Was Banfield right?
New insights from a nationwide laboratory experiment

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Abstract
The north-south gap in social capital has marked Italy as a worldwide example of within-country differences spurring socio-economic diversity. External validity and measurement issues in previous studies raise doubts about whether differences in social capital reflect indeed a 'national syndrome'. Representative data from our nationwide lab-experiment show northerners perform better only in trustworthiness, but they are statistically similar to southerners in cooperation, trust, beliefs about others' trustworthiness, altruism and risk tolerance. As a novel result, the gap in trustworthiness originates from the lower reciprocity of southerners in response to large trustors' transfers, while it is not driven by migration, betrayal aversion and family ties. Our evidence suggests the existence of an intergenerationally-transmitted norm that hinders southerners from reciprocating highly pro-social acts.

Keywords: Trust, cooperation, social capital, experiments, Italy.

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1. Introduction

The resilient gap in social capital between the north and the south of Italy has marked the country as a worldwide example of cultural differences within the country spurring distinct socio-economic paths. In the last sixty years, economic and sociological studies have put emphasis on the scarcity of social capital in the southern regions of Italy (e.g. Banfield 1958; Putnam 1993; Bigoni et al. 2016 and 2017), where trust, cooperation and civic engagement appear less pronounced than in the north. These results achieved international importance in that this scarcity was linked to the worse economic and institutional performance of the south since the Italian unification in 1861 (Helliwell and Putnam 1995; Guiso et al. 2004; De Blasio and Nuzzo 2010; Nannicini et al. 2013).

The current differences in unemployment rate, productivity and income inequality, suggest that the economic backwardness of the south is not a relic of the past.

The aforementioned studies, while using different methods and samples, have converged to the conclusion that a significant north-south divide in social capital exists, with an emerging conundrum of wide differences in pro-social attitudes among regions sharing the same religion, language and formal institutions. However, the circumscribed or non-representative population in some studies (e.g. Banfield 1958; Bigoni et al. 2016 and 2017), and the non-incentivized measures of social capital in others (e.g. Putnam 1993; Guiso et al. 2004) raise concerns about the external validity of the estimated gap, and doubts about the type of preferences that are actually measured (e.g. Glaeser et al. 2000).

Concerns about generalizability and measurement emerge, for instance, in 'The Moral Basis of a Backward Society' by Banfield (1958), among the first most remarkable attempts to trace a link between cultural traits and economic outcomes. On the basis of direct observations and interviews in a single south-Italian town (fictitiously called Montegrano), the author concludes that the underdevelopment of the (entire) south is due to the inability to cooperate with (and trust) non-family members. Such inability would result from 'amoral familism', i.e. a social norm prescribing that societal welfare should be subordinated to the interest of the individual and of her family. A more recent study by Putnam (1993) extends this analysis to the entire peninsula showing that regional differences in association density - a proxy for social capital - predict the north-south gap in government functioning. In testing the hypotheses that trust spurs financial development, Guiso et al. (2004) show that self-reported trust, political participation, and blood donation – which are typically higher in the northern regions of Italy – can lead to larger investments in stocks, broader access to institutional credit, and less reliance on informal credit. Similarly, Nannicini et al. (2013) document that the regions in Italy where social capital is scarce and cooperation is undervalued tend

to be affected by poor institutional performance; in those regions, in the authors' view, candidates are elected on the basis of citizens' personal interest rather than of social welfare.

While most of these studies measure social capital directly, i.e. through non-incentivized survey questions, or indirectly, i.e. through data on socio-political participation (e.g. blood donation and voting turnout), what type of prosocial preferences and beliefs underlie the chosen measures of social capital, and how these preferences and beliefs differ across regions, remain unsolved issues (Gleaser et al. 2000; Bowles and Gintis 2002; Delhey et al. 2011).

A noteworthy contribution in this respect has been recently made by Bigoni et al. (2016), who examine in-depth the type of social preferences leading to a north-south gap in social capital. Their results document that, when exposed to the same incentives, Italians display different preferences, with northerners being more trusting and willing to cooperate than southerners. In a later experiment the authors show that this gap in cooperation is not due to underlying differences in pro-social preferences; it rather originates from the higher levels of aversion to social risk of southerners, and from their pessimistic expectations about others' cooperativeness (Bigoni et al. 2017).

Although these two studies rely on money-incentivized measures, generalizability of results to the entire country might be still problematic. The first study carries out in-field experimental games on a representative sample, though only in four Italian cities (two in north and two in the south). Unless one assumes that the social preferences in these cities well represent those of *all* the other citizens living in southern or northern cities, the authors' inference for the non-sampled areas could be questionable. External validity represents a more serious concern in the second study, in which lab-experiments are conducted with University students. As the authors acknowledge, their sample is not representative and might also suffer of self-selection driven by south-north migration.

The methodological issues of the above-mentioned studies leave two crucial questions unanswered. Does a north-south gap in social capital as estimated in previous studies actually exist? Does it reflect indeed a 'national syndrome'? And, which social-capital dimensions are significantly different among Italian regions? This paper aims to answer to these questions through a nationwide laboratory experiment involving a nationally representative sample, from which a large set of self-reported and behavioural measures of social capital are elicited and compared across the five Italian macroareas.

These methodological innovations are motivated by the need for getting close to the 'first-best' study, where a representative sample of Italian citizens participate into a countrywide laboratory experiment including both money-incentivized games and survey questions. To the best of our

knowledge, this paper is the first in the literature in getting close to this ideal experiment in Italy.[1] We use data from Trustlab, i.e. a project started in 2016 by OECD with the aim of collecting internationally comparable and nationally representative data on trust and other social preferences through survey and experimental games (Murtin et al. 2018). A further innovation of our study is that the Italian sample of Trustlab contains also measures of the Big Five personality traits, which allow us also to check if differences in personality and in other socio-demographic and economic characteristics explain regional variation in social preferences. Furthermore, in a follow-up survey, we collect data on residential history, strengths of family ties and betrayal aversion, and assess the contribution of these socio-demographic traits to the north-south gap in social preferences.

Results show that a difference between the south and the rest of Italy emerges *only* in experimental trustworthiness, while no systematic differences are found, instead, in the vast majority of the other social-capital dimensions under investigation, i.e. engagement in voluntary work activities, cooperation and reciprocity in group-interactions, expectations about others' trustworthiness, altruism and risk aversion. As a novel result, the north-south gap in trustworthiness widens when the amount at stake is high, i.e. when the temptation to defect (the trustor's transfer) increases southerners reciprocate less than northerners. While such inferior reciprocity is well anticipated by south-Italian trustors, in the non-southern areas trust is on average below the profit-maximizing level given the local degree of trustworthiness.

Our findings are confirmed when individual characteristics, including personality traits, income and parent's education and characteristics of the residential location, are controlled for. Furthermore, the observed gap in reciprocity is not accounted for by self-selection of respondents who migrated from the south or by differences in betrayal aversion and in the strength of family ties. Our evidence suggests, instead, that it originates from the parents: regardless of current residence, having a parent from the south is associated with lower trustworthiness. Interestingly, this association is moderated by living in the north, probably because of the learning (and transmission) of social norms by parents who emigrated to a high-reciprocal environment before the respondents' birth.

Overall, our evidence provides only limited support to the previous studies emphasizing a resilient north-south divide in social capital. Italians living in different macroareas do not seem to react in a systematically different way to the same incentives. If anything, they show different behaviour *only* in one specific dimension of social capital, e.g. reciprocity, which does not originate from

[1] See Fehr et al. (2003) for a similar experiment in Germany.

differences in personality or in other preferences, but likely from the intergenerational transmission of a social norm that hinders southerners from rewarding highly pro-social acts.

Such evidence could offer new insights into the historical debate about the existence and the economic effects of social-capital differences across Italian regions, and it can be nonetheless paradigmatic for other European countries facing economic disparities across their macroareas. Our data suggest that the conclusion on the scarcity of social capital being the root of underdevelopment is overemphasized. The lack of remarkable north-south differences in cooperation documented in this study implies that, contrary to what claimed in previous studies, policies aimed at equalizing regional outcomes should not aim (primarily) at incentivizing cooperation or raising citizens' beliefs that others, in general, can be trusted.

The remainder of the paper is organized as follows: In the next section we discuss the Trustlab experiments. Then, descriptive results are discussed. In Section 4 we present our econometric results, and in Section 5 we look in-depth at the trustees' strategy. In section 6 we test additional explanations to the north-south gap in trustworthiness. In the final section we summarize our findings and provide concluding remarks.

2. Trustlab

We rely on data from Trustlab, a research project launched in 2016 by OECD in collaboration with universities and government agencies from OECD countries (Murtin et al. 2018).[2] Trustlab is an initiative aimed at analysing social and institutional trust through cutting-edge methodological approaches. In each country, a representative sample of the general population in terms of age, gender and income is employed to collect detailed data on trust and its drivers. The Italian sample counts over 1,000 participants distributed across Italian regions in proportion to the actual distribution of population.

Participants take part in the study through an online platform developed *ad hoc*, articulated in two main sections.

2.1 The trust game

In the first section, people take part in a series of experimental games. In the trust game (TG) each respondent, endowed with €10, plays both the role of "sender" and "receiver" (Figure A1 in Appendix): first, the sender decides whether to transfer any amount out of her endowment to

[2] France, Italy, United Kingdom, Germany, Slovenia, United States and South Korea are the countries currently involved in the project.

another participant she is randomly coupled with, then the amount sent gets tripled and adds up to the receiver's endowment, who will finally decide whether to transfer any of her new endowment back to the sender. Hence, in the role of sender each respondent chooses to what extent to trust an unknown person, whereas in the role of receiver each respondent reveals her degree of trustworthiness and reciprocity by transferring back an amount of money for each possible level of trust obtainable in the first step (strategy method). Moreover, in a hypothetical scenario participants state how much they expect a trustor sending €5 will be reciprocated by a random partner receiving €15 (first order beliefs).

As in Bigoni et al. (2018), the TG is characterized by reversal of roles in a sequential order: each participant acts first as trustor and then as trustee.[3] However, we can confidently exclude carry-over effects because feedback is provided to Trustlab participants only at the end of the survey, when respondents are informed that the experimental task to compute their final payment and the partner(s) they are matched with are determined randomly within 48 hours by the completion of the survey.

The strategy method is used for trustee's behaviour. When playing as receivers, respondents report how much they would transfer back for each possible amount the trustor could send (from €0 to €10). While the strategy method is also supposed to reduce the degree to which trustees feel responsible towards their matched trustors, Johnson and Mislin (2011), find no significant effect of employing it neither on trust nor on trustworthiness.

2.2 The public goods game

The public goods game (PGG) provides a framework for assessing people's level of cooperation and reciprocity in group-interactions (Figure A2 in Appendix). Participants are randomly sorted into groups of four and decide whether to devote any part of their own endowment (€10) to a common project. Contributions by all group members go into a common pool of resources and get multiplied by a factor of 1.6. The resulting amount of resources 'generated' through the common project is split equally among the four group members, irrespective of their contributions. A participant's payoff is equal to the part of her endowment not offered to the project, supplemented by a fourth of total contributions collected within her group.

[3] Burks et al. (2002) show that prior knowledge of playing in both TG roles leads players both to send and return lower amounts (lower trust and trustworthiness), most likely because of 'reduced responsibility', i.e. the two-role players perceive their responsibility in determining the counterpart's payoff as halved. In a meta-analysis of more than 130 trust games, Johnson and Mislin (2011) find that playing both roles reduces trustworthiness significantly. If the same mechanism is at work in our study, the figures we find could be considered lower bounds to 'real' trust and trustworthiness. Moreover, there are no ex-ante arguments predicting that 'reduced responsibility' should differ across southerners and northerners; even if we expect that southerners in two-role TGs perceive less responsibility than northerners, we should found a significant north-south gap both in trust and trustworthiness. The following results show that this is not the case.

In Trustlab, participants decide first how much to contribute to the common project simultaneously to their group members, thus revealing 'unconditional cooperation'. They are also asked what their contributions would be conditionally on knowing that their group members contributed, on average, by certain amounts of money, in order to understand whether (and in what direction) they condition their own contribution to that of the others.

2.3 The dictator game and the risky decision game

Participants are paired also in the dictator game (DG). Each respondent (sender) decides whether to transfer any part of her endowment of €10 to her partner (receiver), knowing that there is not going to be a second step (i.e. no action is required to the receivers). The only money transfer is intended to measure participants' unconditional altruism.

The behavioural batch in Trustlab concludes with a lottery choice to assess attitudes towards risk. Participants choose one out of six possible lotteries, distinguished by an increasing differential between payoffs in the case of success and failure (occurring with equal odds) and by an expected payoff increasing in such differential. The more extreme the payoffs, the more pronounced the risk-taking attitudes of participants.

2.4 Behavioural measures used in this study

Trustlab collects several experimental measures of trust-related concepts and other social preferences. To operationalize such concepts we consider in this study: (i) the amount sent by the sender in the first step of the TG as a measure of trust (*trust*), (ii) the amount sent back by the receiver in the TG – averaged over the eleven hypothetical transfers of the sender – as a measure of trustworthiness (*trustworthiness*), (iii) the amount expected back from the receiver in case of a €5 transfer as a measure of expected trustworthiness (*beliefs*), (iv) the amount contributed to the common project in the PGG as a measure of cooperation (*cooperation*), (v) the average conditional contribution in the PGG as a measure of reciprocity (*reciprocity*),[4] (vi) the amount sent in the DG as

[4] The respondent is asked how much she is willing to contribute to the common project, would the other three group members, *j*, have contributed on average by €0 up to €10. The average conditional contribution, $\bar{c}_i$, is computed as a simple average of the eleven conditional contributions by respondent *i*. The measure of reciprocity is an average of eleven deviations of conditional contributions from the average conditional contribution, $c_{i,j} - \bar{c}_i$, with weights ranging from -5 to +5 attached, respectively, to the first up to the last deviation, dividing all by 110 (the maximum sum of individual contributions across all eleven cases). The first (last) deviation is the difference between the conditional contribution in case of a €0 (€10) average contribution by other group members and the average conditional contribution. The resulting variable varies between -1.36 (inverse reciprocity) and +1.36 (direct reciprocity). The exact formula is: $Reciprocity_i = \frac{\sum_{j=0}^{10}(c_{i,j}-\bar{c}_i)\cdot(-5+j)}{10\cdot N_j}$, $\bar{c}_i = \frac{\sum_{j=0}^{10} c_{i,j}}{N_j}$, $N_j = 11$, $c_{i,j} = \{0, \dots, 10\}$, $i = 1, \dots, N$

a measure of altruism (*altruism*), and (vii) the lottery chosen as a measure of experimental risk attitudes (*risk propensity*), with later lotteries implying high risk tolerance.[5]

2.5 The survey

The second section of Trustlab is a standard survey with numerous modules. Respondents self-report their level of trust in other people (Generalized Trust Question, *GTQ*) and institutions as well as other attitudes, besides providing information on their socio-demographic and economic characteristics. Although the survey records geographical information down to the municipality level, the geographical level of our interest for assessing the existence of a north-south divide is that of macro-regions (NUTS-1 according to the Eurostat nomenclature), which splits Italy into five areas as Figure 1 shows.

