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Regressors include the following variables as listed in Table 2: *Year, Male, LoneChild, HouseMembers,Townsize, Reader, Risk Catholic, ChurchAttendance, Volunteer, MarriedParents, MotherEducation, FatherEducation, Income, MathGrade, AvgExamScore, Erasmus, LivAbroad, StudentWorker*.

Table 6.1 The effect of ignorance and stakeholdership on combined players' choices

	(1)	(2)	(3)	(4)
VARIABLES	Protection	At least effort	At least talent	Desert
EXANTE	0.282***	-0.030	0.242***	0.223***
	(0.063)	(0.046)	(0.060)	(0.057)
INFOSTAKE	-0.150	-0.133**	-0.046	-0.174*
	(0.096)	(0.054)	(0.099)	(0.097)
STAKEHOLDER	-0.284***	0.083	-0.177*	-0.09
	(0.082)	(0.054)	(0.094)	(0.085)
Male	-0.275***	0.018	-0.08	-0.045
	(0.075)	(0.052)	(0.086)	(0.078)
Observations	267	267	267	267

Regressors include the following variables as listed in Table 2: *Year, Male, LoneChild, HouseMembers, Townsize, Reader, Risk Catholic, ChurchAttendance, Volunteer, MarriedParents, MotherEducation, FatherEducation, Income, MathGrade, AvgExamScore, Erasmus, LivAbroad, StudentWorker*.

Table 6.2 The effect of veil of ignorance and stakeholdership on combined players' choices

	(1)	(2)	(3)	(4)
VARIABLES	Protection	At least effort	At least talent	Desert
EXANTE	0.483***	-0.059	0.301***	0.257***
	(0.114)	(0.080)	(0.102)	(0.095)
INFOSTAKE	-0.068	-0.098	0.036	-0.057
	(0.166)	(0.106)	(0.165)	(0.154)
STAKEHOLDER	-0.401**	0.006	-0.033	-0.032
	(0.143)	(0.097)	(0.150)	(0.150)
EXANTEMALE	-0.312**	0.049	-0.097	-0.061
	(0.133)	(0.108)	(0.126)	(0.136)
INFOMALE	-0.135	-0.063	-0.131	-0.182
	(0.198)	(0.140)	(0.197)	(0.209)
STAKEHOLDERMALE	0.187	0.133	-0.219	-0.093
	(0.202)	(0.132)	(0.186)	(0.189)
Male	-0.239	-0.09	0.135	0.073
	(0.159)	(0.128)	(0.168)	(0.172)
Observations	267	267	267	267

Regressors include the following variables as listed in Table 2: *Year, Male, LoneChild, HouseMembers, Townsize, Reader, Risk Catholic, ChurchAttendance, Volunteer, MarriedParents, MotherEducation, FatherEducation, Income, MathGrade, AvgExamScore, Erasmus, LivAbroad, StudentWorker*.

