Trust and Trustworthiness among Europeans: South - North Comparison*

Fabian Bornhorst‡ Andrea Ichino‡ Karl Schlag‡
Eyal Winter§

September 16, 2004

Abstract

This paper discovers significant differences between southern and northern Europeans in a dynamic version of the "trust game" played by Ph.D. students from different nationalities at the European University Institute. Our version of the trust game allows subjects to choose the receivers to whom they make transfers. Southerners are discriminated against, particularly in terms of contacts and mainly by northern subjects. Strikingly, this discrimination builds up rather than dying out with experience. More than for not being trustworthy (i.e. having a low propensity to reciprocate by making a generous payback for a transfer received), Southerners are being punished for their own low level of trust (i.e. having a low propensity to contact another player with a generous transfer), and for this reason end up leaving the game with lower payoffs.

JEL-Code: C7, D
Keywords: Trust, trustworthiness, European regions, experiments

*We would like to thank the Research Council of EUI for financing this study, Francesco Caselli, Colin Crouch, Jaap Dronkers, Oliver Kirchkamp, Margaret Meyer, Massimo Motta, Soren Johansen, Jacques Ziller and seminar participants at EUI and IIES for insightful comments. We also thank Jessica Spataro for editorial assistance.

‡Department of Economics, European University Institute, Villa San Paolo, Via della Piazzuola 43, I–50133 Florence (FI), Italy. Andrea Ichino is also affiliated with CEPR, CESifo and IZA.

§The Hebrew University of Jerusalem.

1 Introduction

Most economic interactions are preceded by a stage in which agents select partners. Entrepreneurs select their counterparts for a partnership, firms select suppliers, consumers select retailers and employers choose workers from pools of applicants. The initial choice of a partner as well as the decision about the volume of activity to a large extent depends on the agent's beliefs about the prospects of building trust and reciprocity with potential partners. If the interaction takes place repeatedly, experience will play a role as well. Selectors are expected to return to those partners who proved to be trustworthy, and avoid those who failed to reciprocate. In a global environment where economic interactions go across countries and cultures, national diversity may have a substantial impact on agents' initial beliefs regarding partners as well as on the evolution of their interaction over multiple transactions.

In this paper we report on experimental results that describe the impact of cultural diversity on agents' choices of partners as well as on the outcomes of economic interactions. Our subject pool involves participants from different European nationalities. Dividing the continent into two regions our objective is to compare subjects' perceptions about trust and reciprocity between northern and southern Europe by studying subjects' choices of partners and the volume of economic activity.

The issues of trust and reciprocity in economic interactions have been given a considerable attention by the recent literature in experimental economics. Berg, Dickhaut and McCabe (1995) addressed these issues by designing a trust game experiment. The standard format of a trust game involves two players. The "sender" who is assigned an amount of money x by the experimenter decides on a transfer $0 \leq t \leq x$ to be made to the "receiver", who will receive three times the amount of this transfer, i.e., if the sender concedes the amount t to the receiver, then the latter receives $3t$ (while the sender loses just t). Following the transfer made by the sender, the receiver has to decide how much she wants to return. The amount that the receiver decides to return is denoted by $g \in [0, 3t]$ and is equal to what the sender

gets back. While the unique Nash equilibrium prediction of the game is for the receiver to make zero payback and therefore for the sender to make no transfer at all, Berg, Dickhaut and McCabe (1995) found that senders did make considerable transfers, which are backed by substantial paybacks. Among other papers that study subjects' behavior in this trust game is Bucan, Croson and Johnson (2000), which involves a comparison across different countries including the US, China, Japan and Korea focusing on the effect of preliminary discussions within groups on behavior in the trust game.

Our framework differs from this strand of literature in three major aspects. First, we are not interested in differences across countries when subjects interact with partners of the same nationality. We are instead interested in differences across countries when subjects from different nationalities jointly play together our version of the trust game. Second, to highlight the role of the choice of partner in real settings we have allowed participants to choose the partner to whom they make a transfer. Finally, we have designed a dynamic version of the trust game to allow trust and reciprocity to be built up and to enable us to study the evolution of trust in our multi-cultural framework. Our version of the trust game will be described in greater detail in Section 2.

Somewhat more related to our framework is Fershtman and Gneezy (2000) which reports results on a one shot trust game played between Ashkenazi (Jews of European descent) and Sephardi (Jews of Middle Eastern origin) Israelis. They found that Sephardi subjects were discriminated against in the amount of transfers they received although their payback behavior wasn't different from that of their Ashkenazi counterparts. In contrast to their framework in which matching was fixed and the interaction involved a one shot game, in our framework each subject can act both as a sender and a receiver; subjects choose their partner and interact repeatedly within the same group. These features will allow us not only to detect discrimination but also to go more deeply into its roots by analyzing the way it evolves over different periods.

We have conducted our experiment in an environment where a major role of nationality is least expected. Our subject pool involves Ph.D. students at the European University Institute (EUI) in Florence. The EUI whose main objective is to provide advanced academic training to Ph.D. students in a European perspective, attracts young intellectuals from EU member countries with substantial international exposure and with a typical fluency in at least three European languages. If the role of nationality within this group is strong, we would expect it to be even stronger among the general population of Europe.

Our results, presented in Sections 3, 4 and 5, indicate discrimination against South in terms of number of contacts, carried out mainly by northern subjects. However, the most interesting finding is the fact that this discrimination builds up rather than dying out with experience. More than for not being trustworthy (i.e. having a low propensity to reciprocate by making a generous payback for a transfer received), Southern Europeans are being punished for their own low level of trust (i.e. having a low propensity to contact another player with a generous transfer), and for this reason ends up leaving the game with lower payoffs.

As discussed in the concluding Section 6, we find these results particularly striking because of the international exposure of our group of subjects. We interpret these results as an indication that cultural differences in standards regarding trust and reciprocity, possibly related in our case to the stage of development or to the role of the family in the two regions, may be sufficiently robust to persist even when individuals change their original habitat.

2 The Design

The design of our experiment is described extensively in Appendix A. Here we limit ourselves to a summary of its most important features. We conducted three sessions with a total of 110 participants hired among EUI Ph.D. students from different European countries. Upon entry, subjects were asked to fill in a form in which they had to specify their nationality in addition

to other bits of personal information (gender, age and number of siblings) that still allowed their identity to be kept anonymous. This was mainly done in order to blur the fact that our interest lies with the issue of nationality. In each session subjects played six treatments in each of which they were assigned randomly to a group of five players. At the beginning of each treatment the personal information about the other players was made public within the group.

In the first four treatments subjects were allowed to choose without restrictions the partner with whom they wanted to interact among the four subjects in their group. Every one of these treatments involved 6 periods with the following structure: At the beginning of the period, each player received an endowment of 100 points, equivalent to 0.35 Euros. Subjects were then given the opportunity to transfer any part of the initial endowment to a single player of their choice within the group.[1] If a sender made a transfer of t to a receiver she received $3t$. Then each subject who received a transfer had an option to return back any part of it to the person who made him the transfer and the period ended. All decisions were made via computer terminals. At the end of each period a subject saw on the screen only the actions and payoffs of the interactions in which she had been involved (i.e. the one in which she had been a sender if she had transfered a positive amount to some player, and the ones in which she had been a receiver if she had received a transfer from one or more other players). Thus, subjects did not know at the end of a period what had happened between other pairs of players.

The fifth treatment differed from the previous four because subjects were randomly matched to another player at the beginning of each period. Thus, they did not have the possibility to choose a partner and could only send to the player randomly assigned to them. The sixth and final treatment was instead identical to the first four.

Most of our analysis will involve the first four treatments, since the last two treatments are distorted by the absence of free choice in the fifth treat-

[1]Note that choosing no partner was possible, in which case the transfer was equal to zero.

ment. However, we will also look at how imposing a partner in the fifth treatment changes the behavior of subjects in the last treatment in which the choice of partner is again free.

In reporting the results we will refer to two characteristics of players: "trust" and "trustworthiness". Trust concerns sending behavior. It refers to the propensity of a player to contact another player and to make high transfers, which we interpret as a propensity to trust the receiver to reciprocate.[2] By looking at the aggregate data within each region we will provide analysis regarding the extent to which region H trusts region K, where $H, K \in \{\text{North, South}\}$. This will be done by looking at the propensity by which players from region H choose to make a transfer to players of region K as well as the amount of transfers they make. Trustworthiness stands for the tendency of a player to reciprocate by making a generous payback for a transfer he/she received. At the regional level it will be measured by the average return ratio, i.e. what receivers return to senders as a fraction of what they have received. The precise statistics will be explained later. We provide the analysis at the regional level and not at the country level as we fail to have sufficiently many observations for each country pair separately.

