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Amoral Familism, Social Capital, or Trust? The Behavioural Foundations of the Italian North-South Divide*

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March 13, 2015

Abstract

We present the first lab-in-the field experiment on the Italian North-South divide. Using a representative sample of the population, we measure whether regional disparities in ability to cooperate emerge even if differences in geography, institutions, and criminal intrusion are silenced. We report that a behavioural gap in cooperation exists: Northern and Southern citizens react differently to the same incentives. Moreover, this gap cannot be accounted for by tolerance for risk, proxies of social capital, and 'amoral familism.' At least a share of North-South disparities is likely to derive from persistent differences in social norms.

Keywords: Social norms, experiments, Questione Meridionale, Italy.
JEL codes: C72, C93, Z13

The divide between the Northern and the Southern Italian regions embodies a paradigmatic puzzle of within-country differences. Since the Country's Unification in 1861, Italians have been sharing the same institutions, language and dominant religion, yet the differences have persisted, manifesting themselves in every available socio-economic measure (Putnam *et al.*, 1993; Felice, 2014). The puzzle intensified after WW II, for while the North steadily developed, turning this part of the peninsula into an advanced industrial society on a par with the rest of Western Europe, the South remained tenaciously behind, the gap getting even wider.

Despite the relentless institutional effort and the vast economic resources spent trying to promote their development, Southern regions remain Italy's major economic burden. In

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comparison with the North, the South has a lower per-capita GDP (13,704 vs. 23,837 Euros), a higher unemployment rate (12.6% vs. 5.3%), more homicides (1.95 vs. 0.75 out of 100,000), a higher child mortality rate (0.41% vs. 0.29%), and even a lower rate of waste collection sorted for recycling (24% vs. 51%).[1] A core issue traversing what is known in Italy as *La Questione Meridionale* (Jacini, 1884; Salvemini, 1955) has been whether disparities in performance originate from differences in *incentives* or in how people *react to similar incentives*.

Traditional explanations have focused on incentives, which are affected by geographical and structural problems (e.g., distance from Northern Europe, lack of proper roads), inefficient land property institutions (e.g., latifundia; see Franchetti and Sonnino, 1877), rent-seeking informal institutions (e.g., political patronage, the mafia), and by counterproductive economic policies, which destroyed the motivations to work hard, invest and innovate. By contrast, other approaches have stressed the different reactions that people have to similar incentives, because of different preferences, expectations, and norms (Ichino and Maggi, 2000). Two influential contributions along this line have been proposed by Edward Banfield's *The moral basis of a backward society*, and by Robert Putnam's *Making democracy work*, and have inspired countless studies. Although they stress different mechanisms, both scholars share the view that the ability to cooperate is at the basis of socio-economic development. Edward Banfield claimed that the origin of the North-South gap in Italy lies in moral flaws of Southerners, whose only concern would be with their personal welfare and that of their immediate families with utter disregard for anyone else (Banfield and Fasano, 1958). Putnam instead called into question collective dispositions towards cooperation and good government. He posited that these dispositions would originate in the regionally varying levels of social capital, which in turn would relate to sharply different historical experiences (Putnam *et al.*, 1993). The enduring gap in development between the Northern and the Southern regions was also the original question which propelled the notion of trust to gain systematic attention and attain the central role it has now achieved in the social sciences (Gambetta, 1987). Amoral

[1] The data source is the National Bureau of Statistics (Istat). The regions of the North are Piemonte, Valle d'Aosta, Lombardia, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Liguria, Emilia-Romagna. The regions of the center are: Toscana, Umbria, Marche, Lazio. The regions of the South are Abruzzo, Molise, Campania, Puglia, Calabria, Sicilia, and Sardegna. Central regions are excluded from this comparison. GDP: year 2009, (http://sitis.istat.it/sitis/html/indexEng.htm); unemployment: 2009; culpable homicides per 100,000 inhabitants, 2007; mortality measures the number of deaths before 1 year out of those children born alive, 2006; waste collection, 2011, http://www.istat.it/en/archive/30344

familism, social capital and trust, notions that have now entered the social sciences debates well beyond Italy's borders, developed around *La Questione Meridionale*.[2]

Here we employ, for the first time, an experimental approach to study these conjectures, and test whether a North-South differential in the ability to cooperate survives even when incentives are held constant. Should no regional disparities emerge in response to otherwise identical experimental conditions, the implication would be that the root of the North-South divide lies in differences in incentives. Instead, should regional disparities in behaviour persist, the implication would be that preferences, expectations, and social norms play a role.

We believe that this approach can significantly complement the range of evidence scholars have used so far in several ways. First, field data alone cannot reveal whether people's reactions to identical incentives would continue to differ if incentives were equalized. Banfield's work was based on an ethnography carried out in a single village in the South of Italy (Basilicata region). He could not have observed how similar villagers would respond under more favourable economic opportunities. Second, scholars who stress the role of social capital rely on indirect measures – notably blood donations, voting turnout, and association density (Putnam, 2000; Guiso *et al.*, 2004; Cartocci, 2007; Buonanno *et al.*, 2009) – whose link with cooperative dispositions is of a strength which has yet to be established (Durlauf, 2002; Bowles and Gintis, 2002). Finally, measures of trust derived from surveys, such as the Eurobarometer or the World Value Survey, elicit opinions rather than behaviour, and people have no incentives to consider questions carefully or reply truthfully.[3] Moreover, surveys rely on rather vague questions, whose interpretation depends on the context. For example, stating that you 'generally trust people' depends on the level of legal enforcement: indeed, given the same preferences and norms, if trust on average pays off more, then people' opinion will be more favorable toward trust. It is furthermore impossible to establish which reference group respondents have in mind when considering the 'people' in the question, they could be kin, neighbours, or generic compatriots. Despite their scholarly success we do not yet know whether the feet of these explanations for the North-South divide are made of iron or clay.

[2]Banfield's book has 3,961 citations, Putnam's book 30,443, and Gambetta's book has 2,592 (Google Scholar on February 13, 2015).

[3]For instance, they would hardly state to be untrustworthy. More generally, in cross-cultural comparisons of trust and trustworthiness, the interpretation of survey answers relies on the assumption that the degrees of attention and aversion to lying do not correlate with the variable of interest. If lying correlates with the variables of interest, the comparison is troublesome.

In our lab-in-the-field experiment we measure cooperation behaviourally through a Trust Game (Sutter and Kocher, 2007) and a Public Good Game (Henrich *et al.*, 2001; Herrmann *et al.*, 2008). At the same time, we test the amoral familism conjecture (Banfield and Fasano, 1958) by measuring self-interest levels through a set of dictator games, and the social capital conjecture (Putnam *et al.*, 1993) by looking at the proxies used in the literature.

We ran the experiment in four cities, two in the North and two in the South. We chose medium-size cities, large enough to study cooperation beyond the family circle, but small enough to have a stable community, in which dispositions should be shared and deep-rooted.[4]

In each location, we recruited a sample which reflects the composition of the national population. Although cross-cultural experiments with representative samples are rare (Buchan *et al.*, 2009; Cappelen *et al.*, forthcoming), it seemed crucial to us, given our aim to measure the preferences and norms of a society, to employ one.[5] A representative sample increases comparability across locations and boosts the external validity and the generalizability of the results. It further allows us to ensure that differences emerging across locations do not depend on different socio-demographic characteristics of the samples.

