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Abstract

We investigate players' preferences in a multiplayer prisoner's dilemma by comparing results from a direct (satisfaction based) and an indirect (choice based) approach. Both approaches provide strong evidence of preference heterogeneity, with players who cooperate above median being less affected in their choice by monetary payoffs *vis-à-vis* the public good component. The combination of a legality frame plus a conformity information design reduces further the relative preference (satisfaction) for the non-cooperative choice for such players. Our findings support the hypothesis that (part of the) players have, in addition to the standard self-interest component, an other-regarding preference argument that is further satisfied in the legality frame plus conformity design.

Keywords: Analysis of Collective Decision-Making, Corruption, Laboratoty Experiment, Legality Game, Redistribution, Conformity.

JEL numbers: D7, D73, C92, H2

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1. Introduction

A longstanding tradition in the experimental literature has tested indirectly the structure of individual preferences by looking at circumstances and characteristics of incentivized players' choices. This literature has widely documented that, together with a standard self-regarding argument, (intention and/or distribution based) other-regarding components account for an important part of individual decisions. Among the most influential contributions in this respect we remember those related to inequity aversion (Fehr and Schmidt, 1999, and Bolton and Ockenfels, 2000), (positive and negative) reciprocity (Rabin, 1993), other-regarding preferences (Cox, 2004), social welfare preferences (Charness and Rabin, 2002), betrayal aversion (Bohnet and Zeckhauser, 2004) and various forms of pure and impure (warm glow) altruism (Andreoni, 1989 and 1990).

Our paper aims to contribute originally to this literature in different respects. First, it proposes a new kind of social dilemma (the "Vote-with-the-Wallet" game, VWG henceforth) as a special case of dynamic multiplayer prisoner's dilemma. The game reproduces an emerging and increasingly important situation in everyday life where consumers face the alternative between a conventional and a (environmentally, socially, legally) "responsible" product. While the first product is in general less expensive, the second claims that its purchase entails the production of a public good thereby stimulating the willingness to pay of consumers with other-regarding preferences that may/may not compensate the price differential.[1] Second, we analyze choices under the above mentioned social

[1] According to Boston Consulting Group around 20% of products sold at grocery store are "green" or "social" and appeal to consumers' willingness to pay for social and environmental responsibility in their advertising (Smits et al., 2014; Manget et al., 2009).

dilemma by comparing framed and non-framed treatments where the frame refers to an Italian institutional legality rating system[2] (i.e., *rating di legalità*) potentially applicable to all countries.

The latter is a rating system enforced by the Italian Competition Authority (ICA) awarding from one to three stars to companies that accept to be screened and pass legality excellence standards (see Appendix 1 for full details). The rating is higher when the company has a clean score in terms of tax and legal compliance and demonstrates commitment to corporate social responsibility. The rationale of the legality rating is to rebalance the unfair advantage that criminal firms accumulate over honest companies by operating illegally and profiting from money laundering, tax dodging, corrupt procurement, and from other fraudulent means. In so doing delinquent firms not only compete dishonestly, but also spread around the negative externality related to the deterioration of legality.

This institutional action marks virtuous firms with a legality label, and empowers as well consumers to orientate their buying towards clean enterprises. We use a framework where the experiment design is built on a social legality game, where legality- as opposed to corruption- might be considered as a public good, which encourages the achievement of maximum welfare and maximum growth rate of the economy (Shleifer and Vishny, 1993).

Third, we investigate the effect of the introduction of balanced budget redistribution policies taking away resources from "defectors" to reward "cooperators" in the VWG as potentially powerful schemes to increase the degree of cooperation in prisoner's dilemmas.[3] Fourth, in order to

[2] The legality rating has been recently created by the Italian Competition Authority (Autorità Garante della Concorrenza e del Mercato) which is an independent agency tasked with enforcing the Competition Act (Law No. 287 of 10 October 1990).

[3] Our redistribution mechanism is akin to feed-in tariffs providing subsidies to individuals choosing renewable energy which are paid by all taxpayers in a balanced government budget framework (Couture and Gagnon, 2010; Klein et al., 2008; Mendonça, 2007; European Commission, 2008; REN21, 2009). Feed-in tariffs are adopted in around 63 countries (for Europe see Directive 2001/77/EC).

discriminate between conditional cooperation and conformity we evaluate the role of different forms of information. More specifically on this point, under our standard information treatment players know about the share of previous round cooperators in their session while, under the alternative (which we call conformity treatment), they are informed about what has been done on average in the previous round of corresponding treatments in other sessions. Fifth, the collected round-by-round information on satisfaction about the game and beliefs about other players' behavior allows us to extract information about players' preferences with a direct estimation of the satisfaction/utility function together with the traditional indirect approach where preferences are inferred from choices regressed on expected player and group payoffs.

The main result of the paper shows that players' preferences are heterogeneous with consistent findings under the direct and indirect approach. Under the direct approach the choice of the less expensive product (without the public good component) produces significantly lower satisfaction in cooperators above median, satisfaction that is further reduced in treatments with the legality frame and the conformist type of information. Under the indirect approach the impact on the choice of the more expensive product of one's own differential expected payoff is significantly lower for cooperators above median and it is further decreasing in treatments with the legality frame and the conformist type of information.

The paper is divided into five sections (including introduction and conclusions). In the second section we illustrate the theoretical model that is behind our experimental design. In the third section we illustrate the experimental design. In the fourth section we provide some descriptive findings, present our estimation approach and comment the econometric results. The final section concludes.

2. The reference model for our experiment

The theoretical reference for the experiment is the Becchetti and Salustri (2015) vote with the wallet dilemma. In the 2-player (*i=1, 2*) version of the model the utility (U_i) of the two purchasing strategies $S^i = (A, B)$ can be described as follows:

$$U_i(S^i) = \begin{cases} \beta + \alpha - \gamma & if\ S^i = (A, A) \\ \frac{1}{2}\beta + \alpha - \gamma & if\ S^i = (A, B) \\ \frac{1}{2}\beta & if\ S^i = (B, A) \\ 0 & if\ S^i = (B, B) \end{cases}$$

where the strategy profile is $S: = (S^i , S^{(-i)}) \in \{A, B\}^2$.

Parameter $\beta \in [0, +\infty)$ is the total public good component generated when everyone buys the more responsible product.[4] The rationale for such component is that consumers produce a positive externality when voting with the wallet for environmentally, socially or fiscally responsible products for at least two reasons. First, they stimulate companies to be more responsible in order to meet the demand of responsible consumers. Second, the act of buying the responsible product generates *per se* a positive externality (i.e. an environmentally responsible product may contribute positively to health and reduce pollution and global warming thereby producing a positive effect also on those who do not buy it).

Parameter $\alpha \in [0, +\infty)$ measures the other-regarding preference component implying that the purchase of the responsible product may produce a positive effect *per se* on the buyer if she/he has other regarding preferences (see footnote 1 for the reference literature).

[4] In Becchetti and Salustri (2015) the framework remains general while in this paper we will apply it to legality and corruption as explained in the sections that follow.

Finally, $\gamma \in [0, +\infty)$ is the nonnegative price gap between product *A* and product *B* since we conveniently assume that the responsible product is in general more expensive thereby modelling a trade-off between sustainability and prices.

The two-player model unique Nash equilibrium (i.e. NE) is the strategy pair *(B, B)* if $\frac{1}{2}\beta + \alpha < \gamma$, and *(A, A)* otherwise (Becchetti and Salustri, 2015). If $\frac{1}{2}\beta + \alpha < \gamma < \beta + \alpha$ we have a Prisoners' Dilemma (PD) since the unique NE represented by *(B, B)* is Pareto dominated by *(A, A)*.

The scheme above can be generalised to the case of more than two players (i.e. n>2). The multiplayer version of the game is defined by $G = [N , (S^i)_{(i \epsilon N)} , (U_i)_{(i \epsilon N)}]$, $N=\{1, \dots , n\}$, and $S^i = \{A, B\} \ \forall i \epsilon N$. Players' payoffs in this case become

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

where *x* is the number of players whose strategy S^{-i} consists of buying the product *A*.

The NE in the multiplayer game is *(B, B)* when $\frac{1}{n}\alpha + \beta < \gamma$, and *(A, A)* otherwise. The noteworthy difference with respect to the 2-players game is that, the higher the number of players, the ampler the parametric interval ($\frac{1}{n}\alpha + \beta < \gamma < \alpha + \beta$) in which the PD applies. This finding of the multiplayer game confirms that the PD problem is highly relevant in the vote with the wallet dilemma given that the consumers' choice to which the dilemma refers is usually played in mass consumer markets with a large number of participants.

3. The experimental design

Following the above theoretical framework the experiment is designed as a multi-period game in which *n* players have to choose between two alternative purchasing options: product *A* and *B* (see Appendix 2 for detailed experimental instructions). Product *A* costs more but its purchase produces a positive externality (extra payoff) for all other players in the session. Product B costs less but does not produce any externality. In the framed session the experimenter gives a meaning to the externality communicating that product A is produced by an enterprise awarded with the "3-stars-legality-rating" issued by the ICA, while product *B* is produced by an unrated firm. In this sense the public good parameter β is interpreted as the positive externality that legality opposed to corruption may generate in the economic system (a full description of the ICA rating system is provided in Appendix 1). The rationale for interpreting legality (as measured by the ICA legality rating) as a public good (and corruption as a public bad) relies on several factors: i) infringement of tax compliance with tax dodging or tax evasion reduces resources available for the provision of public goods and services; ii) illegal behavior under the form money laundering generates unfair competition with the risk of crowding out legal companies; iii) corrupted corporations may try to obtain unfair advantage in public procurement generating again unfair competition.[5] The above mentioned points produce an unfair allocation of resources that generates a public bad for the society and they make as well clear that the illegal conduct may produce a cost advantage translating into lower prices as modeled in the price difference between product A and B in the vote with the wallet model and in the experiment.

