# At the root of the North-South cooperation gap in Italy: Preferences or beliefs?

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**Abstract.**
The marked difference in the development of the North and the South of Italy represents a prototypical case of seemingly intractable within-country disparities. Recent research found that a plausible determinant of this socio-economic gap would be a difference in the ability to cooperate. Through a laboratory experiment we investigate whence this difference derives from distinct preferences or beliefs. Our findings indicate that Northerners and Southerners share the same individual pro-social preferences, and that the cooperation gap lies rather in the pessimistic beliefs that Southerners have about their cooperativeness. Southerners, furthermore, manifest a stronger aversion to social risk, as compared to the risk of nature. A policy implication is that an intervention or an event that reduced pessimistic beliefs would directly boost cooperation levels.

**Keywords.** Betrayal aversion, conditional cooperation, experiments, Italy.
**JEL codes:** C72, C93, Z13

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# 1 Introduction

The differences in socio-economic performance between the North and the South of Italy have persisted, widened even, since Italian Unification in 1861. The gap is reflected in many and diverse measures that reveal the worse position of the South, such as a systematically lower per-capita GDP, a higher unemployment rate, a higher child mortality rate (ISTAT, 2014), and even a lower rate of waste recycling (ISTAT, 2015). The classic studies by Edward Banfield (1958) and Robert Putnam (1993) that grappled with the North-South gap have propelled to international scholarly attention what in Italy goes under the name of *La Questione Meridionale*, which has become a *paradigmatic puzzle* of why sub-national equilibria can persist despite shared legal institutions, language, and religion. As Italy's major economic burden, the Southern regions are the epitome of seemingly intractable within-country differences.

In this study, we explore the roots of these differences, building on a previous large-scale lab-in-the-field experiment, which found that the ability to cooperate is lower in the South than in the North of Italy (Bigoni et al., 2016).[1] The data from that experiment point at a resilient behavioral difference that holds even if variations in geography, informal institutions, and incentives are experimentally suppressed, and after controlling for socio-demographic characteristics.[2] The same study also found that neither preferences for equality and efficiency, nor risk attitudes account for the cooperation gap. In this paper we aim to go further and identify the underlying mechanisms that could explain these different cooperation outcomes. We pursue two conjectures.

One is related to *conditional cooperation*. A conditional cooperator acts pro-socially not for sheer altruism, but as a reciprocal response to others' actions (Fischbacher et al., 2001). A conditional cooperator, for instance, is willing to sweep his sidewalk or to sort garbage, only if he anticipates that most of his neighbors will do the same, but not otherwise. In a society of conditional cooperators there can be equilibria with high levels of cooperation, sustained by optimistic expectations, and with low or no cooperation, sustained by pessimistic expectations. To explain the observed North-South gap, it would suffice to find either that conditional cooper-

[1] A similar result has also been found by Battiston and Gamba (2016).

[2] This outcome holds taking as measures of cooperation both the size of the contribution in a Public Good Game and the amount sent by trusters in a Trust Game: cooperation declines moving from the North to the South, at both county and individual level.

ation is weaker in the South than in the North, or that, in spite of similar pro-social preferences, Southerners' expectations on others' cooperation are more pessimistic than Northerners?.

A second conjecture – that does not necessarily exclude the first – relates to the attitude toward *social risks*, that is the aversion to the risk of being cheated by others. There is evidence that people's risk aversion is generally higher toward social risks than toward risks of nature, that is towards risks of equally harmful events that depend on bad luck (Bohnet and Zeckhauser, 2004). This phenomenon, known as betrayal aversion, seems to vary in intensity across societies (Bohnet et al., 2008). Betrayal aversion can play a relevant role in the choice to cooperate in a Public Good Game, in a Trust Game, and other social dilemmas. To explain the gap in cooperation levels it would suffice to find that Southerners are more averse than Northerners to being cheated.

These mechanisms lead to distinct policy implications. If Northerners and Southerners share the same preference for conditional cooperation, but have different expectation about others' cooperation level, a shift in beliefs, generated for instance by migration or by a positive shock, could directly improve overall cooperation levels. If instead what matters is a difference in the strength and support of conditional cooperation, a change in behavior would be harder to achieve because it would involve reshaping individual preferences, and would most likely take considerable time, as shown in the literature on the intergenerational transmission of preferences (Bisin and Verdier, 2000; Dohmen et al., 2012). In so far as the attitude towards social risk is a preference trait, the same conclusions would follow also if the betrayal aversion conjecture holds.

For our experimental study we recruited 424 participants from the pool of subjects of the laboratory of experimental economics at the University of Bologna, which attracts students from both the North and the South of Italy (Figure 1). The vast majority of participants completed primary school in their macro-area of origin (96% for the South, 91% for the North), and had at least one parent born there (100% and 85% respectively), which suggests that they have absorbed the social norms of the area where they come from. In order to disentangle the various factors that contribute to the ability to achieve and sustain cooperation, we designed two experiments. In Experiment 1, we study preferences for conditional cooperation, when holding

expectation constant. In Experiment 2, we study individual expectations on others' cooperative behavior and betrayal aversion. The design and the results of the two experiments are presented in Section 2 and 3, respectively. Section 4 discusses the main findings of this study and concludes.

# 2 Experiment 1 on Conditional Cooperation

## 2.1 Design

Experiment 1 elicited the contribution in a Public Good Game conditional on others' contribution choices.[3] We followed the design proposed by Fischbacher et al. (2001). Subjects were randomly assigned to groups of $N = 4$, and received an endowment of $w = 20$ tokens, which they could allocate between a group project ($g_i$) – with a marginal per capita return ($\alpha$) of 0.4 – and a private account ($w - g_i$). Earnings were determined as follows:

$$\pi_i = w - g_i + \alpha \sum_{j=1}^{N} g_j \tag{1}$$

Each subject had to make two types of decisions. The first decision is the *unconditional* choice of how many tokens to contribute to the group project. The second type of decisions are a series of conditional contribution choices. Subjects had to indicate how many tokens they were willing to contribute, given the average contribution to the group project of the other group members. The scenarios for others' contributions ranged from 0 to 20 tokens, in steps of 1 (strategy method). Each subject was paid only for one of his decisions. The relevant decision for payment was the unconditional one for three members of each group. For the fourth group member, selected at random, the relevant decision was the conditional decision corresponding to the realized average contribution of the others. At the end of the session, subjects were informed about their relevant decision, the total contributions to the group project, and their earnings.

[3] After the conditional cooperation task, we also elicited time preferences, which will be analyzed in a separate paper. The instructions of Experiment 1 also include the elicitation of time preferences (see Appendix 1). Feedback was given at the end of the session to avoid any possible carry over effect.

Figure 1: North and South of Italy


**Notes:** Classification in North, Center, and South macro-regions follows the definitions of the National Institute of Statistics (ISTAT). In our experiments we had participants from all shaded regions, except Valle d'Aosta (North), the smallest Italian region. 231 participants were born in the South and 193 in the North. In the data analysis we excluded data for the 26 participants born in the Central regions and 2 born abroad, and concentrate on the gap between North and South.

## 2.2 Experimental procedures

We recruited college students from the University of Bologna that originated from a wide variety of Italian regions. Unlike a representative sample of the population, college-educated participants are better suited to handle some complexities embedded in the experimental designs. The recruitment aimed at covering the South and the North of Italy, excluding the Center. To this end, we invited only subjects born in a specific set of regions. The experiment was conducted at the Bologna Laboratory for Experiments in Social Sciences (BLESS) and at the Laboratorio di Economia Sperimentale (LES) in Forlì. The recruitment strategy in this paper nicely complements the strategy followed in Bigoni et al. (2016). They employed a representative sample of the Italian population, which delivers a high level of external validity but presents limitation on the type and difficulty of the tasks that can be administered. Moreover, Bigoni et al. (2016)studied only four Italian counties, whereas here we broaden the sample to give a nation-wide dimension to the findings.