A distinctive feature of the Italian Trustlab survey is a battery of questions investigating respondents' personality traits. The survey includes a reduced 15-item version of the original Big Five Inventory (BFI) by John et al. (1991), already used in well-known surveys such as the GSOEP, the BHPS, the UKHLS and the HILDA. Trustlab is, to the best of our knowledge, the first survey where this short BFI is administered on a representative Italian sample: questions have been translated from English adjusting an Italian translation provided in Ubbiali et al. (2013). Factorial analyses conducted on the personality data point towards internal consistency of the Italian short BFI, the validity of which is also assessed through convergent and discriminant analyses with comparable BFIs from other surveys (Aassve et al., 2018). In order to be included in the empirical analysis, each personality trait (agreeableness, conscientiousness, neuroticism, extraversion and openness) results from averaging the answers to the three items capturing the respective personality dimension, appropriately recoded in case the questions were negatively-worded to reduce acquiescence bias.

3. Descriptive statistics

The Trustlab sample is representative of the Italian population in terms of gender, age, income and geographical distribution. Table 1a summarizes the composition of the sample by the main socio-demographic and economic characteristics. A third of the sample completed tertiary education while slightly more than half sample holds a high school or a lower level diploma as their highest educational attainment; the remaining 17 percent of the sample is composed of university dropouts

[5] The lotteries in the risk ladder proposed to the respondent give the following payoffs in the case of success (s) and failure (f), both occurring with probability 0.5, listed by increasing risk: first lottery 8 (f) - 8 (s), second lottery 7 (f) - 10 (s), third lottery 6 (f) - 12 (s), fourth lottery 5 (f) - 14 (s), fifth lottery 4 (f) - 16 (s), sixth lottery 1 (f) - 19 (s).

or people with a non-tertiary diploma. Concerning the education of respondents' parents, fathers are moderately more educated than mothers. One out of five respondents is out of the labour force; unemployed represent a bit less of a fifth of those who are in the labour force, while working people are divided between employed and self-employed with a ratio of 5:1. Looking at the marital status, a vast majority of the sample is married, while 36.5 percent is not and the residual tenth is widowed, divorced or separated. 14 percent of respondents live in a rural area, three percentage points more than those who live in large metropolitan areas; almost two thirds of the sample live town or villages, whereas the remaining 14.5 percent lives in small to medium densely populated residence areas. The mean yearly income in the sample is as high as €16,000 but a standard deviation of more than 20,000 suggests the existence of large heterogeneity. In particular, there is a number of outliers in the upper part of the income distribution, as the density appears extremely skewed to the right. On average, the households of respondents in Trustlab include other two people.
Comparison of the distribution of respondents by socio-demographic and economic characteristics and by NUTS level between the Trustlab sample and the actual Italian population as of 2017 suggests high representativeness of the sample. Table 1b shows correlations coefficients between shares of sample and of population classified by gender, age employment status and marital status.

Table 2a reports descriptive statistics of the aforementioned experimental outcomes and of the main survey measures used in this paper. Experimental and self-reported trust have approximately the same mean, although the experimental trust appears more dispersed around the mean. On average, trustworthiness is slightly below expected trustworthiness, with similar distributions also in terms of variability. The average respondent is highly altruistic since she tends to split equally her endowment with an unknown Italian person. Also, Italian respondents show a preference for cooperation since they contribute by an average of 3/5 of their endowments to public goods; they also appear to be conditional reciprocators, meaning that they are willing to contribute more if people around them contribute as well. There is a general prevalence of risk aversion, as showed by preference of safe rather than risky lotteries, although the dispersion around the mean suggests great heterogeneity in this respect. Self-reported measures of social capital suggest that Italian respondents are only rarely involved in voluntary activities, while they get together with friends quite often during the week.

Regarding personality, the average Italian respondent in Trustlab shows high degrees of agreeableness and conscientiousness, as depicted in Table 2b. Medium to high openness also

characterizes the majority of respondents, while respondents appear to be extraverted and neurotic to a lower extent, although the distributions of the latter personality traits are more dispersed.

Figure 2 shows the average levels of self-reported and experimental trust, expected trustworthiness and trustworthiness across the five Italian macroareas. While there are non-dramatic differences in self-reported and experimental trust, the south ranks the lowest in trustworthiness, and the insular (Sardinia and Sicily) scores remarkably high in expected trustworthiness.
When looking at the within-country distribution of the other preferences, we find no evidence of an inferior level of cooperation (conditional or unconditional) and altruism in the south, nor significant differences in risk propensity (Figure 3). In addition, the south does not rank lower than the north in terms of voluntary work and social interactions, which can be considered as other proxies for social capital. Interestingly, the share of respondents who are not involved in social interactions and voluntary work is lower in the south than in the north (Figure A3 in the Appendix).

Other significant differences are found in terms of personality. Each personality trait is computed as simple mean of the three respective items asked in the survey, with harmonized answer ranges. We exclude from estimation respondents with missing information on either of the three personality items.[6] Figure A4 in the Appendix plots the coefficients of the macroareas dummies (north-west being the reference category) from a regression of personality traits on socio-demographic characteristics. Interestingly, the south scores higher in agreeableness, openness and conscientiousness. While the first two are shown to be positively correlated with trust (Dohmen et al. 2008; Freitag and Bauer 2016; McCarthy et a. 2017), there is less consensus about whether conscientiousness spurs (Freitag and Bauer 2016; McCarthy et a. 2017) or hamper (Dohmen et al. 2008) trust.

Summarizing, from this descriptive analysis we do not observe a significant gap in social capital between the south of Italy and the other Italian macroareas. Apart from lower levels of trustworthiness, southerners display on average similar (or in some cases higher) prosocial preferences than northerners.

4. Econometric findings

[6] This leads to the exclusion of 17 respondents from our sample. Results are not dramatically affected if we include them in the analysis.

In order to control for potential confounders as well as to check for the mediating role of the Big Five personality traits and other preferences, we run OLS regressions. Our main estimating equation writes:

$$Y_{ij} = \alpha_j + \sum_k \beta_k X_{k,ij} + \varepsilon_{ij} \quad \text{(eq. 1)}$$

where Y_{ij} is the experimental or survey measure of social capital of individual i living in the macroarea j, and α_j are four macroarea dummies, i.e. south, insular, central and north east (the reference category is north west). In an alternative specification we replace macroarea dummies with a single dummy variable (*south*) equal to one for respondents living in the south (omitted category being the rest of Italy). We control for a set of k socio-demographic variables ($X_{k,ij}$) including age and education categories, household size, income, marital status, job status and size of residential area (Rural, Urban, Small or middle area, Large metropolitan area; Village is the omitted category), which would capture differences in the size (and type of) social networks. Since parents' level of education has been shown to predict children's prosociality (e.g. Dohmen et al. 2011, Pishghadam and Zabihi 2011, Lundborg et al. 2014), we control as well for the level of education of the respondent's mother and father. Some specifications also include the Big Five personality traits.

In Table 3a we report estimation results with survey trust, trust, trustworthiness, and expected trustworthiness as dependent variables. Results show that southerners display lower levels of self-reported trust (columns 1-2) and trustworthiness (columns 5-6), while no significant differences are found in average amount send (columns 3-4) or expected in the TG (columns 7-8). The inclusion of personality traits does not change the main findings, thereby suggesting that the differences in personality shown in Figure 5 do not explain the north-south gap in generalized trust and trustworthiness we observe in the data. These results are confirmed when moving to a more parsimonious model in which the four macroareas dummies are replaced by the south indicator (Table 3b), though remains statistically significant only for trustworthiness.

With respect to the other preferences, we do not find any significant difference across macroareas (Table 4a) or between the south and the rest of Italy (Table 4b) in terms of altruism (columns 1-2), cooperation (3-4), conditional cooperation (5-6), and risk propensity (7-8).

In Table 5 we check for within-country differences in social engagement through an ordered logit regression of frequency of voluntary work (columns 1-2 and 5-6) and of encounters with friends (columns 3-4 and 7-8). Also in this case, we do not find evidence of lower levels of social engagement in the south. Conversely, southerners tend to have more frequent social contacts (Table 5, columns 3-4 and 7-8). However, these results do not imply also that they have are in general more prone to cooperation. Since frequency of social contacts in our data includes friends, this variable is closer to the 'bonding' rather than to the 'bridging' feature of social capital (Putnam 2000; Uslaner 2002), with only the latter capturing trust in (and cooperation with) *unknown* persons and being associated better economic performance.

In order to understand whether the findings on trust and trustworthiness conceal north-south differences in other preferences, we re-estimate the previous models of Table 3b (column 4 and 6) controlling for respondent's behaviour in the other games. Similar to previous studies (Ashraf et al. 2006; Chaudhuri and Gangadharan 2007; Sapienza et al. 2013), the respondent's choices in the role of trustor seem motivated by unconditional kindness and cooperation (Table 6). Since the behaviour when playing in the role of receiver is also positive and significant whereas expected trustworthiness is not, it is likely that trustors formed expectations of reciprocity by extrapolating the behaviour of their opponents from their own one (Sapienza et al. 2013).[7] However, also after controlling for these preferences, there are no significant differences in experimental trust between the north and the south of Italy. Conversely, the north-south gap in trustworthiness is confirmed (and is even larger) when we control for player's behaviour in the other games (Table 7). With the exception of risk propensity, the additional variables are all statistically significant. This evidence is consistent with previous studies showing that trustworthiness can be motivated by conditional and unconditional other-regarding preferences (Cox 2004; Ashraf et al. 2006). Importantly, the inclusion of these preferences leads to a remarkable increase in the goodness of fit, highlighting that a significant portion of the variation in trust and trustworthiness is explained by respondents' behaviour in other games rather than their observed (and likely unobserved) individual characteristics. These findings also suggest that subjects' decisions are consistent across games, which can be interpreted as a signal that respondents understood the instructions and the incentive structure of the experiments.

[7] The data provide support to this hypothesis since the subject's beliefs about the opponent's trustworthiness and her own level of trustworthiness are highly correlated (ρ=0.50). A positive correlation between trust and trustworthiness is also found in previous studies in which, as in our experiment, subjects play both roles in the TG (Glaeser et al. 2000; Chaudhuri and Gangadharan 2007; Altmann et al. 2008; Kovacs and Willinger 2013).

The lack of a significant north-south divide in trust and in expected trustworthiness also suggests that south-Italian trustors fail to anticipate the lower reciprocity levels in their macroarea. This result is confirmed when calculating the payoff-maximizing transfer on the basis of the empirical distribution of return choices in the trustor's macroarea. More specifically, we computed the median amount returned by the trustee for each hypothetical transfer and in each macroarea; we then calculated the correspondent theoretical payoffs of the trustor. These payoffs appear to be lower in the south than in the northern macroareas, especially for higher transfers (Figure A5 in Appendix). While we further discuss this finding in the next section, it is important to notice here that in most Italian macroareas there is only one profit-maximizing transfer (i.e. €10), whereas in the south trustors would equally maximize profits by sending €5, €9 or €10. However, the presence of unique vs. multiple maximizing transfers does not translate into real differences in trustor's choices, which appear distributed in similarly (bimodal) way across macroareas (Figure A6 in Appendix).[8]
This last result suggests that the non-result for the north-south gap in trust could be driven by non-southern trustors sending less than what would be optimal according to the trustworthiness levels in their macroarea. Their transfers, instead, appear more consistent with the trustworthiness patterns we observe in the south.

Overall these findings suggest that there is no evidence of a systematic gap in trust and cooperation between north and south as shown in previous studies. In addition, the lack of north-south differences in beliefs in our data appears in contrast with the evidence from non-representative data in Bigoni et al. (2017), who show that the cooperation gap they found in their previous study (Bigoni et al. 2016) is due to the pessimistic beliefs southerners have about their cooperativeness. Our countrywide lab-experiment suggests, instead, that the north-south gap in social capital is preference- and not belief-based, and lies only in *one* particular dimension, i.e. reciprocity.
Apart from differences in sample representativeness, another possible explanation to our divergent results is that the beliefs-elicitation method in Bigoni et al. (2017) rests on an explicit priming of the 'north' vs. 'south' categories, which could lead to the overestimation of otherwise less-stereotyped beliefs about the southerners' level of cooperation. The elicitation of the subject's beliefs in our experiment, instead, is not conditioned on the geographic origins of the counterpart, and it might be therefore interpreted as a more conservative estimate of expected reciprocity.

5. Understanding the north-south gap in trustworthiness

[8] Furthermore, the percentage of trustors sending €5, €9 or €10 is statistically indistinguishable between the south and the rest of Italy (z=0.216; p=0.8292).

In this section we analyse trustee's reciprocity by exploiting the strategy method, which allows us to understand how receivers condition their choices on those of their opponent. With this information, we also test whether the north-south gap is driven by differences in conditional reciprocity when expected profits from the dominant strategy ('do not reciprocate') increase.

Figure 4 plots the trustee's response choices as a function of the eleven hypothetical transfers. As in previous studies (Schotter and Sopher 2006; Ashraf et al. 2006; Bellemare and Kröger 2007; Bornhorst et al. 2010), the upward sloping curve confirms that reciprocity is the driving force of trustworthiness. With respect to the north-south gap, both southerners and northerners are 'conditional reciprocators', since the amount they return on average increases in the amount they receive. However, southerners tend to reciprocate less than northerners when transfers are larger than 40 percent of the trustor's endowment. We check for the significance of this difference through an OLS regression controlling for individual-level characteristics and for the behaviour in the other games. More specifically, we treat the trustee's choices in the response vector as separated rounds of a trust game, and regress the amount returned on the hypothetical transfer by estimating the following equation:

$$Y_{ijt} = \alpha_j + \sum_k \beta_k X_{k,ijt} + \gamma \mathrm{Send}_t + \varepsilon_{ijt} \qquad \text{(eq. 2)}$$

where Y_{ijt} is the amount the respondent *i* living in macroarea *j* decides to return conditional on the hypothetical transfer *t* of the trustor ($t = 0,\ldots,10$), and *Send* is a variable capturing the increase in the transfer. All other controls are the same as in Table 7 (column 7). We consider the south dummy instead of the four dummies for the macroareas ---results are similar in both specifications (available upon request). The coefficient γ is the slope of the return-send function plotted in Figure 6 and can be interpreted as a measure of conditional reciprocity, i.e. how much receiver's decisions depend on the size of the senders' transfer. Since we have eleven data points for respondent (for a total of 11,132 observations), we clustered standard errors at the individual level.

Results in Table 8 confirm the diverging path in conditional reciprocity as highlighted in Figure 4. Trustees are on average conditional reciprocators since their return choices significantly depend on the amount sent by the trustor (column 1). As expected, on average southerners return less than northerners, confirming the previous results. However, the interaction between the trustor's transfer and the south dummy is negative and significant, suggesting that the north-south gap in reciprocity

widens as the transfer increases (column 2). The same effect is found also when allowing for a non-linear relationship between trustees' decisions and trustor's transfers (columns 3 and 4).