More in detail the experiment is made of 18 sessions in which the same group of 10 players plays for 20 rounds each. At the beginning of each round players are asked to formulate privately their expectations on the number of co-operators (players choosing product A) in the session. They then

[5] In this sense we refer to the classic topic of corruption as hindrance to the correct provision of public goods in the economic literature (Eigen and Eigen-Zucchi, 2002).

play, receive information about the number of those who cooperated (without knowing their identity) and are then asked to formulate at the end of each round (again privately on a 0-10 scale) their satisfaction for the game, for their own behaviour and for the behaviour of the other players in the session round with three different questions. At the end of the experiment one round is extracted and players are paid for the payoff obtained in that round. In addition they receive a participation fee of 20 ECUs (experiment currency units) and (in order to incentivize also the formulation of their beliefs) a prize of 5 ECUs if they have guessed correctly the number of co-operators in the round extracted by the experimenters. The experiment exchange rate is 1 euro = 2 ECUs.

In the experiment sessions we consider the three different treatments that follow:

1. **Baseline**: players are only given basic instructions about payoffs, namely the prices of the two products and the value of the externality when buying product A. They are not given any explanation about why *A* is more expensive than *B* (i.e. 10 against 5 ECUs), nor about the reason players get a bonus (i.e. 3 ECUs representing the positive externality) each time *A* is opted for. For 10 rounds participants play the basic VWG while for the other 10 rounds a redistribution mechanism is introduced: this mechanism transfers part of the payoffs from "defectors" to "cooperators". More specifically, each player is informed before the round begins that, if buying the less expensive product B, she/he will have to transfer money (i.e. 1 ECU) to a pool which will be divided in equal parts among players buying product A. This rule is supposed to mimic a policy action (e.g., tax) aimed to redistribute resources from defectors to co-operators (see footnote 3). The payoff structure in the redistribution mechanism is such that buying the more expensive product A becomes economically not less convenient than buying product B if the number of co-operators is below 3 (see Table A2.4 in Appendix 2).

2. **Legality Frame**: this treatment is similar to the baseline but for the description of the two products, along with the recognition of *A* as the legally "responsible" product between the two, is provided to players. More specifically, experimenters tell participants that product A has been given the 3-star legality rating explaining in short what it means and giving the opportunity (if required) of reading a full description of the legality rating system (as that provided in Appendix 1).
3. **Conformity**: this treatment is similar to the Legality Frame treatment but now the information available at each round about the number of co-operators (players buying product A) in the previous round in the same session is replaced with that about the average share of co-operators in all the already played sessions having exactly the same characteristics (that is, the average of what happened in correspondent rounds of sessions 7-9 (10-12) for sessions 13-15 (16-18) where the exact sequence of sessions is provided in Table 1). The goal is to discriminate between a conditional cooperation effect (which is assumed to be at work where information on past co-operators does affect one's own payoff) from a conformity effect (where information on past co-operators in other sessions does not affect one's own payoff).[6]

Note that, given the payoff structure of the game and the Becchetti-Salustri (2015) model described in section 2, the crucial parameters of the model are set in the baseline treatment as follows: n = 10, $\beta = 30$, $\gamma = 5$, $\alpha = 0$. Given these values, (*B,B*) is the unique (inefficient) NE of the multiplayer game

[6] Conformity is usually defined as the degree to which persons in a group modify their behavior, to fit the views of the society (see Moscovici, 1985 and Cialdini and Trost, 1998 among others). The main rationales for conformity are, according to Carpenter (2004), avoiding disutility for deviating from social norms, and taking advantage of the information processed by others. Conditional cooperation (Fischbacher et al., 2001; Fischbacher and Gächter, 2010) is usually defined as the inclination to contribute more to a public good the more other subjects contribute. The first is more related to culture and social norms, while the second to the behavior of players who participate to the same game and affect with their choices the player's payoff (Becchetti et al., 2015b).

in the baseline treatment since $\frac{1}{n}\beta + \alpha < \gamma < \beta + \alpha$ (i.e. $3 < 5 < 30$). However, in redistribution treatments buying product B yields a lower payoff when there is only one cooperator and the same payoff than buying product A when there are two cooperators. In a companion paper Becchetti et al. (2015a) document that the frame and redistribution effects matter significantly increasing the share of cooperators in static tests. The dynamics of the share of voters across rounds under different treatments is shown in Figures 1A and 1B. The main findings are that cooperation tends to decay over time and redistribution generally produces an upward shift.

4. Results

4.1 Descriptive findings

In Figure 2 we plot the distribution of the share of cooperative choices of each player. The figure shows that there is a small share (about 7 percent) of unconditional cooperators who always choose the responsible product A and a smaller share of unconditional cooperators (about 4 percent) who always choose the cheaper product B. The modal value indicates that around 25 percent of players choose the more expensive product 20 percent of times. In Figure 3 we plot the distribution of round-specific player's self-assessed satisfaction about the game and find that the share of players declaring satisfaction between 8 and 10 is quite high (compared with standard overall life satisfaction distributions this distribution has a more pronounced right skew). In Figure 4 we plot the same distribution for satisfaction about one's own behavior in the game and find that the latter has a very similar structure. We finally display in Figure 5 the distribution of the average frequency of choices of the less expensive product not generating the positive externality comparing two opposite conditions: cooperators above median when the latter are in sessions with the legality frame and conformism information design against cooperators below median in a given session when the latter

are in baseline sessions. Cooperators above median are calculated by using as threshold medians for each specific treatment in order to calculate high and low cooperating attitudes net of the impact of the treatment effect. We find that the two distributions are quite different and do not overlap providing descriptive evidence of heterogeneity of choices stimulated by treatment characteristics. In the sections that follow we will test whether such heterogeneity is statistically significant and how and whether it is affected by treatment designs using a direct and indirect approach.

4.2 Econometric specifications: direct and indirect approach

Under the direct approach the i-*th* player's satisfaction about the specific round t of the treatment s in the experiment is regressed with an ordered probit estimate on the following variables[7] (see Table 2 for the definition of the variables):

$$
\begin{aligned}
Satisfaction_{i,t,s} &= \beta_0 + \beta_1 ChoiceA_{i,t-1,s} + \beta_2 AvgGroupChoiceA_{t,s} + \beta_3 DHighCoopChoiceA_{i,t,s} \\
&+ \beta_4 DConfFrameHighCoopChoiceA_{i,t,s} + \beta_5 DHighCoopAvgGroupChoiceA_{t,s} \\
&+ \beta_6 DConfFrameHighCoopAvgGroupChoiceA_{t,s} + \beta_7 \text{Frame}_{t,s} \\
&+ \beta_8 \text{Frame\_Conf}_{t,s} + \beta_9 Redistribution\_Base_{t,s} + \beta_{10} Redistribution\_Frame_{t,s} \\
&+ \beta_{11} Redistribution\_Conf_{t,s} + \\
&+ \beta_{12} Round + \sum \delta_j SocioDem_j + \varepsilon_{i,t,s}
\end{aligned}
$$

where *ChoiceA* is a dummy with value1 when the more expensive product (i.e. *Product A*) is chosen and the public good effect is generated, while *AvgGroupChoiceA* is the average choice of

[7] Descriptive findings on variables used in the estimates are provided in Table A4.1 in Appendix 4.

product A among the ten players of round *t* in session *s*. The variable is not lagged since players declare their level of satisfaction about the game in a given round after knowing how many players cooperated in that round. The variable *DHighCoopChoiceA* is the interaction between a dummy equal to 1 for participants who cooperated above median and *ChoiceA*, while *DConfFrameHighCoopChoiceA* is the interaction between a dummy equal to 1 for cooperators above median in sessions with legality frame and conformity treatment and *ChoiceA*. By means of *DHighCoopChoiceA* and *DConfFrameHighCoopChoiceA* we test whether *ChoiceA* affects differently cooperators above median and whether an additional effect is generated when the later are in sessions with legality frame and conformism design.

In the same fashion, the variable *DHighCoopAvgGroupChoiceA* is the interaction between a dummy equal to 1 for cooperators above median and the variable *AvgGroupChoiceA*, while *DConfFrameHighCoopAvgGroupChoiceA* is the interaction between a dummy equal to 1 for cooperators above median in sessions with legality frame and conformity treatment and *AvgGroupChoiceA*. These two additional variables allow us to test whether the average behaviour of the group has a heterogeneous effect on the satisfaction about the game of cooperators above median and an additional effect when the latter are in sessions with legality frame and conformism design. The variables that follow in the specification are dummies picking up intercept effects of the different treatments (baseline treatment is the omitted benchmark). Hence *Frame* (*Frame_Conf*) is a dummy equal to 1 if the legality frame (legality frame with conformity) treatment applies, *Redistribution_Base* is a dummy equal to 1 if the redistribution mechanism is applied in the baseline treatment, while *Redistribution_Frame* and *Redistribution_Conf* are unit dummies picking up sessions in which the redistribution mechanism is applied in the framed and framed with conformity treatments respectively. The variable *Round* measures the dynamic effect of experiment rounds on the dependent variable thereby controlling for the potential presence of a time decay effect in the

share of cooperators. We augment this basic set of regressors with *SocioDem* variables capturing standard socio-demographic information collected in the survey[8] (age, gender, mother education, father education, mother professional status, father professional status).