3 Results

The evidence provided in this paper is based on the aggregation of countries in two regions (South, North) according to their average geographical latitude. Table 1 lists the countries represented in each region, the average latitude (in degrees) of each country and the number of subjects per country.

Table 2 provides some general descriptive statistics based on the following notation. The variable f_i^N is the frequency of northern players seen by sender i in her group. With five randomly selected players in each group a sender sees four players and thus the variable takes the following values: $f_i^N \in$

[2]Note that, in our framework, lack of trust can emerge either because senders assign a small probability to the event that their partner will reciprocate or because senders are risk averse. The distinction between these two possible reasons for not trusting others is outside the scope of this paper.

$\{0, 0.25, 0.5, 0.75, 1\}$. For each of these values we have a column in Table 2. Notice that whenever this variable takes value 0 the sender faces only players from South and hence cannot choose a player from North. The converse is true if $f_i^N = 1$.

We denote the average frequency of zero transfers (i.e. no choice of partner) for senders of region $H \in \{N, S\}$ by $Z_H(t = 0)$. These frequencies are reported in the first row of Table 2 for each value of f_i^N. Interestingly, with the exception of the shift from $f_i^N = 0$ to $f_i^N = 0.25$, $Z_N(t = 0)$ decreases with the fraction of northern players seen by the sender, indicating that on average North are[3] more willing to trust when a larger number of interactions with North is possible. The opposite pattern prevails instead for South since $Z_S(t = 0)$ increases with f_i^N.

The average transfers by senders of the two regions are denoted by t_N and t_S and are displayed in the second row of the table. For all values of f_i^N northern senders transfer more tokens than southern senders, which indicates that North have a larger propensity to trust. In the first column of the table it is also worth noting the relatively low amount transferred by southern senders (60 tokens) when the potential partners are all from South.

Denoting with t_i the amount that sender i gives to her partner and with g_i what sender i gets back, we define the return ratio as $r_i = \frac{g_i}{3t_i}$. The third row of Table 2 reports the average return ratios chosen by the northern (r_N) and southern (r_S) receivers to which a sender i makes a transfer, for each value f_i^N.[4] On average, the return ratio chosen by northern receivers is just 2 percentage points higher than the one chosen by southern receivers (56% vs. 54%). Finally, we define the overall payoff earned by sender i as $\pi_{i,send} = 100 - t_i + g_i$, while the payoff for the same subject viewed as a receiver is defined as $\pi_{i,rec} =$ (sum of total amounts received by other players − sum of total amounts returned to other players). Thus the total payoff for

[3]In the sequel we will use the terms "South" and "North" to refer to the plurality of subjects from the two regions. Thus, "South" and "North" will be short for "Southerners" and "Northerners".

[4]Note that these figures are not available for North (South) in the cases in which only South (North) are seen by sender i.

subject i is the sum $\pi_{i,total} = \pi_{i,send} + \pi_{i,rec}$. The averages of these payoffs for the two regions ($\pi_{N,send}$, $\pi_{S,send}$, $\pi_{N,rec}$, $\pi_{S,rec}$, $\pi_{N,total}$, $\pi_{S,total}$) are displayed in the last rows of the table. On average, and independently of the sending, receiving or overall perspective, northern subjects walk out of the game with higher payoffs.

In the following, we will investigate the way that such differences emerged in the course of the game. We will also analyze how robust these differences are and if they are statistically significant. Because we are interested in situations in which players actually had a choice, we will exclude the cases where f_i^N is 0 or 1, i.e. the cases in which a sender sees only southern or northern partners in her group.[5]

3.1 Discrimination against South

The level of trust by players from region H to players of region K can be measured by two indicators: (i) the propensity by which a region H player contacts a region K player to make a positive transfer and (ii) the amount of transfer made by region H players to region K players. Since the frequency of players from the two regions is not the same in each group of players, contact opportunities between regions are not uniformly distributed. Thus one has to be careful in analyzing senders' behavior in terms of both (i) and (ii). However, note that the group composition is determined by the computer in a completely random fashion. We can, therefore, exploit the exogenous variability of group composition to test whether the region of potential partners affects the choices of players or, on the contrary, players choose their partners independently of regional considerations.

Let R_i^N be a dummy variable taking value 1 if the receiver chosen by sender i is from North and 0 otherwise. If sender i chooses her partner disregarding the region to which the receiver belongs the following equality must hold

$$E(R_i^N) = f_i^N \tag{1}$$

[5]Note that this exclusion does not raise concerns because group composition is random.

where E denotes the expectation operator. This equality says that, if the choice is random with respect to region, on average the fraction of northern receivers chosen by a sender must be equal to the fraction of northern players seen by the sender in her group. Figure 1 plots the sample counterpart of the expectation on the left hand side of equation (1) for each value of f_i^N between .25 and .75.[6] This is done for senders in the two regions separately as well as for all senders. A point above the diagonal indicates a preference for North since it means that the average frequency of choosing North is greater than the proportion of North seen by the sender.

We find that almost all the points lie above the 45 degree line. While those corresponding to southern senders are closer to it, the points for northern senders lie much further away. Of course, in the case of all senders, the points are situated in between those of North and South. Thus the figure suggests the existence of a generalized preference for choosing a northern partner as a receiver, a preference which is stronger for northern senders. Note that since R_i^N is dichotomous, and specifically bounded from above at 1, the distance from the 45 degree line has to decrease with f_i^N even in the presence of a propensity to favor North.

In order to assess whether the deviations from random choice displayed in Figure 1 are statistically significant we proceed as follows. Consider the regression

$$R_i^N - f_i^N = D + u_i \tag{2}$$

where D is a constant term and u_i is a zero mean random noise component. Note also that f_i^N is randomly assigned. Given equation (1), a test for the hypothesis that senders choose recipients disregarding nationality can be framed as a test for the null hypothesis that

$$H_0 : \ D = 0 \tag{3}$$

which implies that $R_i^N - f_i^N$ is zero mean noise.

[6]For $f_i^N = 0$, $E(R_i^N)$ is of course equal to 0. For $f_i^N = 1$, conditioning on positive transfers $E(R_i^N)$ is equal to 1.

Table 3 reports the results of this test for the three lines displayed in Figure 1. The evidence of a preference towards North in choosing a partner is statistically significant when aggregating over all senders and even more so when confining only to northern senders. However, the preference of southern senders towards North is not statistically significant. Since we have repeated observations for the same sender in different periods and treatments, the standard errors are corrected to account for within-individual correlation of the error component.

Figure 2 displays the estimates of the constant term D in equation 2 for each of the first four four treatments, with 90% confidence intervals. The figure suggests that the extent of deviation from randomness in favour of North increases during the development of the game. D is not distinguishable from 0 in the first treatment, but increases in the subsequent treatments, becoming significantly different from 0 (at the 10% level) in the fourth treatment. Figure 3 displays the same statistic for northern senders and the tendency towards increasing discrimination against south appears even stronger. No such evidence appears instead to characterize the behavior of South, as described by Figure 4.

Thus, the combination of results from Table 3 and Figures 2, 3 and 4 suggests the possibility that discrimination by North against South does not decrease with experience and actually builds up rather than being a strong prejudice with which North enter the game. This conjecture is further explored in the analysis that follows.

Next we concern ourselves with the magnitude of transfers made by senders differentiated by region. Table 4 shows the matrix of transfers sent by region H to region K, with $K, H \in \{N, S\}$. The top panel refers to the first four treatments, while the bottom panel refers to the earliest interaction in the game, occurring in period $p = 1$ of treatment $T = 1$. In this table, the comparison between columns within the same row indicates how the transfers received by North and by South differ. Overall, in treatments 1 to 4, North receive more than South from northern senders. However, early in the game

($p = 1$,$T = 1$) the opposite happens: South receive more than North from northern senders.

In order to test the statistical significance of the differences shown above, we estimate the following regression:

$$t_j = \alpha_r + \beta_r R_j^N + \delta_r X_j + \tau_j \tag{4}$$

where t_j is the transfer sent to receiver j, R_j^N is a dummy variable taking value 1 if receiver j is from North, X_j is a vector of dummy variables denoting the gender of the sender and of the receiver and τ_j is an error component.[7] The coefficient β_r measures the extent to which transfers received by North differ from transfers received by South. Its estimates and standard errors are reported in Table 5 for all senders and separately for northern and southern senders.[8]

The first row of the table reports results for the first four treatments, taking into account the within-individual correlation of error components. It shows that, on average and controlling for gender, a northern receiver is given 3.24 tokens more than a southern one and that most of this bias is attributed to northern senders: in the second column the point estimate is 5.44. These differences are small in size but statistically significant at the 10% and 5% levels respectively. However, at early stages of the interaction (see the second row of the table) the picture is different. There is no statistically significant evidence of preferences of one group over the other and, if anything, the point estimates of β_r for the transfers sent by northern senders even indicate that North made higher transfers to South than to North.