Each subject could participate in only one of the sessions reported in this paper. Upon arrival, subjects were seated at a visually separated desk and no form of communication was allowed during the experiment. The instructions were read aloud to ensure common knowledge and then subjects answered to control questions before engaging in the task. At the end of the sessions, we administered a computerized questionnaire where we elicited socio-demographic characteristics. Earnings were expressed in tokens and payments were made in private. Recruitment was done using ORSEE (Greiner, 2015) and the design was implemented through z-Tree software applications (Fischbacher, 2007). Recruitment procedures were the same in Experiment 1 and 2.

There were 7 sessions with a number of participants ranging from 19 to 24, for a total of 134 subjects.[4] A session lasted on average about 1 hour. The conversion rate was 4 tokens per Euro and the overall average per-capita earnings were 18 Euros including a 4 Euros show-up fee.[5]

[4]We explicitly mention the geographical constraint in the recruitment message for the first sessions, while in the last four sessions we were able to send the invitation exclusively to subjects born in the regions of interest, thanks to an update of the recruitment software.

[5]Average per capita earnings in Experiment 1 include the time-preference task, not discussed here. In the time-preference task earnings were expressed in Euros and always paid via bank transfer.

## 2.3 Results

**Result 1** *Participants from the South and from the North display a similar preference for conditional cooperation.*

Figure 2: Conditional cooperation in the Public Good Game

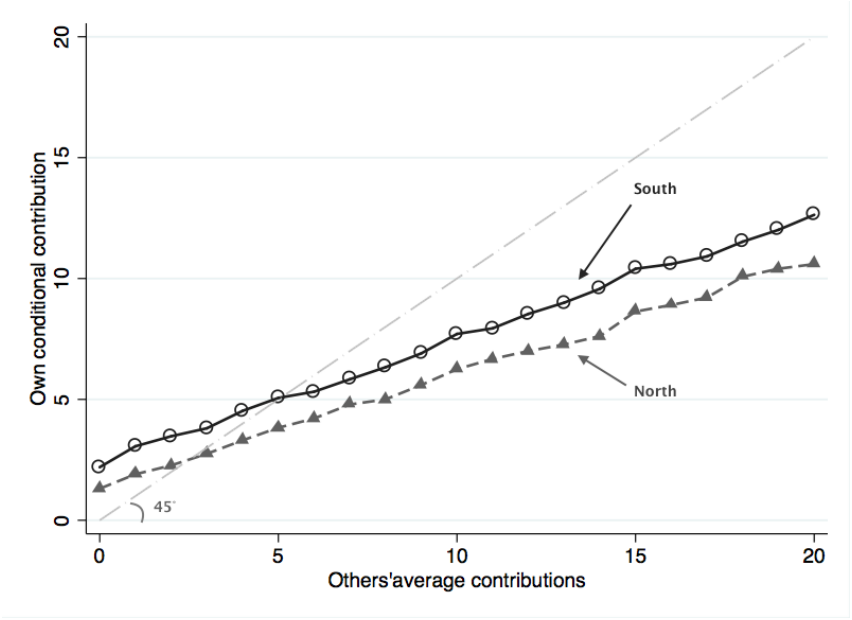



Figure 2 and Table 1 provide support for Result 1. Participants on average varied their contribution depending on the contributions of others. Such link is present both for participants from the North and from the South. These phenomenon is illustrated by the positive slope of the lines in Figure 2 and by the positive correlation at the individual level between own and others' contributions (North: avg.corr.=.69, $N = 52$; South: avg.corr.=.71, $N = 82$). Participants from the North, though, do not differ in a statistically significant manner from those from the South with respect to this correlation (p-value=0.714, two-sided Wilcoxon rank-sum test, $N_N = 52$ and $N_S = 82$).

A regression analysis confirms these findings. Table 1 presents results from OLS regressions explaining the level of contributions conditional on others' choices when pooling participants from the North and the South. In Model 1, we include the variable *Others' average contribution* and a set of controls. *Others' average contributions* is positive and highly significant coefficient, hence showing the presence of conditional cooperation. In Model 2, we include a dummy for those born in the *North* and interact the variable *Others' average contributions* with the *North*

Table 1: Regression on conditional cooperation

| *Dep. var.: Contribution to PGG for a given contribution of others* | Entire sample Model 1 | Model 2 | Rooted sample Model 3 |
|---|---|---|---|
| Others' average contribution | 0.495*** | | |
| | (0.011) | | |
| Others' average contribution x North | | 0.469*** | 0.469*** |
| | | (0.018) | (0.021) |
| Others' average contribution x South | | 0.512*** | 0.499*** |
| | | (0.014) | (0.015) |
| North | | -0.569 | -1.493 |
| | | (1.088) | (1.264) |
| Controls | Yes | Yes | Yes |
| Constant | 5.603*** | 5.509*** | 5.875*** |
| | (1.093) | (1.100) | (1.144) |
| N.obs., N.subjects | 2814, 134 | 2814, 134 | 2499, 119 |
| $R^2$ | 0.255 | 0.259 | 0.262 |

**Notes:** OLS regression with individual level random-effects. Dependent variable: individual conditional contribution to the public account (21 choices for each subject). Controls include: *Male, Experiment run in Forlí, Low task comprehension, Impulsivity score, Logic score*. *Male* takes value 1 for males and 0 for females. *Experiment run in Forlí* takes value 1 for the sessions run in the Forlí campus and 0 for the sessions run in the Bologna campus of the University of Bologna. To account for participants' understanding of instructions, we use the answering time and the number of mistakes they did in the control questions. We classified the task comprehension as low for those subjects who were in the last decile according either to their total answering time, or to their total number of mistakes (this measure was built at the session level). The *Impulsivity score* ranges from 0 to 3 and is the total score in a non-incentivized Cognitive Reflection Test (Frederick, 2005), while the *Logic score* ranges from 0 to 2 and is based on a simplified version of the Raven's progressive matrices test (not incentivized). Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

and *South* dummies. The difference between the two estimated coefficients of the interacted variables is only marginally statistically significant (p-value=0.058). In Model 3 we replicate the regression of Model 2 on a rooted sample, which is restricted to subjects who have completed the primary school in the macro-region of birth, and have at least one parent born in the same macro-region. In this case no significant difference emerges between the behavior of subjects from North and South (p-value=0.247).

The aggregate behavior illustrated by Figure 2 and Table 1 is compatible with a variety of individual patterns of conditional cooperation. For this reason, we classify subjects into four types (Table 2). Following Fischbacher et al. (2001), we label a subject as a *conditional co-*

Table 2: Taxonomy of participants in the Public Good Game

| **Type** | South (%) | North (%) | Total (%) |
|---|---|---|---|
| Conditional cooperators | 70 | 62 | 66 |
| Unconditional: | | | |
| Free-riders | 9 | 17 | 12 |
| Altruists | 2 | 2 | 2 |
| Others | 19 | 19 | 19 |
| **Total** | 100 | 100 | 100 |

*operator* if he has a highly significant (p-value $\leq 1\%$) and positive Spearman rank correlation coefficient or his contribution pattern is monotonically increasing. A *free-rider* is a subject that always contributes 0. An *altruist* is a subject who always contributes more than 15 tokens, unconditionally on others' contributions.

Overall, about two thirds of the subjects are conditional contributors, with similar shares in both macro-regions. About 7% of the subjects matched exactly other's contributions. The percentage of free-riders among the Northerners is almost twice as large as the percentage among the Southerners. Altruists account only for a very small fraction of the population. The distribution of types is not significantly different across macro-regions (Fischer exact test: p.value=0.466, $N_N = 52$ and $N_S = 82$).[6]

To sum up, the data from Experiment 1 established that the average preference for conditional cooperation is indistinguishable among Northerners and Southerners. In a society of conditional cooperators, however, similar preferences for conditional cooperation could lead to very different cooperation levels depending on belief s about others' behavior. The Italian cooperation gap could either originate from different beliefs about others' behavior or different tolerance for social risk. We explore these two mechanisms in Experiment 2. Both mechanisms could independently or jointly lower the ability of a society to achieve cooperative outcomes.