Under the indirect approach we estimate the following probit specification

$$ChoiceA_{i,t,s} = \beta_0 + \beta_1 E[DeltaProfit]_{i,t-1,s} + \beta_2 DHighCoop * E[DeltaProfit]_{i,t,s} + \beta_3 DConfFrameHighCoop * E[DeltaProfit]_{i,t,s} + \beta_4 E[AvgProfitGroup]_{t,s} + \beta_5 ProfitGap_{i,t,s} + \beta_6 \text{Frame}_{t,s} + \beta_7 \text{Frame\_Conf}_{t,s} + \beta_8 Redistribution\_Base_{t,s} + \beta_9 Redistribution\_Frame_{t,s} + \beta_{10} Redistribution\_Conf_{t,s} + \beta_{11} Round + \sum \delta_i SocioDem_i + \varepsilon_{i,t,s}$$

where the unit dummy measuring the choice of product A (*ChoiceA*) is the dependent variable and is regressed on the difference of expected profits from buying product A and product B (*E[DeltaProfit]*). We can calculate such variable given that our questionnaire measures player's expectation on the share of cooperators for every round and treatment. More specifically expected profit is calculated as

$$E[DeltaProfit]_{i,t,s} = 20 - 10 + E[NCoop]_{t,s} * 3 - [20 - 5 + \text{E[NCoop]}_{t,s} * 3]$$

in sessions without redistribution where *NCoop* is the number of players choosing product A in round t of session s, while it is calculated as

[8] A full description of the variables used in our estimates is provided in Table 2. For further details on the socio-demographic variables and their impact see questions 1-11 of the Questionnaire in Appendix 2 and detailed descriptive and econometric findings in Tables A4.1 and A4.2 in Appendix 4.

$$E[DeltaProfit]_{i,t,s} = 20 - 10 + E[NCoop]_{t,s} * 3 + \frac{10 - E[NCoop]}{E[NCoop]} - [20 - 5 +$$

$\mathrm{E[NCoop]}_{t,s}$*3-1]

in sessions with redistribution. As it is clear from what above, the difference in profit is invariant in the number of expected cooperators in sessions without redistribution, while it crucially depends on such expectation in sessions with redistribution.

The variables $DConfFrameHighCoop * E[DeltaProfit]_{\mathrm{i,t,s}}$ and $DConfFrameHighCoop * E[DeltaProfit]_{\mathrm{i,t,s}}$ are constructed by interacting the difference in profits when buying *Product A* vis-à-vis *Product B* respectively with the dummy for cooperators above median, and with the dummy for cooperators above median of sessions with legality frame and conformism design. In addition, we include $DFrameHighCoop * E[DeltaProfit]_{\mathrm{i,t,s}}$ to consider the effect of the frame without conformity design on the "cooperators above the median". Furthermore we add a dummy equal to 1 if the personal profit is lower than the average profit of the group in order to test for the impact of relative income effects. The other controls that follow (treatment dummies and socio-demographic variables) are the same as in the probit specification used for the direct approach.

The indirect approach is important because choosing *Product A* is not necessarily less rewarding in all the circumstances of our experiment. As tables A2.3 and A2.4 in Appendix 2 show, in redistribution treatments under the expectation of less than 3 cooperators choice of product A has a payoff not lower than choice of product B. Hence, by looking at the direct approach, the choice of product A is not always perfectly negatively correlated with player's payoff. In the indirect approach we explicitly measure the profit expected by players and hence overcome the problem.

4.3 Empirical findings

The direct approach estimate shows that the choice of product A is negatively correlated with satisfaction about the game, that is, satisfaction falls when choosing the more expensive, more responsible product (Table 3, column 1). Since the choice of the responsible product is negatively correlated with profits (-.90) it is clear that players have an utility argument which positively relates to their own monetary payoff as expected from a well behaved utility function. The cooperators above median dummy (*DHighCoopChoiceA*) is significant and negative and reduces by more than half the negative effect of buying product A on satisfaction about the experiment. In addition to it, participation to the legality framed game with conformity treatment reduces for cooperators above median by almost another half the original effect (*DConfFrameHighCoopChoiceA* dummy). Hence the sum of the impacts of the two dummies completely eliminate the first effect implying that the choice of the more responsible (and more expensive) product does not reduce satisfaction about the game for cooperators above median in framed treatment with the conformity mechanism.

The share of other players' choosing the responsible product in the game is positive and significant on players' happiness as expected. This is as well consistent with a well behaved utility function since any player choosing the responsible product adds a positive contribution to one's own monetary payoff. The above described findings do not change when we augment our specification with socio-demographic controls (Table 3, column 2).[9]

To sum up, our findings document preference heterogeneity. Satisfaction of cooperators below median is standard (i.e. negative on choice of the more expensive product and positive on other players' choice of that product, therefore positively related to their own monetary payoff). On the

[9] Using a variance inflation factor approach we check whether multicollinearity effects may impact upon our results and find that it is not the case. Goodness of fit when regressing each of the explanatory variables on all the other regressors is below the limit thresholds indicating presence of multicollineraity

contrary, satisfaction of cooperators above median is somewhat different and their satisfaction for buying the less expensive product is much lower and vanishes in the framed experiment with conformity. Satisfaction findings are therefore consistent and explain why these cooperators cooperate above median. They do so because they are not as happy (as cooperators below median are) when buying the less responsible product and especially so in framed treatments with conformity.[10]

To evaluate from another perspective the economic significance of the observed findings we calculate for the first model (Table 3, column 1) the effect of the choice of product A on the probability of declaring satisfaction for the game above 7. We find that the impact is negative and that such choice reduces the probability by 65 percent. However being a cooperator above median reduces by more than half such effect (+37 percent effect of the *DHighCoopChoiceA* dummy the probability of declaring satisfaction above 7 when choosing the responsible product in the game). In addition to it, when cooperators above median choose the responsible product in framed treatments with the conformity mechanism the impact is a 29 pecent higher probability of declaring satisfaction above 7 (effect of the *DConfFrameHighCoopChoiceA* dummy). Hence this additional check confirms what found in Table 3, column 1, that is, the sum of the effects of the two dummies completely offset the negative impact of buying the responsible product on satisfaction.

In a robustness check we replace the dependent variable (satisfaction about the game) with satisfaction about one's own behavior in the game using the same specifications as above (Table 3, columns 3 and 4). Results are similar to those shown in columns 1 and 2 since the two high cooperator

[10] We test whether the effect of legality frame and conformism design is significant when separately estimated but find that this is not the case. Hence the impact is significant only when combined. Results are omitted for reasons of space and available upon request.

dummies (*DHighCoopChoiceA* and *DConfFrameHighCoopChoiceA*) reverse the effect of buying the responsible product for cooperators above median (i.e. when we sum them we find that satisfaction about one's own behavior for cooperators above median is positively affected by the choice of the responsible product in framed treatment with conformity).

The combination of findings from Table 3, columns 1-4 tells us that the impact of players' choices on their satisfaction in the game is mainly channeled through the effect of such choices on satisfaction about their own behavior in the game. If we calculate in a different way the economic significance of the effect also in the case of satisfaction about one's own behavior in the game using a probit estimate where the dependent variable takes one if the satisfaction level is above 7 and zero otherwise we find that the initial negative impact of the choice of the more expensive product (110 percent which must be added to a benchmark positive intercept effect of 20 percent is overcome by a 100 percent move in the opposite direction for cooperators above median to which we must add an additional 66 percent effect for above median cooperators in framed treatment with conformism).

These findings show that, in terms of magnitude, the sum of the effects of the two dummies is much higher than that of the choice of product A with a stronger combined effect than in the case of satisfaction about the game.

In order to check whether these findings are confirmed under the indirect approach we check whether and how the difference in expected profits between buying product B and A affect the choice of product A (specification 2 in section 4.2).

As expected the difference in one's own payoff between choosing the less expensive product B and product A is negatively and significantly correlated with the choice of product A. The economic effect is such that a departure of one ECU from the mean expected difference in profits reduces by 10 percent the probability of choosing the more expensive product producing the public good.

However being cooperators above median produces a 9 percent positive effect that almost completely counterbalances the previous one. A further significant and positive effect of 20 percent must be added for cooperators above median in frame plus conformity treatments (effect of the $DConfFrameHighCoop * E[DeltaProfit]_{i,t,s}$ variable) indicating that in this case the initial effect is completely reversed.

The expected profit of the group is as well positive and significant as expected. Note that this variable captures the part of player's profit unmeasured by the profit differential between buying product A and B since such differential does not vary much in the number of cooperators (not at all in treatments without redistribution and mildly in treatments with redistribution).

The combined use of the direct and indirect approaches in our estimates is important since it overcomes the problem of endogeneity that otherwise exists when estimating the impact of experimental choices on self-declared satisfaction data (the direct approach). If we would rely only on the direct (satisfaction based) approach it is in fact possible that third drivers affect both the choice of the preferred (responsible vs standard) product and declared satisfaction. Even though it is however more difficult that, when we measure satisfaction about the game and not overall life satisfaction, the former may be affected by something different than what is happening in the game.

If the direct (satisfaction based) approach does not completely eliminate all doubts of endogeneity the indirect effect is free from them. It in fact shows that the nexus between experimental circumstances (differences in expected payoffs between buying product A and product B) and experimental choices does not matter in the same way under the base treatment and treatments with the legality frame and the conformism information design. And that the nexus does not work in the same way for all players. If results under the indirect approach are not endogenous and are

substantially consistent with those under the direct approach, those of the latter are more reliable and overcome the suspicion of endogeneity.

If our results are endogeneity free the policy conclusion from both direct and indirect approach is that the responsibility frame plus the conformism information design may produce more responsible consumption choices (producing positive externalities and/or public goods) at least in that subgroup of players with stronger social preferences.