Table 7. Gender effect related to different socio-economic variables

Questions	Coeff	Std.Dev.
Civicness (all these variables take integer values from 1 to 10)		
Civic1: How justifiable is, according to the respondent, enjoying public benefits without entitlements	-0.036	0.217
Civic2: How justifiable is, according to the respondent, avoiding a fare on public transport	0.245	0.276
Civic3: How justifiable is, according to the respondent, tax evasion	0.721**	0.333
Civic4: How justifiable is, according to the respondent, keeping money you obtain by accident when it would be possible to return it to the rightful owner	0.476*	0.251
Civic5: How justifiable is, according to the respondent, failing to report damage you've done accidentally to a parked vehicle	0.747***	0.269
Civic6: How justifiable, according to the respondent, is jumping queues	0.667***	0.259
Inequity aversion		
Inequity1: Rate of redistribution of wealth from the rich to the poor that the respondent would like to implement, if s/he could, by choosing between 5 possibilities: 0%, 25%, 50%, 75%, 100% (it takes integer values from 1 to 5).	-0.228***	0.312
Inequity2: Tax rate system chosen by the respondent among four systems characterized by different level of tax progressiveness (it takes integer values from 1 – the less progressive taxation system - to 5 – the more progressive taxation system).	0.368	0.234
Inequity3: Level of agreement with the following statement, using a 10 level scale: "A limit to the wealth that may be accumulated by the rich should exist until poverty will be eliminated"	-0.692***	0.208
NAZ Variables that measure the level of agreement or disagreement with the different following statements (using a 10 level scale)		
Naz1: The more people contribute, the more they should receive	0.192	0.304
Naz2: People who need more should receive more	0.120	0.377
Naz3: Justice, equity and equality are the most important requisites of a society	0.156	0.277
Naz4: It is not correct from the moral point of view that children of the rich inherit a lot of money and children of the poor nothing	-0.094	0.211
Naz5: Employees who have the best performance should be more likely to be included in the top management of their organizations	0.973***	0.317
Naz6: The salary should reflect the worker's effort	-0.295	0.335
Naz7: When students work in a team on a project, each member of the team should obtain the same mark, independently from the individual effort	0.379*	0.227
Naz8: Decisions on promotions should be based on the effort made by the different employees in respect to their job	-0.103	0.223
Naz9: Sometimes is ok giving a wage increase to the employee who is in need even though he is not the one who worked more hard	-0.057	0.225
Naz10: It is always a bad idea to hire a person by simply considering if he needs the job or not	0.528**	0.224
Naz11: When a bonus is given to a team, it should always been equally shared among the members	-0.295	0.230

The table reports coefficients and significance (*** p<0.01, ** p<0.05, * p<0.1) of the gender dummy (male=1, female=0) in a specification in which the dependent variable is the extent of consensus to the value item in the questionnaire and explanatory factors are the gender dummy plus all sociodemographic controls from Tables 6.1-7.2

Table 8. Robustness check on the significance of the gendered effect on protection when introducing questionnaire responses on value judgement for which there is a significant gender effect

Dependent Variable= 1 if the allocator chooses full egalitarianism or talent plus protection or effort plus protection or luck plus protection					
EXANTE	0.486***	0.490***	0.496***	0.495***	0.497***
	(0.111)	(0.112)	(0.114)	(0.114)	(0.116)
INFOSTAKE	-0.082	-0.068	-0.065	-0.098	-0.153
	(0.168)	(0.166)	(0.171)	(0.171)	(0.160)
STAKEHOLDER	-0.413***	-0.405***	-0.437***	-0.446***	-0.455***
	(0.133)	(0.134)	(0.132)	(0.128)	(0.136)
EXANTEMALE	-0.338***	-0.340***	-0.346***	-0.344***	-0.341**
	(0.129)	(0.130)	(0.131)	(0.131)	(0.134)
INFOMALE	-0.159	-0.178	-0.206	-0.159	-0.141
	(0.198)	(0.193)	(0.189)	(0.200)	(0.201)
STAKEHOLDER MALE	0.253	0.254	0.299*	0.331*	0.298
	(0.182)	(0.181)	(0.177)	(0.176)	(0.191)
Male	-0.247*	-0.240*	-0.274**	-0.278**	-0.234
	(0.142)	(0.142)	(0.139)	(0.135)	(0.151)
Civic3	-0.023				-0.015
	(0.022)				(0.025)
Civic5		-0.022			-0.030
		(0.018)			(0.020)
Inequity3			0.019		0.018
			(0.013)		(0.013)
Naz5				-0.061**	-0.061**
				(0.027)	(0.027)
Naz10					0.047**
					(0.020)
Observations	293	293	292	293	292

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Regressors include the following variables as listed in Table 2: *Year, Male, LoneChild, HouseMembers,Townsize, Reader, Risk Catholic, ChurchAttendance, Volunteer, MarriedParents, MotherEducation, FatherEducation, Income, MathGrade, AvgExamScore, Erasmus, LivAbroad, StudentWorker*.