The remainder of the paper is organized as follows. Section 1 describes the procedures used to select the sample and the experimental locations and Section 2 details the experimental design. Section 3 presents the main findings and Section 4 tests the amoral familism and social capital conjectures. Section 5 discusses possible interpretations of our results.

[4]Our study relates to the literature on cross-cultural experiments. While most previous experiments were run across different countries (Henrich *et al.*, 2001; Herrmann *et al.*, 2008; Buchan *et al.*, 2009; Henrich *et al.*, 2010), this paper is a within-country study. Another notable exception is Lamba and Mace (2011), which studies whether the natural environment can affect the level of cooperation in small scale societies in central India. Previous experiments based on cross-country evidence have shown that cooperation co-varies with factors shared at society level, such as market integration, production technology, religion, the quality of the rule of law, and the degree of globalization. Here we focus on regional differences in cooperation that emerge when holding these factors constant.

[5]While several scholars have moved beyond the college sample and have run experiments with a wide variety of specific subject pools – ranging from employees (Bandiera *et al.*, 2011; Bigoni *et al.*, 2012) to public affair officials (Potters and Van Winden, 2000) and prisoners (Block and Gerety, 1995) – the use of a stratified sample remains an exception in the literature (see Bortolotti *et al.*, 2014 for a discussion). As the propagation of norms of cooperation is an emergent property and can depend on the composition of the population, civic norms cannot be reduced to the sum of the behaviour of specific sub-samples. Thus using a representative sample is particularly pressing given the objectives of our study. There is indeed evidence that results obtained with college students cannot be readily extended to a general sample (Bortolotti *et al.*, 2014), and that age matters for sustaining cooperative norms (Sutter and Kocher, 2007; Egas and Riedl, 2008).

1. Participants in the study

Our goal to measure deep-seated social norms of cooperation among strangers in Italy determined three crucial design features: participant pool, locations where to run the experiment, and the type of tasks that participants faced. We first discuss the selection of participants and locations. and in the next section the experimental tasks.

Participant pools. A total of 618 participants were recruited among the general population. The sample was representative of the Italian population with respect to age, sex, and employment status, since these demographic characteristics could be important to identify social norms in the society at large.[6] It was stratified according to sex, three age categories (18-39, 40-59, 60 and older) and three categories of employment status (employed; housewives and retired; others, including students and unemployed).[7] Two professional companies – Metis-Ricerche and Demoskopea – were hired for the recruitment of subjects.[8]

To ensure that subjects shared the local norms or had at least a good knowledge of them, we added four restrictions. To be eligible for the study, subjects had to: be at least 18 years old, be born and resident in the county, and have a good knowledge of spoken and written Italian. At the beginning of each session, we informed participants that everyone in the room was born and resident in the county (or in the region). Behaviour would reflect in-group norms among generic citizens.[9] Faced with a trade-off between number of participants and number of locations, we opted to boost the sample size, which we deemed of crucial importance, and focused on only four locations.

[6] This stratification strategy and the sample size in our study are similar to the one used in the World Value Survey for Italy.

[7] For the composition of the target sample, we referred to the 2009 statistics on the Italian population. Inhabitants at 1st of January 2009. Age range: 18-39 years, 34.8%; 40-59 years, 34.6%; 60 and more, 31.6%. Sex: male, 48%; female 52%. Employment status: employed, 42%; housewives and retired, 37%; others 21%. Source: http://demo.istat.it/pop2009/index1.html

[8] See online Appendix for further details on the recruitment process. Table A.2 in Appendix summarizes the socio-demographic characteristics of the actual sample.

[9] Among the 581 subjects who completed our questionnaire, about 92.7% of the participants turned out to be at least second generation natives of the county, based on the reported birthplace of their mother and father (i.e., at least one of their parents was born in the county). Due to technical problems, we lack personal information for 37 persons in the sample (24 from the first PGG session in Faenza and 13 from two PGG sessions, May 25 and 28 in Ragusa).

Locations. We selected the locations following rigorous criteria and with three goals in mind: *(i)* to cover Italian counties both in the North and in the South macro-areas; *(ii)* to maximize the difference relative to social capital within each macro-area; and *(iii)* to have medium-size cities. First, in order to cover both macro-areas, we included two counties in the North and two in the South of Italy.[10]

The second selection criterion aimed at increasing the likelihood of sampling counties that would differ in terms of trusting and cooperative behaviour. To achieve this goal, we picked the two counties in the North, and the two in the South, presenting the most extreme levels of social capital, measured in terms of association density, electoral participation, and and blood donations, which are the three most widely adopted proxies in the literature focusing on Italy (e.g. Putnam, 2000; Guiso *et al.*, 2004; Cartocci, 2007; Buonanno *et al.*, 2009).[11] To aggregate these multiple measures of social capital into a single index, we adopted the following procedure. First, we separately ranked all Italian counties according to each of the three dimensions, assigning position 1 to the county with the highest value. To pick the county with the highest level of social capital we adopted a minimax criterion: for each county we computed a 'score' equal to the maximum among the three rankings, then we selected the county with the lowest score. By contrast, to pick the county with the lowest level of social capital we adopted a maximin criterion: for each county we computed a 'score' equal to the minimum among the three rankings, then we selected the county with the highest score. The procedure was performed including all Italian counties, divided into two groups: North and South. The counties in Central Italy are placed in either one or the other cluster.[12] The county with the highest (lowest) social capital in the North was Ravenna (Cuneo), while the county with the highest (lowest) social capital in the South was Ragusa (Crotone).[13]

Although participants were recruited in the whole county, we aimed at cities of comparable size (between 50,000-100,000 inhabitants).[14] We avoided both small towns and large

[10] We excluded the Island of Sardegna because of its geographical and historical peculiarities. North and South are defined according to the official classification of the National Bureau of Statistics, Istat, see http://www.istat.it/it/archivio/6789.

[11] More details on these measures can be found in Section 4.

[12] Marche, Umbria and Toscana to the Northern group and Lazio to the Southern group, with latitude as the yardstick for the assignment.

[13] The procedure is robust to excluding the counties of Central Italy.

[14] Consider that the average size of an Italian county capital is 160,428 inhabitants, a value that lowers to 94,824 when excluding the five largest Italian cities (Roma, Milano, Torino, Palermo, Napoli). The corresponding median populations are 82,367 and 72,329, respectively. The average municipality in Italy is much smaller: 7,492 inhabitants. Source: Istat, http://demo.istat.it/pop2010/index.html

metropolitan cities; as we aimed at studying interactions among non-kins, in very small towns it would have been difficult to achieve the required anonymity among participants. On the other hand, in large cities the population is more diverse and mobile, thereby hindering the elicitation of norms and preferences that are strictly specific to a geographical area. We thus focused on medium-size cities in the counties of interest. All the cities are provincial capitals except for Faenza. In particular, Faenza (56,992 inhabitants) was selected instead of Ravenna as the latter has more than 100,000 inhabitants (155,997 at 2009).[15] Thus, the four selected cities are: Cuneo, Faenza, Crotone, and Ragusa.[16]

2. Experimental design

Every participant faced a series of individual and group tasks (Table 1). The latter consisted of a Public Good Game (PGG), in which roughly half the subjects participated, and a Trust Game (TG) in which the remaining participated; the goal of these group tasks was measuring cooperation levels in the form of voluntary contributions to a group project or of trusting behaviour. The individual tasks consisted of a choice over lotteries – played in all sessions – and three modified Dictator Games (DG) – played in TG sessions only. Below we will first describe the group tasks and next the individual tasks, although in the sessions the order was reversed.