5. Conclusions

We analyse the correspondence between choices and satisfaction in a multiplayer prisoner's dilemma reproducing the trade-off implied in the typical vote with the wallet problem that millions of consumers face today in their everyday life. The diffusion of corporate responsibility and the practice of most companies of advertising their socially and environmentally responsible stance places consumers in front of a choice between a less expensive conventional product and a more expensive alternative incorporating socially or environmentally responsible features. We re-propose the baseline dilemma in our experiment by enriching our design with treatments incorporating an institutionally created legality frame, using different (conformity and/or standard) information designs and including redistribution mechanisms as variants to the base experiment.

Based on experimental findings we investigate the preference structure of our players with a direct and an indirect approach. In the direct approach we measure the impact of different choices on players' satisfaction about the game. In the indirect approach we evaluate the effect of expected profits on players' choices.

The direct and the indirect approaches provide a very similar picture. The two main findings of the paper are that preferences are heterogeneous and the legality frame (when combined with the conformity treatment) matters for that part of consumers who cooperate above median.

More specifically, the combination of three effects (heterogeneity of preferences, the legality frame and the conformity information design) is such that for cooperators above median the negative impact of the choice of product A on satisfaction about the game (due to the lower payoff vis-à-vis product B) disappears in legality framed treatments with the conformity mechanism (direct approach). Or that, for the same group of players, the negative effect of the expected payoff differential when buying the more expensive product becomes a positive effect in legality framed sessions with the conformity information design.

A policy suggestion stemming from our experiment is that CSR-legality frames and culture have a significant effect on an important portion of consumers. These consumers reveal that the often declared willingness to pay for socially and environmentally responsible features of products is confirmed by actual purchases of more expensive "responsible" products and that such choice is consistent with their preference structure and with their satisfaction, with responsible (in our case legality) frames and conformism enhancing such behavior.

A second policy advice is that our findings provide an answer to the question on whether legality ratings of the kind enforced by the ICA can provide benefits to rated companies and enhance responsible choices even in absence of an explicit tax premium or preferential lane in procurement races connected to the rating. Our answer is yes: if companies advertise their rating they may get benefit in terms of extra willingness to pay on behalf of the share of consumers who have other regarding preferences even though tax redistribution mechanisms may significant enhance this effect.

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Tables and Figures

Table 1. Experimental design

Treatment	No. of sessions	Phase 1 (10 rounds)	Phase 2 (10 rounds)	Phase 3	No. of players
Baseline	1 - 3	Baseline	Redistribution	Questionnaire	30
	4 - 6	Redistribution	Baseline	Questionnaire	30
Frame	7 - 9	Frame	Frame + Redistribution	Questionnaire	30
	10 - 12	Frame + Redistribution	Frame	Questionnaire	30
Conformity	13 - 15	Frame (conformity)	Frame (conformity) + Redistribution	Questionnaire	30
	16 - 18	Frame (conformity) + Redistribution	Frame (conformity)	Questionnaire	30

Table 2. Definition of Variables

Variable	Definition
Happiness about the game	Individuals' satisfaction of individuals about the game in each round- on a scale from 0 to 10
Happiness about one's own behaviour	Individuals' satisfaction of individuals about their own behaviour in each round of the game- on a scale from 0 to 10
ChoiceA	Dummy taking value 1 if the individual opts for product A, and 0 otherwise
AvgGroupChoiceA	Average share of individuals that opt for product A during the same period of different sessions
DHighCoopChoiceA	Dummy taking value 1 if the individual who opts for product A is highly cooperative (i.e. over the median of his/her session group), and 0 otherwise
DConfFrameHighCoopChoiceA	Dummy taking value 1 if the individual who opts for product A cooperates above median within a game with frame and/or conformity, and 0 otherwise
DHighCoopAvgGroupChoiceA	Average share of highly cooperative individuals that opt for product A during the same period of different sessions
E[DeltaProfit]	Difference in the expected personal profit from purchasing product B vis-à-vis purchasing product A
DHighCoop*E[DeltaProfit]	Difference in the expected personal profit from purchasing product B vis-à-vis purchasing product A for co-operators above median
DProfitGap	Dummy taking value 1 if the expected profit from buying product A is lower than the average profit of the reference group (i.e. players in the same session)
DConfFrameHighCoop*E[DeltaProfit]	Difference in the expected personal profit from purchasing product B vis-à-vis purchasing product A for co-operators above median within frame and/or conformity games
DFrameHighCoop*E[DeltaProfit]	Difference in the expected personal profit from purchasing product B vis-à-vis purchasing product A for co-operators above median
E[AvgProfitGroup]	Expected average profit of players in the session for the i-th individual
Base	Dummy taking value 1 for baseline sessions, and 0 otherwise
Frame	Dummy taking value 1 for legality framed sessions, and 0 otherwise
Frame_conf	Dummy taking value 1 for legality framed sessions with conformity information design, and 0 otherwise
Redistribution_base	Dummy taking value 1 when the redistributive mechanism takes place in baseline sessions, and 0 otherwise
Redistribution_frame	Dummy taking value 1 when the redistributive mechanism takes place in legality framed sessions, and 0 otherwise
Redistribution_conf	Dummy taking value 1 when the redistributive mechanism takes place in session with conformity information design, and 0 otherwise
Period	Counter of the period from 1 to 20 within each session
Male	Dummy taking value 1 if the individual is a man, and 0 otherwise (according to question 1. of the questionnaire)
Age	Age according to question 2. of the questionnaire
Living condition	Three dummies picking up items of question 4. in the questionnaire (see Appendix 3)
Education (father's side)	Five dummies picking up items of question 5. in the questionnaire (see Appendix 3)
Education (mother's side)	Five dummies picking up items of question 6. in the questionnaire (see Appendix 3)
Employment status (father's side)	Ten dummies picking up items of question 4. in the questionnaire (see Appendix 3)
Employment status (mother's side)	Ten dummies picking up items of question 4. in the questionnaire (see Appendix 3)
Income level	Six dummies picking up items of question 4. in the questionnaire (see Appendix 3)

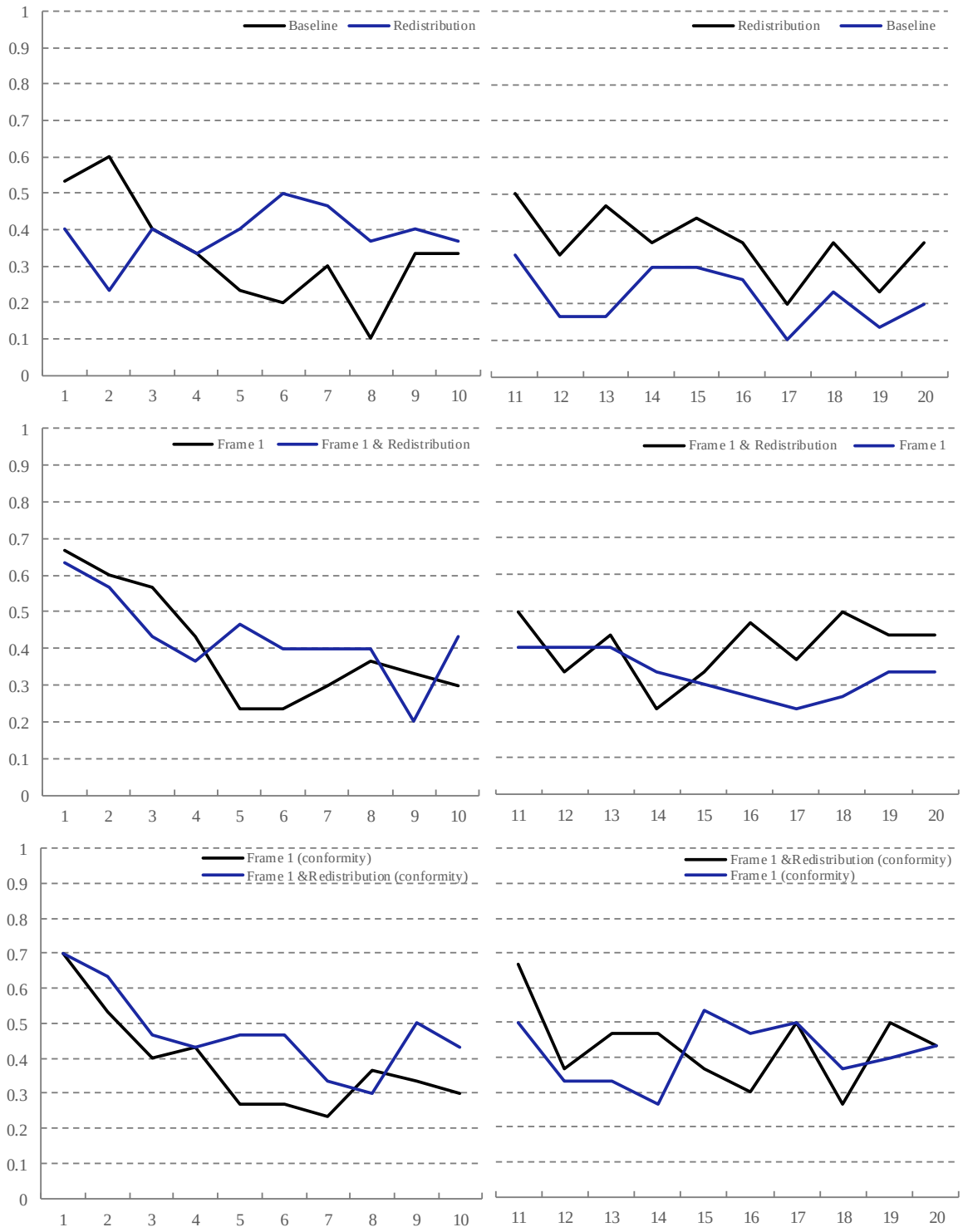
Table 3. The determinants of satisfaction about the game and players' choices (direct and indirect approach)

Dependent variables: columns (1) and (2) Satisfaction about the game; columns (3) and (4) Satisfaction about one's own behavior in the game; columns (5) and (6) Dummy variable taking value 1 when the player chooses product A. Estimation method: ordered probit (columns 1-4), probit (columns 5-6).