We also analyse conditional reciprocity by classifying subjects according to the amount they return for each possible transfer. In our sample, we classify 11 percent of the trustee's choices as 'selfish', 14 percent as 'no return' and 74 percent as 'reciprocal' when they are respectively below, equal to or above the hypothetical transfer. In other terms, selfish choices provide trustors with negative returns on investment, while no return and reciprocal choices imply zero or positive returns respectively. Figure 5A shows that the fraction of selfish (reciprocal) choices starts increasing (decreasing) for transfers larger than 40 percent of the trustors' endowment (e.g. €4). This pattern is more remarkable in the south than in the north (Figure 5B).

We then estimate the determinants of the probability of playing each strategy. Results are reported in Table A1 in the Appendix[9], and show that the likelihood of selfish (reciprocal) choices increases (decreases) when the amount at stake gets larger. However, southern regions are significantly different from the others only in reciprocal choices, which are less likely among southerners (column 5). Consistent with results in Table 6, the north-south gap in reciprocity widens when transfers increase (Table A1 in the Appendix, column 6), with southerners rewarding trustors less often than northerners as doing so generates larger profits.

These results highlight a new dimension underlying the north-south gap in social capital that has not been analysed by any of the previous studies. The higher is the temptation to defect, i.e. the larger the amount at stake, more likely are southerners (as opposed to northerners) to sacrifice societal welfare to maximize their own benefits. In order to check whether this behaviour is consistent also in other scenarios replicating a social-dilemma, we analyse contributions in the PGG conditional on the average amount contributed by group members. If the north-south differences are driven by a decrease in southerners' reciprocity when the selfish strategy is more remunerating, we should observe the same pattern also for conditional cooperation when group contributions increase. Figure A7 in the Appendix shows that when group contributions are above 60 percent of the endowment both southerners and northerners contribute less than 60 percent, but contributions are lower in the south than in the north. Similarly, regression results for the PGG in Table A2 in the Appendix mirror those for the TG in Table 6, showing that subjects tend to condition their contribution on the behaviour of their group members, though non linearly (column 3). However, while *on average*

[9] We exclude zero transfers from these regressions.

there is no significant north-south gap in cooperation, an increase in the expected payoffs from free riding leads southerners to contribute less than northerners (column 4).

Summarizing, these findings suggest that as long as there is little to lose, southerners and northerners cooperate and reciprocate in the same manner. However, when the amount at stake increases, preferences for reciprocity and cooperation start diverging, with southerners defecting more often than northerners. The fact that this behaviour is consistent both in the TG and PGG suggests that southerners obey to a social norm that prevents them from rewarding highly prosocial acts. This is an important result since, in an evolutionary perspective, as the fraction of cooperative types decreases because their prosocial acts are not reciprocated, so does efficiency, thereby preventing the south from reaping all the economic benefits that derive from cooperation.

5. Other explanations to the trustworthiness gap

In order to assess whether the trustworthiness gap is explained by north-south differences in the 'Putnamian' dimensions of social capital, we include to the main trustworthiness regression individual-level measures of civic and social engagement (e.g. voluntary work, connectedness with neighbours, participation to the last political elections). Results reported in Table A3 in the Appendix show that these facets of social capital do not account for the north-south gap in trustworthiness.

In following subsections, we explore other potential explanations to the trustworthiness gap: betrayal aversion, strength of family ties and migration.

5.1 The follow-up

Across May and June 2018, additional survey modules were administered on the original Italian Trustlab sample with the purpose of measuring other preferences and characteristics of respondents that have been shown to be important explanations of the north-south gap. The follow-up survey collected information primarily aimed at: i) disentangling aversion to social risk from aversion to natural risk (betrayal aversion); ii) assessing the extent to which people in the sample respond to 'familistic' norms (strengths of family ties); iii) reconstructing the residential history of respondents; iv) finding patterns of intergenerational transmission of norms.

Because of an attrition rate of about 25% of the sample in our main estimates, we include in the following analysis a supplementary sample, which enables us to increase statistical power for

testing the new hypotheses.[10] Since the analyses in the following sections rely on the largest set of respondents (those in the extended sample who participated also in the follow-up), we restore representativeness by creating weights adjusting the demographic composition of the extended sample (in terms of sex and age classes and sex) to that of the Italian population as of 2017. Moreover, we control for the residual heterogeneity of the supplementary sample by augmenting our models with a dummy variable taking value one for respondents who were not part of the representative sample. Importantly, the inclusion of the extended sample does not alter results shown in previous tables, thereby granting validity to the upcoming estimates. [11]

5.2 Betrayal aversion

In comparison with north Italians, south Italians have been shown to be more averse to betrayal, that is they dislike risk when the risk arises from human behaviour vis-à-vis from nature (Bigoni et al. 2017). Since the literature has shown that betrayal aversion is mainly liked to trust (and not trustworthiness), we might rule out aversion to betrayal as a possible explanation to the observed south-north gap in reciprocity. However, our results could be due to unobserved differences in the extent to which trustees *internalize* the potential cost of betrayal when it comes to trust. Such internalization may emerge more clearly when individuals play both roles in a trust game (as the participants in Trustlab do). Taking betrayal aversion into account, we expect higher reciprocity in the south, provided that southerners are systematically more betrayal averse *and* more likely to internalize the trustor's disutility from expected betrayal than non-southerners. Our evidence showing lower reciprocity in the south suggests that this is not the case, probably because internalization of trustor's aversion to betrayal is less likely to occur in the south, or because betrayal aversion is not systematically different across Italian macroareas. In order to shed lights on the role of betrayal aversion, we nonetheless check whether the north-south gap in reciprocity mirrors an underlying gap in aversion to betrayal, and whether it narrows when controlling for this preference.

To derive a measure of betrayal aversion, in the follow-up study we performed a survey-based task to measure whether respondents are more willing to take on risk when such risk derives from nature

[10] The full sample of Trustlab Italy oversamples female respondents between 18 and 45 years of age in order to study specific issues related to fertility behaviour and family demography. These additional respondents have been excluded from all the estimates carried out so far in order to in order to fully exploit the national representativeness of the data. The follow-up survey containing additional measures of betrayal aversion, strength of family ties and migration has been delivered on the extended sample in order to maximize response rate.

[11] In Tables A4a and A4b we check the consistency of some of the main results presented so far by re-estimating models on a sample inclusive of the supplement. The significance levels of the main variables' coefficients are, if different from previous models, higher. In general, the magnitude of re-estimated coefficients is slightly larger, while the control variable marking the supplementary respondents is always far from approaching significance. Notice also that re-estimation of all the models in previous tables provides almost equal results (available upon request).

rather than other persons' actions.[12] More specifically, we adopt the vignette-based approach as in Cubitt et al. (2017), who rely on a hypothetical scenario where people need to take a taxi from the airport to the city centre, and they have to choose between two taxi companies, i.e. one charging a fixed fee and the other using the taximeter. While the first company charges the same amount (€12) in any case (*safe company*), the price charged by the second company (*risky company*) is uncertain, i.e. €16 with probability 1/5 and €8 with probability 4/5. The two vignettes differ by the source of risk faced by respondents when making their choice between the safe and the risky company: in one case the risk stems from weather conditions (*natural risk*), while in the other case the risk relates to human behaviour, i.e. the taxi driver (*social risk*).[13] We use the same parametrization as in Cubitt et al (2017) so that, with an expected cost of €9.60, a risk neutral, profit maximising, agent would always choose the risky company. Risk-averse respondents might choose the safe company in the natural risk vignette, even though it is more expensive. Thus, betrayal aversion would make respondents more likely to choose the safe company in the social-risk vignette than they are in the natural-risk vignette (the text of the two vignettes is in Figure A8 in Appendix).[14]

Consistent with Bigoni et al. (2017), we find an overall prevalence of betrayal aversion in Italy. As in Cubitt et al. (2017), the share of respondents who chose the safe option in the first vignette is significantly higher when the vignette depicts social rather than natural risk: the difference is at least as large as 7.7 percentage points and significant in each macroarea, reaching the peak in North-eastern Italy (Table A5 in Appendix). To test if betrayal aversion significantly differs across macroareas, we regress an indicator variable for the safe option (*Safe choice*) on the south dummy, a dummy variable equal to one for the social-risk scenario (*SR*) and their interaction.[15] Regression

[12] To measure aversion to betrayal, Bigoni et al. (2017) implement the experimental procedure developed by Bohnet et al. (2008) on a sample of students at University of Bologna, who were recruited so to cover the south and the north of Italy, excluding the center. They exploit a between-subjects design where individuals take part into a trust game and risky dictator game aimed at disentangling the behavioural response to risk originated from social interaction as opposed to nature. The authors find larger MAPs (Minimum Acceptable Probabilities of finding reciprocating trustees) among participants in the trust game compared to participants in the risky dictator game. The larger the MAP, the more the trustor is considered as averse to take risk. These results are interpreted as evidence of overall betrayal aversion, which appears to be systematically high and statistically significant only among trustors from the south. We could not measure betrayal aversion experimentally in Trustlab because of the high number of experimental tasks and survey questions to which respondents were already exposed. Moreover, the calculation of MAPs might have been difficult task for a population composed not only by students, and therefore the Bonhet et al. (2008)'s experimental procedure would have likely produced noisy and unreliable data.

[13] The vignette-based approach addresses the potential shortcomings of the experimental tasks in Bohnet et al. (2008) that stem from the complex incentive structure. However, Cubitt et al. (2017) find significantly higher proportions of people choosing either higher MAPs (in the experimental setting) or safe options (in the vignettes) when facing social risk. Hence, both approaches consistently measure similar patterns of betrayal aversion.

[14] Unlike Cubitt et al. (2017) who use a between-subject design, we carry out a within-subjects design, i.e. each respondent choses between the risky and the safe company in *both* the social- and the natural-risk vignettes. However, the order of vignettes is randomized, and the names of companies differ across vignettes in order to mitigate potential order effects and response biases.

[15] In an additional specification we also control for the order in which the two scenarios are presented. Standard errors are clustered at the individual level to adjust for the doubling of sample size induced by our within-subject design.

results (Table A6 in Appendix) show that there is no significant gap in betrayal aversion between the south and other macroareas.

The combination of answers in both vignettes allows us to categorize four different types of individuals. The 'risk averse' types are those choosing the safe option in both vignettes; at the other extreme we classify as 'risk lovers' the respondents with a preference for risk irrespective of the situation they face. In the middle, we defined 'principled trustful' (Fetchenauer and Dunning 2012) respondents who tend to accept risk only insofar as such risk stems from social interactions, but avoid it when it comes from nature. Lastly, we categorize respondents as 'betrayal averse' if they opt for the safe option when exposed to social risk, but they choose the risky option when facing natural risk.[16] None of these types show statistically significant correlations with trustworthiness (Table A7 in Appendix). Betrayal averse and (to a lesser extent) risk averse individuals appear on average more trustworthy than risk lovers and principle trustful ones, probably because the former, when playing as trustors, are more likely to internalize the social risk embedded in the decision to trust.[17]

Overall this evidence suggests that betrayal aversion does not explain the north-south gap in reciprocity.

5.3 Family ties

A potential explanation to the trustworthiness gap hinges on the geographical differences in the strength of family ties. In collectivistic societies, most socio-economic transactions rely on mutual obligations among known individuals, where the risk of being cheated is mitigated by informal commitment-devices such as monitoring and sanctioning (Yamagishi and Yamagishi 1994; Yamagishi et al. 1998). Trust in unknown persons is therefore endangered as strong and stable relations, by decreasing social risk, provide 'assurance' of mutual cooperation (Yamagishi and Yamagishi 1994).[18] Similarly, if sanctioning and monitoring are more efficiently carried out among small groups of known persons, also lower trustworthiness might emerge when dealing with strangers since deviations from the socially-optimal equilibrium are less promptly discovered (and punished). Thus, strong family ties should negatively predict both trust and trustworthiness in

[16] In our sample, most individuals are risk averse (about 60%), while only about 20% are betrayal averse; risk lovers and principled trustful individuals are rather few, i.e. about 17% and 15% respectively (Figure A9 in Appendix). Consistent with results in Table A6 in Appendix, the distribution of types does not vary significantly by macroareas (Figure A10 in Appendix).

[17] The distribution of types does not significantly correlate with trust either, yet the sign of the correlation is as expected: risk lovers and principled trustful individuals show higher trust, whereas lower trust can be found among risk averse and (even lower) betrayal averse individuals.

[18] A further qualification of this theory is provided by Ermish and Gambetta 2010, who posits that in societies where family ties are less stringent, people feel more motivated to deal with unknown persons to fulfill socio-economic transactions and face more opportunities (not ultimately because interacting more with strangers increases learning), thereby fostering higher trust in strangers.

anonymous transactions as those mimicked by the TG. Consistent with this hypothesis, Alesina and Giuliano (2014) find a negative relationship between strong family ties (measured through survey questions) and generalized trust. Similarly, Ermish and Gambetta (2010), in an experimental setting, find that strong family ties – measured through self-reported frequency of contacts with relatives – predict significantly lower trust.

As in Bertrand and Schoar (2006), Alesina and Giuliano (2010) and Alesina and Giuliano (2014), in the follow-up study we measure the respondents' strength of family ties by relying on three questions on the importance of family as asked in the European Value Study (EVS). More specifically, the first question asks respondents how important is family in their life (answers range from "1-Not at all important" to "4-Very important"). Then, respondents state their agreement with one of two statements about the parents-children relationship and the responsibilities among each other, i.e. "1- there's no duty to respect and love parents who misbehave" or "2- parents should be loved and respected in any circumstances". The last question is about responsibilities of parents towards children, i.e. "1-parents should not pursue children's well-being if this implies giving up their own's", or "2- children deserve the best irrespective of sacrifices in which parents might incur". We aggregate answers to these questions through a principal component analysis and consider the first extracted component as a proxy of the strength of family ties.[19] Family ties appear stronger in south Italy and in the islands (Sicily and Sardinia), while they are weaker in the Northern regions of Italy (Figure A11 in Appendix).[20] The north-south gap in family ties is also confirmed when regressing family ties (*family ties (PCA)*) on the south dummy and other controls (Table A8 in the Appendix).

To test for whether the north-south difference in family ties accounts for the north-south gap in reciprocity we add family ties to the regressions of trustworthiness on the south dummy and controls. While, as expected, strong ties negatively predict reciprocity, the south dummy remains negative and significant, thereby suggesting that the strength of family ties is not the main explanation to the north-south divide in trustworthiness (Tables A9 and A10 in Appendix).

5.4 Migration

Another possible explanation to the trustworthiness gap is self-selection of emigrants. If southerners moving to northern regions have on average lower level of trustworthiness, the estimated north-south gap in reciprocity would be a lower bound of the real gap. A major concern arises, instead, if

[19] The geographical distribution of family ties in our sample is consistent with that obtained using the same proxy for family ties built through EVS data for Italy (available upon request).

