



GENDER DIFFERENCES IN SOCIALLY RESPONSIBLE CONSUMPTION. AN EXPERIMENTAL INVESTIGATION

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Gender differences in Socially Responsible Consumption. An Experimental Investigation

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Abstract*

We report on a simple experimental study designed to investigate the different gender attitudes towards socially responsible consumption. We use the Vote-with-the-Wallet Game (VWG), a version of a repeated multiplayer prisoner's dilemma that mimics the characteristics of the choice between a conventional and a socially responsible product. More precisely we test the effect of three factors: two different frames and an ex-post redistribution mechanism that transfers resources from purely self-interested consumers to responsible ones. We find that women remain significantly more cooperative (choosing more often the responsible good) when the redistribution mechanism is interrupted and are significantly less satisfied about the behavior of the other players in that treatment.

Keywords: Responsible Consumption, Gender Differences, Social Preferences, Lab Experiment.

JEL Classification: C92, C72, D03.

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1. Introduction

Consumer research has established that women and men tend to have different consumption patterns (Costa 1994; Horowitz and Mohun, 1998; Grover et al., 1999; Warde, 1997). In the OECD countries, for instance, women make more than 80 percent of household purchasing decisions and are more likely to buy basic goods such as food, clothing, and household items. Men, on the other hand, spend more than 80 percent of the household income and are more likely to buy more expensive goods, such as houses, cars, and electronics (OECD, 2008). Together with income, age, and household size, gender is a key factor in determining consumer choices.

In this paper we consider a further element that may produce gender differences in consumption styles, that is, the sensitivity to social and/or environmental issues, and, as a consequence, a higher or lower willingness to pay more for socially and/or environmentally responsible good.

We study this phenomenon in a lab experiment by means of the “Vote-with-the-Wallet Game” (VWG) (Becchetti and Salustri, 2015). The game is a multi-person “hybrid contribution-prisoners’ dilemma” (Arce and Sandler, 2005) that stylizes the increasingly frequent situation in which consumers face the choice between a socially responsible product and an alternative more conventional one.¹ What typically defines this case is a trade-off: the first product generally costs more (i.e. organic and fair trade products are generally sold at premium due to the extra costs incurred by producers that incorporate the additional responsible characteristics in their productive process) but consumers – when adequately informed – know that, by “voting with the wallet” for it, they may contribute to a public good (generated by the same characteristics of the product plus a demand-driven stimulus on a more socially and/or environmentally responsible corporate stance) in proportion to the market share of consumers that make the same choice.

We as well investigate in the experiment the effect of a redistribution mechanism studied by Becchetti, Pelligra and Salustri (2015). This mechanism mimics a policy intervention intended to subsidize the responsible choice as it takes away part of the gains from the “defectors” (buyers of the conventional product) and gives them to the “cooperators” (buyers of the responsible products). We introduce this treatment in the experiment because these kinds of policies are becoming more and more relevant as instruments to foster socially and environmentally consumption patterns.

¹ Boston Consulting group reports that organic, environmentally or socially responsible products accounted for at least 15 percent of all grocery sales in 2014 (BCG, 2014). Since the share of consumers actually choosing that kind of product is obviously a subset of those facing the alternative between the responsible and the conventional product, we may infer that the “vote with the wallet” game is played in much more than 15 percent of sales decisions.

They have been recently introduced in around 63 countries under the form of environmental feed-in tariffs (redistributing away from consumers using conventional energy sources to consumers installing solar panels) but can be applied in similar ways to other fields (Couture and Gagnon, 2010). Becchetti, Pelligra and Salustri (2015) find that such a policy significantly increases the share of cooperative choices in equilibrium.

This paper also contributes to the large experimental literature that has, in these years, gathered robust evidence about gender differences mainly in three areas of investigation: attitude towards risk, response to incentives and competition, and other-regarding behavior. We know now that women tend to be more risk-averse and less sensitive to material incentives and to a competitive environment. With regard to social preferences we cannot in general affirm that men and women are different in term of generosity or cooperativeness. Evidence on this point is, in fact, mixed. What can be said with a good degree of confidence is that women's social preferences are more malleable than men's, namely, that women's behavior shows a higher sensitivity to the contextual conditions of the experiment (see Croson and Gneezy, 2009, for a comprehensive survey).

The social preference literature studies when and how people's choices are affected by other individuals' well-being. Most experiments in this area consider participants' behavior in simple economic games such as the dictator game, the ultimatum game, the trust game, and the prisoner's dilemma. In experiments with the dictator game, for instance, women tend to give more than men (Eckel and Grossman, 1998); however when the same game is used in a less anonymous design, as in Bolton and Katok (1995), this difference disappears. Summarising findings from dictator games, Croson and Gneezy (2009) conclude that men are more concerned with efficient allocations while women are more averse to inequality. Results from trust game experiments are inconclusive as they show either no difference between trusting behavior of men and women and find conflicting results for trustworthy and reciprocal behavior (Cox and Deck, 2006; Bohnet 2007 among others), or that woman trust less (Chaudhuri and Gangadharan, 2007; Garbarino and Slonim, 2009). At the same, Cox and Deck (2006) and Bohnet (2007) find no gender differences on trustworthiness and reciprocity, while Chaudhuri and Gangadharan (2007) and Buchan, Croson and Solnick (2008) find that men are more concerned reciprocal behavior than women. The most widely discussed game in experimental psychology and economics is certainly the prisoner's dilemma. Since the early studies based on this game the evidence about the difference in the degree of cooperativeness between men and women has been mixed (see Croson and Gneezy, 2009). The prisoner's dilemma has been investigated also in its multi-person version known as the public good game. Again the findings from this game are inconclusive: Brown-Kruse and Hummels (1993), Sell and Wilson (1991) and Solow and Kirkwood (2002) find higher levels of contribution for men. On the contrary

Seguino, Stevens and Lutz (1996) find that women contribute more, whereas Sell, Griffith and Wilson (1993), Cadsby and Maynes (1998), and Andreoni and Petrie (2008) find no significant differences in the levels of contribution by men and women. Summarizing, the literature on gender differences in experiments does not find clear-cut differences in preferences related to altruism and cooperation but it highlights a higher sensitivity of women to the contextual factors of the experiment.