Group tasks. In the PGG, subjects faced 8 rounds of a voluntary contribution mechanism. They were randomly assigned to groups of $N = 4$, which were randomly changed at every round according to a strangers matching protocol. In every round, all group members received an endowment of $w = 20$ Monetary Units (MUs) and had to simultaneously decide how much of their endowment to invest in a group account, $x_i \in \{0, 6, 14, 20\}$, and how much to keep in their private account (w-x_i). Every MU invested in the group account was doubled and shared equally among group members and individual earnings were determined as follows:

[15] Source. Istat, http://demo.istat.it/pop2010/index.html

[16] The four Italian cities chosen as experimental locations are geographically distant both in terms of kilometers and travelling times. Consider travelling by car from the northernmost town of Cuneo to the southernmost town of Ragusa. According to Google maps, it takes 4 hours and 25 minutes to drive from Cuneo to Faenza (458 km), and then an additional 9 hours and 46 minutes to reach Crotone (919 km). From Crotone it takes 6 hours and 13 minutes to arrive in Ragusa (425 km). For further information on the four selected counties, see Table A.1 in Appendix.

Table 1: *Sequence of Tasks in Each Type of Session*

	PGG sessions	**TG sessions**
INDIVIDUAL TASKS		
Choice over Lotteries	Risk preferences	Risk preferences
Three Dictator Games	–	Concerns for equality and efficiency
GROUP TASKS		
Public Good Game	Cooperation (i.e., contributions)	–
Trust Game	–	Cooperation (i.e., trusting behaviour)

Notes: PGG sessions included three variants of the Public Good Game: Standard, Punishment and Threshold (in this order). TG sessions included two versions of the Trust Game: Baseline and Coordination (more details on the games in Bigoni *et al.*, 2013). Due to space constraints, only the Standard version of the PGG and the Baseline version of the TG are included in this paper.

$$\pi_i^1 = w - x_i + a \sum_{j=1}^{N} x_j$$

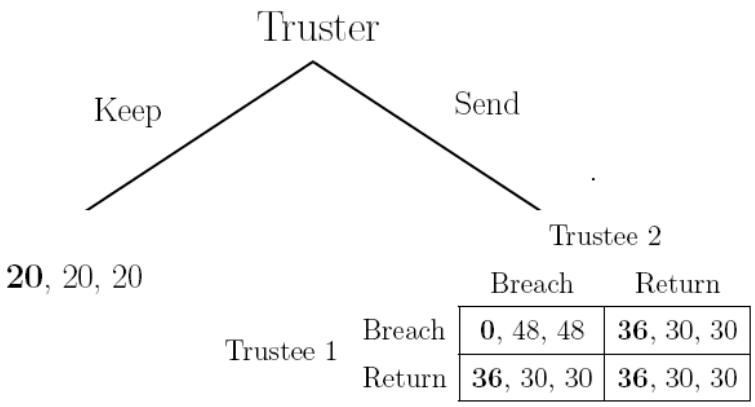
The marginal per capita return (MPCR) of the public good was $a = 0.5$. As the MPCR is above $1/N$ and below 1, free-riding is a dominant strategy for rational self-interested subjects, while group efficiency is maximized when everyone contributes the whole endowment. After each round, subjects could observe the individual contributions and earnings of the other group's members. Earnings cumulated from one period to the next.

In the TG, subjects were divided into groups of three – one truster and two trustees – and played 10 rounds of a modified investment game (Figure 1). We moved away from the standard dyadic trust game and employed a game where trust is not a simple one-to-one relationship, in order to better capture norms of generalized trust (Bigoni *et al.*, 2013). The truster decided first and could either trust or not. If the truster did not trust (Keep), everyone in the group earned 20 MUs and the trustees had no choice to make. If the truster trusted (Send) and at least one trustee reciprocated (Return), the truster earned 36 MUs, and each trustee earned 30 MUs. When no trustee reciprocated (Breach, Breach), the truster earned 0 MUs and each trustee earned 48 MUs. This three-player trust game has two equilibria in pure strategies: (Send, Return, Return) and (Keep, Breach, Breach), but only the latter survives the elimination of weakly dominated strategies. At the end of each round, roles were randomly re-assigned and new groups were formed according to a strangers protocol.[17]

[17] In each TG session there were two matching groups; participants in one matching group never met a participant from

Changing roles should facilitate learning and help spreading norms within the sample.

Figure 1: *Trust Game*



Individual tasks. A choice over lotteries was used to elicit subjects' risk preferences (Eckel and Grossman, 2008). Subjects had to select one from a list of six lotteries; each lottery had two possible outcomes (low or high) that occurred with equal probability. The first lottery was the safest and yielded 17.5 Euros for sure, while the last lottery was the riskiest and yielded 44.0 Euros with probability 1/2 and 1.0 Euro with probability 1/2 (see Figure C.1 in the Appendix). Only two randomly selected subjects per session were paid for this task. To avoid any carry over effect, earnings and winners were determined at the end of the session, by a manual draw.

In each of the three Dictator Games (DGs) each subject had to choose how to allocate amounts of MUs between himself and the other two group members: the six alternative allocations available to the subjects are presented in Table 2. We now describe each dictator game.

In DG1 the dictator always earned 160 MUs and faced choices between equality and group wealth. While allocation 1 ensured equal earnings to all three members of the group (E), allocation 6 delivered the highest sum of earnings for the group (W) at the cost of maximizing inequality. Allocations 2, 3, 4, and 5 provided intermediate situations between E and W. A self-interested dictator would be indifferent among the available allocations, while the choice of a dictator who cares for others' welfare would reveal his relative preferences

another matching group.

Table 2: *Dictator Games*

	DG1: Equality vs. Efficiency Allocations					
	1 (E)	2	3	4	5	6 (W)
You (red)	160	160	160	160	160	160
Other participant (black)	160	154	148	142	136	130
Other participant (white)	160	196	232	268	304	340
Efficiency	*480*	*510*	*540*	*570*	*600*	*630*

	DG2: Self-Interest vs. Efficiency Allocations					
	1 (S)	2	3	4	5	6 (W)
You (red)	190	184	178	172	166	160
Other participant (black)	40	58	76	94	112	130
Other participant (white)	250	268	286	304	322	340
Efficiency	*480*	*510*	*540*	*570*	*600*	*630*

	DG3: Self-Interest vs. Equality Allocations					
	1 (S)	2	3	4	5	6 (E)
You (red)	190	184	178	172	166	160
Other participant (black)	40	64	88	112	136	160
Other participant (white)	250	232	214	196	178	160
Efficiency	*480*	*480*	*480*	*480*	*480*	*480*

for equality over group wealth. In DG2 the dictator faced a tradeoff between self-interest and group wealth. The main difference between DG1 and DG2 resided in the earnings of the dictators; while dictator's earnings are constant on DG1, they vary from 160 to 190 MUs in DG2. DG1 and DG2 shared two features: first, allocation 6 (W) was identical in both games, second, for each allocations k=1,..,6, group wealth was identical across DG1 and DG2 (Table 2). Moreover, in DG2, allocations 1 through 6 were designed to have the same level of inequality as measured according to Fehr and Schmidt (1999)'s model, under the assumption of equal weights for disadvantageous and advantageous inequality.[18] Hence, in DG2 a purely self-interested dictator would always choose allocation 1 (S) over all other allocations. In contrast, in DG3 group wealth is kept constant (480 MUs) in all six allocations and the dictator faces a tradeoff between self-interest and equality. Allocation 1 (S) yields the highest earnings to the dictator but the distribution is highly unequal, whereas allocation 6 (E) presents equality of earnings and yields the lowest earnings for the dictator. A self-interested dictator will choose allocation 1 and earn 190 MUs, while a dictator concerned with inequality may choose allocation 6 and earn 160 MUs.