[6]In the unconditional decision, subjects contributed on average about half of their endowment (10.49). Contributions were slightly higher among Southerners than Northerners (10.74 vs. 10.08), but the difference was not statistically significant (two-sided Wilcoxon rank-sum test, p=0.579, $N_N = 52$ and $N_S = 82$). OLS regressions provide similar results. Contrary to Bigoni et al. (2016), here participants were interacting with others from all parts of Italy. The geographical composition of the group could indeed affect belief s about others' contributions and therefore unconditional cooperation.

# 3 Experiment 2 on Beliefs and Betrayal Aversion

## 3.1 Design

In Experiment 2 we elicited betrayal aversion (Part 1) and then beliefs about the ability to cooperate in the North and South of Italy (Part 2). For the sake of exposition, we reverse the order in which we present the tasks.

**Beliefs.** We asked subjects to estimate the cooperation levels realized in a previous experiment run in the North and South of Italy. The task was a Public Good Game run in separate sessions in the city of Cuneo and Crotone with a representative sample of the Italian population (Figure 1). Before eliciting beliefs, we read the instructions of the original experiment (Bigoni et al., 2016) where it was publicly announced that all participants were born and resident in the province where the experiment was conducted.[7] In the original experiment, subjects interacted for 8 rounds in groups of $N = 4$ strangers (random matching).[8]

Each participant had to provide two estimates of the average contribution across 8 rounds, one for Cuneo, the other for Crotone.[9] An estimate had to be an integer number between 0 and 20 tokens. We randomly selected two subjects from the original experiment, one from Crotone, the other from Cuneo. These two random draws were repeated for every session of Experiment 2 to limit information leakage across sessions. Everyone was paid according to one of the two estimates, selected at random, which was then compared to the actual contribution of a single subject taken from the original experiment. Belief elicitation was incentivized by means of a quadratic scoring rule (see Appendix 1). A subjects could earn up to 26 tokens for an accurate estimate (+/− 1 token). Deviations larger than 5 tokens yielded zero tokens.

[7] We read the Part 2 instructions from the PG session of Bigoni et al. (2016), and asked subjects to answer the same control questions.

[8] Payoffs were as in Expression (1) with $w = 20$, $\alpha = 0.5$, and $g_i = 0, 6, 14,$ or 20.

[9] The list of cities was not disclosed in advance, to avoid any demand effect. The order of the cities was randomized within each session. For each estimate, subjects could see on their screen a map of Italy showing the city location.

**Betrayal aversion.** This part comprised two between-subjects treatments – *Trust* and *Risky Dictator* – based on the experimental set-up proposed by Bohnet et al. (2008).[10] Subjects interacted in pairs with a first mover (blue) and a second mover (red). Pair matching and roles were randomly determined.[11] Betrayal aversion is measured as the difference in the average choice of the first movers between the *Trust* and the *Risky Dictator* treatment.

In the *Trust* treatment – meant to capture preferences toward social risk – blue faces alternatives A and B (Figure 3). Under alternative A both subjects earn 10 tokens and red takes no decision. Under alternative B, earnings in the pair depend on the choice of red, who can choose between options 1 or 2. Option 1 delivers 15 tokens to both subjects while with option 2 blue earns 8 tokens and red earns 22.

The implementation of the game is such that blue (first mover) does not directly choose between the alternatives A and B, but states under which circumstances he prefers A over B. More precisely, he states a number between 0 and 100 that indicates the minimum percentage of red (second movers) choosing option 1 that he requires in order to prefer the "risky" alternative B over the "safe" alternative A. This threshold number is called the minimum acceptable probability (MAP, henceforth). Red always makes a choice, without knowing blue's choice in advance. To determine the game outcome and subjects' payoffs, one needs to compare at the end of each session the MAP in the pair with the realized percentage of second movers choosing option 1 in the session ($p$, henceforth). Alternative A was implemented in the pair if the session's $p$ was smaller than the MAP, and alternative B otherwise.[12]

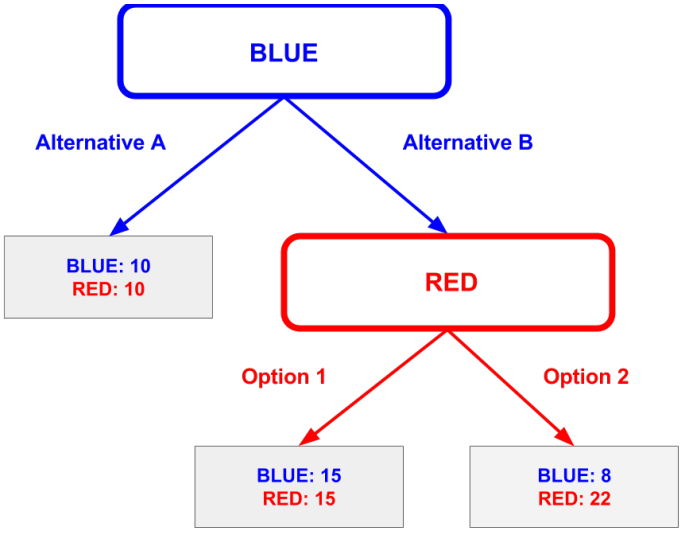
The *Risky Dictator* treatment is meant to capture preferences toward the risk of nature. It is alike the *Trust* treatment, with one difference: reds (second movers) are passive players because their actions are determined by chance. The probability of selecting option 1 or 2 was set by the share of second movers' choices observed in one previous session of the *Trust* treatment. Feedback for the Trust and Risky Dictator tasks were given at the end of the session to avoid

[10] We departed from Bohnet et al. (2008) as we used a different payoff structure, rewrote the instructions, and did not run the treatment where subjects played a lottery against nature (i.e. the Decision Problem).

[11] Red and blue subjects were in the same room and read the same instructions.

[12] At the end of the experiments, everyone observed the outcome in his pair. In addition, first movers observed the RP in the session.

Figure 3: Trust treatment




any possible carry over effect (see Section 2.2 for detailed procedures).

A risk-neutral payoff-maximizer would chose a MAP of about 29%. To see this, one should equalize the certain payoff of 10 from Alternative A to the expected payoff from alternative B, $15p + 8(1 - p)$, where $p$ denotes the probability that option 1 is selected. The MAP is the probability $p$ that solves this equation. A person with no aversion to betrayal would state the same MAP in the *Trust* and *Risky Dictator* treatments. A person that is averse to betrayal would state a higher MAP in the *Trust* than in the *Risky Dictator* treatment.

**Procedures.** Experiment 2 involved 290 subjects (141 from the North and 149 from the South), divided in 15 sessions; session participants ranged from 10 to 31. Earnings were expressed in tokens. The conversion rate was 2 tokens per Euro and the overall average per-capita earnings were 14 Euros, including a 4 Euros show-up fee. For more details about the experimental procedures see Section 2.2.