We conclude this section by summarizing its main observations:

- South is contacted less often and receives less transfers than North, with most of this discrimination attributed to the sending behavior of

[7]The inclusion of observed characteristics like age and number of siblings does not change our results in equation 4 as well as in the other estimated equations that follow. At least in the case of age this is likely to be due to the lack of sufficient variation of this variable in our sample of young Ph.D. students.

[8]The estimated coefficients β_r are not numerically identical to the corresponding differences between columns of Table 4 because of the inclusion of controls for gender.

North.

- The bulk of the discrimination is in the fact that South is contacted less often.

- The discrimination against South does not decrease with experience and is actually less significant at earlier stages of the game compared to when it is judged based on the overall behavior.

In the next section we attempt to investigate the source of the observed discrimination and explain how it emerges. To this end we will compare South and North in terms of their payback behavior as well as their overall tendency to make transfers.

3.2 Why is South Discriminated Against?

We will not attempt to give a conclusive answer to this question. However, further analysis of payback behavior and the evolution of sending behavior may offer some hints. We start with three conceivable conjectures for the source of discrimination:

(A) Discrimination by North against South is a result of pure prejudice that cannot be supported by the behavior of South.

(B) Discrimination by North against South is a consequence of the fact that the return ratio of South is smaller than that of North.

(C) South receive less transfers than North because South themselves transfer little (to both North and South).

We start by comparing North and South in terms of the transfers they make to others. Going back to Table 4, if we compare different rows of the matrix within the same column, we see how transfers sent by North and South differ. In all cases, i.e. independently of the region of the receiver, North transfer considerably more than South. In other words North trust more all receivers. This is true when we average over the first four treatments, as well as when we look at period 1 of treatment 1. It is interesting to observe

that in this early interaction North transfer more to South than to North, and South transfer very little to themselves.

To test the significance of these differences the appropriate regression to be estimated is

$$t_i = \alpha_s + \beta_s S_i^N + \delta_s X_i + \theta_i \tag{5}$$

where t_i is the transfer sent by sender i, S_i^N is a dummy variable taking value 1 if sender i is from North, X_i denotes the gender of the sender[9] and θ_i is an error component.[10] The coefficient β_s measures the extent to which transfers sent by North differ from transfers sent by South. Results are reported in Table 6 for transfers sent to all receivers and separately to northern and southern receivers.[11]

The first row of the table reveals that, controlling for gender, North transfer significantly more than South (on average 10.35 more tokens to the group as a whole, and 12.24 more tokens to northern players). North's tendency to transfer more than South is very high also at the earliest stage of the interaction (12.80 tokens more than South to the group as a whole in row $T = 1$,$p = 1$.) But perhaps the most interesting observation here is the fact that North treat South (in terms of transfers) much better than South treat itself (on average 28.41 more tokens in $T = 1$,$p = 1$).

In Figure 5 we consider the evolution of the game by looking separately at each of the first four treatments, and the evidence confirms again that North tend to transfer more than South on average.[12] If we interpret a generous transfer by a sender as an indication that the sender trusts the receiver to reward him/her later in the game (either by making a generous payback or by making a generous transfer in a subsequent period) then Table 6 and Figure

[9]The gender of the receiver cannot be included in this case because of the presence of zero transfers, i.e. situations in which there is no receiver.

[10]Standard errors are computed taking into account within-individual correlation of the error terms.

[11]The estimated coefficients β_r are not numerically identical to the corresponding differences between rows of Table 4 because of the inclusion of controls for gender.

[12]Note that the differences in transfers between North and South reported in the figure are statistically significant at the 5 percent level in each treatment.

5 clearly indicate that North are endowed with the propensity to trust others more than South and that this holds also at a very early stage of the game.

We next move to compare North and South in terms of their payback behavior. Here we estimate the regression

$$r_i = \delta + \gamma_r R_i^N + \eta_r X_i + \rho_i \tag{6}$$

where $r_i = \frac{g_i}{3t_i}$ is the return ratio chosen by the receiver for sender i, R_i^N is a dummy variable taking value 1 if the receiver chosen by sender i is from North, X_i is a vector of dummy variables denoting the gender of the sender and of the receiver, and ρ_i is an error component. The coefficient γ_r measures the extent to which northern receivers choose a higher return ratio than southern ones. Results are reported in Table 7 for all senders and separately for northern and southern senders.[13]

Judged on the basis of the first four treatments (see the first row of the table), the return ratio chosen by northern receivers is not significantly higher than the one of southern receivers, independently of the region of the sender. The picture changes, however, when we look at the earliest stage of the game (the first period of the first treatment) in the second row of the table. Here we see that southern receivers return significantly less than northern receivers as a fraction of what they received in the initial transfer. Moreover, note that the difference is particularly large when the sender is from North.

Taken together, the evidence provided above is against conjecture (A). We see little evidence for discrimination against South at the outset. On the other hand, South return less than North as a ratio of what they receive in the earliest stage of the game.[14] Moreover, South send lower transfers throughout the game. This suggests that the discrimination against South that builds up later in the game may have to do with South's tendency to return less at the earliest stage of the game (conjecture B) and/or to make

[13]Standard errors are computed taking into account within-individual correlation of the error terms.

[14]Note that this conclusion differs from that of Fershtman and Gneezy (2000) who establish that the discrimination against Sephardi receivers is irrational as payback behavior in the two groups was essentially the same.

lower transfers in general (conjecture C).

We further explore the validity of these conjectures by looking at the way contacts are positively reinforced and reciprocated from period to period. In Table 8 we test whether the choice of a sender in the second period differs from randomness conditioning on the choice made in the first period. We therefore estimate equation (2) again but this time only on the observations for the second period of all treatments and separately for the cases in which North or South were chosen in the first period. We then test the null hypothesis (3) for this case. Note that this hypothesis, if accepted, would imply that senders choose their partner randomly in the second period, and in particular independently of what they did in the first one.

This conclusion is, however, rejected by the evidence of Table 8. The first row of the table shows that if North are chosen in the first period the preference for North is reinforced by all senders in the second period. Moreover North reinforcement of a previous northern choice is greater than that of South. The evidence of reinforcement of a previous southern choice is instead very weak (see the second row of the table), particularly when the sender is from North. We conclude that North's higher standards in terms of return ratios at the outset of the game generate a stimulus that leads subjects (in particular northern senders) to reinforce a previous transfer to North. It is indeed easy to see why the initial higher standards of North in terms of return ratios should stimulate transfers to North later in the interaction. In our version of the trust game it is clearly optimal to make high transfers to subjects who have previously proven to be trustworthy. Thus, taken in isolation, the evidence of Table 8 would support conjecture (B).

However, Table 9 confirms, from a different perspective, what was already suggested by Table 7: there is no indication that the initial difference in trustworthiness between North and South persists during the evolution of the game, both in terms of economic dimension and statistical significance. This table reports, for every treatment, the average return ratio chosen by

each northern and southern subject for all the transfers they received.[15] It is important to realize that by considering the average return ratio chosen by each subject, we do not give more weight to subjects who, because of their relatively higher trustworthiness, are contacted more often. All subjects, independently of their region, are more trustworthy in the fourth treatment than in the first, and in no treatment the difference between the two regions is statistically significant. Moreover, additional computations show that in both regions the subjects who are initially less trustworthy (those who return less than the median in treatments 1 and 2) increase their return ratios equally, on average, in treatments 3 and 4 (from 0.34 to 0.41).

We know instead that throughout the entire game North transfer significantly more than South (see Table 6 and Figure 5). Thus, the difference in the propensity to trust, more than the difference in trustworthiness, appears to be likely to explain why South is discriminated against in a fashion that does not fade away during the evolution of the game. In other words, also conjecture (B) finds less support in our data. But, is it possible that the persistently higher tendency of North to trust other subjects is reciprocated by their partners with more frequent transfers to North?

Table 10 shows that subjects tend to trust those who trusted them. In this table we estimate how the odds that a subject i trusts a subject j depend on the existence of previous interactions between i and j. These estimates are based on the Conditional Logit Model described in Appendix B. The first row of column 1 indicates that the odds that i transfers to j in period 2 are 3.38 times higher if i has chosen j already in period 1, as opposed to choosing another partner. The second row of the same column shows that the odds of the same event are even higher (6.83) if j has transferred to i in period 1 as opposed to making another choice. Both estimates are highly statistically significant. Thus, the subjects of our study are more likely to

[15]These figures are computed by first averaging the return ratios of each subject in a given treatment and then by averaging across subjects in each region, that is: $\bar{r}_{K,T=\tau} = 1/M \sum_{i=1}^{M} \bar{r}_{i,T=\tau}$, where $\bar{r}_{i,T=\tau}$ is the average ratio that subject i returned in treatment $T = \tau$ and M is the number of individuals from region K that received a transfer at least once in that treatment. K stands for North and South, respectively.

transfer not only to partners that they have previously trusted, but also to partners who trusted them.