We contribute to this line of investigation by focusing on the VWG, a variant of the multi-person prisoner's dilemma never studied before experimentally (the companion paper by Becchetti, Pelligra and Salustri, 2015, is the only exception). More generally, the questions that we tackle, whether gender differences matter in the VWG and for the redistribution policy, are of foremost importance. They, in fact, may provide an answer on whether women or men have different preferences for the responsible consumption (in absolute or conditionally to the different contexts of the experiment) and/or which of the two sexes is more potentially reactive to campaigns or policies in favour of social and environmental sustainability.

The three main findings of our paper are: i) women are significantly more likely to maintain the cooperative behavior (choice of the responsible product) after the redistributive mechanism is interrupted; ii) they are significantly less satisfied about the behavior of other players in the game; iii) the introduction of two frames, with different specifications of the socially responsible activities of the firm, has no differential effect on men and women.

The paper is divided into five sections (introduction and conclusions included). The second section outlines the theoretical framework. The third section describes the experimental design and the hypotheses to be tested. The fourth section presents empirical findings. The fifth section concludes.

2. The “Vote-with-the-Wallet” Game

The Vote-with-the-Wallet Game (VWG), introduced first by Becchetti and Salustri (2015), is a specific multi-person “hybrid contribution-prisoners’ dilemma” (Arce and Sandler, 2005). In its simplest form, the two-player variant, player's utility conditional to the choice of voting for the responsible product (vR) or voting for the conventional product (vC) can be written as

$$U_i(S) = \begin{cases} \beta + \alpha - \gamma & \text{if } S = (vR, vR) \\ \frac{1}{2}\beta + \alpha - \gamma & \text{if } S = (vR, vC) \\ \frac{1}{2}\beta & \text{if } S = (vC, vR) \\ 0 & \text{if } S = (vC, vC) \end{cases}$$

where $S := (S^i, S^{-i}) \in \{vC, vR\}^2$ indicates the strategy profile.

The parameter $\beta \in [0, +\infty)$ measures the externality arising from the voting choice that induces corporations to a more socially, environmentally and fiscally responsible stance, the intensity of the effect depending on the share of players choosing the vR strategy. The parameter $\alpha \in [0, +\infty)$ measures the positive effect generated by the vR strategy, in case of players' nonzero other-regarding preferences. The parameter $\gamma \in [0, +\infty)$ measures the cost differential between the vR strategy (buying the responsible product) and the vC strategy (buying the equivalent non conventional product). Players are assumed as being not income constrained in the game.²

As shown by Becchetti and Salustri (2015), with $G = (N, (S^i)_{i \in N}, (U_i)_{i \in N})$, $N = \{1, 2\}$ and $S^i = \{vR, vC\}$, the unique Nash Equilibrium (NE) of the game is (vC, vC) if $\frac{1}{2}\beta + \alpha < \gamma$ and (vC, vC) otherwise, and we are in the “prisoner’s dilemma area” for intermediate values of γ , that is $\frac{1}{2}\beta + \alpha < \gamma < \beta + \alpha$. In this parametric interval the unique NE, (vC, vC) , is Pareto dominated by the strategy pair (vR, vR) . In the multiplayer version of the game $n > 2$, $G_n = (N, (S^i)_{i \in N}, (U_i)_{i \in N})$, $N = \{1, \dots, n\}$, and $S^i = \{vR, vC\}$ for each $i \in N$. The payoff function now becomes

$$U_i(S^i, S^{-i}) = \begin{cases} \frac{j+1}{n}\beta + \alpha - \gamma & \text{if } S^i = vR \\ \frac{j}{n}\beta & \text{if } S^i = vC \end{cases}$$

where j measures the number of players choosing the vR strategy in S^i . The multiplayer game has (vC, vC) as a unique NE if $\frac{1}{n}\beta + \alpha < \gamma$ and (vR, vR) otherwise.

What has to be noted is that a higher number of players clearly makes the prisoner’s dilemma area larger since the parametric interval of γ in which we are in presence of a prisoner’s dilemma is $(\frac{1}{n}\beta + \alpha, \alpha + \beta)$. This implies that, in global consumer and investor markets, the prisoner’s dilemma in the VWG is highly relevant.

² Said in other terms this implies that only players without income constraints (income at least equal or above the full cost of the responsible product) can participate to the game.

3. Experimental design

In this work we analyse data gathered in Becchetti, Pelligra and Salustri (2015). They investigate players' choices in a VWG with or without a redistribution mechanism that transfers money from defectors to cooperators. Each treatment considers two sequences, of 10 rounds each, of the VWG with and without redistribution, respectively. In each round a group of 10 players chooses between two goods named A and B: the first costs 10 tokens, the second 5 tokens. In each round players are given an endowment of 20 tokens. This version of the game is specifically designed to reproduce the main characteristics of the VWG, including the positive externality in purchasing the responsible but more expensive good. For this reason there is a benefit of 3 tokens for each participant whenever a player chooses the more expensive good A (see Table A1 in the Appendix). The share of players choosing each good is the only information revealed to all players at the end of each round. The “redistribution phase” consists of a 10 round variant of the VWG where all players choosing product B are taxed of 2.5 points that are conveyed to a common fund. The collected points are then redistributed before the following round among players who have previously chosen the good A (see tables A3 and A4 in the Appendix). It comes along that the purchase of good A becomes the dominant strategy in the redistribution phase, whatever the number of cooperative players.

By applying the theoretical framework described in section 2 to the parametric case of our game without redistribution we find that $n = 10$, $\beta = 30$, $\gamma = 5$, and $a = 0$ for simplicity. As a consequence the payoff function becomes³

$$\begin{aligned}
 U_i(S^i, S^{-i}) &= \begin{cases} \frac{j+1}{n}\beta - \gamma & \text{if } S^i = vR \\ \frac{j}{n}\beta & \text{if } S^i = vC \end{cases} \\
 &= \begin{cases} \frac{j+1}{10}30 - 5 & \text{if } S^i = vR \\ \frac{j}{10}30 & \text{if } S^i = vC \end{cases}
 \end{aligned}$$

³ Note that in our utility function we do not have the endowment since the parameters are expressed as differentials between the choice of the responsible product and the choice of the conventional product.

with j being the number of players choosing the νR strategy in S^i . The multiplayer game has $(\nu C, \nu C)$ as a unique (inefficient) NE since $\frac{1}{n}\beta + \alpha < \gamma < \beta + \alpha$ (i.e. $3 < 5 < 30$).