[20] A chi-squared test rejects at the 1% level the hypothesis that the distribution of family ties is equal across macroareas ($\chi^2(52)$ = 78.426, *p-value* = .01). Non-parametric tests confirm that the family ties are significantly stronger in the south than in the north (*z-score* = -3.87, *p-value* < 0.001; $\chi^2(13)$ = 33.765, *p-value* = 0.001).

southerners with larger civic and human capital move to the north, for instance because they are attracted by better job perspectives or because they feel uncomfortable with the uncooperative social norms in the region of origin. Self-selection of emigrants implies that, when the most prosocial south-Italian citizens emigrate, the regions of origin are left with low-cooperative individuals and hence experience a 'civicness drain'.[21]

To assess the role of migration, we collect information about respondents' residential history, i.e. where they were born, where they spent most of their life until age 16, and the province of origin of their parents. Thus, we identify respondents who immigrated to the region in which they currently live and the stage of life in which migration occurred. Descriptive statistics show that 14% of respondents migrated to the current macroarea, with most of them moving from the south (46%); the most frequent migration route is from the south to the north, especially to the north-west of Italy (Figure A12 in Appendix). Among respondents born in the south, trustworthiness tends to be higher in respondents who currently live in northern regions than for those who live in other regions or remained in the south (Figure A13 in Appendix); yet these differences fell only marginally short of significance. We also re-estimate our preferred trustworthiness regression including two dummy variables for individuals who moved from the south to the north and for other migration patterns (the omitted category is composed by non-emigrants). In alternative specifications we consider also migration at different stages of life, and include indicators for specific migration routes across macroareas and periods of life (before or after age 16). Results show that emigrants are not statistically different in trustworthiness from non-emigrants, while the north-south gap in trustworthiness remains statistically significant in all specifications (Table A11 in Appendix). Thus, self-selection of emigrants or learning of social norms do not seem to account for the low reciprocity in the south.

5.5 Intergenerational transmission

The observed gap in trustworthiness could also be driven by the intergenerational transmission of social norms and values, with parents from the south passing on to their children norms of behaviour based on low reciprocity. If social norms are inherited from parents in childhood and change only slowly thereafter (Bisin and Verdier 2001; Dohmen et al. 2012; Guiso et al. 2008; Giulietti et al. 2016), respondents having a south-Italian parent should display lower trustworthiness than those having a parent from a different macroarea, regardless of their current residence.

[21] Presentation of Moti Michaeli at 2017 Florence-Constance joint Workshop on Behavioural and Experimental Social Sciences, November 3, 2017: "Civicness drain: Emigrants' self-selection and social norms in the place of origin", http://www.beelab.unifi.it/workshop2017/files/BookOfAbstract.pdf (joint work with Marco Casari, Andrea Ichino, Maria de Paola, Vincenzo Scoppa, Ginevra Marandola).

To test this hypothesis, we re-estimate the trustworthiness regression replacing the south dummy with an indicator for respondents living in the north. We also add a dummy variable for respondents having at the least one parent from the south, who represent 39.8% of our sample. To adjust for residential history, in additional specifications we control for migration from south to north and other migration patterns (at any age). Regression results (Table A12 in Appendix) document that living in the north is associated with higher trustworthiness (column 1); this positive effect is, however, absorbed by the southern origins of parents, which goes in the opposite direction (column 2). Interestingly, living in the north slightly counterbalances the negative effect of parental origins on trustworthiness (column 3), regardless of respondents' migration decisions, which – as previously shown – do not play a significant role (column 4).[22]

Overall this evidence suggests that the lower trustworthiness of non-northerners could be a result of the intergenerational transmission of norms prescribing low reciprocity, which is moderated by a prolonged exposure to the highly reciprocal contexts of north-Italian regions. Such moderation occurs independently from respondents' migration patterns, thereby suggesting that it is the update of parents' attitudes to a high-trustworthiness environment, rather than the exposure of their children to these contexts, that offsets the intergenerational transmission of low-trustworthiness norms.

[22] The fraction of respondents living in the north with at least one parent from the south is 12.2%.

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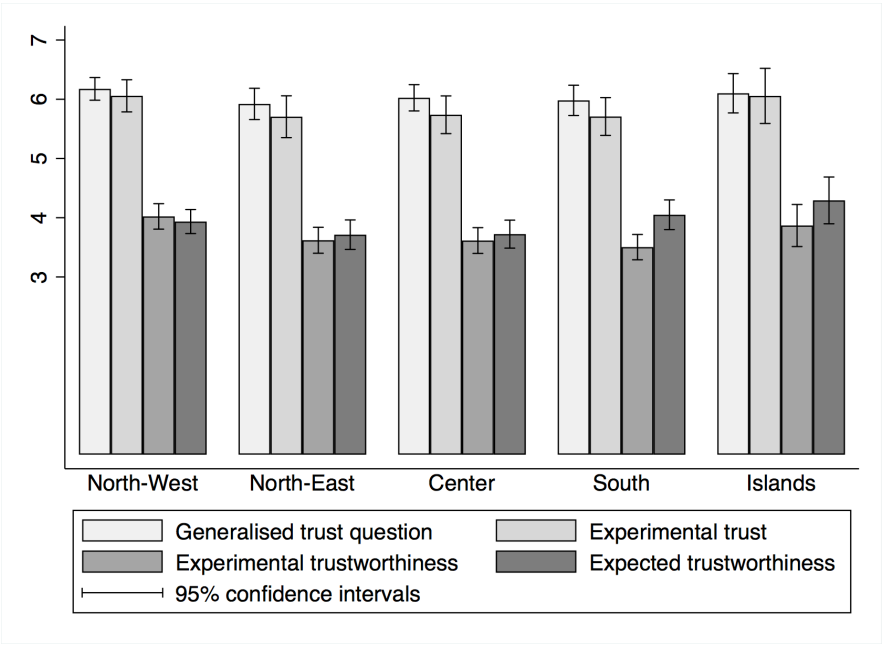
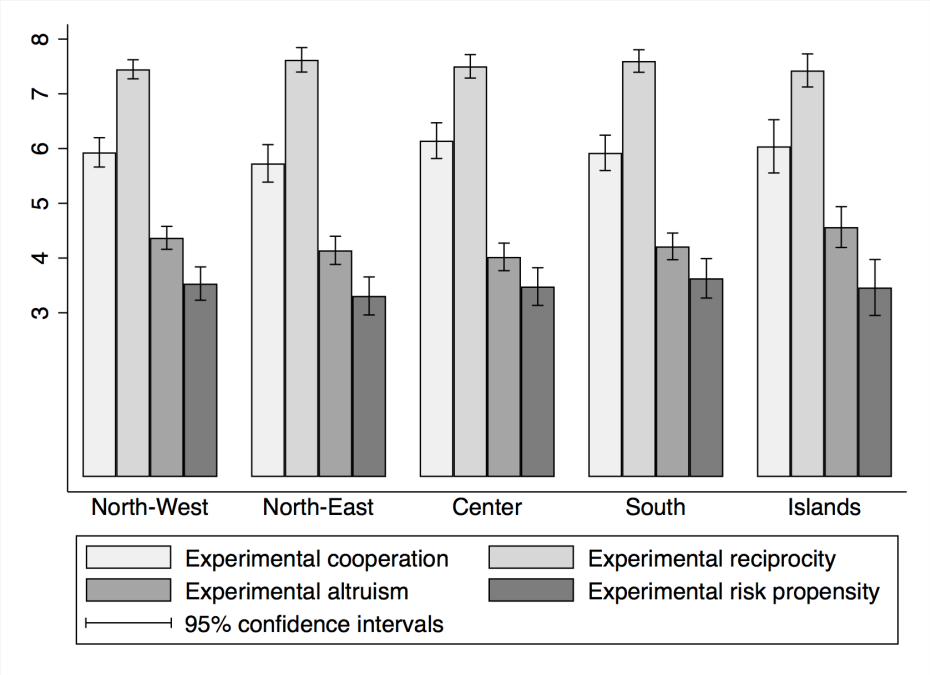
Figure 1 –The Italian macroareas

Figure 2 – Self-reported trust and trust games outcomes across the Italian macroareas



Notes: variables' means and 95% confidence intervals by Italian macroareas. Variation range of all variables rescaled to vary between 0 and 10. The *generalised trust question* (GTQ) asks respondents 'In general, how much do you trust most people?'. *Trust* is the amount of money sent by trustors to trustees in the trust game. *Trustworthiness* is the amount of money returned by trustees to trustors in the trust game. *Expected trustworthiness* is the amount of money trustors expect to be returned by trustees in the trust game.

Figure 3 – Cooperation, reciprocity, altruism and risk tolerance across the Italian macroareas



Note: variables' means and 95% confidence intervals by Italian macroareas. Variation range of all variables rescaled to vary between 0 and 10. *Cooperation* is the amount of money contributed by participants to the common project in the public goods game, unconditional on other participants' contributions. *Reciprocity* is the amount of money contributed by participants to the common project in the public goods game, conditional on other participants' contributions. *Altruism* is the amount of money sent by dictators to receivers in the dictator game. *Risk propensity* is the lottery chosen by participants in the risk game (the stronger risk aversion, the lower the measure).

Figure 4 – The north-south gap in conditional reciprocity (trust game)

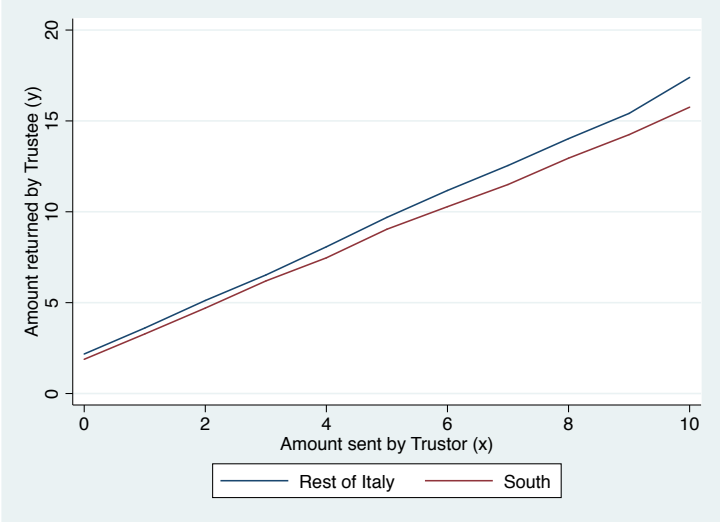


Figure 7 – The evolution of reciprocal strategies over the amount transferred

A B

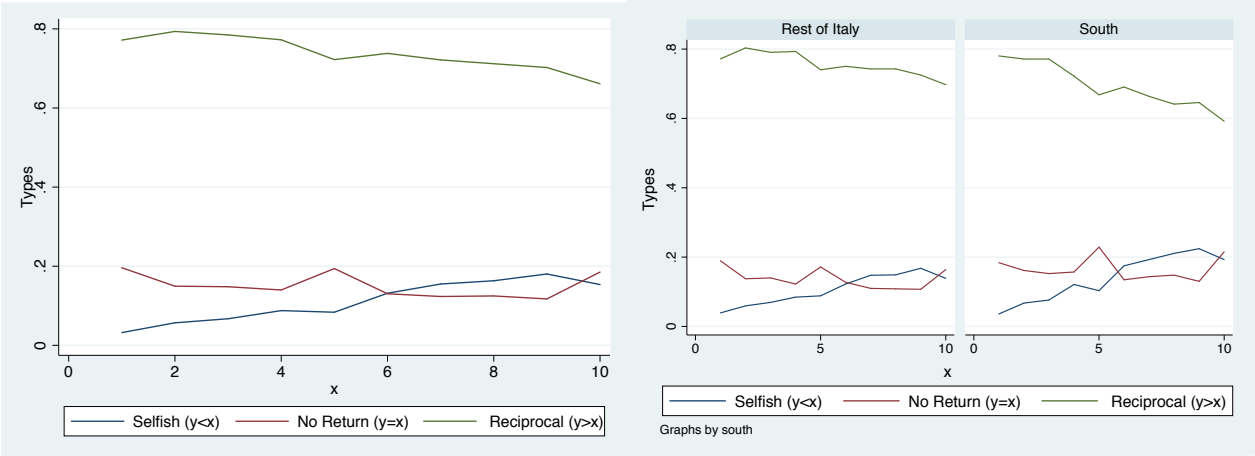


Table 1a – Socio-demographic composition of the sample –

Variable		Share
Place of residence	North-West	29.5%
	North-East	17.3%
	Center	20.8%
	South	21.9%
	Islands	10.4%
Gender	male	49.2%
	female	50.8%
Age	18-24	11.7%
	25-34	19.7%
	35-44	23.2%
	45-54	26.0%
	55-64	19.4%
Education	High school or less	50.8%
	Some college or other non-tertiary	17.0%
	Tertiary diploma	32.2%
Employment status	Employed	55.7%
	Self-employed	11.0%
	Unemployed	13.2%
	Inactive	20.1%
Marital status	Single	36.5%
	Married	54.2%
	Other	9.3%
Urbanization of residence area	Rural	14.4%
	Town/Village	59.5%
	Small-medium metropolitan area	14.5%
	Large metropolitan area	11.6%

Table 1b – Sample representativeness

	NUTS-2	NUTS-3
Overall	0.98	
Female	0.961	0.927
Male	0.978	0.943
Age 18 - 24	0.885	0.626
Age 25 - 24	0.96	0.858
Age 35 - 44	0.943	0.907
Age 45 - 54	0.949	0.925
Age 55 - 64	0.934	0.916
Employed	0.981	0.95
Self-employed	0.897	0.88
Employed	0.984	0.952
Unemployed	0.86	0.759
Inactive	0.946	0.855
Married	0.964	0.922
Single	0.978	0.927

Correlations between frequencies of Italian Trustlab respondents and frequencies of Italian population aggregated at the NUTS-2 or NUTS-3 level, by category indicated in the left column.
Sources: Trustlab, Istat.