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
ChoiceA	-0.525***	-0.526***	-0.704***	-0.706***		
	(0.075)	(0.075)	(0.072)	(0.072)		
AvgGroupChoiceA	0.801***	0.843***	0.964***	1.010***		
	(0.179)	(0.179)	(0.171)	(0.170)		
DHighCoopChoiceA	0.290***	0.286***	0.719***	0.717***		
	(0.107)	(0.107)	(0.103)	(0.103)		
DConfFrameHighCoopChoiceA	0.387***	0.384***	0.518***	0.502***		
	(0.143)	(0.143)	(0.141)	(0.141)		
DHighCoopAvgGroupChoiceA	-0.328	-0.410	-0.188	-0.294		
	(0.250)	(0.249)	(0.235)	(0.234)		
E[DeltaProfit]					-0.102***	-0.100**
					(0.039)	(0.039)
DHighCoop*E[DeltaProfit]					0.097***	0.096***
					(0.036)	(0.035)
DConfFrameHighCoop*E[DeltaProfit]					0.203***	0.204***
					(0.049)	(0.049)
DProfitGap					-0.497***	-0.498***
					(0.156)	(0.156)
DFrameHighCoop*E[DeltaProfit]					0.118**	0.120**
					(0.048)	(0.048)
E[AvgProfitGroup]					0.012***	0.012***
					(0.001)	(0.001)
Redistribution_base	-0.959***	-0.958***	-0.706***	-0.705***	-0.050	-0.048
	(0.066)	(0.066)	(0.064)	(0.064)	(0.144)	(0.143)
Redistribution_frame	0.115	0.385	-0.234	0.018	-0.168	-0.104
	(0.347)	(0.327)	(0.243)	(0.233)	(0.200)	(0.199)
Redistribution_conf	-0.467	-0.381	-0.343	-0.273	0.026	0.043
	(0.348)	(0.329)	(0.248)	(0.238)	(0.201)	(0.198)
Frame	0.026	0.296	-0.352	-0.101	-0.303	-0.244
	(0.346)	(0.326)	(0.243)	(0.233)	(0.201)	(0.202)
Frame_conf	-0.321	-0.235	-0.081	-0.010	-0.059	-0.050
	(0.348)	(0.329)	(0.247)	(0.237)	(0.194)	(0.191)
Round	0.019***	0.019***	0.010***	0.010***	-0.005	-0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)
Socio-dem controls	No	Yes	No	Yes	No	Yes
Constant					-2.778***	-2.427***
					(0.215)	(0.588)
Observations	3,600	3,600	3,600	3,600	3,585	3,585
Number of individuals	180	180	180	180	180	180
Wald $\chi 2$	304.58 (0.00)	355.32 (0.00)	266.87 (0.00)	311.41 (0.00)	414.28 (0.00)	466.36 (0.00)

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Figures 1a-1f. Share of players choosing the "responsible" product under different treatments



Source: Becchetti et al. (2015a)

Figure 2. Average choice of product A for experiment players

(0=unconditional non-cooperators; 1= unconditional cooperators)

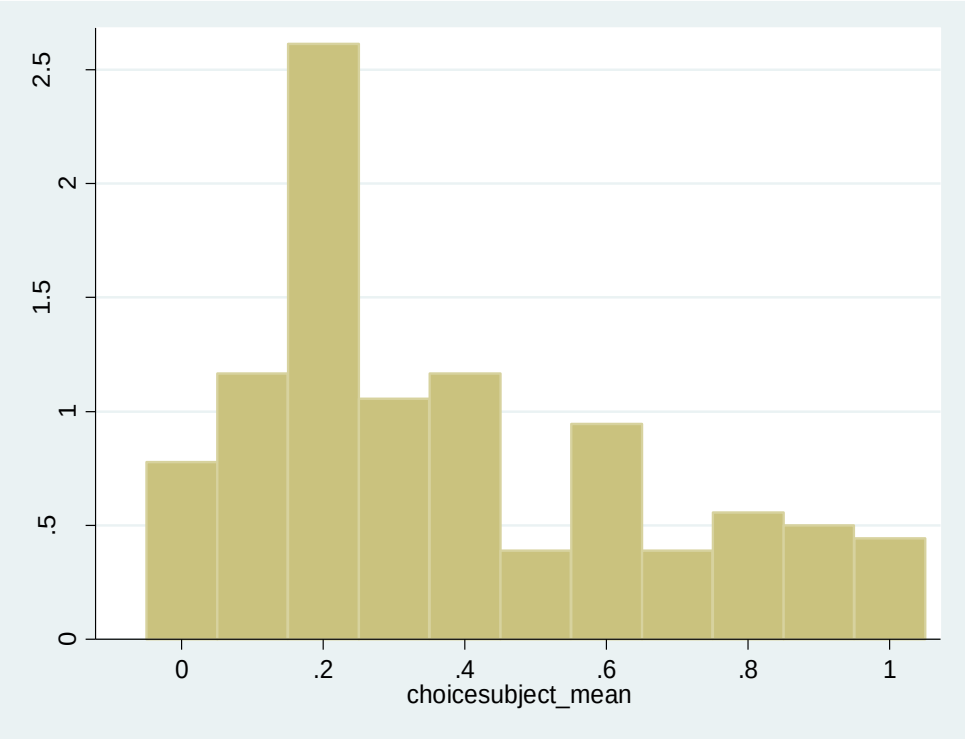


Figure 3. Distribution of satisfaction about the game in each round-session

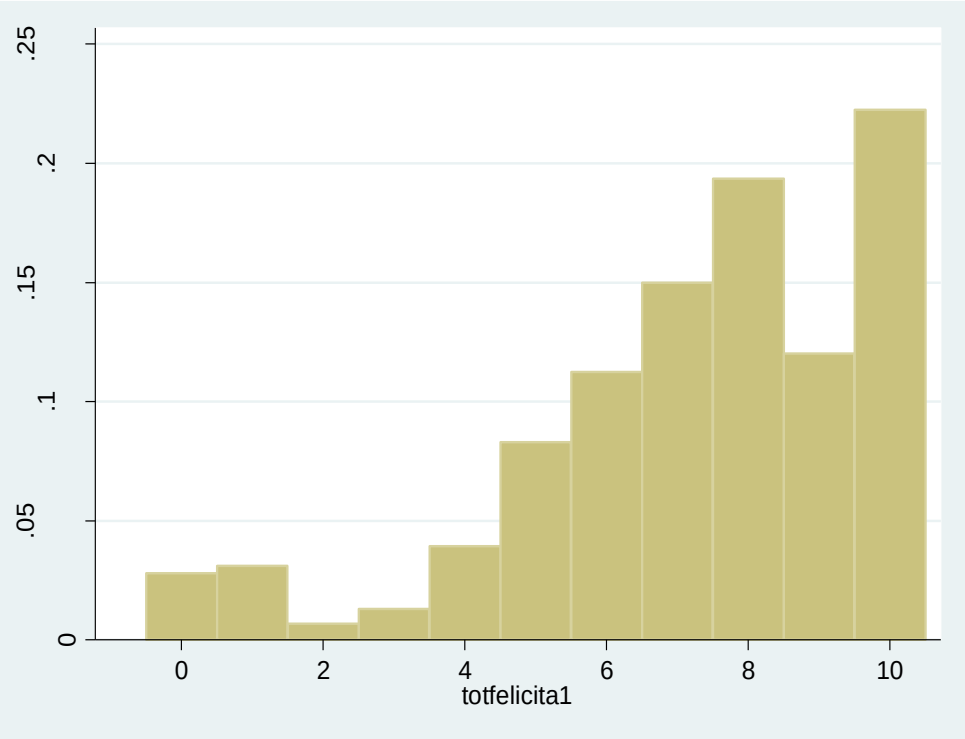


Figure 4. Distribution of satisfaction about one's own behavior in each round-session