It is easy to see that the experiment's payoffs structure involves the typical free-riding problem of the prisoner's dilemma, because the dominant strategy in the baseline treatment is represented by purchasing the cheaper but less responsible good B whatever the share of players choosing good A (see Table A2 in the Appendix).

The experiment consists of two more treatments where the game is framed. The two goods are itemized as two "electricity supply contracts" provided by a "socially responsible company" (good A) and a second unspecified company (good B). In the two frames, social responsibility is presented as concerning two different "areas of commitment". Frame 1 sees the company's dedication to the local development of the economy, while frame 2 describes the company's "pledge" to fund social innovations initiatives and projects on a national scale⁴. The idea behind these two versions of the game is to differentiate the possible indirect impact that players may have from the socially responsible activities of the company. The larger the distance, the lower the potential benefit for the player. Each of the three treatments (baseline, frame 1, and frame 2) has been replicated by inverting the order of the phases, with the redistribution phase at the end or at the beginning (see Table A5 in the Appendix).

The main findings of the companion paper of Becchetti, Pelligra and Salustri (2015) who analyze revealed choices in the experiment are: i) the non zero but declining share of cooperators in the baseline (framed and non framed) treatments; ii) the upward jump in the share of cooperators once the redistribution mechanism is introduced; iii) the positive effect of the frame on the share of cooperative choices in non-redistribution treatments.

3.1. Hypothesis testing

In this paper we test a further related hypothesis. Let $C_{i,t}(G)$ indicate the strategy selected by the i^{th} player in round t of game G , with $C \in \{\nu R, \nu C\}$ where νR (voting for/buying the responsible product) is the purchase of good A, while νC (voting for/buying the conventional product) is the purchase of good B, and $G \in \{\text{baseline, baseline frame 1, baseline frame 2, redistribution, redistribution frame 1, redistribution frame 2}\}$ indicates the specific treatment considered.

The null hypothesis tested is

⁴ See Experimental instructions in the Appendix 2 for a precise description of the frames.

$$H_0: C_{f,t}(G) = C_{m,t}(G)$$

where f are women and m men. That is, our null states that there are no gender differences in the share of cooperators in the specific treatment G .

3.2. Procedures

The experimental sessions took place at the University of Cagliari (Italy), in June 2015. We recruited 180 participants (90 females and 90 males), mainly students. At their arrival in the lab, participants, ten per session, were randomly assigned to a computer. General instructions were read aloud and subjects were informed that the experiment consisted of two phases, but they received the specific instructions only for phase one. Questions about the structure of the game, the procedures and the payment rules were then answered privately. Once each participant completed the ten rounds of phase one, subjects were given phase two instructions, which were read aloud. When the second phase ended all the participants completed a post-experimental questionnaire about their socio-demographic characteristics, general values, and their attitude about corporate social and environmental responsibility (see Appendix 3). Each participant received the equivalent in cash (conversion rate 2 tokens = 1 euro) of the payoff obtained in one round randomly chosen among the twenty played plus 5 tokens as show-up fee. The sessions lasted approximately one hour and earnings averaged about 16 euros. The experiment was computerized using the software z-Tree platform (Fischbacher, 2007).

4. Results

4.1. Empirical findings

Our findings document that the null is rejected only in one case, that is, in the baseline treatment where the share of non-cooperative choices is 69.68 percent for women and 79.31 percent for men (χ^2 7.29, p-value 0.007). In all other treatments (frame 1, frame 2, and the redistribution treatments under baseline, frame 1, and frame 2) we detect no significant gender differences. Note that this is actually two findings in one. First, women cooperate significantly more in the baseline treatment (the treatment without redistribution mechanism). Second, the introduction of responsibility frames in the baseline treatment bridges the gender gap, with men reaching the same level of cooperative choices than women.

[TABLE 1 ABOUT HERE]

To examine more in depth this finding consider that, as is clear from our design, the aggregate players' choices in the baseline treatment actually correspond to two different sequences of baseline-redistribution designs. In the first case players play 10 rounds under the baseline treatment and the following 10 rounds (from the 11th to the 20th) under the redistribution treatment. In the second case the sequence is inverted. When we decompose the gender result in baseline treatment between the baseline-redistribution and the redistribution-baseline sequences we find that the gender effect is concentrated on the second case with 85.3 percent non-cooperative choices of men against 67.3 percent non-cooperative choices of women (χ^2 13.45, p-value 0.000). Hence, we conclude that women are more likely to keep the cooperative strategy even after the redistribution mechanism is removed.

When we look at the dynamics of men and women's choices in the redistribution-baseline sessions we clearly find evidence of what we tested (Figure 1). The averages of cooperative choices for the two sexes overlap until the 10th round while there is a clear-cut difference after the removal of the redistribution mechanism (11th round), which lasts until the 18th round. More specifically, the men's change in the share of cooperative choice is much sharper as soon as the elimination of the redistribution mechanism is announced. This can be interpreted in two ways: i) since the shift in design makes the non-cooperative choice the dominant strategy, men are more rational to adapt to it soon; ii) women are more resilient to the cooperative choice in the attempt to avoid the coordination failure implied by the prisoner's dilemma logic of the game.

[FIGURE 1 ABOUT HERE]

4.2. Satisfaction about the game

With our ex post survey we ask participants to the experiment about their satisfaction for the behavior of their mates in the game. And find here another relevant difference between women and men (see Figure 2). The gender difference in the distribution of satisfaction for other players' experiment is clear-cut. When looking at the right tail we find that less than 9 percent of women express a level of satisfaction above 7 against more than 45 percent of men. The difference on the left tail is strong as well: more than 36 percent of women express a satisfaction below 5, while this is the case for slightly less than 29 percent for men.