Table 2a – Descriptive statistics of main dependent variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Trust	1,016	6.00	2.93	0	10
Trustworthiness	1,016	9.44	5.18	0	25
Trustworthiness	1,016	9.90	5.51	0	25
Altruism	1,016	4.32	2.29	0	10
Cooperation	1,016	6.00	2.87	0	10
Reciprocity	1,016	0.63	0.42	-1	1.18
Risk propensity	1,016	2.84	1.60	1	6
Generalized trust	1,011	6.08	2.11	0	10
Frequency of voluntary work	1,016	0.75	0.90	0	4
Frequency of encounters with friends	1,016	2.14	0.93	0	4

Table 2b - Descriptive statistics of personality traits

Personality trait	Obs	Mean	Std. Dev.	Min	Max
Openness	1002	3.62	0.76	1	5
Conscientiousness	1002	3.81	0.67	1.67	5
Extraversion	1012	2.94	0.80	1	5
Agreeableness	1004	3.90	0.68	1.33	5
Neuroticism	1013	3.08	0.84	1	5

Table 3a – Macroareas differences in trust, trustworthiness and expected trustworthiness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Survey measure				*Behavioural measure*			
Dep. Var.:	GTQ		Trust		Trustworthiness		Expected trustworthiness	
North East	-0.330	-0.276	-0.190	-0.211	-1.058**	-1.135**	-0.522	-0.483
	(0.205)	(0.194)	(0.284)	(0.288)	(0.484)	(0.489)	(0.514)	(0.520)
Central	-0.296	-0.264	-0.135	-0.192	-1.154**	-1.133**	-0.591	-0.596
	(0.181)	(0.175)	(0.267)	(0.273)	(0.484)	(0.492)	(0.487)	(0.499)
South	-0.375*	-0.394**	-0.124	-0.0706	-1.276***	-1.407***	0.0577	-0.123
	(0.202)	(0.199)	(0.266)	(0.271)	(0.468)	(0.469)	(0.506)	(0.509)
Insular	0.0433	-0.0268	0.404	0.510	0.234	0.418	1.349*	1.303*
	(0.242)	(0.236)	(0.353)	(0.351)	(0.696)	(0.713)	(0.733)	(0.732)
female	-0.0551	-0.0160	-0.611***	-0.455**	-0.416	-0.303	0.0386	-0.0877
	(0.146)	(0.146)	(0.196)	(0.205)	(0.346)	(0.365)	(0.361)	(0.377)
agreableness		0.241**		0.123		0.330		0.332
		(0.117)		(0.151)		(0.282)		(0.297)
conscientiousness		-0.211*		-0.0661		-0.174		-0.0581
		(0.114)		(0.156)		(0.286)		(0.301)
neuroticism		-0.447***		-0.243**		-0.216		-0.0860
		(0.0866)		(0.115)		(0.198)		(0.212)
extraversion		0.480***		-0.159		-0.0281		0.615***
		(0.0891)		(0.127)		(0.205)		(0.213)
openness		-0.0823		-0.212		-0.389		-0.437*
		(0.0950)		(0.133)		(0.239)		(0.250)
Age: 25-34	0.0130	-0.0884	0.361	0.396	0.691	0.474	1.146	1.147
	(0.271)	(0.277)	(0.381)	(0.396)	(0.694)	(0.717)	(0.698)	(0.717)
Age: 35-44	0.266	0.192	-0.0722	-0.110	-0.160	-0.447	0.915	0.817
	(0.289)	(0.296)	(0.411)	(0.425)	(0.695)	(0.721)	(0.743)	(0.765)
Age: 45-54	0.0852	0.0521	-0.206	-0.264	-0.0212	-0.150	0.969	1.034
	(0.289)	(0.298)	(0.411)	(0.423)	(0.719)	(0.753)	(0.762)	(0.780)
Age: 55-64	0.244	0.267	-0.344	-0.376	-0.0192	-0.130	1.736**	1.805**
	(0.305)	(0.314)	(0.427)	(0.437)	(0.736)	(0.770)	(0.781)	(0.799)
People in household	0.0688	0.0713	-0.0785	-0.0643	0.0475	0.0485	0.0224	0.0520
	(0.0614)	(0.0599)	(0.0858)	(0.0866)	(0.151)	(0.155)	(0.168)	(0.174)

Some college/non tertiary	-0.0815	-0.00720	0.370	0.457*	0.0714	0.0500	-0.671	-0.650
	(0.203)	(0.195)	(0.265)	(0.268)	(0.441)	(0.433)	(0.490)	(0.478)
Tertiary education	0.0622	0.120	0.00929	0.0278	0.158	0.261	-0.633	-0.516
	(0.164)	(0.161)	(0.218)	(0.223)	(0.400)	(0.411)	(0.431)	(0.445)
Personal income (log)	0.0456	0.0236	0.0792**	0.0608	0.0649	0.0144	0.0387	0.0232
	(0.0303)	(0.0289)	(0.0380)	(0.0394)	(0.0686)	(0.0690)	(0.0749)	(0.0770)
Self-employed	-0.472**	-0.455**	0.412	0.390	-0.544	-0.409	-0.889	-0.772
	(0.226)	(0.213)	(0.319)	(0.319)	(0.468)	(0.476)	(0.558)	(0.556)
Unemployed	-0.107	-0.165	0.216	0.127	-0.134	-0.463	-0.885	-0.962
	(0.223)	(0.221)	(0.344)	(0.356)	(0.617)	(0.627)	(0.608)	(0.628)
Inactive	-0.231	-0.328	0.145	-0.0422	-0.207	-0.657	-0.806	-0.921
	(0.239)	(0.235)	(0.326)	(0.338)	(0.591)	(0.599)	(0.617)	(0.637)
Married	0.433**	0.300*	0.0730	-0.0379	-0.567	-0.632	-0.471	-0.701
	(0.178)	(0.175)	(0.256)	(0.261)	(0.452)	(0.470)	(0.506)	(0.519)
Other marital status	0.0150	-0.318	-0.128	-0.392	-0.353	-0.581	-1.080	-1.285*
	(0.284)	(0.287)	(0.372)	(0.379)	(0.656)	(0.679)	(0.702)	(0.738)
Rural area	0.442**	0.336*	0.316	0.293	-0.213	-0.182	0.474	0.444
	(0.200)	(0.196)	(0.293)	(0.300)	(0.496)	(0.506)	(0.540)	(0.543)
Urban area	0.292	0.263	0.310	0.345	-0.0413	0.0503	0.0421	0.142
	(0.178)	(0.178)	(0.248)	(0.251)	(0.433)	(0.441)	(0.477)	(0.484)
Small-mid area	-0.0923	-0.0427	0.250	0.0968	-0.0244	-0.0368	0.466	0.157
	(0.219)	(0.205)	(0.292)	(0.296)	(0.525)	(0.527)	(0.568)	(0.568)
Large metropolitan area	0.311	0.221	0.220	0.253	0.0855	0.210	0.0361	0.00883
	(0.232)	(0.221)	(0.327)	(0.333)	(0.654)	(0.670)	(0.621)	(0.639)
Father's education ≥ secondary	-0.0409	-0.0578	-0.214	-0.211	-0.201	-0.119	-0.186	-0.236
	(0.162)	(0.156)	(0.226)	(0.229)	(0.384)	(0.389)	(0.407)	(0.406)
Mother's education ≥ secondary	-0.0383	-0.0121	0.00467	-0.0809	0.392	0.362	0.143	0.343
	(0.166)	(0.162)	(0.234)	(0.237)	(0.394)	(0.403)	(0.433)	(0.437)
Observations	1,010	975	1,015	979	1,015	979	1,015	979
R-squared	0.045	0.122	0.034	0.047	0.030	0.040	0.031	0.043

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

Table 3b – Trust, trustworthiness and expected trustworthiness (south vs. rest of Italy)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Survey measure				*Behavioural measure*			
Dep. Var.:	GTQ		Trust		Trustworthiness		Expected trustworthiness	
South	-0.230	-0.260	-0.107	-0.0501	-0.776**	-0.924**	0.126	-0.0571
	(0.178)	(0.177)	(0.232)	(0.238)	(0.391)	(0.394)	(0.448)	(0.453)
female	-0.0547	-0.0149	-0.613***	-0.454**	-0.410	-0.300	0.0371	-0.0840
	(0.146)	(0.146)	(0.196)	(0.206)	(0.347)	(0.367)	(0.363)	(0.379)
agreableness		0.232**		0.113		0.291		0.308
		(0.118)		(0.152)		(0.283)		(0.300)
conscientiousness		-0.211*		-0.0585		-0.169		-0.0417
		(0.113)		(0.155)		(0.288)		(0.304)
neuroticism		-0.451***		-0.261**		-0.246		-0.131
		(0.0863)		(0.114)		(0.196)		(0.210)
extraversion		0.487***		-0.154		0.00200		0.630***
		(0.0892)		(0.127)		(0.207)		(0.215)
openness		-0.0819		-0.210		-0.385		-0.428*
		(0.0949)		(0.133)		(0.242)		(0.252)

Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,010	975	1,015	979	1,015	979	1,015	979
R-squared	0.040	0.119	0.031	0.043	0.020	0.029	0.021	0.034

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

Table 4a – Macroareas differences in altruism, cooperation and risk propensity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.:	altruism		cooperation		reciprocity		risk propensity	
North East	-0.247	-0.282	-0.246	-0.250	-0.000117	-0.0180	-0.0559	-0.107
	(0.215)	(0.213)	(0.268)	(0.269)	(0.0390)	(0.0397)	(0.150)	(0.151)
Central	-0.395*	-0.343	0.341	0.279	0.00601	0.0156	-0.0868	-0.0836
	(0.217)	(0.220)	(0.261)	(0.264)	(0.0380)	(0.0384)	(0.148)	(0.151)
South	-0.110	-0.0984	-0.0428	-0.0613	-0.00652	-0.0146	0.132	0.123
	(0.208)	(0.214)	(0.263)	(0.268)	(0.0370)	(0.0376)	(0.151)	(0.155)
Insular	0.359	0.408	0.362	0.355	-0.0130	-0.000382	0.0818	0.0320
	(0.290)	(0.291)	(0.343)	(0.347)	(0.0494)	(0.0496)	(0.192)	(0.193)
female	-0.357**	-0.348**	-0.857***	-0.851***	-0.0273	-0.0135	-0.144	-0.147
	(0.154)	(0.161)	(0.189)	(0.197)	(0.0272)	(0.0283)	(0.107)	(0.112)
agreableness		-0.111		0.0301		0.0291		0.0930
		(0.115)		(0.146)		(0.0206)		(0.0861)
conscientiousness		-0.205*		0.219		-0.00347		-0.0925
		(0.122)		(0.153)		(0.0235)		(0.0856)
neuroticism		-0.0270		-0.129		-0.0275*		-0.0267
		(0.0906)		(0.113)		(0.0161)		(0.0641)
extraversion		0.151		-0.127		-0.0197		0.0678
		(0.0972)		(0.127)		(0.0168)		(0.0690)
openness		0.0561		0.0905		0.0147		0.0906
		(0.104)		(0.126)		(0.0178)		(0.0742)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,015	979	1,015	979	1,015	979	1,015	979
R-squared	0.033	0.039	0.047	0.059	0.067	0.075	0.027	0.035

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

Table 4b – Altruism, cooperation and risk tolerance (south vs. rest of Italy)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.:	altruism		cooperation		reciprocity		risk propensity	
South	-0.00621	-0.00821	-0.128	-0.129	-0.00610	-0.0144	0.155	0.164
	(0.178)	(0.185)	(0.228)	(0.234)	(0.0327)	(0.0335)	(0.129)	(0.132)
female	-0.354**	-0.346**	-0.871***	-0.859***	-0.0274	-0.0140	-0.143	-0.147
	(0.155)	(0.162)	(0.189)	(0.197)	(0.0270)	(0.0282)	(0.107)	(0.112)
agreableness		-0.123		0.0208		0.0286		0.0895
		(0.116)		(0.146)		(0.0207)		(0.0859)
conscientiousness		-0.201		0.235		-0.00284		-0.0917
		(0.122)		(0.153)		(0.0235)		(0.0858)
neuroticism		-0.0429		-0.149		-0.0281*		-0.0295
		(0.0909)		(0.114)		(0.0159)		(0.0638)
extraversion		0.160		-0.130		-0.0198		0.0702
		(0.0978)		(0.126)		(0.0168)		(0.0687)
openness		0.0596		0.0833		0.0141		0.0906

		(0.105)		(0.125)		(0.0178)		(0.0740)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,015	979	1,015	979	1,015	979	1,015	979
R-squared	0.025	0.031	0.043	0.055	0.067	0.075	0.026	0.034

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

Table 5 – Macroareas differences in social engagement

OLOGIT	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep Var:	Frequency of voluntary work		Frequency of encounters with friends		Frequency of voluntary work		Frequency of encounters with friends	
North East	0.195	0.162	-0.0999	-0.0790				
	(0.189)	(0.191)	(0.180)	(0.181)				
Central	-0.320*	-0.294	0.0984	0.0574				
	(0.188)	(0.197)	(0.172)	(0.174)				
South	0.0635	-0.0647	0.651***	0.624***	0.0262	-0.0806	0.553***	0.550***
	(0.176)	(0.178)	(0.165)	(0.173)	(0.149)	(0.154)	(0.145)	(0.153)
Insular	0.487**	0.342	0.622***	0.500**				
	(0.219)	(0.226)	(0.227)	(0.228)				
female	0.0300	-0.114	-0.0955	-0.161	0.0316	-0.113	-0.106	-0.166
	(0.132)	(0.139)	(0.128)	(0.135)	(0.131)	(0.138)	(0.127)	(0.135)
agreableness		0.102		0.0549		0.0998		0.0541
		(0.110)		(0.103)		(0.108)		(0.102)
conscientiousness		0.118		0.0474		0.119		0.0560
		(0.108)		(0.108)		(0.108)		(0.108)
neuroticism		-0.0370		-0.265***		-0.0403		-0.281***
		(0.0842)		(0.0800)		(0.0836)		(0.0799)
extraversion		0.291***		0.422***		0.298***		0.419***
		(0.0855)		(0.0845)		(0.0855)		(0.0845)
openness		0.322***		0.208**		0.331***		0.208**
		(0.0949)		(0.0891)		(0.0941)		(0.0894)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,015	979	1,015	979	1,015	979	1,015	979

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

Table 6 – The rationales of trust

Dep. Var.: *Trust*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
south	0.135	-0.0416	-0.0463	0.00559	-0.0538	-0.0683	0.0871	0.0644
	(0.228)	(0.230)	(0.225)	(0.220)	(0.239)	(0.240)	(0.211)	(0.221)
trustworthiness	0.200***						0.102***	0.127***
	(0.0172)						(0.0207)	(0.0214)
expected trustworthiness		0.149***					0.0327	0.0365*
		(0.0177)					(0.0209)	(0.0213)
altruism			0.472***				0.227***	0.335***
			(0.0388)				(0.0462)	(0.0453)
cooperation				0.433***			0.306***	
				(0.0322)			(0.0349)	

reciprocity					-0.253			-0.0823
					(0.250)			(0.219)
risk propensity						0.111*	0.00221	0.0377
						(0.0649)	(0.0542)	(0.0568)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
PTs	YES	YES	YES	YES	YES	YES	YES	YES
Observations	979	979	979	979	979	979	979	979
R-squared	0.164	0.118	0.175	0.213	0.044	0.046	0.305	0.233

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

Table 7 – The rationales of trustworthiness

Dep. Var.: *Trustworthiness*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
south	-0.892**	-0.896***	-0.917**	-0.862**	-0.922**	-0.944**	-0.854***	-0.861***
	(0.375)	(0.341)	(0.371)	(0.383)	(0.394)	(0.396)	(0.327)	(0.328)
trust	0.632***						0.297***	0.333***
	(0.0615)						(0.0603)	(0.0559)
expected trustworthiness		0.486***					0.388***	0.393***
		(0.0398)					(0.0396)	(0.0398)
altruism			0.810***				0.294***	0.331***
			(0.0915)				(0.0856)	(0.0875)
cooperation				0.479***			0.114**	
				(0.0631)			(0.0560)	
reciprocity					0.130			0.706*
					(0.478)			(0.371)
risk propensity						0.121	-0.0928	-0.0658
						(0.118)	(0.0920)	(0.0929)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
PTs	YES	YES	YES	YES	YES	YES	YES	YES
Observations	979	979	979	979	979	979	979	979
R-squared	0.152	0.287	0.153	0.096	0.029	0.030	0.353	0.353

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

Table 8 – The north-south divide in conditional reciprocity (trust game)