The second column of Table 10 interacts the dummies of the first column with an indicator for whether the transfers or the return ratios received from j in period 1 were larger than the corresponding median levels in the sample. The estimated odds ratios for these interactions are larger than 1 and highly significant as well. The first one (3.32) indicates that if i chose j in period 1, i is more likely to go back to j in period 2 if j previously returned more than the median in the sample. Thus, as expected, higher trustworthiness is rewarded with a higher likelihood of a transfer in subsequent periods. The second interaction is, however, more interesting for our purposes. It indicates that if j transferred to i in period 1, i is more likely to transfer to j in period 2 if the previous transfer from j was larger than the median in the sample. Thus, also a higher degree of trust from others is rewarded with trust. The same analysis is replicated in columns 3 and 4 for all periods with similar results.

Interestingly trust is rewarded with trust independently of the region of the subject who trusted first. Results not reported for brevity indicate that when South and North contact another player in period 1, they are equally more likely to be contacted by this player in period 2. On the other hand northerners have a significantly higher tendency to reciprocate a contact from any other player. So the extent to which trust is rewarded with trust depend on the region of the subject who is called to reciprocate. More specifically, trust is rewarded with trust by all subjects, but more so by North than by South.

We have seen the tendency of all subjects, and in particular of northern subjects, to reward with a generous transfer those from whom they previously received high transfers. There is more than one reason for doing so. This behavior can be a consequence of a natural desire to return a favor by a favor, or it may be a tool to signal others that a high level of transfers is expected in the future as well. But there is also a third possible explanation: Figure 6

shows that "trust and "trustworthiness", as measured respectively by average transfers and average return ratios are highly correlated in the subjects of our study. Hence it is possible that subjects are reciprocating with high transfers to those from whom they received high transfers in the past because they are aware of this statistical correlation and realize that the return ratios from these individuals can be expected to be high. It is reasonable to assume that all these three explanations play a role in motivating subjects to make high transfers to those who made high transfers to them.

Summing up, our evidence suggests that the higher northern tendency to trust all other subjects throughout the game stimulates a higher frequency of transfers to North from all other subjects and in particular from northerners. In other words, it suggests that even if southern and northern standards in terms of return ratios are very similar, the fact that South fail to approach North's standards in terms of transfers sustains the reluctancy of North to contact South with high transfers throughout the game. We therefore conclude that conjecture (C) receives the highest support in our data. Put differently, more than for not being trustworthy, South are being punished for their own low level of trust.

Our finding concerning South's level of trust is consistent with Knack and Keefer (1997) who seek to find the correlation between social capital and trust on the one hand and economic performance on the other. Their analysis builds on the World Values Surveys that contain questionnaire data on thousands of respondents from 21 countries. To assess the level of trust they rely on the following question posed in each country: "Generally speaking would you say that most people can be trusted, or that you can't be too careful in dealing with people" Their measure of trust is defined to be the percentage of respondents replying "most people can be trusted". All but two countries (Poland and Greece) represented in our experiment appear in the survey. Excluding these two countries, the average trust measure for North is 45.4% and only 26.8% for South.

Similar conclusions are also reached by Guiso, Sapienza and Zingales

(2003), who find that disparities in relative trust between people of different countries affect the level of trade. While they explain their evidence just as a consequence of stereotyping, our results indicate that differences in trust may emerge and be reinforced by repeated interactions between nationalities, even when agents are not characterized by strong stereotyping at the outset of the interaction.

Moreover note that while both Knack and Keefer (1997) and Guiso, Sapienza and Zingales (2003) base their findings on questionnaires, our findings are based on revealed preferences that emerge from subjects' decision making.

4 Payoffs

On average, making a transfer pays off well. Even when disregarding the fact that a subject increases his/her chance of being made a high transfer in a subsequent period by making a high transfer, subjects' payback behavior generates positive profits. On average, subjects made 60 Cents profit on every Euro transfer in payback only. South are therefore being punished for their low level of trust. Figure 7 plots the average payoffs (in points) of North and South at each of the six periods within treatments 1 to 4. Figure 8 shows the average payoff across periods for each treatment. These two figures reveal that North dominate South in terms of payoffs at each and every period (averaged over treatments) and at each and every treatment (averaged over periods).

5 The consequences of forcing interactions

It is interesting to observe that forcing interactions appears to reduce the differences between the two regions. This is suggested by Table 11 where we compare descriptive statistics for the treatments $T = 4$, $T = 5$ and $T = 6$. As explained in Section 2, the fourth treatment is the last one of the initial series of treatments in which subjects had free choice of partner. In

treatment $T = 5$ they were instead matched randomly with another subject, while in the last treatment they had again free choice. Not surprisingly, the impossibility to choose the partner reduces considerably the degree of trust and trustworthiness and therefore the average payoffs. But the most interesting result of this table is that after being forced to interact without choice of partner, subjects from the two regions appear to behave more similarly than they did before. If we compare the first and the last columns of this table, we see that the differences between the two regions in terms of transfers and payoffs are considerably smaller in treatment $T = 6$ than in treatment $T = 4$, and this happens even if average transfers go back to the levels observed before treatment $T = 5$.

6 Discussion

We have discovered significant differences between southern and northern Europeans in a dynamic version of the trust game. South is discriminated against, mainly by North, as overall it is contacted less often and ends up leaving the experiment with lower payoffs. We suggested that the observed inferior treatment that South receive can find its roots in South's own behavior in the game. South pay back less on transfers it receives at early periods of the game and make substantially lower transfers than North practically throughout the game.

While South have a slight bias in favor of North, this bias is not statistically significant as is the case of North's bias in favor North. This difference between North and South can be explained by the principle that "Losses loom greater than gains" which follows from Kahneman and Tversky (1979) prospect theory: We have seen that a higher reciprocity standard prevails in the North (where by reciprocity we include both the return ratios and the propensity of making high transfers in the future.) It is reasonable to assume that these differences in reciprocity also reflect different expectations about reciprocity in each region. This means that on average when North make a transfer to South, North are disappointed by the outcome (they make

a loss with respect to their expectations), whereas transfers from South to North leave South with gains (relative to their expectations). Because losses loom greater than gains the forces that drive North away from South are greater than those which drive South away from South, which explains why the discrimination against South appears stronger for Northern players.

It would be a serious challenge to provide an encompassing explanation of the different standards of North and South in terms of both trust and trustworthiness as emerged from our experiment and from the evidence of Knack and Keefer's (1997) and Guiso, Sapienza and Zingales (2003). While this is outside the scope of this paper we suggest two directions here: The first possibility is that these differences emerge merely from an income effect: Assuming that "generosity" and "reciprocity" are luxury (normal) goods, people will tend to "consume" more of them the greater is their income. Thus the higher level of income and stage of development in the North during recent history would be responsible for cultural differences regarding trust and trustworthiness, reflected in our results.

The other possible explanation is that differences in terms of trust and trustworthiness between South and North have to do with the different role of the family in these two regions. In both social and economic activities the family plays a much greater role in the South than in the North.[16] With family ties less intensive in the North, people in the North rely on networking outside the family more than people in the South. Trust and trustworthiness outside the family is thus more crucial for social and economic success in the North.

We point out that regardless of the preferred explanation and even if both the income effect and the family effect are weak, a convergence to two substantially different population equilibria in two societies can emerge from a grain of difference that reinforces itself in a dynamic trajectory that leads to substantial differences. This suggests the possibility that a small group of individuals endowed with low trust and trustworthiness can cause a snowball

[16]See, for example, Bentolila and Ichino (2003) and their references.

effect by which more and more people adopt their standards as trust and trustworthiness pays off less and less.

Our findings have two types of implications. Firstly, the fact that agents' choice of partners in economic interactions is not arbitrary and may depend on characteristics that appear to be payoff irrelevant (region in our case) is a message worth taking into the theoretical literature. Secondly, our findings make a valid point in the European perspective. The significance of the regional role as established in our experiments highlights the question of whether the persistence of cultural and national diversity across regions within unified Europe should not impose any impediment to achieving economic and political uniformity.