[FIGURE 2 ABOUT HERE]

In order to check whether the observed difference remains significant once we control for relevant observable factors we estimate the following ordered logit base specification (Table 2 column 1)

$$Satisfaction_i = \beta_0 + \beta_1 PlayerNonCoopShare_i + \beta_2 AvgGroupNonCoopShare_i + \beta_3 Male_i + \beta_4 Age_i + \sum_j \delta_j DIncome_j + \varepsilon_i \quad (1)$$

where *Satisfaction* is a 0-10 variable measuring satisfaction for the behavior of other players in the game. The two variables measuring what happened in the game are *PlayerNonCoopShare* (the share of cooperative choices of the i^{th} player across the 20 rounds) and *AvgGroupNonCoopShare* (the share of cooperative choices of all the ten players across the 20 rounds). Socio-demographic controls such as a male gender dummy, age, and five income dummies are added to the estimate.

[TABLE 2 ABOUT HERE]

Results presented in Table 3 show that men are significantly more satisfied about the behavior of other players than women. Note that in the regression we control for the share of one's own noncooperative choices (*PlayerNonCoopShare*) and for the average share of cooperative choices of other players in the experiment (*AvgGroupNonCoopShare*). In an augmented specification we as well calculate the average level of players' profits in each round (depending on the number of cooperators and on the presence/absence of the redistribution mechanism) (*Profit* variable) and find that the gender effect is robust to the inclusion of such variable (Table 2, column 2).

A likely interpretation linking this finding to that previously shown in section 4.1 is that women are significantly more disappointed than men for the incapacity of experiment mates of reaping the potential gains from a cooperative choice after the monetary incentive (the redistribution mechanism) is removed. This interpretation would be consistent with the observation of the significantly higher propensity to keep the cooperative strategy after the end of the redistribution mechanism. Marginal effects calculated on the ordered logit estimate tells us that female gender reduces by around 20 percent the probability of declaring a level of satisfaction for other players' behavior above 7. The econometric effect is smaller than the previously mentioned descriptive effect but still very relevant. Part of the descriptive

effect is likely to be absorbed by the significant positive impact on satisfaction of one's own non cooperative choice. This variable suggests once again that the lack of satisfaction for other players' behavior is driven by their lack of support for the cooperative behavior followed by a given player.⁵

In a final robustness check we decompose the gender effect separating each of the six different sequences of the game (Baseline plus Redistribution, Redistribution plus Baseline, Frame 1 plus Redistribution, Redistribution plus Frame 1, Frame 2 plus Redistribution, Redistribution plus Frame 2). Consistently with our interpretation of the nexus between the two results of the paper (that on experiment choices and on stated satisfaction) we find that the two sequences in which the gender effect is strongly significant are those where the redistribution effect comes first and the policy is suspended at the end of the 10th round (significance of *MaleBaseAfter* and *MaleFrameOneAfter* dummies in the specification of Table 2, column 3). This occurs both in the redistribution plus baseline sequence and in the redistribution plus frame 1 sequence.

It is important to note that gender differences in satisfaction about other players' behavior do not depend on different game circumstances since the average share of non-cooperative choices is 49.8 percent for men and 48.8 percent for women. As well the ratio between one's own average choices (1 if non cooperative and 0 otherwise) and the average share of other players' non cooperative choices (our coefficient of betrayal aversion) is very close (31.8 against 31.0). This finding seems to show that after the initial different behavior when the redistribution ceases women adapt to other players' behavior in a sort of conditional cooperation attitude.

Note that a methodological problem that always emerges when using data that do not come from randomized experiments (hence in our choice of combining data from randomized experiments and stated preferences) is endogeneity. In our case the problem obviously does not apply since we are looking at gender differences and therefore at a variable that cannot be caused by third omitted drivers.

5. Conclusions

The literature on gender differences in experiments does not find clear-cut differences in preferences related to altruism and cooperation. It however concludes that many specific gender differences can be found related to specific game contexts.

⁵ In a sense, since cooperation is a joint endeavor, this disappointment is similar to that of the individuals who come to a social meeting and do not find the other invited participants. With reference to a well known saying, "it takes two to make tango", it takes more than two to make the vote with the wallet game. In this perspective our findings seem to register the disappointment of the mate who is willing to "dance" for the others who do not participate to the game itself.

We analyze a specific game context that is becoming more and more relevant in our days. The game outlines the dilemma of choosing between a more expensive product advertised as incorporating more environmental and social responsibility and a cheaper alternative conventional product of equivalent quality. We model the choice under the form of a hybrid contribution multiplayer prisoner's dilemma which we call "Vote-with-the-Wallet Game". Our findings confirm that gender differences exist conditionally to specific game circumstances. More specifically, women are not more cooperative in absolute terms but are significantly more likely to keep cooperative behavior even when the incentive to follow it (the redistribution mechanism taxing defectors and subsidizing cooperators) ceases. As far as the game continues however, if they find that other players do not follow they then adapt consistently with the conditional cooperation principle. They however remain significantly more disappointed for the other players' behavior in the game, and especially so in those treatments where the redistribution mechanism is operated first and then disconnected, that is, in the same treatments in which the gender difference in cooperative choices is significant.

A policy suggestion stemming from our experiment (which requires further testing to see whether our findings are robust or sample specific) is that gender effects are relevant when evaluating the persistence of responsible/cooperative behavior after that the economic incentives supporting it have been removed.