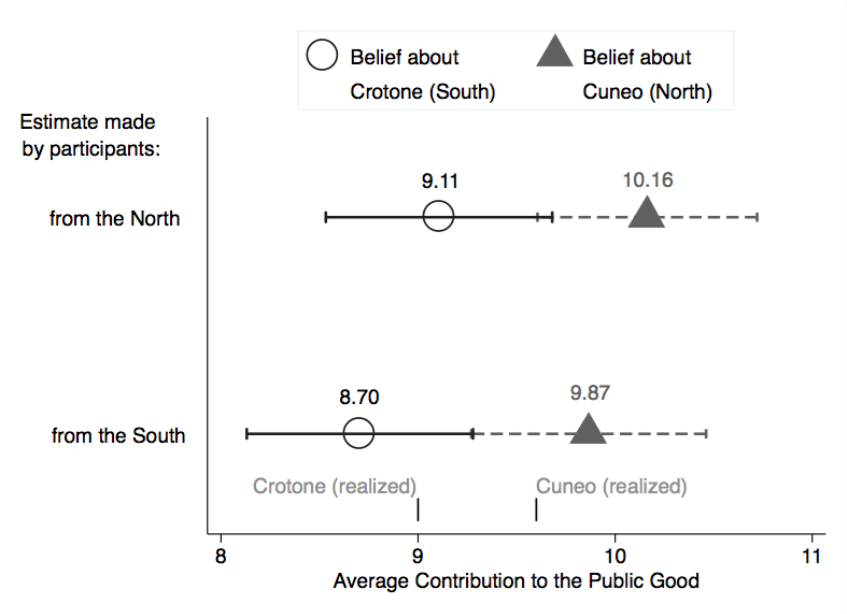
### 3.2 Results

**Result 2** *Participants expect higher cooperation in the North than in the South.*

Support for Result 2 comes from Figure 4 and Table 3. There is a widespread belief that people in Cuneo (North) contribute in a Public Good Game more than people in Crotone (South) and this difference is statistically significant (two-sided Wilcoxon signed-rank test: p<0.001, $N = 290$). More precisely, the average estimate is 10.01 tokens for Cuneo, and 8.90 tokens for Crotone. This belief is shared among participants from both the North and the South (two-sided Wilcoxon signed-rank test: p=0.003, $N = 141$; p<0.001, $N = 149$, respectively).

This result is confirmed by regressions in Table 3. Subjects on average believe that contributions are 1.1 tokens higher in Cuneo than in Crotone (Model 1, coefficient for *Cuneo*). In Model 2, we include a dummy for people who were born in the *North*, and interact the variable *Cuneo* with *North* and *South* dummies. The difference between the two estimated coefficients of the interacted variables is not statistically significant (p-value=0.836). This result holds even if we restrict the sample to subjects rooted in their macro-area (Model 3, p-value=0.758).

Figure 4: Beliefs about cooperation




**Notes:** the vertical dashed lines report the average contribution levels observed in Bigoni et al. (2016). The whiskers denote 90% confidence intervals.

**Result 3** *Participants from the South display a significant aversion to betrayal.*

Table 3: Regression on beliefs about cooperation

| *Dep.var.: Belief about avg.contrib. in a PGG in Cuneo or Crotone* | Entire sample | | Rooted sample |
|---|---|---|---|
| | Model 1 | Model 2 | Model 3 |
| Cuneo | 1.110*** | | |
| | (0.251) | | |
| North | | 0.090 | 0.000 |
| | | (0.514) | (0.560) |
| Cuneo x North | | 1.057*** | 1.106*** |
| | | (0.361) | (0.400) |
| Cuneo x South | | 1.161*** | 1.271*** |
| | | (0.351) | (0.354) |
| Controls | Yes | Yes | Yes |
| Constant | 8.193*** | 8.161*** | 7.967*** |
| | (0.578) | (0.598) | (0.625) |
| N.obs., N.subjects | 580, 290 | 580, 290 | 514, 257 |
| $R^2$ | 0.059 | 0.059 | 0.076 |

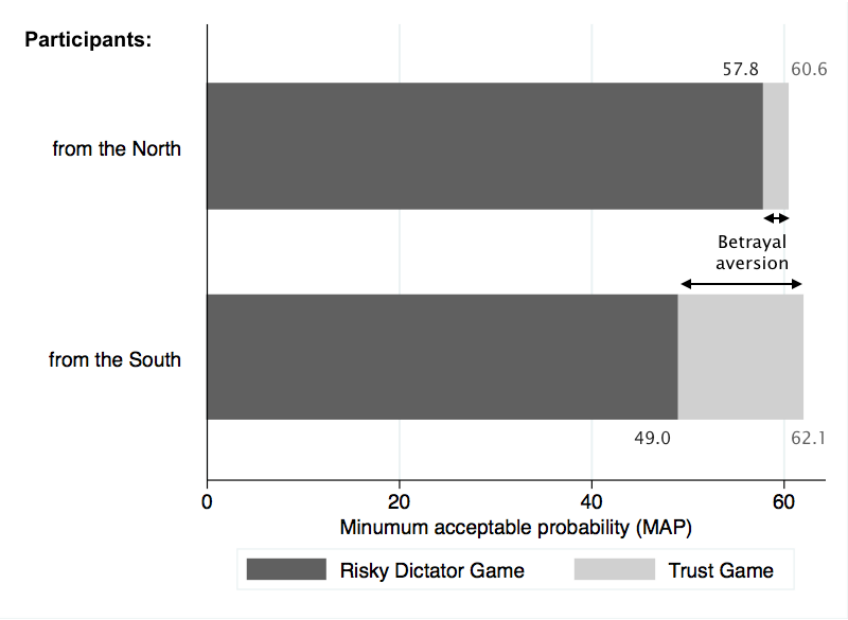
**Notes:** OLS regression with individual-level random effects. Every subject makes two estimates. See notes to Table 1 for a description of *Controls*. Default location is Crotone (South). Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Table 4: Regression on betrayal aversion

| *Dep. var.: MAP in Trust and Risky Dictator treatments* | Entire sample | | Rooted sample |
|---|---|---|---|
| | Model 1 | Model 2 | Model 3 |
| Trust treatment | 10.374** | | |
| | (4.091) | | |
| North | | 4.862 | 4.914 |
| | | (6.156) | (6.627) |
| Trust treatment x North | | 6.905 | 10.581 |
| | | (6.029) | (7.033) |
| Trust treatment x South | | 13.285** | 13.157** |
| | | (5.567) | (5.586) |
| Controls | Yes | Yes | Yes |
| Constant | 39.001*** | 37.859*** | 37.691*** |
| | (6.229) | (6.407) | (6.667) |
| N.obs. | 146 | 146 | 128 |
| $R^2$ | 0.081 | 0.086 | 0.110 |

**Notes:** OLS regression. One observation per subject. See notes to Table 1 for a description of *Controls*. Default decision refers to the Risky Dictator treatment. Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5%, and 10% level, respectively.

Figure 5: Betrayal aversion




**Notes:** 72 observations from the North, and 74 observations from the South. One observation per subject.

Support for Result 3 comes from Figure 5 and Table 4. Following Bohnet et al. (2008) we say that there is betrayal aversion if the minimum acceptable probability stated in the Trust treatment is higher than in the Risky Dictator treatment. We measure betrayal aversion at the aggregate level, and not at the individual level, because of the between-subject design.

The degree of betrayal aversion across Italian macro-regions is illustrated in Figure 5 by the white portion of the bars. Subjects from the South of Italy display a substantial degree of betrayal aversion (13.1 percentage points) which is statistically significant (two-sided Wilcoxon rank-sum test, p=0.027, $N_T = 38$ and $N_{RD} = 36$). The degree of betrayal aversion among subjects from the North is much smaller (2.8 percentage points) and is not statistically significant (two-sided Wilcoxon rank-sum test, p=0.552, $N_T = 40$ and $N_{RD} = 32$).

These results are confirmed by the OLS regressions presented in Table 4. Model 1 shows that overall participants display betrayal aversion. Models 2 and 3 reveal that betrayal aversion is significant only for subjects from the South (*Trust treatment* $\times$ *South*). According to an F-test, however, the degree of betrayal aversion does not significantly differ among Southerners and Northerners (p-value=0.436 for Model 2, p-value=0.773 for Model 3).

# 4 Discussion and Conclusions

Stark regional disparities in income are common in many countries (Ezcurra and Rodríguez-Pose, 2013) and policies aimed at reducing within-country differences have commanded a lot of attention in Europe and elsewhere. These policies have mostly focused on equalizing opportunities and conditions across areas, while people's preferences and beliefs have hardly been taken into consideration in this debate (Brosig-Koch et al., 2011; Rustagi and Veronesi, 2016 are exceptions). However, in so far as regional differences in preferences and beliefs are found to explain regional differences in cooperation, they may be precious in identifying which policies are more likely to succeed. To this end, we have taken Italy as a case-study and have measured beliefs and key economic preferences by using the rigorous methodology of experimental economics.