A Experimental design

The experiment was conducted using a computerized setup[17] in 3 sessions at the European University Institute near Florence, Italy. Participants were 110 Masters and PhD students from the faculties of Law (30%), History (15%), Social and Political Sciences (23%), and Economics (33%). Subjects originated from 15 different European countries. They were between 23 and 36 years old (average: 27.7), and 64% were male. Because it was the first time that experiments were conducted at this place, the subject pool was not experienced in playing games. For each session a multiple of five subjects was recruited (session 1: 40, session 2: 30, session 3: 40). The profit earned by participants ranged from Euro 24 to Euro 47.90, with an average of Euro 36.34 (s.d. 4.89), including a 5 Euro show-up fee paid to each candidate. Each session (including a 15 min. questionnaire at the end) lasted for about 2 hours. Participants were recruited via email and were invited to sign up on a website. Each session took place in 3 computer labs with 10 to 25 computers each, located in different buildings of the university campus. Upon arrival to an assigned computer lab, subjects randomly drew a seat number and an account number. This account number was later used to identify subjects for payment, which was organized anonymously. Further to that, the computer labs were prepared using separators to individualize the environment. In each room, a professor of the university monitored the experiment in a discrete way.

Note that at no point in time were subjects deceived. Subjects could choose how often (max 3 times) they wanted to read through the instructions on the screen. They also had a hard copy of the instructions next to their machines. The instructions were followed by a short quiz of three questions covering the crucial aspects of the game. Almost all subjects appeared to have understood the game very well before playing. No major clarification questions were asked. After reading through the instructions, subjects were asked to enter information about their age, gender, nationality, and number of siblings.[18] To increase anonymity, the age displayed to fellow players was modified by adding a random number. This was also mentioned in the instructions further to a general anonymity and privacy statement.

Each session consisted of 6 treatments in which subjects were randomly matched in groups of five players

In the first four of these treatments subjects played the following repeated version of the trust game. At the beginning of the treatment, each player

[17]The Z-Tree software described in Fischbacher (1999)

[18]During the recruitment process it was made sure that subjects were recruited only from countries which have a substantial number of students at the university. This restriction was introduced to avoid identification of the subjects during the game.

could see some information about the four other players in his group, the information included the players' nationality, age, gender, and the number of siblings. The subjects then decided to *whom* and *how much* of their initial endowment of 100 they were willing to transfer. No entry in any of the boxes corresponded to making no choice, which was also an option. In the next step subjects saw *who* among the other players had chosen them and *how much* they had received from these partners. In addition, this amount was shown multiplied by three. For each player from whom a transfer was received, they could choose how much to return back. Then, subjects were presented a summary of all transfers and returns they had been involved with. These steps were repeated 6 times. Then, groups were reshuffled and a new treatment was played. Due to the limited amount of subjects in each session and the large size of each group, the re-matching had to be done on a random basis, hence it is not ruled out that subjects could meet again in subsequent groups.

The fifth treatment differed from the previous four because it did not allow free choice of partners. Subjects, were again matched in groups of five players, but instead of being able to choose a partner, they were randomly assigned to one of the fellow players. In every period of this treatment players faced a new non-modifiable random choice of partner.

The sixth and final treatment was instead identical to the first four and thus allowed free choice of partners.

B Conditional Logit Model

The estimates of Table 10 have been computed using the conditional logit model proposed by McFadden (1973). This model is applied to our setting in the following way. Define U_{ijp} as the utility of i if i chooses j in period p, and

$$d_{ijp} = \begin{cases} 1 & \text{if } i \text{ chooses } j \text{ in } p, \\ 0 & \text{otherwise.} \end{cases}$$

The time index p stands for the six periods of the game. Conditional on participating in the game (*i.e.* not making a zero transfer), each player can choose one among four possible partners, $j = \{1, 2, 3, 4\}$ in each period. The four choices are mutually exclusive and exhaustive. The random utility corresponding to each choice is assumed to be:

$$U_{ijp} = \alpha d_{ijp-1} + \delta d_{jip-1} + \nu X_{ij} + \epsilon_{ijp} \tag{7}$$

for $j = \{1, 2, 3, 4\}$. Using the above notation, d_{ijp-1} means that player i has chosen j in the previous period. Similarly, d_{jip-1} means that player j has

chosen player i in the previous period. The omitted variable is that player i and j had no interaction in the previous period. The other covariates X_{ij} include the remaining choice specific characteristics such as gender, nationality (both interacted with the corresponding attributes of i), age, and siblings. Note that the fact that j was previously chosen by i (or not) is interpreted as a characteristic of the choice j in p. By the same token, the fact that i was chosen by j (or not) in period $p-1$ becomes a characteristic of j in p. Hence, previous playing behaviour can be seen as generating observable choice specific attributes in p.

Player i chooses player j if this yields highest utility. Hence,

$$\Pr(d_{ijp} = 1) = \Pr(U_{ijp} > U_{ikp}) \, \forall \, k \neq j.$$

The estimates from this model are reported in column 1 (for the second period of the first four treatments) and in column 3 (for all periods in the first four treatments) of Table 10.

This random utility model can be augmented by adding variables which characterize the effect of previous behavior in more detail. In columns 2 and 4 of Table 10 (respectively for the second periods and for all the first four treatments) we interact the dummy indicating whether i transferred to j in the previous period with a dummy indicating whether j returned more than the median return ratio in the sample. Similarly, we interact the dummy indicating whether j transferred to i in the previous period with a dummy indicating whether j transferred more than the median transfer in the sample.

All estimated coefficients are reported in the form of odds ratios.

References

Bentolila, Samuel and Andrea Ichino, (2003) "Unemployment and Consumption: Why Are Job Losses Less Painful than Expected Near the Mediterranean?", EUI, mimeo.

Berg, Joyce and John Dickhaut and Kevin McCabe, (1995) "Trust, Reciprocity and Social History", *Games and Economic Behaviour*, 10:122-142.

Buchan, Nancy, and Rachel T.A. Croson and Eric J. Johnson, (2000) "Trust and Reciprocity: An International Experiment", *mimeo.*

Central Intelligence Agency (CIA) (2003) "The World Fact Book", *available at http://www.cia.gov/cia/publications/factbook/.*

Fershtman, C. and Gneezy, U., (2001) "Discrimination in a Segmented Society: An Experimental Approach", *Quaterly Journal of Economics*, 116:351-377.

Fischbacher, Urs (1999): "Z-Tree: Zurich Toolbox for Readymade Economic Experiments", Working Paper No. 21, University of Zurich: Institute for Empirical Research in Economics.

Guiso Luigi, Paola Sapienza and Luigi Zingales, (2003)"Cultural Biases in Economic Exchange", mimeo.

Kahneman, Daniel., and Tversky, Amos., (1979) "Prospect theory: An analysis of decisions under risk", *Econometrica*, 47, 313-327.

Knack, Stephen and Philip Keefer, (1997) "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation", *Quarterly Journal of Economics*, 52:1251-1287.

McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in Econometrics.* New York: Academic Press.

Table 1: Nationalities: frequencies and average latitude

country	av. latitude	participants
Southern countries		
Greece	39	9
Portugal	39.3	1
Spain	40	11
Italy	42.5	17
France	46	12
Northern countries		
Austria	47.2	6
Belgium	50.5	5
Germany	51	16
Poland	52	3
Netherlands	52.3	8
Ireland	53	5
United Kingdom	54	8
Denmark	56	3
Sweden	62	4
Finland	64	2

Source: CIA (2003).

Table 2: Descriptive statistics

	f_i^N					
	0	0.25	0.5	0.75	1	average
$Z_N(t=0)$	0.07	0.08	0.07	0.04	0.04	0.06
$Z_S(t=0)$	0.03	0.04	0.05	0.10	0.11	0.07
t_N	75	78	80	80	77	79
t_S	60	77	66	67	71	69
r_N	n.a.	0.52	0.54	0.57	0.60	0.56
r_S	0.56	0.56	0.50	0.55	n.a.	0.54
$\pi_{N,send}$	177	147	154	163	173	158
$\pi_{S,send}$	132	163	136	147	149	146
$\pi_{N,rec}$	137	116	106	96	82	105
$\pi_{S,rec}$	88	74	92	86	98	87
$\pi_{N,total}$	314	264	260	259	255	262
$\pi_{S,total}$	220	237	227	233	247	233

Note: f_i^N is the frequency of northern players seen by sender i in her group. $Z_K(t=0)$ is the fraction of zero transfers for senders of region K. t_K is the average transfers sent by region K. r_K is the average return ratio chosen by receivers of region K. This figure is not available for northerners (southerners) in the cases in which only southerners (northerners) are seen by senders. The payoff for a sender of region K from making a transfer is defined as $\pi_{K,send} = 100 - t + g$ where g is what the sender gets back. The payoff for a receiver of region K from receiving transfers is defined as $\pi_{K,rec}$= (sum of total amounts received by other players − sum total amounts returned to other players). The total payoff is the sum $\pi_{K,total} = \pi_{K,send} + \pi_{K,rec}$. K is equal to N or S denoting North and South respectively.