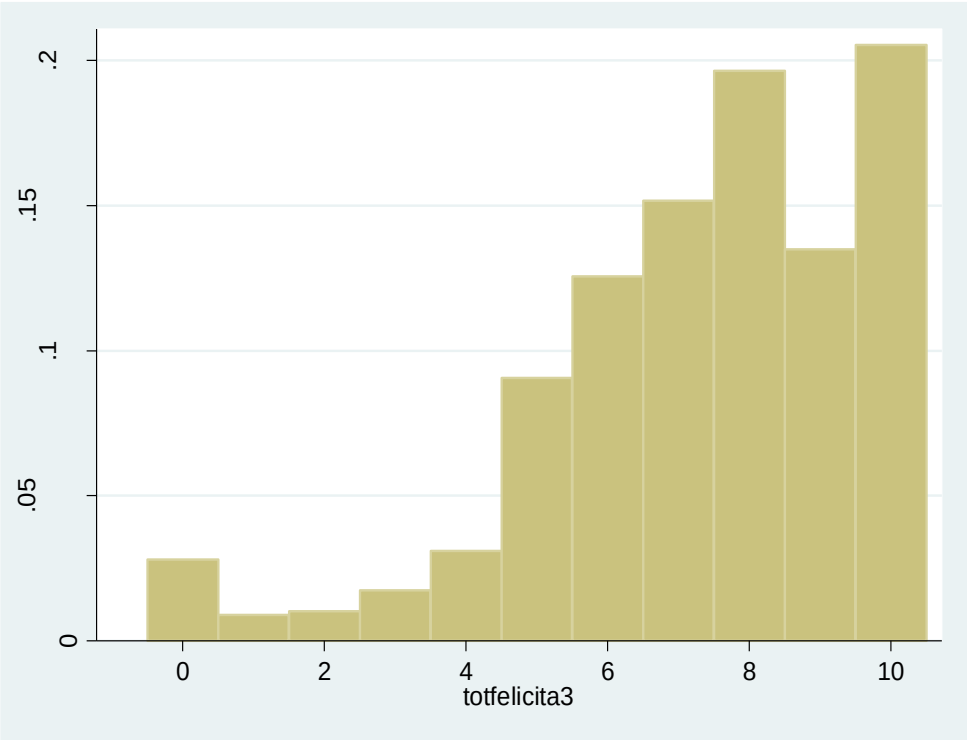
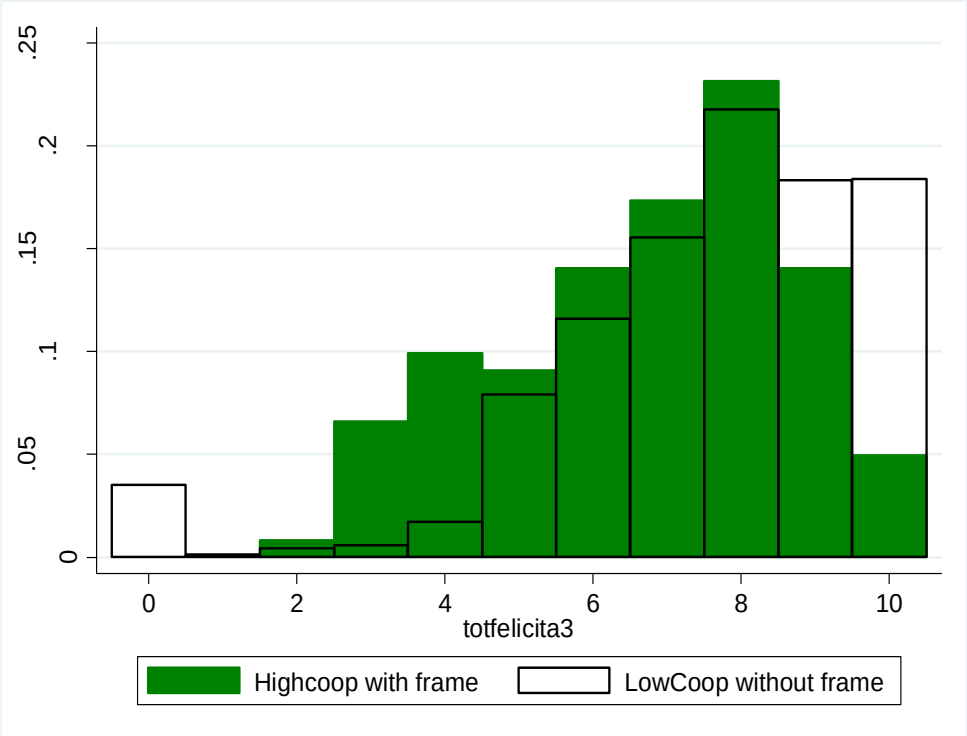


Figure 5 Choice of product B satisfaction with one's own behavior



Legend: Green bars indicate cooperators above median in framed sessions with conformism design. White bars indicate cooperators below median in baseline sessions.

APPENDIX 1 – THE LEGALITY RATING

The Legality Rating is an instrument designed to increase the competitiveness of lawful companies by supporting their ethical and honest initiatives. It was approved by the Italian Parliament at the end of 2012.

Two conditions must be met by the enterprises that work in Italy in order to ask for the legality rating:

1. Achieving a turnover of at least two million of euros in the year before asking for the legality rating. This value must be ascribed either to the single enterprise, or to the group to which the single enterprise belongs to and whose balance-sheet was duly approved;
2. To be signed up in the registry of businesses for at least two years.

Companies willing to be rated can apply throughout an online form, and follow the guidelines published on the AGCM website.

The legality rating ranges from a minimum score of one star to a maximum score of three stars, and it is awarded by the Italian Competition Authority (ICA) on the base of information directly provided by the company and further verified through cross-checks with data owned by the public administration.

"One-star"-legality rating

In order to be eligible for the minimum score (i.e. the "one-star"-legality rating) a firm must fulfil the following requirements:

1. The entrepreneur and other relevant individuals must not be the recipients of preventive and / or precautionary measures, nor must they be convicted for tax-related crimes. They must not be addressed by judicial sentences for mafia, nor must they be involved with mafia activities of any sort. The firm must not have been submitted to compulsory administration, nor must it have been convicted for administrative wrongdoings.
2. In the 2-years period before applying for the legality rating the firm must not have been convicted for serious crimes related to anti-trust, for breaching the code of consumption, for not respecting norms about safety and security of the working place, or for not complying with the obligations towards employees and collaborators as for remunerations, contributions, insurance responsibilities, and fiscal matters. Moreover, the firm must not have been under scrutiny for declaring less income than what verified, for having experienced revocations of public funds that were not duly paid back by the firm itself, or for not having paid taxes. Likewise, the enterprise must not have received any sanction by the Italian Anti-Corruption Authority implying the prohibition either to sign contracts with the public administration, or to participate to auctions for public procurement.
3. Eventually, the company must declare to use exclusively traceable payment methods in order to process financial transactions whose value is higher than one thousand euros.

"Two-stars" and "three-stars"-legality rating

More requirements are needed for firms to be rated with two or three stars of legality. If at least six of the following accomplishments are met, then a firm will obtain two stars:

1. Complying with the Legality Protocol signed by the Ministry of Internal Affairs and the Italian Industrial Federation, with its guidelines for implementation, and with the Protocol signed by the Ministry of Internal Affairs and the Association of Cooperatives together with local prefectures and trade associations;
2. Using traceable payment methods also to process financial transactions whose amounts are lower than the threshold stated by the law;
3. Adopting an organizational framework apt to the conformity control as stated by the law;
4. Adopting processes that grant the Corporate Social Responsibility;
5. Being registered to lists of entities that are not prone to mafia infiltrations;
6. Endorsing the ethical codes of self-regulation that are defined by trade associations;
7. Having in place organizational frameworks to prevent and contrast **corruption**.

Denunciations of crimes by the entrepreneur and her family and collaborators, if followed by legal penal consequences, shall be hold in high esteem.

Duration of the legality rating

The legality rating lasts two years since its release, and it can be renewed upon request.

If one of the minimum prerequisites fails to exist, the ICA will revoke the one-star rating.

If conditions upon which a two-stars or a three-stars rating were awarded stop to be present, the ICA can reduce the legality rating.

The ICA will keep its website up to date with the list of companies awarded with the legality rating, along with effective dates and subsequent suspensions and revocations.

ENGLISH WEB PAGES ABOUT THE LEGALITY RATING BY AGCM:

http://www.agcm.it/en/newsroom/press-releases/2196-boom-of-requests-to-antitrust-authority-to-obtain-the-rating-of-legality.html

http://www.group.intesasanpaolo.com/scriptIsir0/si09/contentData/view/Rating_Legalit%C3%A0_eng.pdf?id=CNT-04-000000011635A&ct=application/pdf

http://www.agcm.it/en/statistics/doc_download/477-annualreport2014presentation.html

POLICY DOCUMENTS MENTIONING THE LEGALITY RATING BY AGCM:

Page 2: http://ec.europa.eu/competition/ecn/brief/03_2012/it_powers.pdf

APPENDIX 2 – INSTRUCTIONS

English Translation	**Original Italian**
General instructions Welcome and thanks for participating to this experiment. Our goal is to verify the impact of some factors on our decision processes. 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. 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). Overall the experimental session will last approximately one hour. We ask you to work alone and in silence. Thanks for your participation!	**Istruzioni Generali** Benvenuto e grazie per aver deciso di partecipare a questo studio. 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. 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. Ti chiediamo di lavorare da solo e in silenzio. Grazie ancora per la tua partecipazione! **Istruzioni specifiche**

Specific instructions **Baseline Condition** In this session you will be asked to choose (for 10 rounds) which, between 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 information you will play the following round. **Round *n*** You receive an endowment of 20 points. You must choose whether to buy: Product A Product B. 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. 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. The effect on your payoff of the two players' choices (buying product A or product B) are summarized in the table which follows: (table A2.1) Each of the 10 players is in the same situation as you and faces the same payoff table.	**Gioco Base** 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 **Periodo *n*** Ricevi una dotazione iniziale di 20 punti. Devi decidere se: Acquistare il prodotto A. Acquistare il prodotto B. 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. 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. Le conseguenze (in termini di guadagni) delle due possibili scelte (acquistare il prodotto A o il prodotto B) sono riassunte nella tabella 1 (tabella A2.1)

Your final payoff from each of the different choices you may make (conditional to other participants' choices) is summarized in the following table: (table A2.2) Please choose: Product A Product B	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 A2.2) Quale prodotto scegli? Prodotto A Prodotto B
Redistribution Condition *Same as in the Base treatment plus:* Notice that, at the end of each round 1 point will be subtracted from the payoff of all those participants who have chosen product B. All those points will form 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 A2.3) 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 A2.4)	**Redistribuzione** *Come nel trattamento base più:* Nota Bene: Rispetto alla situazione precedente però, ora c'è una novità. Ad ogni giocatore che avrà scelto il prodotto B verrà prelevato 1 punto che andrà 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 A2.3). 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