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Tables and Figures

Table 1. Hypothesis testing

Treatment (men) vs (women)	Obs.	Share of non- cooperative choices (%) (1) vs (2)	χ^2	P- value
Base	600	79.31 vs 69.98	7.28	0.007
Base Frame 1	600	56.9 vs 60.71	0.908	0.341
Base Frame 2	600	53.4 vs 54.51	0.068	0.793
Redistribution	600	39.1 vs 41.43	0.428	0.513
Base (after Redistribution)	300	85.3 vs 67.3	13.45	0.000
Base (before Redistribution)	300	72.86 vs 77.31	0.036	0.85
Frame 1 (after) Redistribution	300	41.9 vs 28.8	4.88	0.027
Frame 2 (after) Redistribution	300	26.7 vs 38	1.59	0.20
Redistribution (after) Frame 1	300	36.9 vs 28.57	0.596	0.44
Redistribution (after) Frame 2	300	35.6 vs 35.62	1.41	0.23

Notes: for the definition of different treatments see Appendix 2:

Table 2. The gender effect in the determinants of satisfaction about other players' behavior

VARIABLES	(1)	(2)	(3)
Male	0.953*** (0.272)	0.929*** (0.273)	
PlayerNonCoopShare	3.216*** (0.631)	4.538*** (1.408)	3.548** (1.738)
AvgGroupNonCoopShare	-3.507** (1.534)	-10.326 (6.658)	-5.482 (8.370)
MaleBaseAfter			2.351** (1.080)
MaleBaseBefore			1.998* (1.082)
MaleFrameOneBefore			0.656 (0.945)
MaleFrameOneAfter			2.886** (1.154)
MaleFrameTwoBefore			2.022* (1.171)
MaleFrameTwoAfter			1.676 (1.054)
Age	-0.007 (0.042)	-0.003 (0.042)	-0.018 (0.044)
DIncome1	-0.290 (0.489)	-0.229 (0.494)	-0.138 (0.498)
DIncome2	-0.232 (0.504)	-0.169 (0.508)	-0.079 (0.515)
DIncome3	-0.529 (0.500)	-0.477 (0.504)	-0.344 (0.510)
DIncome4	-0.778 (0.590)	-0.721 (0.594)	-0.662 (0.593)
Profit		-0.222 (0.211)	-0.048 (0.273)
Constant cut1	-3.499*** (1.331)	-11.759 (7.958)	-5.679 (10.184)
Constant cut2	-2.503* (1.303)	-10.764 (7.953)	-4.678 (10.182)
Constant cut3	-1.956 (1.296)	-10.215 (7.949)	-4.124 (10.179)
Constant cut4	-1.333 (1.292)	-9.590 (7.945)	-3.494 (10.177)
Constant cut5	-0.680 (1.290)	-8.933 (7.941)	-2.834 (10.176)
Constant cut6	-0.134 (1.291)	-8.384 (7.938)	-2.277 (10.176)
Constant cut7	0.556 (1.294)	-7.688 (7.932)	-1.574 (10.174)
Constant cut8	1.772 (1.303)	-6.462 (7.923)	-0.333 (10.169)
Constant cut9	2.618** (1.317)	-5.614 (7.922)	0.522 (10.168)
Observations	180	180	180

Notes: *Male*: (0/1) dummy for male gender, *PlayerNonCoopShare*: average share of player's non cooperative choice in the game; *ArgGroupNonCoopShare*: average share of group's non cooperative choice in the same player's session; *MaleBaseAfter*: (0/1) dummy for baseline treatment after redistribution treatment interacted with male dummy; *MaleBaseBefore*: (0/1) dummy for baseline treatment before redistribution treatment interacted with male dummy; *MaleFrameOneAfter*: (0/1) dummy for frame one treatment after redistribution treatment interacted with male dummy; *MaleFrameOneBefore*: (0/1) dummy for frame one treatment before redistribution treatment interacted with male dummy; *MaleFrameTwoAfter*: (0/1) dummy for frame two treatment after redistribution treatment interacted with male dummy; *MaleFrameTwoBefore*: (0/1) dummy for frame two treatment before redistribution treatment interacted with male dummy; *Age*: player's age; *Dincome*: income dummies for different yearly net income brackets (*Dincome1* <15,000 euros; *Dincome2* 15,001-25,000 euros; *Dincome3* 25,001-35,000 euros; *Dincome4* 35,001-50,000 euros; omitted benchmark 50,001-90,000 euros); *Profit*: average player's profit per round.

Figure 1. Dynamics of gendered cooperative choices in the Redistribution-Base Sessions