Previous results suggest that a difference emerges in the ability to cooperate observed between the North and the South of Italy, which is not reflected in individual preferences for equity or efficiency, as measured though Dictator Games (Bigoni et al., 2016). Here we go further, and investigate the possible causes of such cooperation gap.

Our study confirms that the problem of cooperation in the South relative to the North does not lie in differences in pro-social preferences. We report that conditional cooperation is not responsible for the gap: in both macro-regions, the same proportion of subjects, two-thirds, behave as conditional cooperators, increasing their contribution in the Public Good Game in response to the other members of their group increasing theirs. One may conjecture that a self-selection issue emerges here, if the most cooperative students tend to choose the university of Bologna. This would imply that we failed to detect a regional difference in preferences for conditional cooperation, simply because the southern students in our experiment would be on average more cooperative than those who remained in the South. We cannot rule this out completely. Still, a recent experiment on the college choices of high-school students from the South (Calabria) shows that, at the aggregate level, preferences for conditional cooperation do not differ between those who move to the Center-North of Italy and those who stayed in the South.[13]

[13]Presentation of Andrea Ichino at IZA, November 15, 2016: *Civicness drain: Emigrants' self-selection and social norms in the place of origin*, `http://legacy.iza.org/de/webcontent/events/izaseminar_description_`

The cause of the difference in cooperative ability hence lies elsewhere. First, Northerners and Southerners differ in the aversion to social risk, which is present among the latter, but negligible among the former. The pattern of statistical significance based on the behavior in a Trust Game, however, is inconclusive: betrayal aversion is significantly different from zero among Southerners and but not among Northerners, yet the two values do not significantly differ from each other. The low number of subjects (ca. 70) may have something to do with this. It is nonetheless tempting to speculate on this result as it seems a promising avenue of further study. A more intense aversion to betrayal could be due to engrained conventional values that hold people who are cheated in lower esteem than people who cheat –*fool me once shame on me*. Or it could be a response to the expected cost of being cheated, the fear that one could have to bear the cost of redress and reputation re-building privately rather than rely on public or social justice.

Our more robust result puts the responsibility for cooperation disparities squarely on more pessimistic expectations about how much others are likely to contribute in the Public Good Games: Southerners have more conservative beliefs about other Southerners' contribution, than Northerners have about other Northerners. Interestingly, these lower expectations are shared by the Northerners when asked about Southerners.

Our findings suggest that the distance between the North and South of Italy pertains to a dimension of social interaction. The observed regional difference in behavior is not rooted in individual pro-social preferences, as suggested by Banfield. What really matters are the beliefs about others' cooperative behavior and the preferences toward social risk. The coherent picture offered by our findings throws up further questions on the historical origins of both the different cooperative beliefs and the different weight attributed to social vs. natural risk across Italy, but these are left for future research.

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`html?sem_id=2964`.

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## References


Banfield, E. C. and L. Fasano (1958). *The Moral Basis of a Backward Society.* The Free Press.

Battiston, P. and S. Gamba (2016). When the two ends meet: An experiment on cooperation across the Italian North-South divide. LEM Papers Series 2016/41, Laboratory of Economics and Management (LEM), Sant'Anna School of Advanced Studies, Pisa, Italy.

Bigoni, M., S. Bortolotti, M. Casari, D. Gambetta, and F. Pancotto (2016). Amoral familism, social capital, or trust? The behavioural foundations of the Italian North-South Divide. *The Economic Journal 126*(594), 1318–1341.

Bisin, A. and T. Verdier (2000). "Beyond the Melting Pot": Cultural Transmission, Marriage, and the Evolution of Ethnic and Religious Traits. *The Quarterly Journal of Economics 115*(3), 955–988.

Bohnet, I., F. Greig, B. Herrmann, and R. Zeckhauser (2008). Betrayal Aversion: Evidence from Brazil, China, Oman, Switzerland, Turkey, and the United States. *American Economic Review 98*(1), 294–310.

Bohnet, I. and R. Zeckhauser (2004). Trust, risk and betrayal. *Journal of Economic Behavior & Organization 55*(4), 467–484.

Brosig-Koch, J., C. Helbach, A. Ockenfels, and J. Weimann (2011). Still different after all these years: Solidarity behavior in East and West Germany. *Journal of Public Economics 95*(11-12), 1373–1376. cited By 29.

Dohmen, T., A. Falk, D. Huffman, and U. Sunde (2012). The Intergenerational Transmission of Risk and Trust Attitudes. *The Review of Economic Studies 79*(2), 645–677.

Ezcurra, R. and A. Rodríguez-Pose (2013). Does economic globalization affect regional inequality? A cross-country analysis. *World Development 52*, 92–103.

Fischbacher, U. (2007). z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics 10*(2), 171–178.

Fischbacher, U., S. Gächter, and E. Fehr (2001). Are people conditionally cooperative? Evidence from a public goods experiment. *Economics Letters 71*(3), 397–404.

Frederick, S. (2005). Cognitive reflection and decision making. *The Journal of Economic Perspectives 19*(4), 25–42.

Greiner, B. (2015). Subject pool recruitment procedures: Organizing experiments with orsee. *Journal of the Economic Science Association 1*(1), 114–125.

ISTAT (2014). La mortalitá dei bambini ieri e oggi in italia. Technical report.

ISTAT (2015). Italia in cifre: edizione 2015. Technical report.

Putnam, R., R. Leonardi, and R. Nanetti (1993). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton University Press.

Rustagi, D. and M. Veronesi (2016). Social identity, attitudes towards cooperation, and social preferences: Evidence from Switzerland. Working Papers 01/2016, University of Verona, Department of Economics.

# Appendixes

## 1 Instructions

### Instructions (Experiment 1)

Welcome. The goal of this study is to understand how people take decisions. Starting from now and till the end of the study, no form of communication with the other participants is allowed. Please switch off your mobile phones. You have earned € 4 for showing-up on time. During the study, you will be able to earn additional money, depending on your choices and the choices of the other participants.

### Part 1: Instructions

**Tokens and payments.** All the earnings for this first part will be expressed in tokens. Tokens will be converted at the end of the study at the rate of € 1=3 tokens. Your earnings for this part will be paid to you in cash and anonymously at the end of the study; other participants will not be informed about your earnings.

**Group formation.** In this part, you will be assigned to a group of four people. Groups will be formed randomly by the computer. Nobody will be informed about the identity of the other people in the group.

**Decisions to make.** You have to decide how to use 20 tokens. You can put the 20 tokens in your personal account or invest them – all or part of them – in a common project. Every token not invested in the common project will be automatically put in your personal account.

**Your earnings from the personal account.** For every token you put in the personal account, you earn exactly one token. For instance, if you put all 20 tokens in your personal account – i.e., you invest 0 in the common project – you get exactly 20 tokens. Instead, if you put 6 tokens in

your personal account, you get 6 tokens from the account. There could be additional earnings coming from the common project.

**Your earnings from the common project.** In contrast with the personal account, everything you invest in the common project generate some earnings for all the group members. The earnings from the common project will be divided equally among all group members. Of course, you will also benefit from the tokens invested in the common project by you and by the other members of the group. More precisely, you earnings from the project are computed as follows:

*Your earnings from the common project= Sum of the investments in the common project x 0.4*

Let consider some example:

- If the sum of your investments and the investments of the other group members is equal to 60, everyone in the group – you included – earns 24 tokens from the common project. That is, $60 \times 0.4 = 24$
- If the sum of your investments and the investments of the other group members is equal to 10, everyone in the group – you included – earns 4 tokens from the common project. That is, $10 \times 0.4 = 4$

**Your total earnings.** Your total earnings will be equal to the sum of the earnings obtained from your personal account and from the common project.