Table 3: Deviations from random choice over all periods of the first 4 treatments

	All senders	N senders	S senders
D	0.044	0.062	0.022
s.e.	0.018	0.026	0.025
p-value	0.008	0.008	0.193
obs.	2167	1215	952

Note: The table reports results from the estimation of the regression $R_i^N - f_i^N = D + u_i$ by sender group. R_i^N is a dummy variable taking value 1 if the receiver chosen by sender i is from North and 0 otherwise. f_i^N is the frequency of northern players seen by sender i in her group. D is a constant parameter to be estimated. u_i is an error component. Standard errors are robust and take care of within-individual correlation of the error component. p-values are for the test that $D = 0$. The cases in which f_n^i is 0 or 1 are excluded. Note that f_n^i is randomly assigned.

Table 4: The matrix of transfers between regions

		Southern receiver	Northern receiver	average
All periods	Southern sender	73.83	73.87	73.86
$T = 1, 2, 3, 4$	Northern sender	81.37	86.38	84.39
	average	77.80	81.20	79.76
$p = 1, T = 1$	Southern sender	28.92	47.45	40.15
	Northern sender	63.38	54.91	57.67
	average	47.93	52.09	50.62

Note: The table reports simple averages of positive transfers from "rows" to "columns". The cases in which the fraction f_n^i of northern players seen by sender i is 0 or 1 are excluded. Note that this fraction is randomly assigned.

Table 5: Differences between the transfers sent to northern and southern receivers

		By all Senders	By N Senders	By S Senders
All periods	β_r	3.24	5.44	-0.35
$T = 1, 2, 3, 4$	s.e.	1.89	2.62	2.82
	t-value	1.71	2.07	-0.13
	obs.	2330	1271	1059
$p = 1$, $T = 1$	β_r	4.00	-3.51	11.31
	s.e.	6.91	10.08	9.93
	t-value	0.58	-0.35	1.14
	obs.	90	51	39

Note: The table reports robust standard errors and corresponding t-values for the test that $\beta_r = 0$ in the regression $t_j = \alpha_r + \beta_r R_j^N + \delta_r X_j + \tau_j$ by sender groups. t_j is the transfer sent to receiver j. R_j^N is a dummy variable taking value 1 if receiver j is from North. X_j is a vector of dummy variables denoting the gender of the sender and of the receiver. τ_j is an error component. The estimated coefficients β_r are not numerically identical to the corresponding differences between columns of Table 4 because of the inclusion of controls for gender. The cases in which the fraction f_n^i of northern players seen by sender i is 0 or 1 are excluded. Note that this fraction is randomly assigned.

Table 6: Differences between the transfers sent by northern and southern senders

		To all Receivers	To N Receivers	To S Receivers
All periods	β_s	10.35	12.24	5.92
$T = 1, 2, 3, 4$	s.e.	3.88	3.68	4.05
	t-value	2.67	3.33	1.46
	obs.	2310	1249	918
$p = 1$, $T = 1$	β_s	12.80	7.64	28.41
	s.e.	6.97	8.62	11.62
	t-value	1.84	0.89	2.45
	obs.	87	53	29

Note: The table reports robust standard errors and corresponding t-values for the test that $\beta_s = 0$ in the regression $t_i = \alpha_s + \beta_s S_i^N + \delta_s X_i + \theta_i$, by receiver groups. t_i is the transfer sent by sender i. S_i^N is a dummy variable taking value 1 if sender i is from North. X_i denotes the gender of the sender. The gender of the receiver cannot be included in this case because of the presence of zero transfers, i.e. situations in which there is no receiver. θ_i is an error component. The estimated coefficients β_s are not numerically identical to the corresponding differences between the rows of Table 4 because of the inclusion of controls for gender. The cases in which the fraction f_n^i of northern players seen by sender i is 0 or 1 are excluded. Since this exclusion restriction operates differently from the perspective of senders and receivers, the number of observations in Tables 5 and 6 differ. Note that this fraction is randomly assigned.

Table 7: Differences in the return ratio chosen by northern and southern receivers

		For all senders	For N senders	For S senders
All periods	γ_r	0.017	0.028	-0.011
$T = 1, 2, 3, 4$	s.e.	0.023	0.033	0.032
	t-value	0.75	0.86	-0.34
	obs.	2167	1215	952
$p = 1$, $T = 1$	γ_r	0.108	0.166	0.045
	s.e.	0.063	0.086	0.110
	t-value	1.72	1.93	0.41
	obs.	82	49	33

Note: The table reports robust standard errors and corresponding t-values for the test that $\gamma_r = 0$ in the regression $r_i = \delta + \gamma_r R_i^N + \eta_r X_i + \rho_i$ by sender groups. r_i is the return ratio chosen by the receiver for the sender i. R_i^N is a dummy variable taking value 1 if the receiver chosen by sender i is from North. X_i is a vector of dummy variables denoting the gender of the sender and of the receiver. ρ_i is an error component. The cases in which the fraction f_n^i of northern players seen by sender i is 0 or 1 are excluded. Note that this fraction is randomly assigned.

Table 8: Reinforcement of deviations from random choice with respect to previous choices

period 2		all senders	N senders	S senders
N chosen in $p = 1$	D	0.169	0.212	0.101
	s.e.	0.032	0.038	0.055
	p-value	0.000	0.000	0.034
	obs.	204	125	79
S chosen in $p = 1$	- D	0.086	0.065	0.109
	s.e.	0.038	0.059	0.048
	p-value	0.012	0.136	0.013
	obs.	165	85	80

Note: This table tests whether the choice of a sender in the second period differs from randomness conditioning on the choice made in the first period. The equation $R_i^N - f_i^N = D + u_i$ is estimated, by sender groups, only on the observations for the second period of all treatments and separately for the cases in which North or South was chosen in the first period.
R_i^N is a dummy variable taking value 1 if the receiver chosen by sender i is from North and 0 otherwise. f_i^N is the frequency of northern players seen by sender i in her group. D is a constant parameter to be estimated. u_i is an error component Standard errors are robust and take care of within-individual correlation of the error component. p-values are for the test that $D = 0$. The cases in which f_n^i is 0 or 1 are excluded. Note that f_n^i is randomly assigned
The coefficients reported in "S chosen in $p-1$" were multiplied with (-1) so that a positive sign indicates reinforcement of a southern choice.

Table 9: Return ratios over treatments

	$T = 1$	$T = 2$	$T = 3$	$T = 4$
$\bar{r}_N$	0.51	0.51	0.50	0.56
obs.	57	58	59	59
$\bar{r}_S$	0.47	0.49	0.48	0.51
obs.	47	47	47	50
p-value	0.46	0.78	0.60	0.22

Note: The table reports, for each treatment, the average return ratios chosen by northern and southern receivers. The reported figures are computed by first averaging the return ratios of each subject in a given treatment and then by averaging across subjects in each region, that is: $\bar{r}_{K,T=\tau} = 1/M \sum_{i=1}^{M} \bar{r}_{i,T=\tau}$, where $\bar{r}_{i,T=\tau}$ is the average ratio that subject i returned in treatment $T = \tau$ and M is the number of individuals from region K that received a transfer at least once in that treatment. K stands for North and South, respectively. p-values are for the test on the equality of $\bar{r}_N$ and $\bar{r}_S$, controlling for gender.

Table 10: Reciprocation of previous positive experiences

	period 2		all periods	
	1	2	3	4
$d_{ijp-1} = 1$	3.38 (.39)***	2.02 (.31)***	3.34 (.16)***	1.74 (.12)***
$d_{jip-1} = 1$	6.83 (1.06)***	4.56 (.85)***	4.51 (.30)***	2.93 (.27)***
$d_{ijp-1} = 1 \wedge 1\{r_{ijp-1} \geq \text{med}(r)\}$	.	3.32 (.79)***	.	3.71 (.39)***
$d_{jip-1} = 1 \wedge 1\{t_{jip-1} \geq \text{med}(t)\}$	.	3.06 (.82)***	.	2.38 (.27)***
Obs.	1728	1728	8180	8180
Pseudo R^2	0.26	0.3	0.26	0.3
Correct Predictions	0.63	0.64	0.60	0.62

Note: $d_{ijp-1} = 1$ denotes the event that i has chosen j in the previous period, and $d_{jip-1} = 1$ means j has chosen i in the previous period. "$\wedge$" is the logical "and" operator, and $1\{...\}$ is the indicator function which takes value one if the expression inside the parenthesis is true. "med()" is the median of the variable. Reported values are odds ratios, standard errors in parenthesis. *, ** , *** denote significance equal to the 10, 5 and 1 percent level of a test that the odds ratio is one. Control variables included are: age and siblings of all 4 players, gender and nationality of i interacted with the attributes of j. Pseudo R^2 is the percent of variance explained by the model compared to a model which includes a constant only. Correct predictions indicates the share of observations in which the highest estimated probability $\hat{p}_j$ coincides with the actual choice. See Appendix B for further details.