Please choose: Product A Product B **Frame Condition** ***A**s in the Baseline plus framed description of Product A as follow*s Product A is a product or service provided by an enterprise awarded with the "3-stars legality rating". This rating can be conferred by the Italian Competition Authority (i.e. Autorità Garante della Concorrenza e del Mercato, "Authority" from now on) upon request of a company. In order to be signaled with the 3-stars rating a company must have in place organizational frameworks to prevent and fight of corruption. Specifically, conditions for 3-stars rating are stated by the Authority as follows: 1. the entrepreneur must not be involved in lawsuit for mafia, tax-evasion, antitrust behaviours, unfair practices towards employees and customers, and bad administration (minimum accomplishments to be 1-star rated); 2. the enterprise mush accomplish ministerial codes of conduct, employ trackable paying methods, adopt organisational frameworks liable to the legal conformity control, endorse processes that guarantee the Corporate Social Responsibility, be listed among enterprises that	che faranno gli altri giocatori, secondo lo schema della seguente tabella (tabella A2.4) Quale prodotto scegli? Profotto A Prodotto B **Frame** *Come nel gioco base più la descrizione del prodotto A come segue* Il prodotto A è un bene venduto da un'impresa a cui è stato attribuito il certificato "3 stelle di legalità". Questo certificato viene rilasciato dall'Autorità Garante della Concorrenza e del Mercato (AGCOM) su richiesta dell'impresa interessata. Per ottenere "3 stelle di legalità" è necessario che: 1. L'imprenditore non sia coinvolto in processi per mafia, evasione fiscale, comportamenti anticoncorrenziali, comportamenti scorretti ai danni di lavoratori e consumatori, e cattiva amministrazione (requisiti minimi per l'ottenimento di "1 stella di legalità"); 2. L'impresa operi nel rispetto dei codici di condotta ministeriali, utilizzi sistemi di pagamento tracciabili, adotti modelli organizzativi che garantiscano i controlli di

are not tied to mafia, and adhere to existing ethical codes of conduct; 3. have in place organizational frameworks to prevent and fight corruption. Product A costs 10 points. By buying product A you gain 3 points directly, and you will gain 3 points for each player who purchases product A too. Product B is a product or service provided by an enterprise which is not awarded with the legality rating issued by the Authority (i.e. either the company did not enquire for the rating, or it asked for the rating but did not obtain it). Product B costs 5 points. By buying product B you do not gain any point directly, but you will still gain 3 points for each player who purchases product A.	conformità, adotti processi in linea con la responsabilità sociale, compaia negli elenchi di imprese non legate all'organizzazione mafiosa, aderisca ai codici etici e di condotta esistenti 3. abbia "adottato modelli organizzativi di prevenzione e di contrasto della corruzione". 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. Il prodotto B è un bene o fornito da un'impresa priva del certificato di legalità AGCOM (può non averlo richiesto oppure non rispetta tutti i requisiti di cui sopra). 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

Table A2.1

	Payoff	
Your choice	Product A	Product B
Participation bonus	5 points	5 points
Endowment	20 points	20 points
Cost	-10 points	-5 points
Benefit (from the choice of other participants)	+3 points for each participant choosing product A	+3 points for each participant choosing product A

Table A2.2

	When you buy A				**When you buy B**			
How many players choose good A	***Endowment***	***Cost***	***Benefit***	***TOTAL***	***Endowment***	***Cost***	***Benefit***	***TOTAL***
			3 X n =				***3 X 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 A2.3

	Payoff	
Your choice	Product A	Product B
Participation bonus	5 points	5 points
Endowment	20 points	20 points
Cost	-10 points	-5 points
Benefit (from the choice of other participants)	+3 points for each participant choosing product A	+3 points for each participant choosing product A
Redistribution effect	The share of the total points withdrawn from the buyers of B equally distributed among the buyers of A	-1 point

Table A2.4

	When you buy A					**When you buy B**				
How many players choose good A	***Endowment***	***Cost***	***Benefit***	***Redistribution***	***TOTAL***	***Endowment***	***Cost***	***Benefit***	***Redistribution***	***TOTAL***
			3 X *n* =					3 X *n* =		
10	20	-10	30	**-**	**40.0**	-	-	-	-	-
9	20	-10	27	**0.1**	**37.1**	20	-5	27	-1	**41.0**
8	20	-10	24	**0.3**	**34.3**	20	-5	24	-1	**38.0**
7	20	-10	21	**0.4**	**31.4**	20	-5	21	-1	**35.0**
6	20	-10	18	**0.7**	**28.7**	20	-5	18	-1	**32.0**
5	20	-10	15	**1.0**	**26.0**	20	-5	15	-1	**29.0**
4	20	-10	12	**1.5**	**23.5**	20	-5	12	-1	**26.0**
3	20	-10	9	**2.3**	**21.3**	20	-5	9	-1	**23.0**
2	20	-10	6	**4.0**	**20.0**	20	-5	6	-1	**20.0**
1	20	-10	3	**9.0**	**22.0**	20	-5	3	-1	**17.0**
0	-	-	-	-	-	20	-5	0	-1	**14.0**

While in sessions 7-15 at the end of each round is provided the number of co-players choosing product A among the members of the same group, in sessions 16-18 along with the information about the average share of co-operators observed in the parallel sessions 10-12. This kind of information is provided to disentangle conditional cooperation from conformist-type behaviour.

APPENDIX 3 – QUESTIONNAIRE

1. Gender: ☐$_1$ M ☐$_0$ F

2. Age: _____ years

3. District of residence_____

4. Housing condition:
   a. Live alone
   b. Live with family
   c. Live with other (not related) people

5. Father's education

   ☐$_1$ Primary School ☐$_2$ Middle School

   ☐$_3$ Upper Intermediate/High school ☐$_4$ University degree

   ☐$_5$ Other_____

6. Mother's education

   ☐$_1$ Primary School ☐$_2$ Middle School

   ☐$_3$ Upper Intermediate/High school ☐$_4$ University degree

   ☐$_5$ Other_____

7. Father's professional status

   ☐$_1$ Self-employed ☐$_2$ Clerk

   ☐$_3$ Manual worker ☐$_4$ Executive

   ☐$_5$ Retired ☐$_6$ Homemaker

   ☐$_7$ Student ☐$_8$ Entrepreneur

   ☐$_9$ Unemployed ☐$_{10}$ Other_____

8. Mother's professional status

   ☐$_1$ Self-employed ☐$_2$ Clerk

   ☐$_3$ Manual worker ☐$_4$ Executive

   ☐$_5$ Retired ☐$_6$ House activity

   ☐$_7$ Student ☐$_8$ Entrepreneur

   ☐$_9$ Unemployed ☐$_{10}$ Other_____

9. How many people are there in your household (including yourself)? _____

We would like to remind you that these data will only serve statistical purposes, that information will be handled anonymously and it shall never be disclosed at disaggregated level

10. Please, mark the class to which your annual household income (net) in 2015 belongs to

☐1 up to 15.000 ☐2 15.001 - 25.000 ☐3 25.001 - 35.000

☐4 35.001 - 50.000 ☐5 50.001 - 90.000 ☐6 higher than 90.000

11. On a scale from 0 to 10, please indicate your level of satisfaction with the experience of having undergone this experiment:

Not satisfied at all =0 Completely satisfied =10

0	1	2	3	4	5	6	7	8	9	10

12. On a scale from 0 to 10, please indicate your level of satisfaction about the behaviour of the players who participate in your same game:

Not satisfied at all = 0 Completely satisfied = 10

0	1	2	3	4	5	6	7	8	9	10

13. On a scale from 0 to 10, please indicate your level of satisfaction about your own behavior in the game:

Not satisfied at all = 0 Completely satisfied = 10

0	1	2	3	4	5	6	7	8	9	10

14. On a scale from 0 to 10, how would you rate the overall trustworthiness of others?

None = 0 Complete = 10

0	1	2	3	4	5	6	7	8	9	10

15. On a scale from 0 to 10, how would you rate your overall satisfaction with life?

Not satisfied at all = 0 Completely satisfied = 10

0	1	2	3	4	5	6	7	8	9	10

16. On a scale from 0 to 10, how would you rate your satisfaction about your financial situation?

Not satisfied at all = 0 Completely satisfied = 10

0	1	2	3	4	5	6	7	8	9	10

17. Please tick the box that mostly represent your political orientation:

Extreme LEFT				Extreme RIGHT

18. Have you got an account on Facebook?

☐$_1$YES ☐$_0$NO

19. If you have an account on Facebook, how many friends do you have approximately on your account?

20. Have you got an account on Twitter?

☐$_1$YES ☐$_0$NO

21. If you have an account on Twitter, how many people do you follow?
22. If you have an account on Twitter, by how many people are followed by?