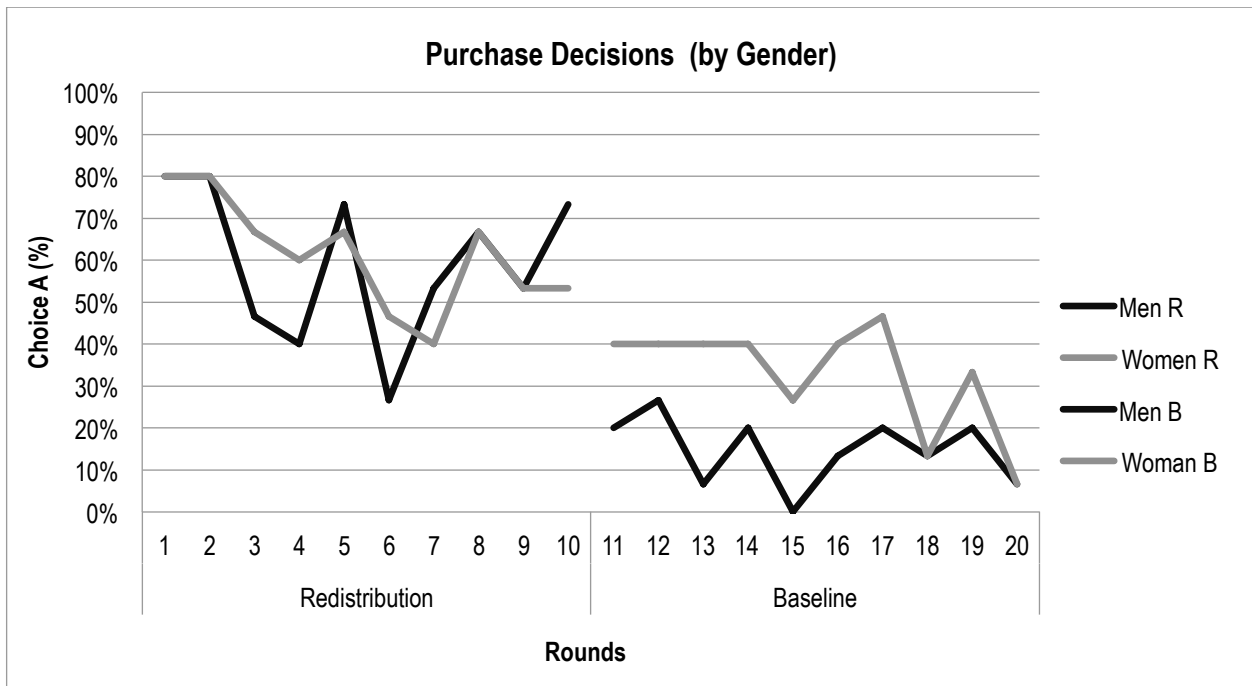
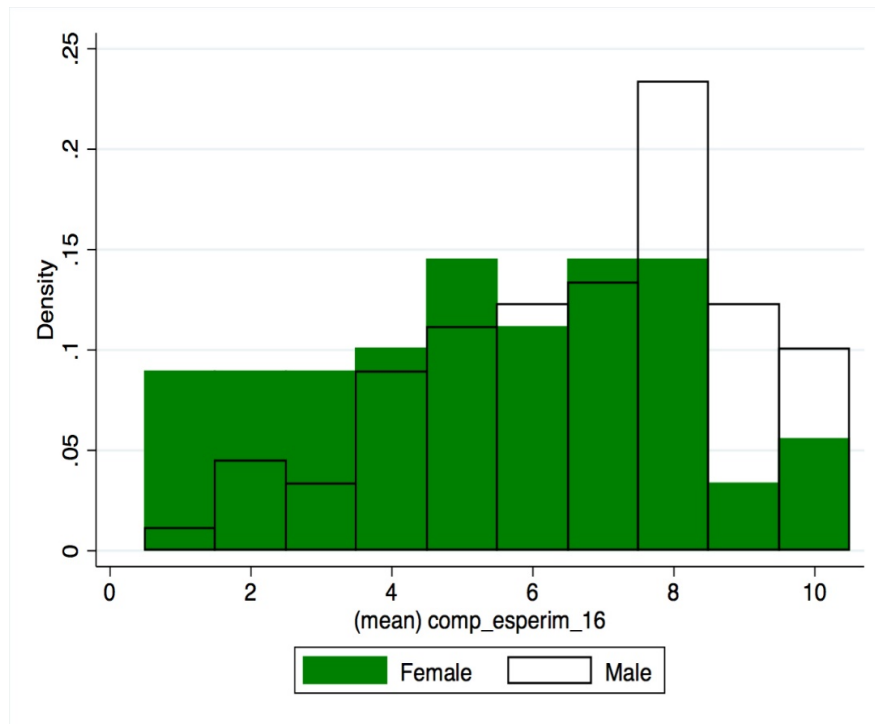


Figure 2 Distribution of satisfaction for other players' behavior for men and women in the VWG



Notes: *(mean)comp_esperim_16*: average satisfaction with other players' behavior in the experiment (males vs females)

Appendix 1: Parametric specification of the VWG

Table A1: Costs and benefits in the Base Vote-with-the-wallet game (VWG) experiment

	Payoff	
Endowment	20	20
Your Choice	Product A	Product B
Cost	-10	-5
Benefit (from the choice of the other players)	+3 for each player choosing product A	+3 for each player choosing product A

Table A2: Players' payoff in the Base VWG experiment conditional to other players' choices.

How many players choose good A	When you buy good A				When you buy good B			
	Endowment	Cost	Benefit	TOTAL	Endowment	Cost	Benefit	TOTAL
			$3 \times n =$				$3 \times n =$	
10	20	-10	30	40	-	-	-	-
9	20	-10	27	37	20	-5	27	42
8	20	-10	24	34	20	-5	24	39
7	20	-10	21	31	20	-5	21	36
6	20	-10	18	28	20	-5	18	33
5	20	-10	15	25	20	-5	15	30
4	20	-10	12	22	20	-5	12	27
3	20	-10	9	19	20	-5	9	24
2	20	-10	6	16	20	-5	6	21
1	20	-10	3	13	20	-5	3	18
0	-	-	-	-	20	-5	0	15

Table A3: Costs and benefits in the VWG experiment with Redistribution

	Payoff	
Endowment	20	20
Your Choice	Product A	Product B
Cost	-10	-5
Benefit (from the choice of the other players)	+3 for each player choosing product A	+3 for each player choosing product A
Redistribution effect	2.5 tokens times the number of players who chooses product B, divided by the number of those who chooses product A	-2.5

Table A4: Players' payoff in the VWG experiment with Redistribution, conditional to other players' choices.

	When you buy good A					When you buy good B				
How many players choose good A	Endowment	Cost	Benefit	Redistribution	TOTAL	Endowment	Cost	Benefit	Redistribution	TOTAL
			$3 \times n =$					$3 \times n =$		
10	20	-10	30	-	40.0	-	-	-		-
9	20	-10	27	0.3	37.3	20	-5	27	-2.5	39.5
8	20	-10	24	0.6	34.6	20	-5	24	-2.5	36.5
7	20	-10	21	1.1	32.1	20	-5	21	-2.5	33.5
6	20	-10	18	1.7	29.7	20	-5	18	-2.5	30.5
5	20	-10	15	2.5	27.5	20	-5	15	-2.5	27.5
4	20	-10	12	3.8	25.8	20	-5	12	-2.5	24.5
3	20	-10	9	5.8	24.8	20	-5	9	-2.5	21.5
2	20	-10	6	10.0	26.0	20	-5	6	-2.5	18.5
1	20	-10	3	22.5	35.5	20	-5	3	-2.5	15.5
0	-	-	-	-	-	20	-5	0	-2.5	12.5

Table 5: Treatments and Sessions.