Table 11: Descriptive statistics for treatments $T = 4$, $T = 5$ and $T = 6$

	$T = 4$	$T = 5$	$T = 6$
t_N	85	68	82
t_S	78	65	80
r_N	0.56	0.38	0.48
r_S	0.51	0.39	0.50
$\pi_{N,total}$	274	226	264
$\pi_{S,total}$	251	241	259

Note: t_K is the average transfer made by senders of region K, r_K is the average return ratio chosen by receivers of region K, and $\pi_{K,total}$ is the average total payoff earned by subjects of region K. K is equal to N or S denoting North and South respectively. In treatment 5 senders were not allowed to choose a partner.

Figure 1: Deviation from randomness towards North (first 4 treatments)

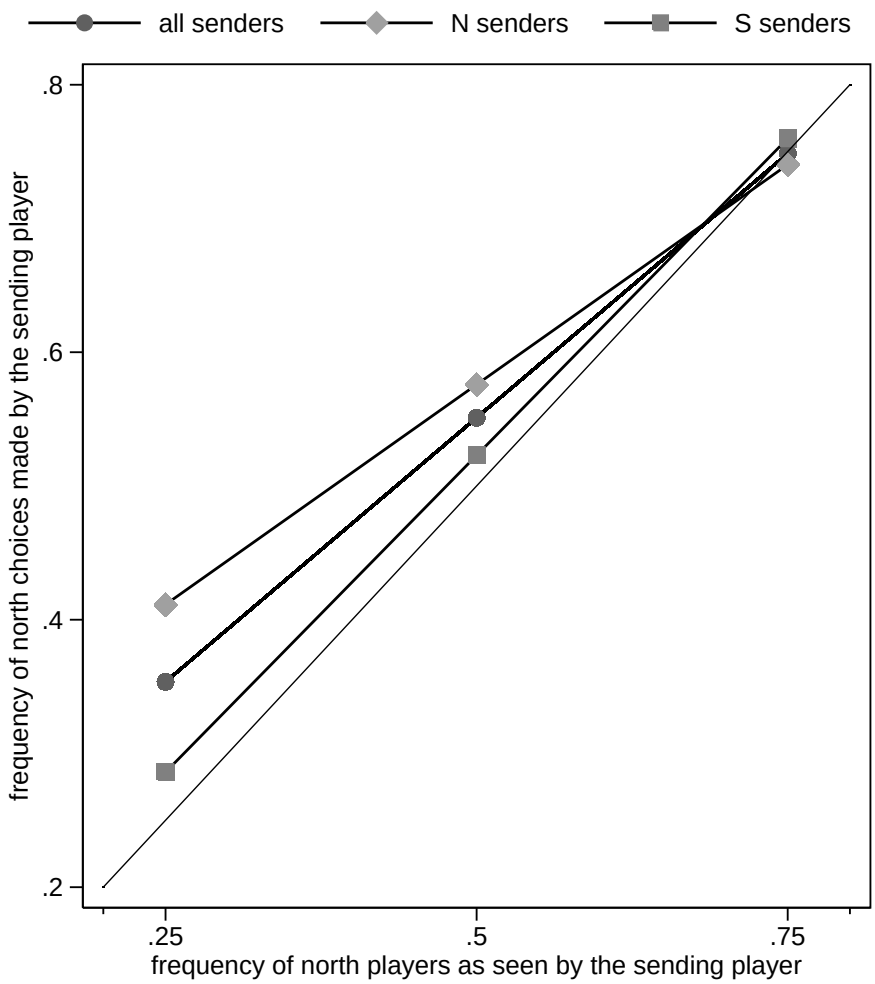