Dep. Var.: *Reciprocity* (*y*)	(1)	(2)	(3)	(4)
south	-0.854***	-0.0579	-0.854***	-0.212
	(0.322)	(0.275)	(0.322)	(0.274)
send	1.475***	1.510***	1.450***	1.462***
	(0.0274)	(0.0302)	(0.0344)	(0.0388)
$send^2$			0.00254	0.00475
			(0.00254)	(0.00296)
south*send		-0.159**		-0.0568
		(0.0702)		(0.0842)
south*$send^2$				-0.0102*
				(0.00562)
trust	0.297***	0.297***	0.297***	0.297***
	(0.0594)	(0.0594)	(0.0594)	(0.0594)
cooperation	0.114**	0.114**	0.114**	0.114**

	(0.0551)	(0.0552)	(0.0552)	(0.0552)
Expected trustworthiness	0.388***	0.388***	0.388***	0.388***
	(0.0390)	(0.0390)	(0.0390)	(0.0390)
altruism	0.294***	0.294***	0.294***	0.294***
	(0.0844)	(0.0844)	(0.0844)	(0.0844)
Risk propensity	-0.0928	-0.0928	-0.0928	-0.0928
	(0.0907)	(0.0907)	(0.0907)	(0.0907)
Controls	YES	YES	YES	YES
PTs	YES	YES	YES	YES
Observations	10,769	10,769	10,769	10,769
R-squared	0.543	0.544	0.543	0.544

Robust standard errors in parentheses clustered at individual level
*** p<0.01, ** p<0.05, * p<0.1

Appendix – not for publication

Figure A1 – Trust game in the Trustlab on-line platform

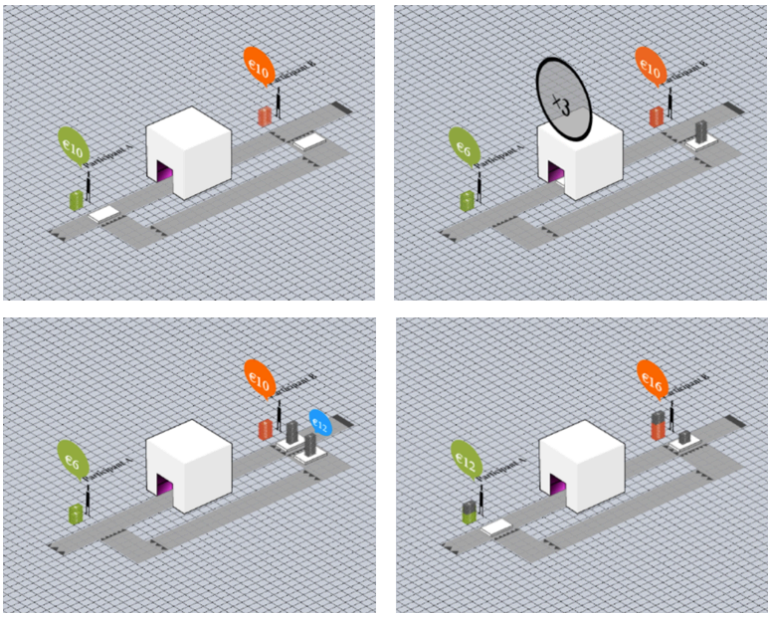


Figure A2 – Public goods game in the Trustlab on-line platform

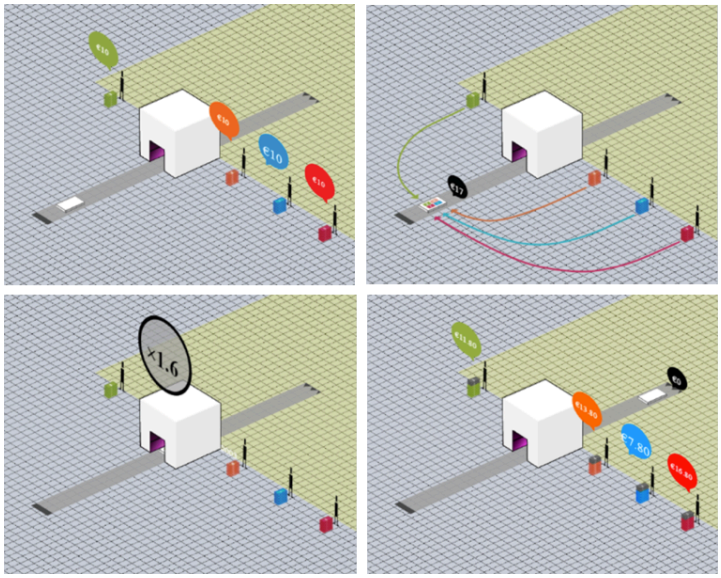


Figure A3 – Social engagement and voluntary across the Italian macroareas

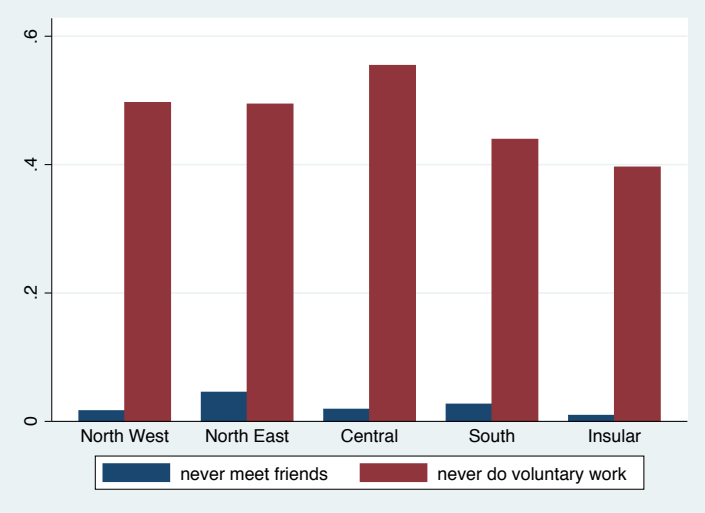


Figure A4 – Personality differences across the Italian macroareas

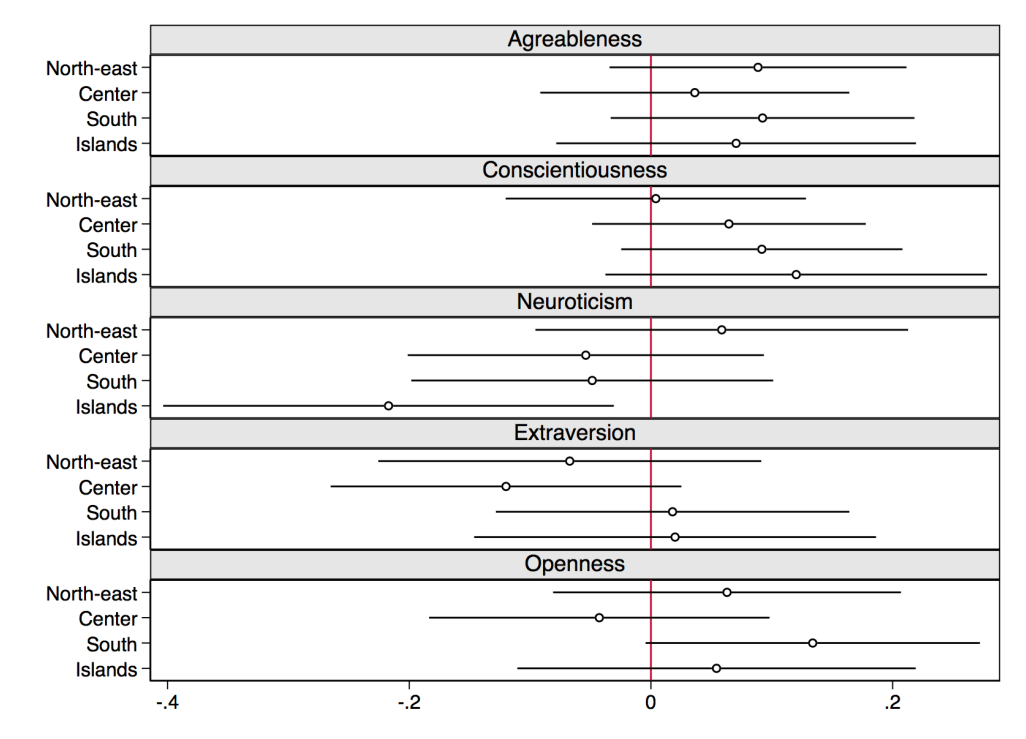


Figure A5 – Theoretical trustor's payoffs based on empirical distribution of reciprocity

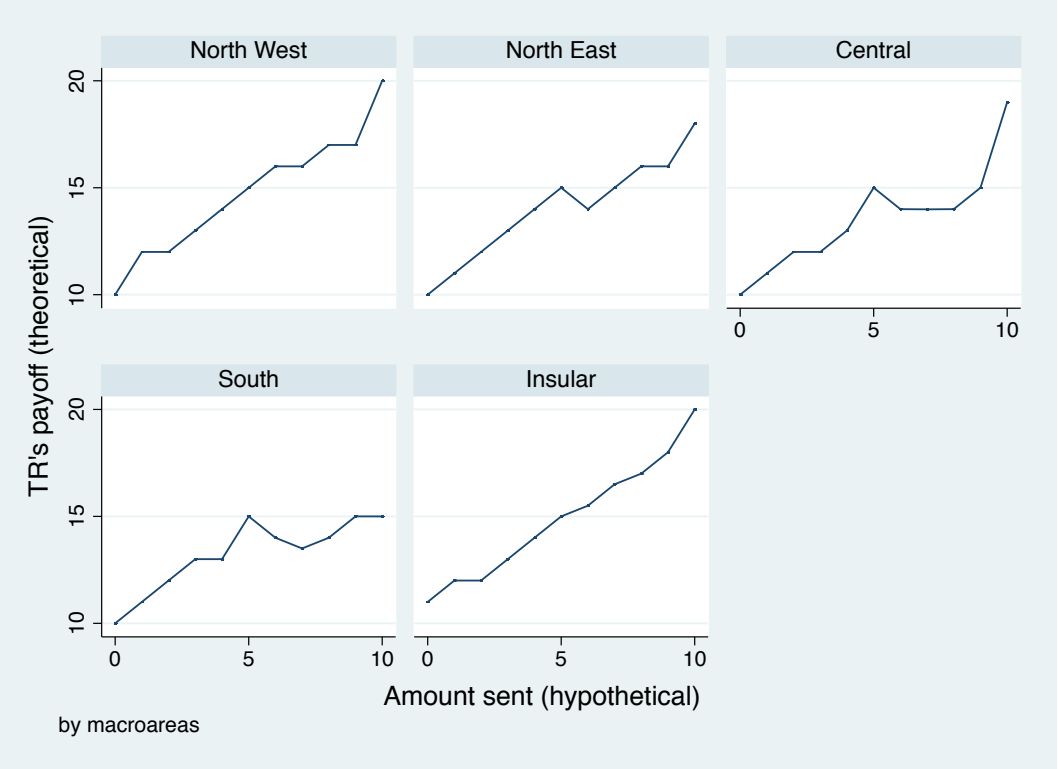


Figure A6 – Distribution of trustor's offer

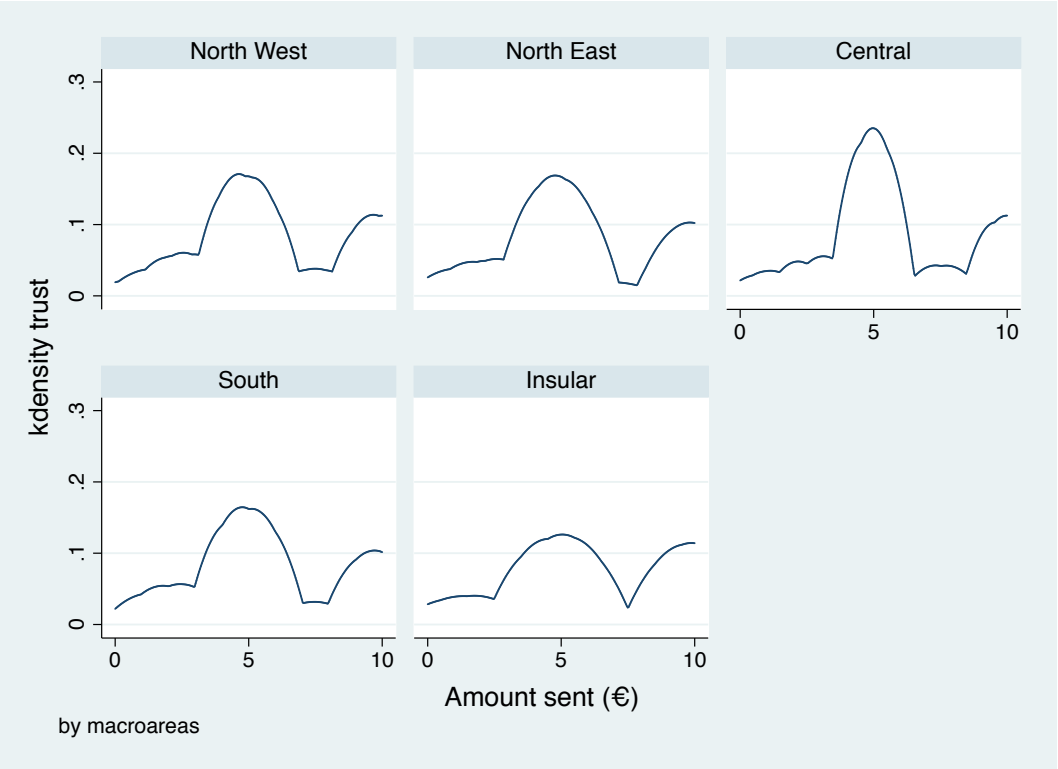


Figure A7 – The north-south gap in conditional cooperation (public goods game)

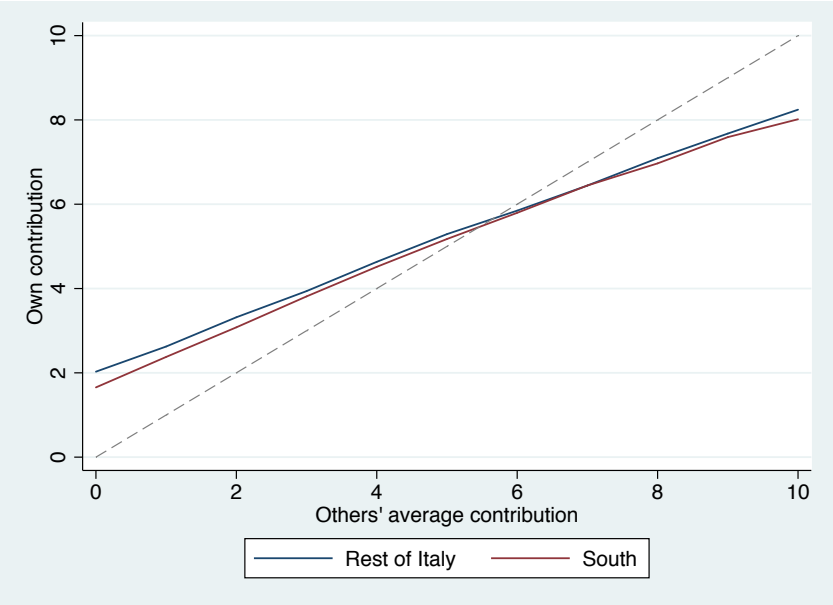


Figure A8 – Hypothetical scenarios to assess betrayal aversion

Social risk

For personal reasons, you have to travel to a big city. From the airport you can choose between two taxi companies to reach your final destination for which you don't know the exact route. Company A charges you a fixed price of €12. Company B charges you according to the taxi meter. If the driver takes the direct route, it costs you €8. However, 1 out of 5 drivers take detours to make more money out of you and the fare is then €16. Which company would you choose?