[18]The difference in inequality measured according to Bolton and Ockenfels (2000)'s model is also minimal in these allocations.

Each subject was asked to play as the dictator in DG1, DG2, and DG3; at the end of the session, only one of the games was selected at random for payment. Importantly, roles in the game were then randomly assigned to determine earnings.

Experimental procedures. All sessions were held in hotel conference rooms or educational centres located near the city centre and free of any political or religious connotations. Venues were near or at well-known locations accessible by car or public transport. For the experiment we employed the mobile Bologna Laboratory for Experiments in Social Sciences (BLESS), consisting of 32 laptop computers connected through a wireless network to a laptop server, which was transported from Bologna to the locations of the experiment by van. Upon arrival, subjects were invited to seat at a desk; visual contact among participants was not possible, and no form of communication was allowed during the experiment. All participants signed a consent form and a data release form. At the beginning of each task, the relevant instructions were handed out and read aloud. The experimenter who read the instructions was the same in all sessions and in all cities. To ensure the full understanding of the instructions, we asked subjects to individually answer a set of computerised control questions before each task (except the choice over lotteries). Our participants included a rather large number of elderly and uneducated people: this called for a user friendly interface and simplified tasks. We largely relied on graphical elements to make the task more intuitive;[19] To make their choices subjects simply had to touch the screen, and there was no need to use the keyboard or the mouse.

The study was conducted between March and October 2011. The number of participants in a session ranged between 24 and 32, and everyone participated in only one session. Sessions were run in the evening or on a Saturday in order to favour a wider participation. The experiment was programmed with z-Tree (Fischbacher, 2007). At the end of the sessions, we administrated a computerized questionnaire with measures of social capital, socio-demographic characteristics, and other information (see Appendix). A PGG session lasted on average 2 hours and a TG session 1 hour and 30 minutes. Subjects received 30

[19]See Figure A.2 in Appendix. In programming our interfaces, we took inspiration form the first wave of experiments conducted at the Internet Laboratory for Experimental Economics, iLEE (for further details see: http://www.econ.ku.dk/cee/ilee/description/ilee1/). Instead, Figure A.1 in the Appendix shows the appearance of the lab room.

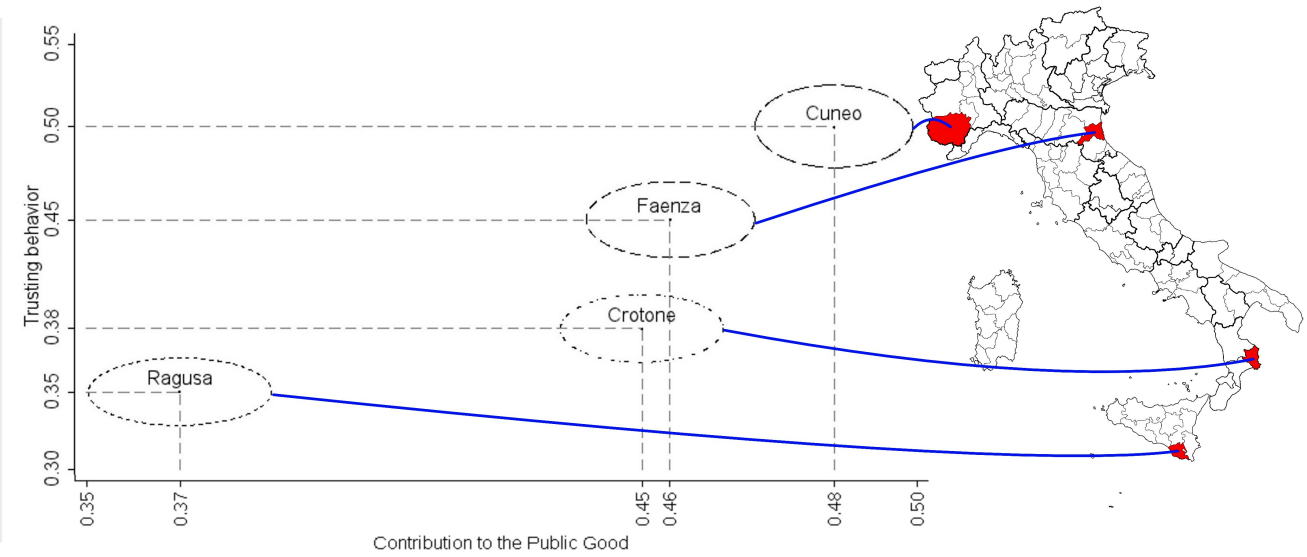
Euros gasoline vouchers for showing up on time, plus a cash payment corresponding to the sum of their earnings in each part. Payments were made privately right after the end of the experiment; average per-capita earnings were 16.5 (17.5) Euros in cash in PGG (TG) sessions plus 30 Euros in gasoline vouchers.[20]

3. A resilient cooperation divide

In this Section we document how cooperation differ within Italy and present our two main results.

Result 1 *There exists a North-South gap in cooperative behaviour.*

Figure 2: *Cooperation Levels Across Italy*



We find that in the North cooperation levels are higher than in the South. Support for Result 1 is provided by Figure 2 and by a series of linear regressions in Tables 3 and 4. Figure 2 reports county-average contributions in the PGG (Public Good Game) as a fraction of the endowment, and county-average trust frequencies in the TG (Trust Game) across all

[20] Reported payments comprise earnings from all tasks, including tasks not reported in this paper.

rounds and individuals. On both tasks, the most cooperative county is Cuneo (0.502 in TG and 0.485 in PGG), and the least cooperative is Ragusa (0.346 in TG and 0.365 in PGG). The dashed ellipses are drawn at a 95% confidence level after a bootstrapping procedure: we randomly draw 10,000 pairs of observations per county with repetition.

The regression models employ as dependent variable either the individual frequency of trust in the TG (Table 3) or the average individual contribution level in the PGG (Table 4). The dummy *Northern Italy* takes value 1 for Northern regions and 0 otherwise; the positive and significant coefficients suggest that participants from the North cooperate significantly more than those from the South (Tables 3 and 4, Model 1).[21]

The divide in cooperation remains significant after controlling for task comprehension, socio-demographic characteristics, and other individual traits. To control whether comprehension was a problem , especially for elderly or uneducated participants, which affected our results, we included the dummy *Task comprehension*, which takes value 1 for participants that had troubles answering a battery of control questions.[22] In addition, we control for a series of socio-demographic characteristics based on self-reported questionnaire data, which include dummy variables for gender, age (18-39, 40-59, 60 and above), occupational status (*Housewife or retired*, *Employed*, and *Student or unemployed*), and proxies for family wealth (*House of property* and *Own 2 or more cars*).[23]

Result 1 is remarkable also because it persists after controlling for a series of additional dimensions of individual preferences, elicited in the experiment. We control for preferences toward risk based on the lottery task. We include a first variable that takes value 1 for participants who selected the two safest options and 0 otherwise (*Strongly risk averse*); the second variable takes value 1 for those selecting one of the two riskiest options (*Risk neutral or risk loving*). When adding this controls for risk preferences, the North-South gap remains large and significant (Model 3, Tables 3 and 4).[24]

[21] In all regressions in this Section, standard errors are robust for clustering at the session level for the PGG sessions, and at the matching-group level for the TG sessions.