APPENDIX 4 –ADDITIONAL ESTIMATES

Table A4.1 Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Happiness about the game	3601	7.236	2.508	0	10
Happiness about one's own behaviour	3601	7.311	2.342	0	10
ChoiceA	3600	0.381	0.486	0	1
AvgGroupChoiceA	3600	0.381	0.169	0	0.9
DHighCoopChoiceA	3600	0.291	0.454	0	1
DConfFrameHighCoopChoiceA	3600	0.107	0.309	0	1
DHighCoopAvgGroupChoiceA	3600	0.182	0.227	0	0.9
E[DeltaProfit]	3585	3.568	1.845	-5	5
DHighCoop*E[DeltaProfit]	3585	1.722	2.163	-5	5
DProfitGap	3601	0.913	0.283	0	1
DConfFrameHighCoop*E[DeltaProfit]	3585	0.535	1.444	-5	5
DFrameHighCoop*E[DeltaProfit]	3585	0.634	1.535	-5	5
E[AvgProfitGroup]	3600	248.972	48.189	150	400
Base	1200	0.500	0.500	0	1
Frame	3601	0.167	0.373	0	1
Frame_conf	3601	0.167	0.373	0	1
Redistribution_base	3601	0.167	0.373	0	1
Redistribution_frame	3601	0.167	0.373	0	1
Redistribution_conf	3601	0.167	0.373	0	1
Round	3600	10.500	5.767	1	20
Male	3600	0.500	0.500	0	1
Age	3600	24.911	4.454	18	42

Table A4.1 Summary statistics (continues)

Variable	Obs	Mean	Std. Dev.	Min	Max
Living conditions					
(live alone)	3600	0.061	0.240	0	1
(live with the family)	3600	0.706	0.456	0	1
(live with other-not-related people)	3600	0.233	0.423	0	1
Education (father's side)					
(primary school)	3600	0.083	0.276	0	1
(middle school)	3600	0.356	0.479	0	1
(high school)	3600	0.428	0.495	0	1
(university)	3600	0.122	0.328	0	1
(other)	3600	0.011	0.105	0	1
Education (mother's side)					
(primary school)	3600	0.094	0.292	0	1
(middle school)	3600	0.383	0.486	0	1
(high school)	3600	0.372	0.483	0	1
(university)	3600	0.139	0.346	0	1
(other)	3600	0.011	0.105	0	1
Employment status (father's side)					
(self-employed)	3600	0.139	0.346	0	1
(clerk)	3600	0.133	0.340	0	1
(manual)	3600	0.128	0.334	0	1
(executive)	3600	0.056	0.229	0	1
(retired)	3600	0.300	0.458	0	1
(housework)	0	0.000	0.000	0	0
(student)	0	0.000	0.000	0	0
(entrepreneur)	3600	0.089	0.285	0	1
(unemployed)	3600	0.050	0.218	0	1
(other)	3600	0.106	0.307	0	1
Employment status (mother's side)					
(self-employed)	3600	0.067	0.249	0	1
(clerk)	3600	0.211	0.408	0	1
(manual)	3600	0.050	0.218	0	1
(executive)	3600	0.006	0.074	0	1
(retired)	3600	0.094	0.292	0	1
(housework)	3600	0.428	0.495	0	1
(student)	3600	0.006	0.074	0	1
(entrepreneur)	3600	0.033	0.180	0	1
(unemployed)	3600	0.028	0.164	0	1
(other)	3600	0.078	0.268	0	1
Income level					
(up to 15.000)	3600	0.350	0.477	0	1
(15.001 - 25.000)	3600	0.250	0.433	0	1
(25.001 - 35.000)	3600	0.200	0.400	0	1
(35.001 - 50.000)	3600	0.100	0.300	0	1
(50.001 - 90.000)	3600	0.083	0.276	0	1
(higher than 90.000)	3600	0.017	0.128	0	1

Table A4.2 The determinants of satisfaction about the game and players' choices (direct and indirect approach)- Full regression findings

Dependent variables: columns (1) and (2) satisfaction about the game; columns (3) and (4) satisfaction about one's own behavior in the game; columns (5) and (6) Dummy variable taking value 1 when the player chooses product A

	(1)	(2)	(3)	(4)	(5)	(6)
ChoiceA	-0.525***	-0.526***	-0.704***	-0.706***		
	(0.075)	*(0.075)*	*(0.072)*	*(0.072)*		
AvgGroupChoiceA	0.801***	0.843***	0.964***	1.010***		
	(0.179)	*(0.179)*	*(0.171)*	*(0.170)*		
DHighCoopChoiceA	0.290***	0.286***	0.719***	0.717***		
	(0.107)	*(0.107)*	*(0.103)*	*(0.103)*		
DConfFrameHighCoopChoiceA	0.387***	0.384***	0.518***	0.502***		
	(0.143)	*(0.143)*	*(0.141)*	*(0.141)*		
DHighCoopAvgGroupChoiceA	-0.328	-0.410	-0.188	-0.294		
	(0.250)	*(0.249)*	*(0.235)*	*(0.234)*		
E[DeltaProfit]					-0.102***	-0.100**
					(0.039)	*(0.039)*
DHighCoop*E[DeltaProfit]					0.097***	0.096***
					(0.036)	*(0.035)*
DProfitGap					-0.497***	-0.498***
					(0.156)	*(0.156)*
DConfFrameHighCoop*E[DeltaProfit]					0.203***	0.204***
					(0.049)	*(0.049)*
DFrameHighCoop*E[DeltaProfit]					0.118**	0.120**
					(0.048)	*(0.048)*
E[AvgProfitGroup]					0.012***	0.012***
					(0.001)	*(0.001)*
Frame	0.026	0.296	-0.352	-0.101	-0.303	-0.244
	(0.346)	*(0.326)*	*(0.243)*	*(0.233)*	*(0.201)*	*(0.202)*
Frame_conf	-0.321	-0.235	-0.081	-0.010	-0.059	-0.050
	(0.348)	*(0.329)*	*(0.247)*	*(0.237)*	*(0.194)*	*(0.191)*
Redistribution_base	-0.959***	-0.958***	-0.706***	-0.705***	-0.050	-0.048
	(0.066)	*(0.066)*	*(0.064)*	*(0.064)*	*(0.144)*	*(0.143)*
Redistribution_frame	0.115	0.385	-0.234	0.018	-0.168	-0.104
	(0.347)	*(0.327)*	*(0.243)*	*(0.233)*	*(0.200)*	*(0.199)*
Redistribution_conf	-0.467	-0.381	-0.343	-0.273	0.026	0.043
	(0.348)	*(0.329)*	*(0.248)*	*(0.238)*	*(0.201)*	*(0.198)*
Male		0.129		-0.171		-0.078
		(0.281)		*(0.199)*		*(0.115)*
Age		-0.012		-0.039*		0.007
		(0.033)		*(0.023)*		*(0.013)*
Living condition (live with the family)		-0.871		-0.433		-0.271
		(0.634)		*(0.444)*		*(0.255)*
Living condition (live with other people)		-1.594**		-0.875*		-0.518**
		(0.653)		*(0.458)*		*(0.264)*
Education (father's side; middle school)		0.454		0.074		-0.083
		(0.531)		*(0.376)*		*(0.214)*
Education (father's side; high school)		0.385		-0.132		-0.129
		(0.565)		*(0.401)*		*(0.228)*
Education (father's side; university)		0.189		-0.374		-0.236
		(0.666)		*(0.472)*		*(0.270)*
Education (father's side; other)		-1.802		-2.033*		-1.824**
		(1.467)		*(1.046)*		*(0.898)*
Education (mother's side; middle school)		-0.855*		-0.593		0.212
		(0.516)		*(0.368)*		*(0.210)*
Education (mother's side; high school)		-0.326		-0.381		-0.014
		(0.572)		*(0.406)*		*(0.232)*
Education (mother's side; university)		0.954		0.315		-0.185
		(0.688)		*(0.488)*		*(0.283)*
Education (mother's side; other)		0.446		0.632		2.074***
		(1.468)		*(1.056)*		*(0.754)*
Employment status (father's side; clerk)		0.343		-0.131		-0.009
		(0.506)		*(0.357)*		*(0.205)*
Employment status (father's side; manual)		0.453		-0.152		0.123

		(0.491)		*(0.348)*		*(0.201)*
Employment status (father's side; executive)		-1.610**		-0.250		-0.256
		(0.686)		*(0.488)*		*(0.286)*
Employment status (father's side; retired)		-0.245		-0.151		-0.016
		(0.472)		*(0.335)*		*(0.196)*
Employment status (father's side; entrepreneur)		0.032		-0.036		-0.219
		(0.614)		*(0.434)*		*(0.257)*
Employment status (father's side; unemployed)		1.309*		0.566		-0.244
		(0.726)		*(0.514)*		*(0.300)*
Employment status (father's side; other)		1.116**		0.967**		0.343
		(0.550)		*(0.392)*		*(0.227)*
Employment status (mother's side; clerk)		-1.192**		-0.598		-0.032
		(0.597)		*(0.416)*		*(0.239)*
Employment status (mother's side; manual)		-0.870		-0.486		-0.345
		(0.807)		*(0.565)*		*(0.328)*
Employment status (mother's side; executive)		-2.983		-2.639		-0.812
		(2.257)		*(1.607)*		*(0.932)*
Employment status (mother's side; retired)		0.146		0.114		0.035
		(0.746)		*(0.526)*		*(0.301)*
Employment status (mother's side; housework)		-0.504		-0.292		-0.266
		(0.574)		*(0.400)*		*(0.229)*
Employment status (mother's side; student)		-1.688		-1.169		-0.385
		(1.755)		*(1.243)*		*(0.698)*
Employment status (mother's side; entrepreneur)		-0.557		-0.731		-0.141
		(0.904)		*(0.637)*		*(0.371)*
Employment status (mother's side; unemployed)		-2.084**		-1.149*		0.437
		(0.946)		*(0.661)*		*(0.380)*
Employment status (mother's side; other)		-1.263*		-0.862*		-0.621**
		(0.744)		*(0.522)*		*(0.309)*
Income level (15.001 - 25.000)		0.574		0.332		-0.048
		(0.360)		*(0.256)*		*(0.148)*
Income level (25.001 - 35.000)		0.275		-0.110		0.038
		(0.401)		*(0.284)*		*(0.164)*
Income level (35.001 - 50.000)		-0.524		-0.459		0.037
		(0.511)		*(0.362)*		*(0.209)*
Income level (50.001 - 90.000)		0.127		0.326		0.331
		(0.555)		*(0.394)*		*(0.228)*
Income level (higher than 90.000)		0.084		1.343		0.805
		(1.329)		*(0.959)*		*(0.580)*
Round	0.019***	0.019***	0.010***	0.010***	-0.005	-0.004
	(0.003)	*(0.003)*	*(0.003)*	*(0.003)*	*(0.005)*	*(0.005)*
Constant					-2.778***	-2.427***
					(0.215)	*(0.588)*
Observations	3,600	3,600	3,600	3,600	3,585	3,585
Number of id	180	180	180	180	180	180