Natural risk

For personal reasons, you have to travel to a big city. From the airport you can choose between two taxi companies to reach your final destination for which you don't know the exact route. Company C charges you a fixed price of €12. Company D charges you according to the taxi meter. If the weather is fine, it costs you €8. However, 1 out of 5 times, due to bad weather conditions the ride takes longer and the fare is then €16. Which company would you choose?

Figure A9 – Distribution of risk-propensity types

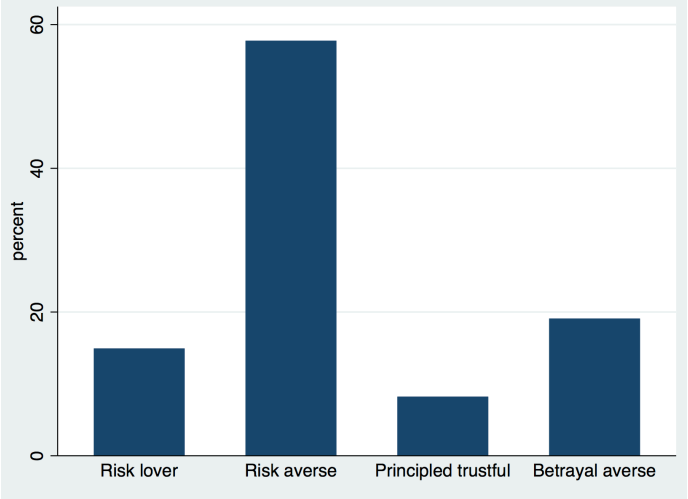
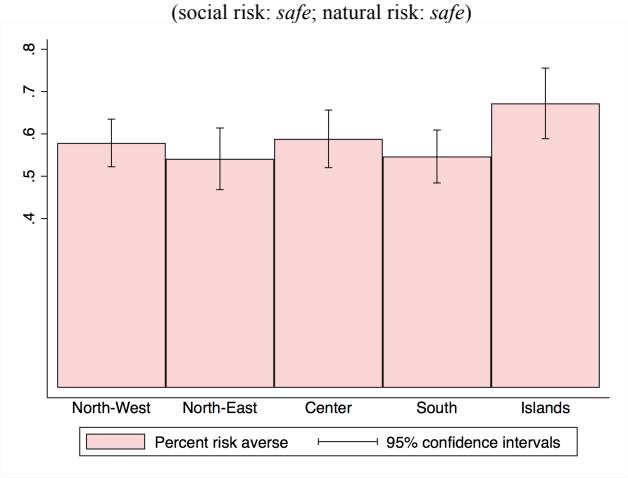
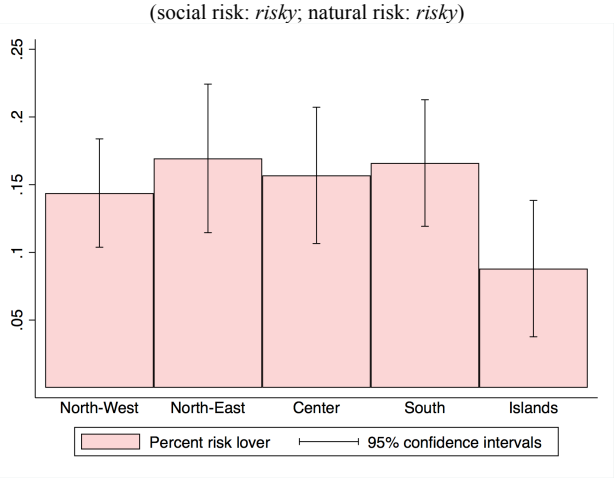


Figure A10 – Risk propensity types by macroareas

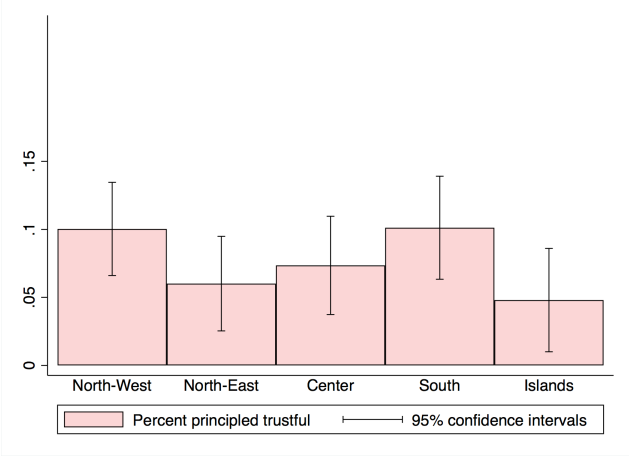
risk averse
(social risk: *safe*; natural risk: *safe*)



risk loving
(social risk: *risky*; natural risk: *risky*)



principled trustful
(social risk: *risky*; natural risk: *safe*)



betrayal averse
(social *risk*: safe; natural risk: *risky*)

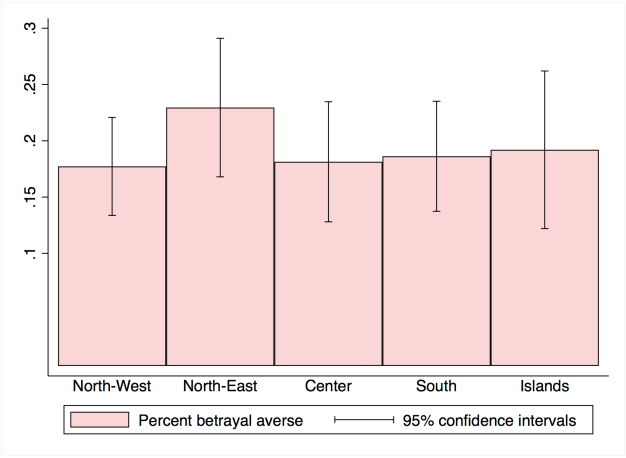


Figure A11 – Strength of family ties across Italian macroareas

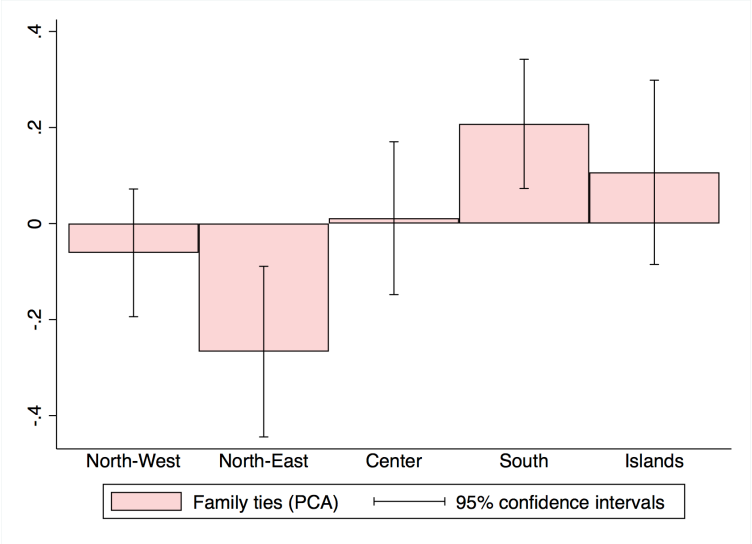
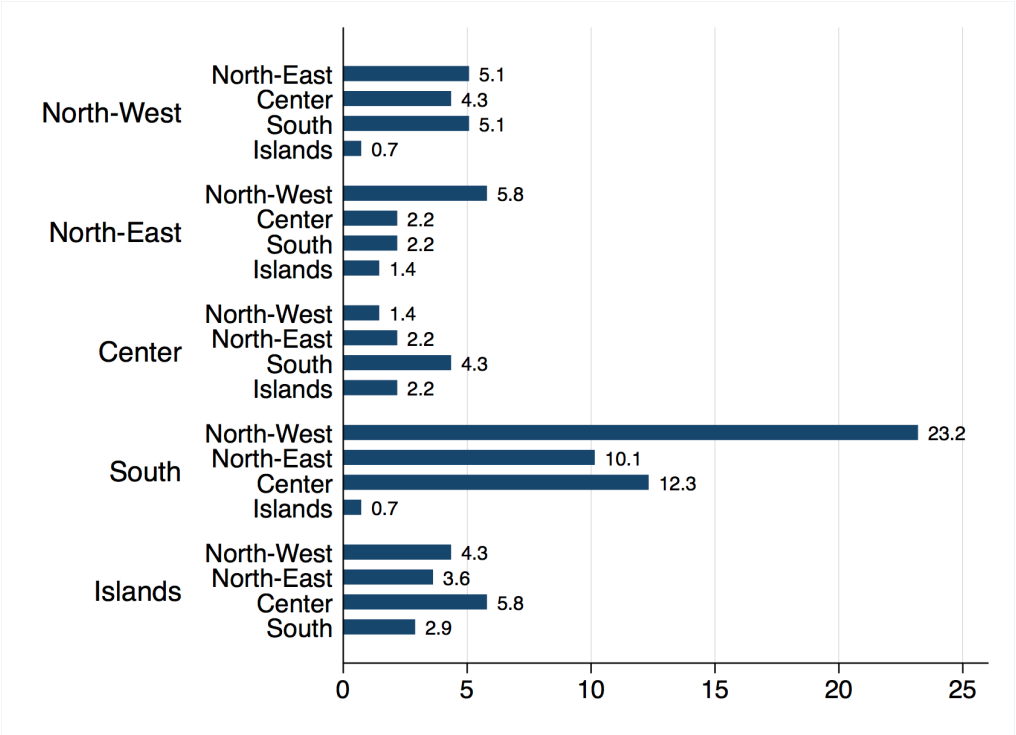


Figure A12 – Migration patterns across Italian macroareas



Notes: each bar shows the number of migrants from a macroarea of birth (outer categories) to a macroarea of residence (inner categories) as a percentage of total migrants in the sample.

Figure A13 – Experimental trustworthiness by macroarea of residence (only respondents born in the South)

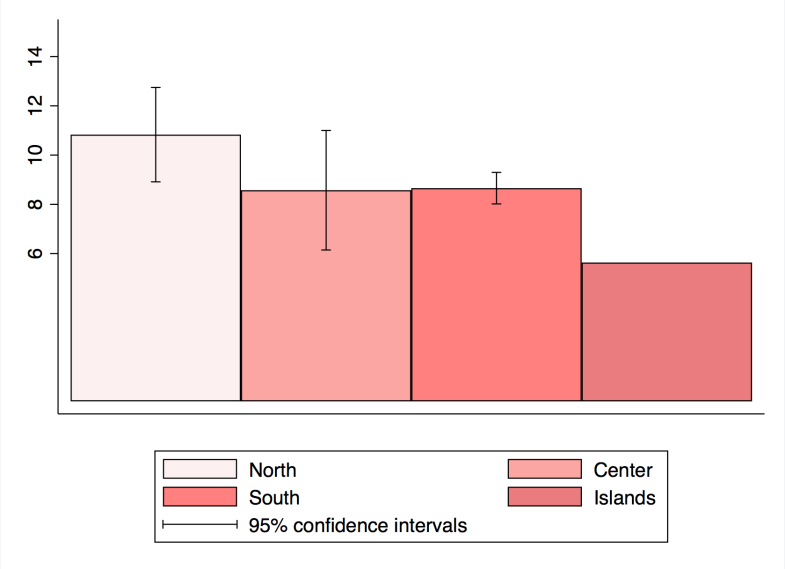


Table A1 – Determinants of reciprocal strategies (trust game)

	(1)	(2)	(3)	(4)	(5)	(6)
PROBIT (Marginal effects)	selfish		no return		reciprocal	
south	0.0228	0.00344	0.0330	0.00896	-0.0674**	-0.00818
	(0.0162)	(0.0215)	(0.0229)	(0.0255)	(0.0305)	(0.0358)
Send	0.0131***	0.0124***	-0.00299***	-0.00396***	-0.0125***	-0.0102***
	(0.00128)	(0.00135)	(0.00105)	(0.00114)	(0.00158)	(0.00170)
South*send		0.00291		0.00416		-0.0100**
		(0.00248)		(0.00278)		(0.00398)
trust	-0.0109***	-0.0109***	-0.00889**	-0.00890**	0.0226***	0.0226***
	(0.00264)	(0.00264)	(0.00387)	(0.00387)	(0.00505)	(0.00506)
Expected trustworthiness	-0.00428***	-0.00429***	-0.00516**	-0.00517**	0.0104***	0.0105***
	(0.00157)	(0.00157)	(0.00217)	(0.00217)	(0.00294)	(0.00294)
altruism	-0.00602*	-0.00601*	0.000290	0.000313	0.00631	0.00628
	(0.00361)	(0.00361)	(0.00559)	(0.00559)	(0.00731)	(0.00731)
cooperation	-0.00962***	-0.00963***	-0.00238	-0.00237	0.0136***	0.0136***
	(0.00279)	(0.00279)	(0.00375)	(0.00375)	(0.00504)	(0.00505)
Risk propensity	0.00913**	0.00914**	-0.00981	-0.00981	8.95e-05	7.51e-05
	(0.00412)	(0.00413)	(0.00618)	(0.00618)	(0.00819)	(0.00819)
Controls	YES	YES	YES	YES	YES	YES
PTs	YES	YES	YES	YES	YES	YES
Observations	9,790	9,790	9,790	9,790	9,790	9,790

Robust standard errors in parentheses clustered at individual level
*** p<0.01, ** p<0.05, * p<0.1

Table A2 – The north-south divide in conditional cooperation (public goods game)

Dep. Var.: *Amount invested in the PGG*	(1)	(2)	(3)	(4)
south	-0.00244	-0.0722	-0.00244	-0.259
	(0.133)	(0.212)	(0.133)	(0.224)
others_send	0.626***	0.624***	0.715***	0.691***
	(0.0134)	(0.0151)	(0.0232)	(0.0264)
south*others_send		0.0127		0.106*
		(0.0328)		(0.0550)
others_send^2			-0.00801***	-0.00615***
			(0.00170)	(0.00192)
south*others_send^2				-0.00847**
				(0.00406)
trust	0.0905***	0.0905***	0.0905***	0.0905***
	(0.0243)	(0.0243)	(0.0243)	(0.0243)
trustworthiness	0.106***	0.106***	0.106***	0.106***
	(0.0160)	(0.0160)	(0.0160)	(0.0160)
Expected trustworthiness	-0.0242*	-0.0242*	-0.0242*	-0.0242*
	(0.0143)	(0.0143)	(0.0143)	(0.0143)
altruism	0.0985***	0.0985***	0.0985***	0.0985***
	(0.0324)	(0.0324)	(0.0324)	(0.0324)
Risk propensity	0.0248	0.0248	0.0248	0.0248
	(0.0381)	(0.0382)	(0.0382)	(0.0382)
Controls + PTs	YES	YES	YES	YES
Observations	10,120	10,120	10,120	10,120
R-squared	0.445	0.445	0.445	0.445