Treatment	Phase 1 (10 rounds)	Phase 2 (10 rounds)	Phase 3	Subjects no.
BR	Base	Redistribution	Questionnaire	30
RB	Redistribution	Base	Questionnaire	30
BR1	Base Frame 1	Redistribution Frame 1	Questionnaire	30
RB1	Redistribution Frame 1	Base Frame 1	Questionnaire	30
BR2	Base Frame 2	Redistribution Frame 2	Questionnaire	30
RB2	Redistribution Frame 2	Base Frame 2	Questionnaire	30

Appendix 2: Experimental instructions

English Translation	Original Italian
<p>General instructions</p> <p>Welcome and thanks for participating to this experiment.</p> <p>Our goal is to verify the impact of some factors on our decision processes.</p> <p>Together with other participants you will have to take decisions in different situations. Depending of your decisions along with those of the other participants you will get a certain number of points. One among all your decision will be picked randomly and the points you get in that particular situation will be converted in euros (with the exchange rate 2 points = 1 euro) and paid to you in cash. Besides, you will receive 5 points for participating. These points will sum up to those gained during the experiment.</p> <p>Your identity and those of the other participants to the experiment will never be revealed even after the end of the experiment. Also your choices and answers will be dealt with anonymously (without reference to your identity).</p> <p>Overall the experimental session will last approximately one hour.</p> <p>We ask you to work alone and in silence.</p> <p>Thanks for your participation!</p> <p>Specific instructions</p> <p>Base Treatment</p> <p>In this session you will be asked to choose (for 10 rounds) which, among two products (product A and product B), you intend to buy. For every round you will be given an endowment of 20 points that you will be able to spend to purchase one of the two products. At each round, after your choice and the choices of all other players, we will tell to you and them, without revealing their identity, how many players have chosen product A and product B. After this communication you will play the following round.</p> <p>Round n</p> <p>You receive an endowment of 20 points. You must choose whether to buy:</p> <p>Product A Product B.</p> <p>Product A costs 10 points. If you buy product A you will receive 3 points for any of the other players choosing to buy product A.</p>	<p>Istruzioni Generali</p> <p>Benvenuto e grazie per aver deciso di partecipare a questo studio.</p> <p>Siamo interessati alla comprensione di alcuni fattori che influenzano i nostri processi decisionali. Durante questo studio ti troverai a dover prendere delle decisioni in differenti situazioni. Le tue decisioni insieme alle decisioni prese dagli altri partecipanti allo studio determineranno la vincita di un certo numero di punti. Tra tutte le decisioni che prenderai, una verrà estratta in maniera casuale, e i punti guadagnati in quella situazione verranno convertiti in euro e pagati realmente (tasso di conversione 2 punti = 1 euro). Per la sola partecipazione, poi, riceverai 5 punti che andranno a sommarsi a quelli guadagnati durante la sessione.</p> <p>La tua identità e l'identità degli altri partecipanti non verranno mai svelate, né ora né dopo la fine dello studio. Anche tutte le tue scelte e ogni tua risposta verrà trattata in maniera assolutamente anonima senza nessun riferimento alla tua identità. Nel complesso la sessione durerà approssimativamente un'ora.</p> <p>Ti chiediamo di lavorare da solo e in silenzio.</p> <p>Grazie ancora per la tua partecipazione!</p> <p>Istruzioni specifiche</p> <p>Trattamento Base</p> <p>In questa situazione dovrai scegliere ripetutamente (per 10 volte) quale tra due prodotti (prodotto A e prodotto B) acquistare. Ogni volta ti verrà assegnata una certa dotazione di punti che potrai spendere per l'acquisto di uno dei prodotti. Dopo che tu e tutti gli altri avranno scelto, ti verrà comunicato (in maniera anonima) quanti giocatori hanno scelto il prodotto A e quanti il prodotto B prima di giocare nuovamente</p> <p>Periodo n</p> <p>Ricevi una dotazione iniziale di 20 punti. Devi decidere se:</p> <p>Acquistare il prodotto A. Acquistare il prodotto B.</p> <p>Il prodotto A costa 10 punti. Acquistando il prodotto A otterrai 3 punti per ognuno degli altri giocatori che, nel tuo gruppo, ha scelto di</p>

<p>Product B costs 5 points. If you buy product A you will receive 3 points for any of the other players choosing to buy product A.</p> <p>The effect on your payoff of the two players' choices (buying product A or product B) are summarized in the table which follows: (table A1)</p> <p>Each of the 10 players is in the same situation as you and faces the same payoff table. Your final payoff from each of the different choices you may make (conditional to other participants' choices) is summarized in the following table: (table A2)</p> <p>Please choose: Product A Product B</p> <p>Redistribution treatment Same as in the Base treatment plus:</p> <p>Notice that, at the end of each round 2.5 points will be subtracted from the payoff of all those participants who have chosen product B. All those point will for a common fund that will equally divided among the participants who have chosen product A. The effect on your payoff of the two players' choices (buying product A or product B) are summarized in the table which follows: (table A3)</p> <p>Each of the 10 players is in the same situation as you and faces the same payoff table. Your final payoff from each of the different choices you may make (conditional to other participants' choices) is summarized in the following table: (table 4)</p> <p>Please choose: Product A Product B</p>	<p>acquistare come te il prodotto A. Il prodotto B costa 5 punti. Acquistando il prodotto B otterrai 3 punti per ognuno degli altri giocatori che, nel tuo gruppo, ha scelto di acquistare il prodotto A.</p> <p>Le conseguenze (in termini di guadagni) delle due possibili scelte (acquistare il prodotto A o il prodotto B) sono riassunte nella tabella 1 (tabella A1)</p> <p>Ognuno dei 10 partecipanti si trova nella tua stessa situazione e ha la stessa tabella che descrive i guadagni a seconda delle scelte effettuate dagli altri giocatori. Il tuo guadagno per ognuna delle 10 scelte dipende non solo da quale bene decidi di acquistare tu, ma anche dalle scelte di acquisto che faranno gli altri giocatori, secondo lo schema della tabella 2: (tabella A2)</p> <p>Quale prodotto scegli? Prodotto A Prodotto B</p> <p>Trattamento redistribuzione Come nel trattamento base più:</p> <p>Nota Bene: Rispetto alla situazione precedente però, ora c'è una novità. Ad ogni giocatore che avrà scelto il prodotto B verranno prelevati 2,5 punti che andranno a formare un fondo complessivo che verrà, poi, redistribuito in parti uguali a tutti i giocatori che avranno scelto il prodotto A. Le conseguenze (in termini di guadagni) delle due possibili scelte (acquistare il prodotto A o il prodotto B) sono riassunte nella tabella n.3 (tabella A3).</p> <p>Ognuno dei 10 partecipanti si trova nella tua stessa situazione e ha la stessa tabella che descrive i guadagni a seconda delle scelte effettuate dagli altri giocatori. Il tuo guadagno per ognuna delle 10 scelte dipende non solo da quale bene decidi di acquistare tu, ma anche dalle scelte di acquisto che faranno gli altri giocatori, secondo lo schema della tabella 4 (tabella 4)</p> <p>Quale prodotto scegli? Prodotto A Prodotto B</p>
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Frames