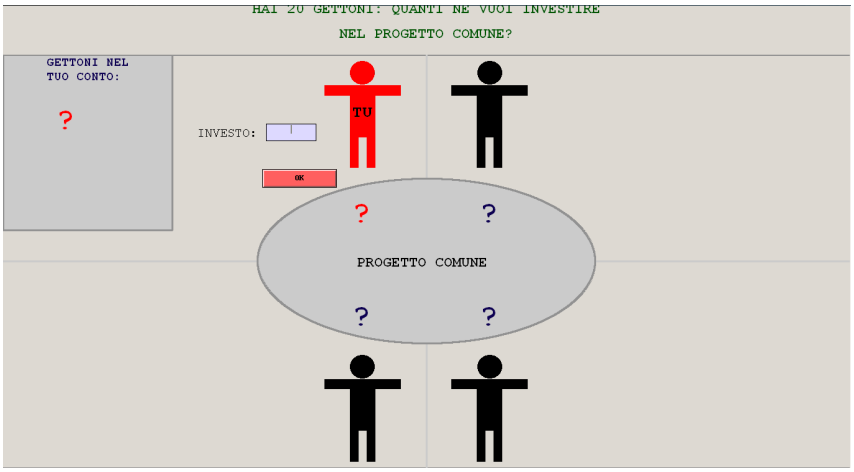
*Your total earnings = Earnings from the private account + Earnings from the common project*
*Your total earnings = (20 - Investment in the common project) + (Sum of the investments in the common project x 0.4)*

Before proceeding, we ask you to answer a few questions. The answers to these questions won't influence your earnings. If you have any question or doubt, please rise you hand and one of us will come to your desk to answer.

$\Longrightarrow$ ——— *new page* ——— $\Longleftarrow$

**How to proceed.** In this part, you will have 20 tokens and you will have to decide how many tokens to put in your private account and how many to invest in the common project. Each participant, will have to make two decisions – decision A and B.

Figure A-1: Decision A

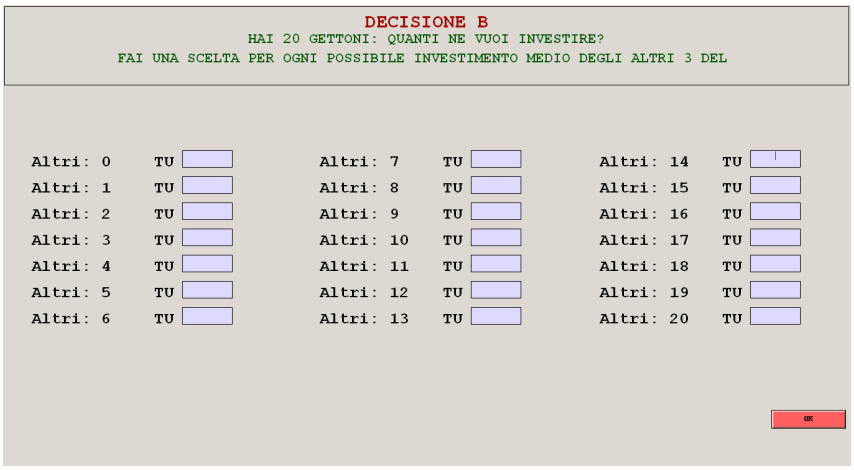



- **Decision A.** You have to decide how many tokens, out of 20, you want to invest in the common project. A screen like the one in Figure A-1 will be displayed: you have to enter an integer between 0 and 20 in the gray field. That number corresponds to the money you intend to invest in the common project. A confirmation box will appear as soon as you make your decision and tap OK. Please, try to enter a number and press OK. You should be able to see the confirmation box and the amount you invested in the common project (central part of the screen). You should also be able to see how much you put in your personal account (upper-left part of the screen).

- **Decision B.** After Decision A, you will see a screen like the one in Figure A-2. In each cell of the table there is a possible (rounded) average investment by the other three members of your group. The cell in the upper-left corner represents the case in which none of the other group members have invested in the common project. The cell in the bottom-right corner represents the case in which all of the other group members have invested 20 tokens in the common project. For every cell, you have to enter an integer between 0 and 20. That number corresponds to the money you intend to invest in the common project if the average investment by the other group members is the one indicated in that cell. In

Decision B, you can vary your investment level in the common project based on the average investment by the other group members. Please notice that you have to make 21 decisions, one for each cell. You have to say how much you want to invest in the common projects if the others have invested on average 0, 1, 2, 3 etc. Once you have made all 21 decisions, you have to tap OK (bottom part of the screen) to confirm.

Figure A-2: Decisione B




**Earnings.** A random draw will determine if your payment will depend on Decision A or B. You won't know which decision will be relevant when deciding. It is hence in your best interest to pay attention to both decisions. At the end of today's session, one member of each group will be randomly selected. Decision B will be implemented for the selected participant, while Decision A will be implemented for the others. Let consider a few example together to better understand how your payments will be computed.

**Example 1.** Consider the following scenario. Please bear in mind that it is just an example to better understand how you will be payed.

- **You have** been selected and your Decision B will be implemented. It follows that Decision A will be implemented for the other 3 members of your group;
- The investments by the other 3 group members in Decision A are: 0, 2, and 4 tokens;
- The average investment of the non-selected group members is equal to 2 tokens: $(0 + 2 + 4)/3 = 2$;
- In Decision B you stated that you want to invest 1 token if the others invested 2 on average;

- Therefore, the total investment in the common project is: $0 + 2 + 4 + 1 = 7$ tokens;
- Your earnings from the common project are: $7 \times 0.4 = 2.8$ tokens;
- Your total earnings are: 19 tokens from your personal account (you invested 1, so you have 19 left) plus 2.8 tokens from the common project, for a total of 21.8 tokens;
- Consider instead the following: in Decision B, you have decided to invest 19 tokens in the common project. The total investment in the common project is: $0 + 2 + 4 + 19 = 25$ tokens
- In this case, your earnings from the common project are $25 \times 0.4 = 10$ tokens;
- Your total earnings are: 1 token from your personal account (you have invested 19, so you are left with 1) plus 10 tokens from the common project, for a total of 11 tokens.

**Example 2.** Consider the following scenario. Please bear in mind that it is just an example to better understand how you will be payed.

- **You have not** been selected and your Decision A will be implemented. It follows that for one of the other 3 group members Decision B will be implemented;
- In Decision A, you have decided to invest 16 tokens and the other 2 non-selected members of your group have invested 18 and 20;
- The average investment of the non-selected group members is equal to 18 tokens: $(16 + 18 + 20)/3 = 18$;
- The selected participant stated that he/she wants to invest 1 token if the others invested 18 on average;
- Therefore, the total investment in the common project is: $16 + 18 + 20 + 1 = 55$ tokens;
- Your earnings from the common project are: $55 \times 0.4 = 22$ tokens;
- Your total earnings are: 4 tokens from your personal account (you invested 16, so you have 4 left) plus 22 tokens from the common project, for a total of 26 tokens;

- Consider instead the following: in Decision B, the selected person have decided to invest 19 tokens in the common project. The total investment in the common project is: $16 + 18 + 20 + 19 = 73$ tokens;
- In this case, your earnings from the common project are $73 \times 0.4 = 29.2$ tokens;
- Your total earnings are: 4 token from your personal account (you have invested 16, so you are left with 4) plus 29.2 tokens from the common project, for a total of 33.2 tokens.

Is there any question?