[22] The experiment did not proceed until everyone correctly answered all the control questions. To account both for participants that were particularly slow in answering the control questions, and for those who made several mistakes, we labelled their task comprehension as 'low' if they were in the last decile according either to their total answering time, or to their total number of mistakes. This measure is built at the county level and separating the TG and PGG treatments.

[23] Due to technical problems, we lack personal information for 37 persons in the sample (see footnote 9). An additional dummy *Missing questionnaire* takes value one for these 37 participants, and zero otherwise.

[24] Risk preferences appear to have no significant effect on the choice to trust (Table 3) and a counter-intuitive effect in the contributions to the PGG (Table 4).

In addition, we control for individual concerns for efficiency and equality, as elicited by means of the Dictator Games (Table 3, Model 4). We classify the participants into three types according to their choices in the DGs (Table 2). A participant expresses a *Strong concern for efficiency* when she favours total surplus in the group over equality of earnings in the costless choice DG1 and over self-interest in DG2. By contrast, a participant expresses a *Strong concern for equality* when she favours equality of earnings over total surplus in the costless choice DG1 and over self-interest in DG3. The third category is residual and includes the participants whom we call self-interested. Regression results show that individual cooperation levels in terms of trust exhibit a significant North-South gap also after including controls for individual concerns for efficiency and equality.

Table 3: *Individual Trust Level*

Dep.var.: Individual trust frequency	Model 1	Model 2	Model 3	Model 4	Model 5
Northern Italy	0.111**	0.103**	0.109**	0.106**	
	(0.033)	(0.035)	(0.038)	(0.038)	
Latitude					0.017**
					(0.005)
Individual choices over lotteries					
Strongly risk averse			-0.046	-0.040	-0.037
			(0.060)	(0.054)	(0.055)
Risk neutral/Risk loving			-0.002	-0.012	-0.015
			(0.061)	(0.067)	(0.065)
Individual concerns for equality and efficiency					
Strong concern for equality				-0.038	-0.039
				(0.066)	(0.066)
Strong concern for efficiency				0.024	0.024
				(0.066)	(0.066)
Task comprehension (1=low)		-0.024	-0.023	-0.026	-0.028
		(0.049)	(0.049)	(0.049)	(0.049)
Socio-demographic characteristics	No	Yes	Yes	Yes	Yes
N.obs. (individuals)	242	242	242	242	242
R-squared	0.026	0.049	0.052	0.057	0.059

Notes: OLS regression with standard errors robust for clustering at the matching-group level (in parentheses). The dependent variable is the frequency of one participant trusting over all rounds of the TG when she was a trustor. The default categories are: moderately risk averse, weak or no concern for efficiency, weak or no concern for equality. Socio-demographic characteristics are listed in the main text. Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5% and 10% level, respectively.

When considering the averages at the county level, one can also notice an empirical alignment between latitude and cooperation level. This fact is illustrated in Figure 2 and confirmed by non-parametric tests as well as regression models (Model 5 in Table 3 and Model 4 in Table 4). Locations are ordered along a North-South continuum, in terms of both trust in

Table 4: *Individual Contribution to the Public Good*

Dep.var.: Individual Contribution to the PGG	Model 1	Model 2	Model 3	Model 4
Northern Italy	1.213*	1.161**	1.066**	
	(0.580)	(0.432)	(0.429)	
Latitude				0.195***
				(0.057)
Individual choices over lotteries				
Strongly risk averse			0.806	0.806
			(0.572)	(0.569)
Risk neutral/Risk loving			-0.921*	-0.895*
			(0.445)	(0.450)
Task comprehension (1=low)		0.757	0.819	0.822
		(0.739)	(0.731)	(0.725)
Socio-demographic characteristics	No	Yes	Yes	Yes
N.obs. (individuals)	372	372	372	372
R-squared	0.015	0.085	0.101	0.106

Notes: OLS regression with standard errors robust for clustering at the session level (in parentheses). The dependent variable is the contribution of one participant averaged over all rounds of the PGG. The default category for risk preference is: moderately risk averse. Socio-demographic characteristics are listed in the main text. Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5% and 10% level, respectively.

the TG (Jonckheere-Terpstra test: p-value=0.009, z=- 2.61, n=18),[25] and contributions in the PGG (Jonckheere-Terpstra test: p-value= 0.037, z=2.09, n=13).

To sum up, our evidence – based on over 600 participants – confirms the presence of a systematic cooperation gap, which survives when external factors are held constant. The gap is robust to variations in the type of the cooperative tasks – TG or PGG – and persists after controlling for socio-demographic characteristics, risk preferences, and concerns for equality and efficiency.

Contributions to the public good and trust are two measures of cooperation which have been widely investigated, and often discursively associated in the literature. Yet there is no evidence on how strongly linked they are.

Result 2 *Our two independent measures of cooperative behaviour – contributions to the public good and trust – move in unison.*

Support for Result 2 comes from Figure 2 and Table 5. We report that the ranking of counties according to trust is identical to the ranking based on contributions: the higher the

[25] We use a Jonckheere-Terpstra test, a non-parametric test for more than two independent samples, designed to test for ordered differences between treatments (Hollander and Wolfe, 1999). For this test, we take as single observation the average contribution at the session level, and the frequency of trustful choices at the matching group level (hence we have two independent observations per session). All tests are two-sided.

trust in the TG, the higher the levels of voluntary contribution in the PGG. TG and PGG were played by different participants – which makes the two measures independent of each other – and involved tasks with different parameters and types of strategic interaction. Yet, results are agreeing, which indicates the presence of a robust behavioural trait. This novel evidence that trust and contributions vary in unison across locations suggests that these phenomena share a common root, which we identify as the collective ability to cooperate.

Support for Result 2 is provided by linear regression analyses (Table 5). The dependent variable is the contribution of each participant as averaged over all rounds of the PGG. The independent variables are the county-average frequency of trust, alone or with controls for demographic characteristics. Results indicate that an increase by 10 percentage points in the frequency of trust corresponds to a highly significant increase of the average contribution by about 1.5 points (Model 1). The relation between trust and individual contributions in the PGG remains positive and significant also after controlling for socio-demographic characteristics and task comprehension (Model 2).[26]

Table 5: *Individual Contributions to the Public Good vs. Trust.*

Dep.var.: Individual Contribution to the PGG		
	Model 1	Model 2
County-average trust frequency	15.320***	14.507***
	(3.421)	(2.913)
Task comprehension (1=low)		0.759
		(0.719)
Socio-demographic characteristics	No	Yes
N.obs. (individuals)	372	372
R-squared	0.027	0.096

Notes: OLS regression with standard errors robust for clustering at the session level (in parentheses). Demographic characteristics are listed in the main text. The trust frequency comes from sessions run in the same county but with a distinct set of individuals. Socio-demographic characteristics are listed in the main text. Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5% and 10% level, respectively.