Figure 2: Coefficient D over treatments, all Senders

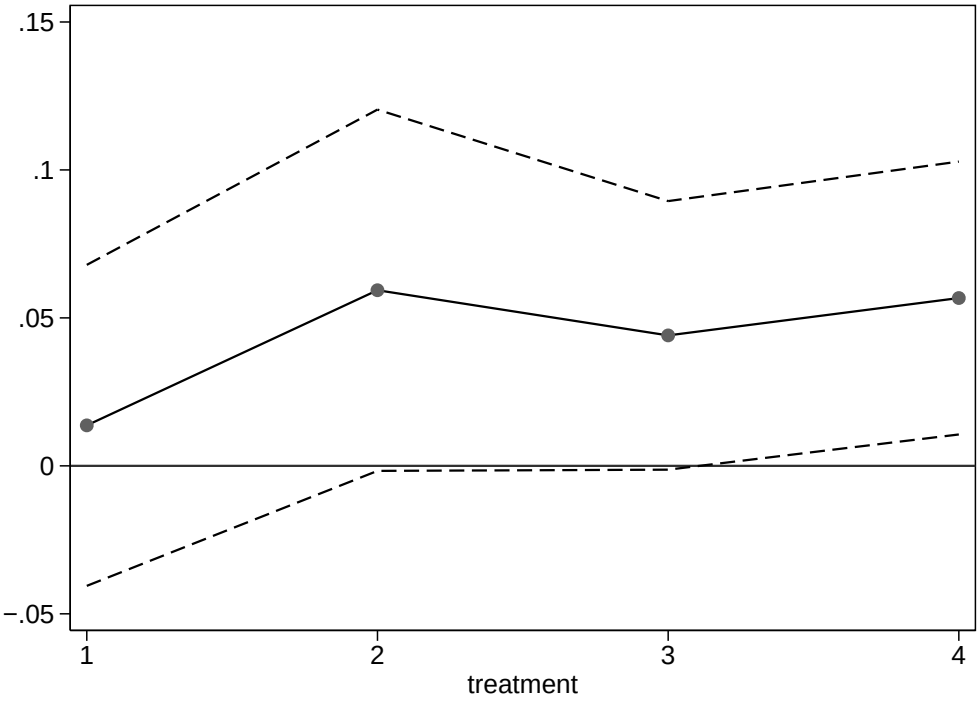


Figure 3: Coefficient D over treatments, Northern Senders

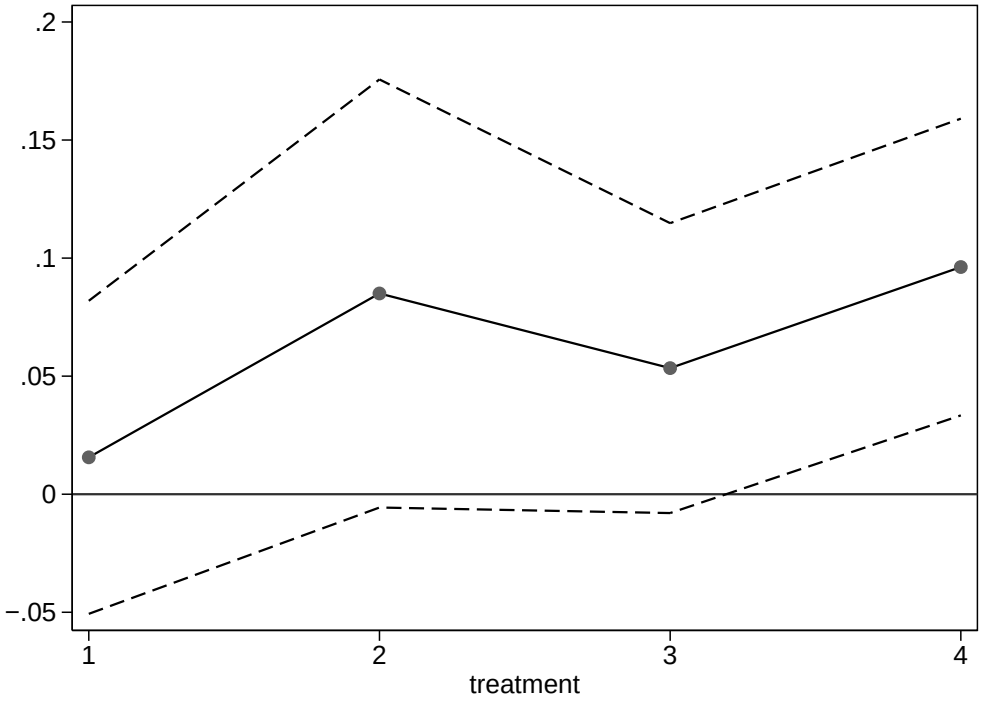


Figure 4: Coefficient D over treatments, Southern Senders

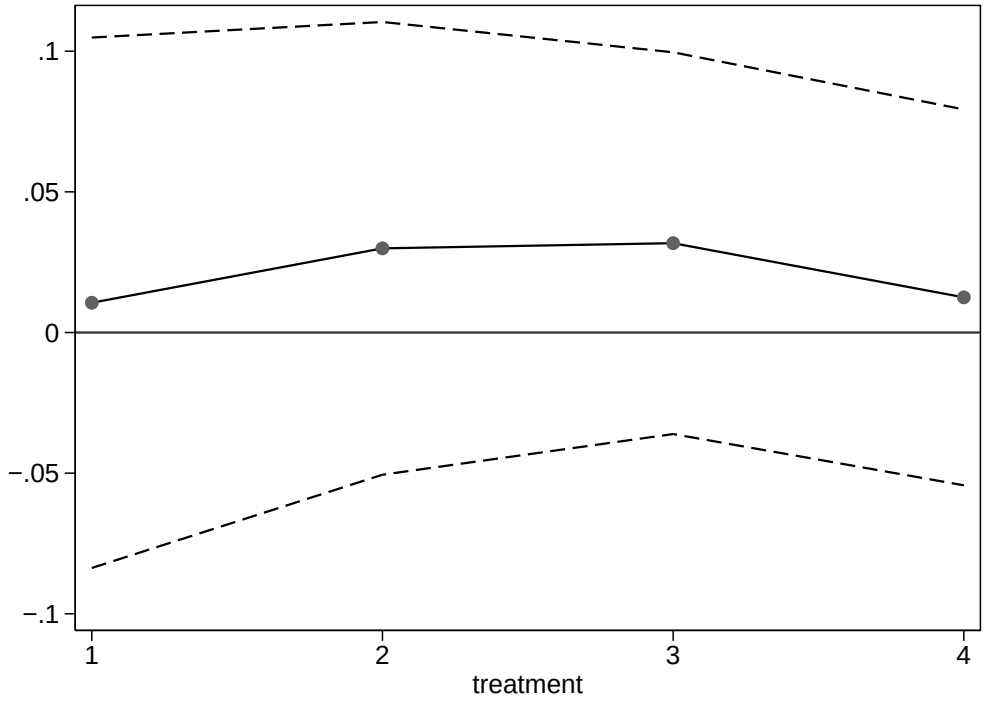


Figure 5: Transfer comparison N and S

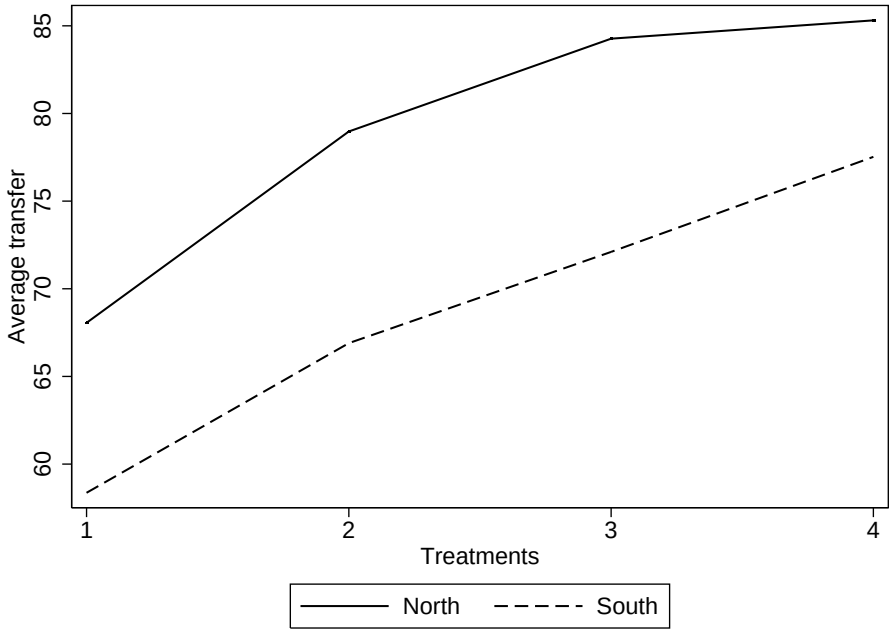
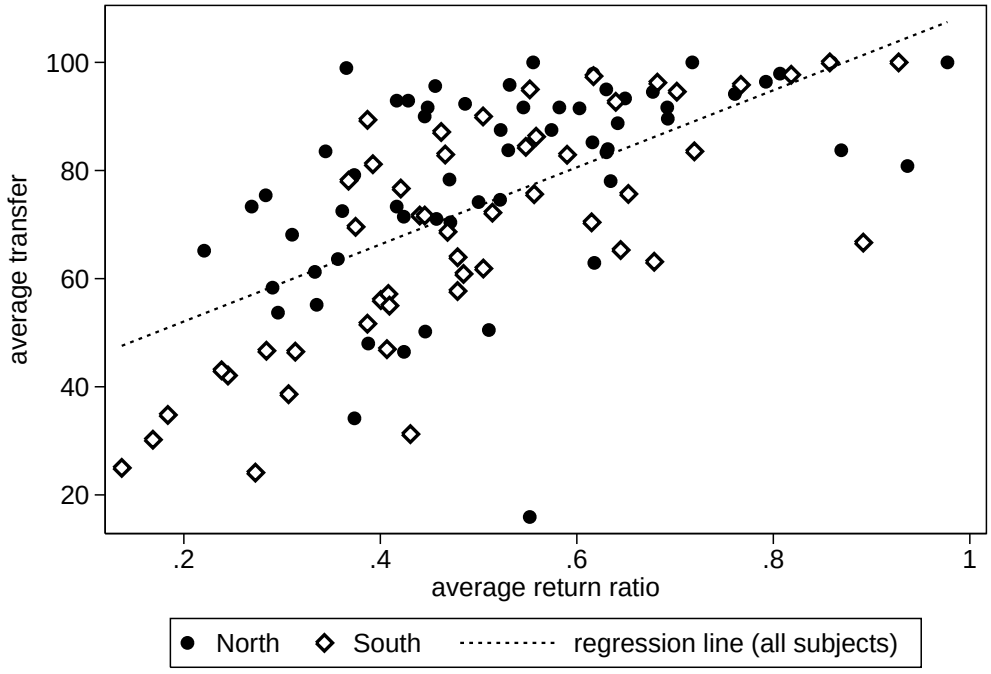


Figure 6: Correlation of Trust and Trustworthiness, all Senders



Note: correlation .62, slope 71.27

Figure 7: Payoff comparison N and S, per period

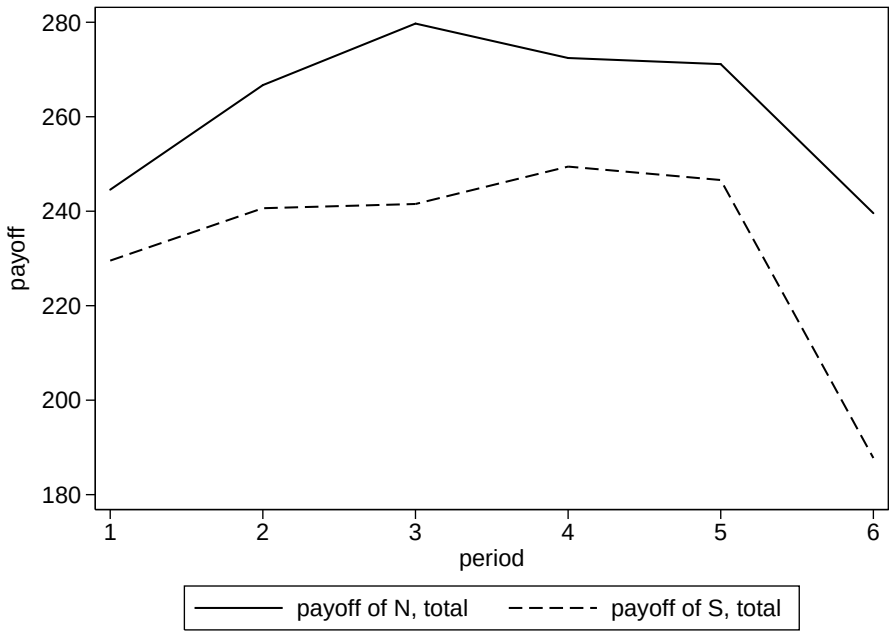


Figure 8: Payoff comparison N and S, per treatment