$\Longrightarrow$ ——— *new set of instructions* ——— $\Longleftarrow$

## Part 2: Instructions

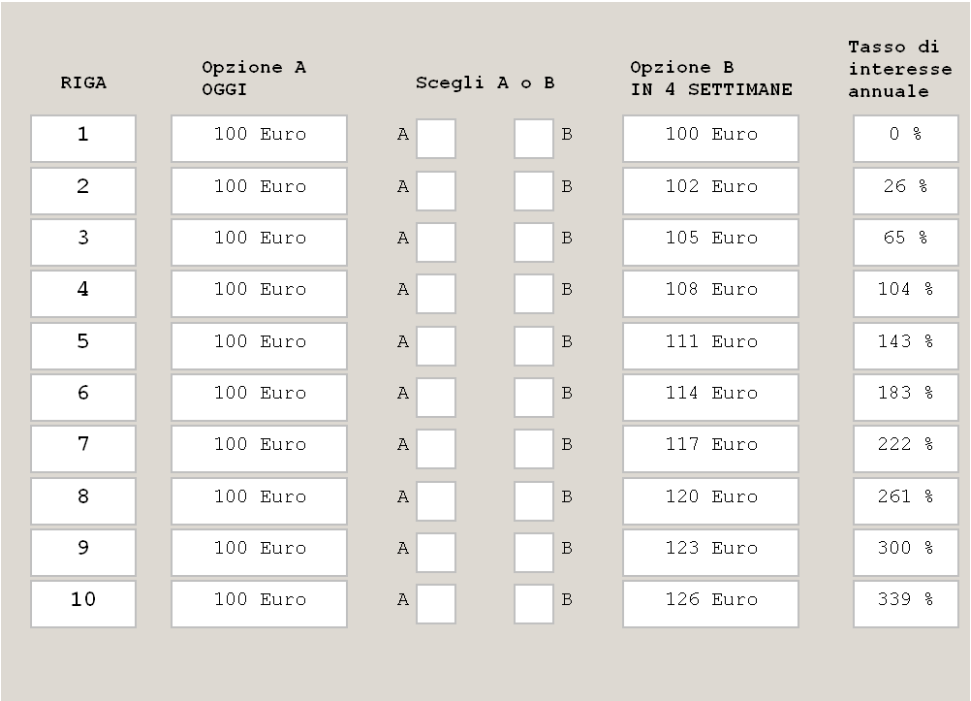
**The decision.** You will face 10 situations; in each situation, you have to decide between an amount of money today and a larger amount in 4 weeks. You can see the 10 situations on the screen and in Figure A-3. Each situation requires to decide between two options:

- **Option A:** a bank transfer of 100 Euro to be executed **today**;
- **Option B:** a bank transfer of 100 Euros or more to be exectued in **4 weeks** from now.

**Payment.** If you chose Option A, the bank transfer will be executed **today**, before midnight. If you chose Option B, the money will be wired in **4 weeks** from today, before the midnight of the due day. From the moment the transfer is wired, it usually takes about two day before you can dispose of the money on your bank account. The lag is the same for both options. Therefore, the money won't be available on your account the very same day the transfer is made.

Every situation corresponds to a row in the decision table. For each row, you must indicate if you prefer Option A or B. For instance, in the first row you must say if you prefer 100 Euros today (Option A) or 100 Euros in 4 weeks (Option B). In the second row, you must say if you prefer 100 Euros today (Option A) or 102 Euros in 4 weeks (Option B). In the last row, you must say if you prefer 100 Euros today (Option A) or 126 Euros in 4 weeks (Option B). Next

Figure A-3: Choice between A and B



| RIGA | Opzione A OGGI | Scegli A o B | | Opzione B IN 4 SETTIMANE | Tasso di interesse annuale |
|---|---|---|---|---|---|
| 1 | 100 Euro | A | B | 100 Euro | 0 % |
| 2 | 100 Euro | A | B | 102 Euro | 26 % |
| 3 | 100 Euro | A | B | 105 Euro | 65 % |
| 4 | 100 Euro | A | B | 108 Euro | 104 % |
| 5 | 100 Euro | A | B | 111 Euro | 143 % |
| 6 | 100 Euro | A | B | 114 Euro | 183 % |
| 7 | 100 Euro | A | B | 117 Euro | 222 % |
| 8 | 100 Euro | A | B | 120 Euro | 261 % |
| 9 | 100 Euro | A | B | 123 Euro | 300 % |
| 10 | 100 Euro | A | B | 126 Euro | 339 % |

to each row, you can see the interest rate –computed on a yearly base– for that situation.

**Your earnings.** Once everyone is finished with the task, the computer will randomly select one person in this room and the number of the selected desk will appear on the screen. Only the selected person will be paid for this part, the other participants will get nothing for this part. The amount of the transfer will depend on a second random draw. The computer will randomly draw one of the 10 situations (row 1 to 10 in the table). The selected participant will hence receive a bank transfer for the amount he/she had chosen in the selected row. Consider the following example. Row number 4 is randomly selected:

- If the selected person has chosen Option A, he/she will receive a 100 Euros transfer today;
- If the selected person has chosen Option B, he/she will receive a 108 Euros transfer in 4 weeks.

The earnings for this part are added to the ones from the first part.

Is there any question? Please rise your hand if you have any question and one of us will come to your desk to answer.

$\Longrightarrow$ ——— *new set of instructions* ——— $\Longleftarrow$

# Instructions (Experiment 2 – Trust)

Welcome. This study is financed by the European Commission and the University of Bologna. The goal of the study is to understand how people take decisions. During the study, you will be able to earn money, depending on your choices and the choices of the other participants. Your earnings will be expressed in tokens and converted at the rate of 1 Euro = 2 tokens at the end of the study. To the amount you will earn during the study, you have to add 4 Euros for showing-up on time. You will be paid at the end of this session in private and in cash; others participants will not be informed about your earnings.

From now and till the end of the study, no form of communication with the other participants is allowed. Please switch off your mobile phones.

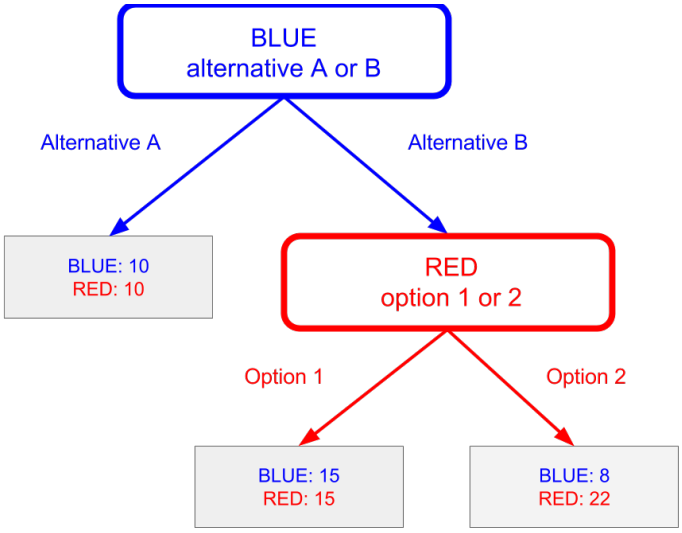
The study comprises two parts. I am about to read the instructions for the first part, please follow them carefully.

## Part 1: Instructions

Participants in this room will be randomly assigned to one of two roles. Half of the people in this room will be BLUE players and the other half will be RED players. Pairs will be formed randomly and will comprise one BLUE and one RED player. You won't be given any information about the identity of the other person in your pair.

BLUE and RED have to make different decisions; see Figure below.

Figure A-4: Earnings table




**If your role is BLUE.** You have two alternatives: A and B.

- Alternarive A (on the left) grants 10 for sure.
- Alternative B (on the right) grants either 8 or 15, depending of RED' choice.

**If your role is RED.** You must choose between two options: 1 and 2 (see Figure A-4). If alternative A is implemented, then your choice is not relevant and you earn 10. If alternative B is implemented, your choice will have consequences for your earnings and the ones of BLUE.

- Option 1 yields 15 to both you and BLUE;
- Option 2 yields 22 to you and 8 to BLUE.

**Your task if your role is RED.** You have to choose between option 1 and 2. At the time of your choice, you don't know which alternative – A or B – will be implemented.

Please, look at the screen. You will have to complete the following statement:

*If alternative B is implemented,* ***I choose option*** _____.

You have to tap on your preferred option to make your decision.

**Your task if your role is BLUE.** You have to choose under which conditions you prefer alternative B over alternative A.

Alternative A yields you 10 for sure. In case you select alternative B, you earnings depend on the choice of RED. If you are paired with a RED choosing option 1, you earn 15. If you are paired with a RED choosing option 2, you earn 8. Therefore, the lower the number of REDs choosing option 1, the more likely that you will earn 8 instead of 15.