Finally, we report some findings on trustworthiness. One could interpret trust levels as a response to trustworthiness levels: trustworthiness can influence trust because trust pays off when a high fraction of the population is trustworthy. Being trustworthy also follows a North-South ordering: the individual frequencies of trustworthy choices in the TG are 34% in Cuneo, 33% in Faenza, 32% in Crotone, and 25% in Ragusa (Jonckheere-Terpstra test: p-value=0.049, z=-1.97, n=18, two-sided). However, no significant difference in trustworthiness

[26] These effects persist also in a regression where the dependent variable is the individual frequency of trust and the dependent variable is the county-level contribution to the PGG (robustness check in Appendix, see Table B.1).

emerges between North and South, according to an OLS regression (see Table 6). In Model 1, we include the dummy *Northern Italy* as a regressor, and in Model 2 we add controls for the same socio-demographic characteristics considered in Table 3. In Model 3, we control for participants' preferences over risk, and in Model 4 we introduce dummies capturing concerns for equality and efficiency. The average frequency of reciprocal actions is indeed higher in the North, but the correlation does not seem to be significant.

Table 6: *Individual Trustworthiness Level*

Dep.var.: Individual trustworthiness frequency					
	Model 1	Model 2	Model 3	Model 4	Model 5
Northern Italy	0.048	0.045	0.048	0.048	
	(0.048)	(0.044)	(0.047)	(0.048)	
Latitude					0.008
					(0.007)
Individual choices over lotteries					
Strongly risk averse			0.032	0.033	0.034
			(0.071)	(0.074)	(0.074)
Risk neutral/Risk loving			0.039	0.038	0.037
			(0.078)	(0.081)	(0.081)
Individual concerns for equality and efficiency					
Strong concern for equality				0.001	0.000
				(0.055)	(0.054)
Strong concern for efficiency				0.002	0.002
				(0.058)	(0.058)
Task comprehension (1=low)		0.032	0.029	0.029	0.029
		(0.065)	(0.070)	(0.070)	(0.070)
Socio-demographic characteristics	No	Yes	Yes	Yes	Yes
N.obs. (individuals)	238	238	238	238	238
R-squared	0.004	0.033	0.036	0.036	0.037

Notes: OLS regression with standard errors robust for clustering at the matching-group level (in parentheses). The dependent variable is the frequency of one participant trustworthiness over all rounds of the TG when she was a trustee. The default categories are: moderately risk averse, weak or no concern for efficiency, weak or no concern of equality. Socio-demographic characteristics are listed in the main text. Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5% and 10% level, respectively.

4. Amoral familism and social capital

Our evidence suggests that the North-South gap in the ability to cooperate depends also on how differently people respond to the same incentives. In fact, the experimental method isolates subjects from confounding factors that influence the payoff structure, such as institutions, geographical factors, mafia extractions, degree of corruption and the efficiency of the public administration.

Here we consider two highly prominent interpretations of the economic and social divide

in Italy. One interpretation was proposed by Banfield and Fasano (1958), who posited that people in the South were incapable of transcending their own immediate, material interest, or the one of their closest kins. Banfield famously named this disposition, 'amoral familism.' The other interpretation was discussed by Putnam *et al.* (1993), who ascribed the gap to disparities in terms of social capital, which could arise from different historical experiences.

Amoral familism. Banfield describes Southerners to be more 'self-interested' than Northerners, and proposes it as an explanation for the economic backwardness of the South. His interpretation emerged from ethnographic observations in the field and in-depth interviews mostly conducted in a single village of Southern Italy, which he fictionally dubbed *Montegrano*. In his own words:

> The hypothesis is that the Montegranesi act as if they were following this rule: Maximize the material, short-run advantage of the nuclear family; assume that all others will do likewise. One whose behaviour is consistent with this rule will be called an 'amoral familist.' [...] In a society of amoral familists, no one will further the interest of the group or community except as it is to his private advantage to do so.
>
> (Banfield and Fasano, 1958, p. 85)

Experimental data we collected in different locations can provide an empirical test of Banfield's core conjecture.[27] In the DG, our participants had to decide how to allocate an amount of money between themselves and two others. The potential beneficiaries were fellow-citizens from the same county, who were neither family members nor in a position to return the favour after the experiment, because their identity was not disclosed. In such an environment, amoral familists should not be willing to sacrifice any of their own welfare in favour of others, hence if Banfield's conjecture were true, we should observe a more self-interested behaviour in the South than in the North. This methodology presents several advantages over surveys and interviews: the mechanism to elicit individual preferences is incentive compatible, data are easily comparable across locations, and the strict protocol we

[27] One could conceive other empirical tests for the implications of Banfield's conjecture, for instance about the level of honesty. Here we test one aspect, which we label his 'core conjecture.'

followed ensures the replicability of the study. In addition, we can couple our measures of the intensity of 'self-interest' with individual measures of trust (Result 3).

Result 3 *Preferences for self-interest do not vary systematically between North and South. In addition, variations in self-interest cannot explain the North-South gap in cooperative behaviour.*

To measure the intensity of 'self-interest', we focus on individual concerns for equality and efficiency. We classify a person as caring about equality if she is willing to pay a personal cost to increase the level of equality of earnings in her group; similarly, a person cares about efficiency if she is willing to pay a cost in order to increase the total earnings in her group.[28] Both preferences can be viewed as departures from self-interest and serve as useful measurements to compare behaviour in different locations. We report similar preferences for self-interest in the North and the in the South of Italy. In particular, about 26 percent of participants can be classified as being self-interested or having weak concerns for others, both in the North and in the South. When looking at county-averages, concerns for equality and efficiency, unlike cooperation levels, are not aligned along a North-South continuum.[29]

Support for Result 3 comes from Tables 3 and 7. The available evidence suggests that cooperation does not critically depend on concerns for equality and efficiency: for instance, residents of Cuneo display the weakest concerns for efficiency and yet they are the most cooperative in our sample (Table 2). More precisely, individual trust levels do not significantly correlate with individual concerns for equality and efficiency, and the North-South gap persists after controlling for levels of self-interest (Model 4 in Table 3). Furthermore, an Oaxaca decomposition shows that the North-South difference in trust is not explained by differences in individual concerns for equality and efficiency (Table 7).[30] Results indicate

[28] These measures should capture well the traits characterising Southerners according to Banfield, who writes that: 'The amoral familist will value gains accruing to the community only insofar as he and his are likely to share them. In fact, he will vote against measures which will help the community without helping him because, even though his position is unchanged in absolute terms, he considers himself worse off if his neighbours' position changes for the better. Thus it may happen that measures which are of decided general benefit will provoke a protest vote from those who feel that they have not shared in them or have not shared in them sufficiently (Banfield and Fasano, 1958, pg. 101).'

[29] See Table B.2 in Appendix.

[30] The Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973) is an econometric technique used to decompose a differential between two groups with respect to a variable of interest: in our case, trust in Northern and Southern Italy. This technique allows to single out what fraction of this differential can be explained by the available control variable, and what fraction instead remains unexplained.

that the difference in average trusting behaviour between Southern and Northern residents is equal to -0.111 (Prediction South minus Prediction North), and is statistically significant at the 5% level. We can estimate how much of this difference can be attributed to concerns for equality and efficiency (Table 7, Model 1). Overall, the two dummy variables *Strong concern for equality* and *Strong concern for efficiency* explain less than 1% of the North-South difference. Concerns for equality and efficiency cannot significantly explain the observed gap in terms of trusting behaviour. In sum, this evidence leads to both a lack of corroboration of Banfield's core conjecture and a refinement of the main result regarding the differences between the North and the South of Italy in how people respond to the same incentives.