Robust standard errors in parentheses clustered at the individual level
*** p<0.01, ** p<0.05, * p<0.1

Table A3 – The north-south gap in trustworthiness: the role of social capital

Dep. Var.: *experimental trustworthiness*	(1)	(2)	(3)	(4)
south	-0.879***	-0.856***	-0.838**	-0.855**
	(0.329)	(0.327)	(0.333)	(0.335)
voted in the last elections	-0.106			-0.114
	(0.475)			(0.488)
Respondent never volunteers		-0.161		-0.292
		(0.280)		(0.299)
Connectedness with neighbours			-0.0562	-0.0606
			(0.0593)	(0.0625)
trust	0.284***	0.297***	0.294***	0.281***
	(0.0609)	(0.0603)	(0.0613)	(0.0619)
expected trustworthiness	0.398***	0.387***	0.392***	0.400***
	(0.0402)	(0.0396)	(0.0401)	(0.0407)
altruism	0.292***	0.293***	0.305***	0.300***
	(0.0875)	(0.0856)	(0.0865)	(0.0883)
cooperation	0.100*	0.115**	0.113**	0.101*
	(0.0563)	(0.0560)	(0.0568)	(0.0571)
risk propensity	-0.108	-0.0911	-0.0900	-0.104
	(0.0934)	(0.0920)	(0.0932)	(0.0946)
Controls	YES	YES	YES	YES
PTs	YES	YES	YES	YES
Observations	956	979	965	943
R-squared	0.355	0.353	0.353	0.356

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

Table A4a – Original sample vs. extended sample with population weights

Dep. Var.: *experimental trustworthiness*	(1)	(2)	(3)	4)
	Original sample		Extended sample	
South	-0.854***	-0.861***	-0.980***	-0.986***
	(0.327)	(0.328)	(0.306)	(0.305)
Extended sample			-0.146	-0.0903
			(0.351)	(0.353)
Trust	0.297***	0.333***	0.308***	0.349***
	(0.0603)	(0.0559)	(0.0603)	(0.0555)
Expected trustworthiness	0.388***	0.393***	0.359***	0.363***
	(0.0396)	(0.0398)	(0.0372)	(0.0374)
Altruism	0.294***	0.331***	0.289***	0.333***
	(0.0856)	(0.0875)	(0.0837)	(0.0861)
Cooperation	0.114**		0.122**	
	(0.0560)		(0.0521)	
Reciprocity		0.706*		0.841**
		(0.371)		(0.351)
Risk propensity	-0.0928	-0.0658	-0.114	-0.0854
	(0.0920)	(0.0929)	(0.0877)	(0.0877)
Controls	YES	YES	YES	YES
PTs	YES	YES	YES	YES
Observations	979	979	1,406	1,406
R-squared	0.353	0.353	0.328	0.329

Robust standard errors in parentheses. Columns 3-4 include population weights adjusting the sample composition to the gender and

age-group structure of Italian population as of 2017 by macroarea of residence.
*** p<0.01, ** p<0.05, * p<0.1

Table A4b – Original sample vs. extended sample with population weights

Dep. Var.: *Reciprocity* (*y)*	(1)	(2)	(3)	(4)
	Original sample		Extended sample	
South	-0.854***	-0.0579	-0.980***	-0.114
	(0.322)	(0.275)	(0.302)	(0.248)
extended sample			-0.146	-0.146
			(0.347)	(0.347)
Send	1.475***	1.510***	1.439***	1.480***
	(0.0274)	(0.0302)	(0.0264)	(0.0296)
Send * South		-0.159**		-0.173***
		(0.0702)		(0.0646)
Trust	0.297***	0.297***	0.308***	0.308***
	(0.0594)	(0.0594)	(0.0597)	(0.0597)
cooperation	0.114**	0.114**	0.122**	0.122**
	(0.0551)	(0.0552)	(0.0515)	(0.0515)
Expected trustworthiness	0.388***	0.388***	0.359***	0.359***
	(0.0390)	(0.0390)	(0.0368)	(0.0368)
Altruism	0.294***	0.294***	0.289***	0.289***
	(0.0844)	(0.0844)	(0.0828)	(0.0828)
Risk propensity	-0.0928	-0.0928	-0.114	-0.114
	(0.0907)	(0.0907)	(0.0868)	(0.0868)
Controls	YES	YES	YES	YES
PTs	YES	YES	YES	YES
Observations	10,769	10,769	15,466	15,466
R-squared	0.543	0.544	0.523	0.524

Robust standard errors in parentheses clustered at individual level. Columns 3-4 include population weights adjusting the sample composition to the gender and age-group structure of Italian population as of 2017 by macroarea of residence.
*** p<0.01, ** p<0.05, * p<0.1

Table A5 – Share of safe choices across vignettes

	Social risk		Natural risk		Difference	Z stat.	p-value
All macroareas	76.8	[42.2]	66	[47.4]	10.8	-5.5	0.000
North-West	75.6	[43]	67.9	[46.8]	7.7	-2.1	0.037
North-East	77	[42.2]	60.3	[49.1]	16.7	-3.4	0.001
Center	77	[42.2]	66.2	[47.4]	10.8	-2.4	0.016
South	73.3	[44.3]	64.8	[47.9]	8.5	-2	0.041
Islands	86.4	[34.4]	72	[45.1]	14.4	-2.8	0.005

p-values based on Mann-Whitney U test

Table A6 – Betrayal aversion in Italy

Dep. Var.: *Safe choice*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Social risk treatment	0.0930***	0.0930***	0.0937***	0.0979***	0.0930***	0.0930***	0.0936***	0.0979***
	(0.0170)	(0.0170)	(0.0191)	(0.0198)	(0.0170)	(0.0170)	(0.0191)	(0.0198)
South		-0.0435	-0.0423	-0.0400		-0.0417	-0.0404	-0.0371
		(0.0298)	(0.0379)	(0.0384)		(0.0297)	(0.0377)	(0.0382)
Social risk treatment * South			-0.00256	-0.0119			-0.00255	-0.0119
			(0.0410)	(0.0421)			(0.0410)	(0.0421)
Extended sample	-0.0567**	-0.0561**	-0.0561**	-0.0603*	-0.0568**	-0.0562**	-0.0562**	-0.0599*
	(0.0259)	(0.0259)	(0.0259)	(0.0342)	(0.0259)	(0.0259)	(0.0259)	(0.0342)
Order of vignettes (natural risk first)					-0.0485*	-0.0472*	-0.0472*	-0.0540**
					(0.0252)	(0.0252)	(0.0252)	(0.0245)
Controls	NO	NO	NO	YES	NO	NO	NO	YES
PTs	NO	NO	NO	YES	NO	NO	NO	YES
Observations	2,117	2,117	2,117	2,035	2,117	2,117	2,117	2,035
R-squared	0.013	0.015	0.015	0.071	0.016	0.018	0.018	0.075

Robust standard errors in parentheses clustered at individual level. All columns include population weights adjusting the sample composition to the gender and age-group structure of Italian population as of 2017 by macroarea of residence.
*** p<0.01, ** p<0.05, * p<0.1

Table A7 – Trustworthiness by type of risk propensity, adjusting for other social preferences

Dep. Var.: *Experimental trustworthiness*	(1)	(2)	(3)	(4)	(5)
South	-0.796**	-0.788**	-0.797**	-0.796**	-0.789**
	(0.354)	(0.354)	(0.353)	(0.354)	(0.354)
Risk averse	0.00641				
	(0.312)				
Risk lover		-0.264			-0.229
		(0.385)			(0.410)
Betrayal averse			0.215		0.168
			(0.380)		(0.403)
Principled trustful				-0.0401	-0.0446
				(0.539)	(0.556)
trust	0.335***	0.337***	0.337***	0.336***	0.338***
	(0.0666)	(0.0665)	(0.0662)	(0.0666)	(0.0666)
expected trustworthiness	0.331***	0.330***	0.331***	0.331***	0.330***
	(0.0429)	(0.0429)	(0.0429)	(0.0430)	(0.0430)
altruism	0.256***	0.254***	0.257***	0.256***	0.254***
	(0.0902)	(0.0898)	(0.0900)	(0.0900)	(0.0900)
cooperation	0.108*	0.108*	0.107*	0.108*	0.108*
	(0.0590)	(0.0590)	(0.0590)	(0.0590)	(0.0591)
risk propensity	-0.0831	-0.0826	-0.0856	-0.0828	-0.0841
	(0.110)	(0.110)	(0.110)	(0.110)	(0.110)
Extended sample	-0.0362	-0.0250	-0.0317	-0.0345	-0.0203
	(0.426)	(0.427)	(0.427)	(0.427)	(0.427)
Controls	YES	YES	YES	YES	YES
PTs	YES	YES	YES	YES	YES
Observations	1,017	1,017	1,017	1,017	1,017
R-squared	0.306	0.306	0.306	0.306	0.307

Robust standard errors in parentheses. Risk propensity types are defined as follows: *risk averse* types made a safe choice in both vignettes; *risk lover* types made a risky choice in both vignettes; *betrayal averse* types chose the risky option in the natural risk vignette and the safe option in the social risk vignette; *principled trustful* types chose the safe option in the natural risk vignette and

the risky option in the social risk vignette. All columns include population weights adjusting the sample composition to the gender and age-group structure of Italian population as of 2017 by macroarea of residence. *** p<0.01, ** p<0.05, * p<0.1

Table A8 – The north-south divide in strength of family ties

Dep. Var.: *Family ties (PCA)*	(1)
South	0.235***
	(0.0853)
Extended sample	-0.0360
	(0.103)
Controls	YES
PTs	YES
Observations	1,016
R-squared	0.163

Robust standard errors in parentheses. The dependent variable is the first principal component extracted from three survey questions on family importance and responsibilities of family members. Population weights adjusting the sample composition to the gender and age-group structure of Italian population (as of 2017 by macroarea of residence) are included. *** p<0.01, ** p<0.05, * p<0.1

Table A9 – The north-south divide in trustworthiness accounting for family ties

Dep. Var.: *Experimental trustworthiness*	(1)	2)
South	-0.732**	-0.725**
	(0.355)	(0.353)
Family ties (PCA)	-0.279*	-0.253*
	(0.143)	(0.143)
trust	0.341***	0.374***
	(0.0667)	(0.0613)
expected trustworthiness	0.331***	0.338***
	(0.0426)	(0.0427)
altruism	0.256***	0.293***
	(0.0899)	(0.0922)
cooperation	0.110*	
	(0.0588)	
risk propensity	-0.0938	-0.0485
	(0.110)	(0.109)
reciprocity		0.888**
		(0.419)
Extended sample	-0.0570	-0.0382
	(0.427)	(0.428)
Controls	YES	YES
PTs	YES	YES
Observations	1,016	1,016
R-squared	0.310	0.312

Robust standard errors in parentheses. Both columns include population weights adjusting the sample composition to the gender and age-group structure of Italian population as of 2017 by macroarea of residence. *** p<0.01, ** p<0.05, * p<0.1

Table A10 – The north-south divide in reciprocity accounting for family ties

Dep. Var.: *Reciprocity*	(1)	(2)
South	-0.732**	0.107
	(0.349)	(0.296)
Send	1.421***	1.464***
	(0.0306)	(0.0350)
Send * South		-0.168**
		(0.0708)
Family ties (PCA)	-0.279**	-0.279**
	(0.141)	(0.141)
trust	0.341***	0.341***
	(0.0657)	(0.0657)
cooperation	0.110*	0.110*
	(0.0579)	(0.0579)
Expected trustworthiness	0.331***	0.331***
	(0.0420)	(0.0420)
altruism	0.256***	0.256***
	(0.0886)	(0.0886)
Risk propensity	-0.0938	-0.0938
	(0.108)	(0.108)
Extended sample	-0.0570	-0.0570
	(0.420)	(0.420)
Controls	YES	YES
PTs	YES	YES
Observations	11,176	11,176
R-squared	0.512	0.513

Robust standard errors in parentheses clustered at individual level. Both columns include population weights adjusting the sample composition to the gender and age-group structure of Italian population as of 2017 by macroarea of residence. *** p<0.01, ** p<0.05, * p<0.1

Table A11 – The north-south divide in trustworthiness accounting for internal migration patterns

Dep. Var.: *Experimental trustworthiness*	(1)	(2)	(3)
South (current residence)	-0.817**	-0.829**	-0.781**
	(0.359)	(0.361)	(0.388)
South to North migration (any age)	0.963		
	(1.041)		
Other migration patterns (any age)	-0.186		
	(0.509)		
South to North migration (birth)		1.962	
		(2.192)	
South to North migration (childhood)		-1.322	
		(2.435)	
Other migration patterns (birth)		0.434	
		(0.626)	
Other migration patterns (childhood)		-0.701	
		(0.803)	
trust	0.326***	0.322***	0.325***
	(0.0669)	(0.0669)	(0.0693)
Expected trustworthiness	0.322***	0.320***	0.333***
	(0.0433)	(0.0435)	(0.0440)
altruism	0.273***	0.274***	0.285***
	(0.0903)	(0.0906)	(0.0931)
cooperation	0.106*	0.108*	0.108*
	(0.0597)	(0.0600)	(0.0629)
Risk propensity	-0.0970	-0.0899	-0.108
	(0.112)	(0.111)	(0.111)
Extended sample	-0.0510	-0.0845	-0.184
	(0.430)	(0.434)	(0.443)
Birth-to-current-residence migration patterns (20 groups)	NO	NO	YES
Childhood-to-current-residence migration patterns (20 groups)	NO	NO	YES
Controls	YES	YES	YES
PTs	YES	YES	YES
Observations	992	984	984
R-squared	0.306	0.306	0.342

Table A12 – The north-south divide in trustworthiness accounting for intergenerational transmission of preferences and migration

Dep. Var.: *Experimental trustworthiness*	(1)	(2)	(3)	(4)
North (residence)	0.599**	0.343	-0.127	-0.0830
	(0.270)	(0.342)	(0.433)	(0.437)
Parents from South		-0.617*	-1.075**	-1.065**
		(0.338)	(0.426)	(0.432)
Parents from South * North (residence)			1.238*	1.161*
			(0.695)	(0.695)
Migrated at any age				0.112
				(0.468)
Trust	0.306***	0.329***	0.327***	0.327***
	(0.0607)	(0.0675)	(0.0672)	(0.0675)
Expected trustworthiness	0.361***	0.329***	0.327***	0.322***
	(0.0374)	(0.0433)	(0.0429)	(0.0431)
altruism	0.284***	0.261***	0.268***	0.277***
	(0.0841)	(0.0915)	(0.0910)	(0.0912)
cooperation	0.127**	0.111*	0.105*	0.110*
	(0.0526)	(0.0601)	(0.0597)	(0.0601)
Risk propensity	-0.121	-0.0996	-0.0921	-0.0936
	(0.0880)	(0.112)	(0.111)	(0.112)
Extended sample	-0.155	-0.0745	-0.0659	-0.0743
	(0.351)	(0.436)	(0.436)	(0.435)
Controls	YES	YES	YES	YES
PTs	YES	YES	YES	YES
Observations	1,406	993	993	985
R-squared	0.325	0.305	0.308	0.309