If none of the REDs choose 1 (0%), you know that you will earn 8 tokens for sure if you choose alternative B. If all REDs choose 1 (100%), you know that you will earn 15 tokens for sure if you choose alternative B. If a RED every 5 chooses 1 (20%), you could be paired with a RED that chose 1 or 2. In this case, you have a 20% probability of being paired with a RED who chose 1 and a 80% probability to be paired with a RED who chose 2.

Please look at the screen. You will have to complete the following sentence:

*I prefer* ***alternative B*** *if* ***at least*** _____ ***percent of the REDs choose option 1*** *(please enter a number between 0 and 100).*

Please move the triangle to answer. Make some trials: drag the triangle with the mouse or with your fingers and observe how your answer changes. For your convenience, you can also use the + and − buttons at the sides of the bar.

Once you have selected the desired number, please press confirm.

**Important remarks.** BLUE does not know the actual faction of RED players choosing 1 and has no means to influence this fraction. This fraction will depend on the number of REDs that choose 1. BLUE just indicate under which circumstances he/she prefers alternative B: that is, how large the fraction of REDs choosing option 1 has to be in order for him/her to prefer alternative B.

**Earnings** After all REDs and BLUEs have made their decision, the actual percentage of RED choosing option 1 is computed. This information will only be visible on BLUEs' screen. In each pair, the actual percentage will be juxtaposed to the minimum one required by BLUE.

- If the **actual percentage** is **smaller** than the minimum percentage required by BLUE, alternative A is be implemented. Both BLUE and RED earns 10 tokens each.
- If the **actual percentage** is **larger** than the minimum percentage required by BLUE, alternative B is implemented. The earnings also depend on the choice made by RED as shown in Figure A-4.

**Examples.** Consider the following situation. BLUE prefers alternative B if at least 50% of REDs choose option 1. Which alternative is implemented if it turns out that 20% of RED has chosen option 1? Alternative A is implemented as the actual percentage (20%) is smaller than 50%. In this case BLUE has a sure earnings of 10.

Which alternative is implemented if it turns out that 83% of REDs have chosen option 1? Alternative B is implemented as the actual percentage (83%) is smaller than 50%. In this case BLUE earns 15 with probability 83% and 8 with probability 17%

Is there any question? Please rise your hand if there is a question and we will come to your desk to answer it. Before proceeding, please answer a quiz to make sure everyone has correctly understood the instructions.

# Part 2: Instructions

In this part, you are asked to provide an estimate about decisions made by other people who took part in a series of previous studies. These studies were conducted in different cities with participants with different age, gender and employment status.

I am about to read the instructions we used in these previous studies. It is important that you carefully follow these instructions and fully understand them.

---

*Beginning of the original instructions*

people in this room are randomly divided in groups of four; nobody can know the identity of the other members of the group.
The screen displays your group: you are the person in red.
What is your task? Each member of the group is endowed with 20 tokens that have to be divided between a common project and his wallet. You can see four red buttons on the screen. You can decide to:

- put 0 tokens in the common project and keep 20 tokens in your wallet;
- put 6 tokens in the common project and keep 14 tokens in your wallet;
- put 14 tokens in the common project and keep 6 tokens in your wallet;
- put 20 tokens in the common project and keep 0 tokens in your wallet.

As an example with no consequences for your earnings, please press the button PUT 0 AND KEEP 20.

A box to CONFIRM or CHANGE your choice has appeared on the screen; please, press CONFIRM.

After everyone has confirmed his choice, you can see:

- the tokens kept in the wallet by each member of the group;
- the tokens put in the common project by each member of the group;

- the total number of tokens the group has put in the common project.

How are your earnings computed?

- you earn the tokens you kept in your wallet;
- the total number of tokens in the project is doubled and divided equally among the four members of the group.

Look at the top-left part of the screen; as you can see, in the present example you earn the 20 tokens you kept in your wallet. In addition, you earn 20 tokens from the common project. Why? Because:

- you put 0 tokens in the common project, while the other people put 20, 14, and 6 tokens, for a total of 40;
- the 40 tokens are doubled for a total of 80;
- the 80 tokens are equally shared; therefore, you earn 20 form the common project; that is, 80 divided by 4.

Earnings for the other members of the group are computed alike. Please, remember that this is just an example.
Earnings from the common project are the same for each member of the group: is it just a coincidence? No it is not; even though the amount of tokens put in the project by each member is different, the total amount is always shared equally.
Can you know how much has been put in the common project by each member of the group? Yes, you can know the amount. Consider the tokens keep in the wallet, as reported next to each person:

- if the person kept 20 tokens in his wallet, he put 0 tokens in the common project;
- if the person kept 14 tokens in his wallet, he put 6 tokens in the common project;
- if the person kept 6 tokens in his wallet, he put 14 tokens in the common project;
- if the person kept 0 tokens in his wallet, he put 20 tokens in the common project.

In this part there are 8 rounds with the same rules. In the upper-left part of the screen you can see the number of the current round. At the beginning of every round, new groups of four people

are formed at random.

To sum up, in every round:

- you are endowed with 20 tokens;
- you have to decide how to allocate the tokens between your wallet and the common project;
- the tokens put in the common project by the group are doubled and then divided equally among the four members of the group;
- your earnings are equal to the sum of what is in your wallet and the tokens from the common project.

Earnings are summed from round to round. *[Is everything clear?]*

Before starting, please answer a few questions.

*End of original instructions*

---

Before describing your task and how your earnings are computed, please answer the same quiz we administered to the participants who took part in the previous experiments.

**Your task.** At the beginning of this part of the study, the computer will randomly draw two participants from the previous study – the one we just read the instructions.

For every selected person, you will be asked to estimate how many tokens this person has contributed to the common project. We ask for the average over the 8 rounds.

Your answer has to be an integer number between 0 and 20.

**Key question: How many token the selected person has contributed (on average) to the common project?**

We run sessions in different cities. We used these instructions and paid participants based on their choices. In each city, we recruited about 80-90 participants, both male and females,

between 18 and 90 years old. We recruited participants with different employment status: workers, unemployed, housewives, and retired. The composition of the participants to these previous studies is similar to the one of the Italian population with respect to gender, age and employment status. That means, for instance, that about half of the participants were females, as they represent about half of the Italian population.

You will have to provide your estimate of the tokens contributed to the common project by the selected person, without knowing his/her gender, age, and employment status. For the selected person, you will only get to know the province where the study was conducted: this information will be displayed on the upper part of the screen. Please keep in mind that the participants were born and resident in the province where the study was run.

Once you will have submitted the first estimate, we will move to the estimate for the second person. Once more, you will be asked to estimate how many tokens this person has contributed to the common project – we ask for the average over the 8 cycles. You will only get to know the city where the study including the selected person was run.

Table A-1: Tabella dei guadagni

| Distance from the actual average | Your earnings (in tokens) |
|---|---|
| 0 o 1 token | 26 |
| 2 tokens | 22 |
| 3 tokens | 17 |
| 4 tokens | 10 |
| 5 tokens | 1 |
| 6 tokens or more | 0 |

**Your earnings.** Your earnings can vary between 0 and 26 tokens depending on the accuracy of your estimate. The closer you get to the actual average number of tokens put in the common pool by the selected person, the higher your earnings. Please see Table A-1. You earn 26 tokens if your estimate is identical to the actual contribution or if it departs from the actual number by at most 1 token (from above or below). If, for instance, your estimate departs from the actual contribution by 4 tokens, you earn 10. If your estimate departs by 6 or more tokens you earn nothing. You will be paid only for one of the two estimates; the computer will randomly

determine if you will be be paid for the first or the second estimate. You will know which of the two estimates will be paid only after having made both decisions; it is hence in your interest to pay attention to both decisions. The earnings from this part will be added to the ones from the previous part.

Please rise you hand if you have any question and I will come to your desk to answer.