Table 7: *Variations in Self-Interest: an Oaxaca Decomposition of the North-South Gap in Trust.*

Dependent Variable: Individual trust in the TG		
	Model 1	Model 2
Prediction South	0.364***	0.364***
	(0.029)	(0.029)
Prediction North	0.475***	0.475***
	(0.032)	(0.032)
Difference	-0.111**	-0.111**
	(0.043)	(0.043)
Explained part		
Strong concern for equality	-0.001	- 0.001
	(0.003)	(0.003)
Strong concern for efficiency	-0.000	-0.000
	(0.001)	(0.001)
Strongly risk averse		0.006
		(0.009)
Risk neutral/Risk loving		-0.003
		(0.008)
Total explained	-0.001	0.002
	(0.003)	(0.011)
Unexplained part		
Total unexplained	-0.110**	-0.113**
	(0.037)	(0.045)
N.obs. (individuals)	242	242

Notes: The dependent variable is the frequency of one participant trusting over all rounds of the TG when she was a trustor. Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5% and 10% level, respectively.

What then can explain the observed lack of correlation between cooperation and concerns for equality and efficiency? Cooperative tasks such as the PGG and TG expose subjects to the risk of being cheated and exploited by others, which is absent in DGs, where the allocation of money among group members only depends on the unilateral choice of the dictator. The choices of dictators reflect individual preferences toward the well-being of others, but present no elements of strategic interaction. One reason for the existence of the North-South gap

in the ability to cooperate could be that Southerners are generally less willing to take risks. Such an interpretation does not find support in the risk preference data that we collected. The evidence can be seen in three results. First – unlike cooperation – risk preferences do not exhibit a North-South ordering.[31] Second, trust in TG and contributions in PGG are significantly explained by the dummy *Northern Italy* also after controlling for individual risk preferences (Model 3 in Tables 3 and 4). Third, an Oaxaca decomposition confirms that individual risk preferences do not significantly account for the observed North-South differences neither in trust nor in contributions (Tables 7 and Table B.3 in Appendix). We conclude that the cooperation gap is not driven by individual differences in risk aversion.

Social capital. Social capital is a wide-encompassing concept (Nannicini *et al.*, 2013). Here we focus on Putnam's definition, which entails a collective dimension of social interaction:

> [...] social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them [...] A society of many virtuous but isolated individuals is not necessarily rich in social capital.
>
> (Putnam *et al.*, 1993, p.19).

One obstacle to surmount when using social capital is to find appropriate proxies. We conform with studies about Italy, which custumarily employ data about association density, electoral participation, and blood donations, which are the proxies that we use in Result 4 (Putnam, 2000; Guiso *et al.*, 2004; Cartocci, 2007; Buonanno *et al.*, 2009).

Result 4 *Our behavioural measures of cooperation do not correlate with any of the customary proxies for social capital.*

Support for Result 4 comes from comparing cooperation patterns in the experiment and proxies of social capital both at the county level and at the individual level. For the county level, we consider the following measures.

Association density is defined as the number of associations per 100,000 inhabitants. This figure includes cultural, leisure, artistic, sports, environmental, and any kind of nonprofit

[31] See Table B.2 in Appendix.

associations with the exclusion of professional and religious associations (Putnam *et al.*, 1993). We used county-level data for the year 1999 and considered the number of associations whose members work voluntarily per 100,000 inhabitants according to law 266/91 per 100,000 inhabitants (data from Buonanno *et al.*, 2009, base on Istat, *'Primo censimento istituzioni nonprofit in Italia, 1999.'*)

Electoral participation considers the average voting turnout, expressed as the percentage of eligible voters in all referenda held in Italy from 1946 to 1999 (Guiso *et al.*, 2004 on original data of the Italian Ministry of Internal Affairs).[32]

Finally, *Blood donations* are measured as the instances of donations per 1,000 inhabitants. Our data are based on (Cartocci, 2007) and refer to year 2002.[33]

The above proxies of social capital seem to capture the North-South divide in a broad sense. The average number of associations is 49 every 1000 inhabitants in the two counties of the North and 27 in the two counties of the South; average referenda turnout is 87% in the North and 71% in the South; the number of blood donations in a year is 59.5 per 1000 inhabitants versus 41.2. However, they do not correlate with the observed patterns of cooperation in the PGG and TG at the county level. According to social capital proxies, Faenza scores first, followed by Ragusa, Cuneo, Crotone.[34] Cuneo and Ragusa are the closest counties in terms of social capital proxies and the most further apart in terms of ability to cooperate in the experiment. Faenza unquestionably appears the best in social capital but not in terms of cooperation levels. Within each macro area, the county with the lowest level of social capital cooperated more than the one with the highest level.[35]

[32] This is generally considered as a better proxy of the desire of civic participation than the turnout at general elections, for a number of reasons. First, voting at referenda is not mandatory in Italy. Second, in referenda the issues on the ballot are less related to local interests. Third referenda are immune from the contamination of the so called 'exchange vote,' which is an illegal practice according to which people may receive a payment in order to cast a vote for a particular candidate (see for instance Putnam *et al.*, 1993). In our data, the counties of Belluno and Aosta have missing values for referenda turnout. We assigned to Belluno the average value for the Veneto region and to Aosta the average value of the Piemonte region.

[33] Data for Lazio and Puglia are available at the regional rather than county level and data for the counties of Gorizia and Trieste are the average value for the two counties.

[34] When considering Referenda turnout the ranking is Faenza, Cuneo, Ragusa, Crotone. For Faenza we consider the county of Ravenna. Recall from Section 2 that the selection of the counties in this study relied on measures of social capital.

[35] Table B.4 (Model 1 and 3, in Appendix) provides further support to the idea that these proxies for social capital cannot explain the observed gap in cooperative behaviour. *Blood donation* is significant in a model that explains cooperation but with a sign opposite to what is expected.

We have so far considered county-level comparisons. Following Gächter and Herrmann (2011), we also considered individual-level measures. Result 4 is also supported when correlating behavioural measures of cooperation with proxies of social capital at the individual level.

These measures were self-reported by participants in the final questionnaire. We asked participants whether they i) donated blood at least once during the previous 12 months, ii) voted in the 2009 European elections, iii) voted at least in one of the referenda held since 1999, iv) are member of an association or a social organizations (a list of type of associations followed).[36] Voting in the most recent referenda is not any longer a reliable indicator of civic duty because abstention has been strategically used to invalidate the referenda and maintain the status quo (a 50 per cent voter turnout is required). For this reason we also asked whether subjects voted in the last election for the European Parliament, which has exhibited lower turn out rates than local or national political elections, and where voting behaviour is usually driven by issues that are distant from local interests. In the analysis presented in Table 8 we consider a proxy that takes value 1 if a participant either voted at least in one referenda or for the European parliament.

We employed an Oaxaca decomposition to estimate how much of the observed gap in cooperation can be explained by individual-level proxies of social capital (Table 8). The decomposition performed on the individual contributions to the Public Good shows that the predicted North-South difference in contributions is accounted only in minimal part by individual-level measures of social capital and is not statistically significant (Model 1). The decomposition on the individual trust frequency exhibits a similar result (Model 2).[37] In sum, there is mixed evidence about the predictive power of association density, electoral turnout, and blood donation for cooperative behaviour. Other measures of social capital may turn out to be more tightly connected with trust and contributions to the public good.