The frames concern a more detailed description of the two products

<p>Frame 1</p> <p>Product A is a ‘energy supply contract’. The company that provides it is committed to:</p> <ul style="list-style-type: none">• spend the 80% of its budget within the region, to generate a positive impact on the local economy, both in term of value creation and higher employment;• employ workers only with permanent employment contract;• train on a regular basis the employees to keep their capabilities and human capital constantly up-to-date. <p>Product A costs 10 points. If you buy product A you will receive 3 points for any of the other players choosing to buy product A.</p> <p>Product B is a ‘energy supply contract’ provided by a company that does not implement any particular form of social responsible conduct. Product B costs 5 points. If you choose product B you will you will receive 3 points for any of the other players choosing to buy product A.</p> <p>Frame 2</p> <p>Product A is a ‘energy supply contract’. The company that provides it, is committed to devote each year a share of its profits to fund a number of high social impact projects. A national call will attract socially oriented projects that will be selected through a voting process among the company clients.</p> <p>Product A costs 10 points. If you buy product A you will receive 3 points for any of the other players choosing to buy product A.</p> <p>Product B is a ‘energy supply contract’ provided by a company that does not implement any particular form of social responsible conduct. Product B costs 5 points. If you choose product B you will you will receive 3 points for any of the other players choosing to buy product A.</p>	<p>Frame 1</p> <p>Il prodotto A è un contratto di fornitura di energia elettrica. L’impresa che lo propone si impegna a:</p> <ul style="list-style-type: none">• sostenere l’80% dei suoi costi nel territorio regionale, con una ricaduta positiva sul tessuto economico e sull’occupazione locale;• ad assumere i dipendenti solo con contratti a tempo indeterminato;• a formare regolarmente i propri dipendenti per mantenerne elevate le loro competenze ed il capitale umano. <p>Il prodotto A costa 10 punti. Acquistando il prodotto A otterrai 3 punti per ognuno degli altri giocatori che, nel tuo gruppo, ha scelto di acquistare come te il prodotto A.</p> <p>Il prodotto B è un contratto di fornitura di energia elettrica tradizionale. L’impresa che lo propone non evidenzia nessuna forma di responsabilità sociale. Il prodotto B costa 5 punti. Acquistando il prodotto B otterrai 3 punti per ognuno degli altri giocatori che, nel tuo gruppo, ha scelto di acquistare il prodotto A.</p> <p>Frame 2</p> <p>Il prodotto A è un contratto di fornitura di energia elettrica. L’impresa che lo propone si impegna a destinare ogni anno una quota dei profitti per il finanziamento di progetti ad alto impatto sociale. Un bando prevederà le modalità di partecipazione dei vari progetti di utilità sociale che verranno poi votati da tutti gli utenti della società elettrica.</p> <p>Il prodotto A costa 10 punti. Acquistando il prodotto A otterrai 3 punti per ognuno degli altri giocatori che, nel tuo gruppo, ha scelto di acquistare come te il prodotto A.</p> <p>Il prodotto B è un contratto di fornitura di energia elettrica tradizionale. L’impresa che lo propone non evidenzia nessuna forma di responsabilità sociale. I</p> <p>Il prodotto B costa 5 punti. Acquistando il prodotto B otterrai 3 punti per ognuno degli altri giocatori che, nel tuo gruppo, ha scelto di acquistare come te il prodotto A.</p>
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Appendix 3: Post-Experimental Questionnaire

1. Gender
2. Age
3. Place of residence
4. Housing condition:
 - a. Living alone
 - b. Living with family
 - c. Living with other people (non family)
5. Father education
 - a. Primary School
 - b. Middle School
 - c. Upper Intermediate/High school
 - d. University degree
 - e. Other
6. Mother education
 - a. Primary School
 - b. Middle School
 - c. Upper Intermediate/High school
 - d. University degree
 - e. Other
7. Father professional status
 - a. Self employed
 - b. Clerk
 - c. Manual worker
 - d. Executive
 - e. Retired
 - f. House activity
 - g. Student
 - h. Entrepreneur
 - i. Unemployed
 - j. Other
8. Mother professional status
 - a. Self employed
 - b. Clerk
 - c. Manual worker
 - d. Executive
 - e. Retired
 - f. House activity
 - g. Student
 - h. Entrepreneur
 - i. Unemployed
 - j. Other
9. Number of people in the household (including yourself)
10. Are you or members of your family actively involved in volunteering organisations?
11. Are you or members of your family actively involved in environmental organisations?
12. Whom do you buy your electricity from?
13. Does you house/apartment is provided with any of the following technologies?
 - a. Solar panels
 - b. Other solar thermal technologies
 - c. Pellet stoves
14. Your family's yearly net income (year 2014):

- a. < 15.000
- b. 15.001 - 25.000
- c. 25.001 - 35.000
- d. 35.001 - 50.000
- e. 50.001 - 90.000
- f. > 90.000

Use this scale to answer the following questions

Not at all=0 Completely satisfied=10

- 15. How much do you feel satisfied about what you experienced during this experiment?
- 16. How much do you feel satisfied about others' participant behavior in the games?
- 17. How much do you feel satisfied about your behavior in the game?
- 18. Generally speaking how much do you think you can trust others
- 19. To what extent are you satisfied with your life in general?
- 20. To what extent are you satisfied with your life in financial situation?
- 21. Using a scale (-5 = left , 0 center, +5 right) how would you define your political preferences?

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