[36] A transcript of the questions is in Appendix. Subjects had the chance to answer that they were not eligible for donating blood or for voting at the time of the European elections or of the referenda: in those cases, we coded the answers as zeros, but created specific dummies to denote these subjects.

[37] Linear regression analysis on individual contributions to the PGG and trust frequencies in the TG provide similar results. See Table B.4, Model 2 and 4 in Appendix.

Table 8: *Individual-Level Social Capital: an Oaxaca Decomposition of the North-South Gap in Cooperation*

Dep var:	*Individual Contribution in PGG* Model 1	*Individual Trust in TG* Model 2
Prediction South	8.153***	0.364***
	(0.378)	(0.029)
Prediction North	9.366***	0.475***
	(0.339)	(0.032)
Difference	-1.213**	-0.111**
	(0.507)	(0.044)
Explained part		
Blood donor	-0.020	-0.000
	(0.039)	(0.001)
Voted in referenda or European elections	0.016	0.011
	(0.040)	(0.010)
Association member	-0.016	-0.000
	(0.029)	(0.013)
Missing value for social capital	-0.112	-0.007
	(0.080)	(0.008)
Total explained	-0.131	-0.003
	(0.192)	(0.018)
Unexplained part		
Total unexplained	-1.082*	-0.114**
	(0.507)	(0.047)
N.obs. (individuals)	372	242

Notes: In Model 1, the dependent variable is the contribution of one participant averaged over all rounds of the PGG. In Model 2, the dependent variable is the frequency of one participant trusting over all rounds of the TG when she was a trustor. Symbols $***$, $**$, and $*$ indicate significance at the 1%, 5% and 10% level, respectively.

5. Discussion

Does the Italian North-South divide originate from regional differences in incentives or rather from how differently people respond to equal payoffs? Our findings support the importance of the latter factor.

In a lab-in-the-field experiment, we find that people in the North have a higher propensity to cooperate than people in the South (Result 1). This evidence was obtained in a highly controlled situation, which offered participants in all locations identical opportunities to earn money, and in which both the institutions and the returns from cooperation were the same. In this study, a representative sample of the Italian population was presented with two classic social dilemmas, the trust game and the voluntary contribution to a public good, which were played among people who live in the same location, but that are neither friends nor relatives.

We also observe that the ranking of the four locations under study is the same according to both trust and contribution levels (Result 2), hence highlighting the resilience of the North-South gap in cooperative behaviour. Our experimental measures of the ability to cooperate are robust to changes in the design, do not depend on idiosyncratic characteristics of the participants, and capture a deep trait, which manifests itself regardless of the specific social dilemma faced by the subjects.

We looked at our data through the lenses of two well-known conjectures on the determinants of the North-South divide, which were formulated by Banfield and Fasano (1958) and by Putnam *et al.* (1993). They suggest that preferences, expectations, and social norms are key factors in explaining the differences in outcome between the South and the North of Italy (Result 1) – that is, these conjectures go beyond the disparities in opportunities. In this sense, they are broadly in line with our findings.

A closer look, however, reveals that these conjectures miss the mark. Banfield and Fasano (1958) suggest that Southerners display a higher level of self-interest than Northerners and framed it as a morality issue. We elicit individual concerns towards equity and efficiency through incentivized tasks (Dictator Games) and find no systematic North-South divide along this dimension. Moreover, data about self-interest at the individual level cannot explain the

observed gap in cooperative behaviour (Result 3). Putnam *et al.* (1993) instead relies on the concept of social capital to interpret the wide disparities present between North and South of Italy. The customary proxies for social capital do vary dramatically between Northern and Southern regions; they cannot, however, account for the pattern of cooperative behaviour we observe in our four locations. This implies that these proxies do not correlate with the actual ability of a society to overcome a social dilemma (Result 4).

To summarise, the experiment provides support for the role of preferences, expectations, and social norms in shaping the differential ability to cooperate that we observe across Italy. Our findings also suggest directions for a more precise identification of the behavioural dimensions that determine why people respond so differently to identical incentives, in the North and in the South. Two such dimensions relate to how people deal with aspects of social interaction that characterize group tasks. One interpretation is that the North-South behavioural gap could originate in the different social norms of *conditional cooperation*, or in the expectations thereof (Kocher *et al.*, 2008). Cooperation is conditional when it emerges as a reciprocal response to others' actions, or it relies on the expectations that others will cooperate as well (Fischbacher *et al.*, 2001). If a norm of conditional cooperation is in place, when people interact with each other in group tasks (e.g. Trust Game, Public Good Game), the higher the observed or expected level of initial cooperation, the easier to sustain cooperation in a society. To explain the gap, it would be enough to prove either that the fraction of conditional cooperators is lower in the South, or that the expectations on others' cooperation are more optimistic in the North. In the present experiment, the ability to cooperate appears as inherently social and can spread as a beneficial bacterium, in a self-reinforcing process. This mechanism can operate even if, according to choices in the Dictator Games, the fraction of self-interested participants is similar in Northern and Southern Italy.

A second interpretation relates to the aversion to a specific type of risk. Our evidence shows that tolerance of financial risk – elicited through a lottery task – plays a negligible role in accounting for the North-South gap in the ability to cooperate. One should consider, however, that this finding is based on the customary assumption that the degree of risk aversion is identical for all domains, which cannot be taken for granted. In particular, previous experiments suggest that people exhibit a higher degree of aversion towards the social risk of

being cheated by others, than to the risk related to events that only depend on luck, as in our lottery task (Bohnet and Zeckhauser, 2004). Existing evidence also indicates that the degree of this *betrayal aversion* varies across societies (Bohnet *et al.*, 2008). The Italian gap in cooperation levels could spring from a specific aversion of Southerners, not to risk in general, but to the social risk of being cheated by others. This type of social risk is present when playing both the Trust Game and the Public Good Game, but not in unilateral decisions such as those in Dictator Games.

The two interpretations lead to distinct behavioural predictions when moving from in-group to out-group cooperation. If the cooperation gap depends on conditional cooperation, people would increase their level of cooperation when facing a group that is expected to cooperate more. On the contrary, if the betrayal aversion interpretation holds, the in-group and out-group cooperation levels would remain similar.

Our study contributes to the understanding of the *characteristics* of the North-South gap, which appears to lie in the ability to cooperate but not necessarily in other dimensions such as financial risk or preferences of equality and efficiency. These results are novel. An implication of the findings is that building infrastructures, removing the pressure from organised crime, increasing the productive investment in the South may not be enough to equalise regional outcomes – at least not in the short-medium run – unless people's dispositions toward in-group cooperation change as well. We acknowledge that regional variations in the structure of incentives may contribute to the existing North-South divide in Italy. What we claim is that our study identifies the presence of a gap in cooperative behaviour that persists even when incentives are held constant. In a sense, what we measure represents a lower bound for the North-South divide.

The next step would be to understand the *origins* of such distinct norms at the local level. Regional disparities in Italy survived 150 years of common national history (Daniele and Malanima, 2011; Felice, 2014), thus displaying long-term persistence, and several scholars have pointed at heterogeneous experiences in the distant past as the source of the gap in cooperation levels (Putnam *et al.*, 1993; Nunn and Wantchekon, 2011).

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Additional Supporting Information may be found in the online version of this article:

Appendix A: Selection of Locations and Participants.

Appendix B: Additional Statistical Analysis

Appendix C: Experimental Instructions

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