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o'higgins, s. niall and Sbriglia, Patrizia

university of salerno, university of naples II-SUN

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MEASURES OF SOCIAL CAPITALAND TRUST

Niall O'Higgins
Università di Salerno
nohiggins@unisa.it

Patrizia Sbriglia[§]
Università di Napoli II-SUN
patrizia.sbriglia@unina2.it

Abstract

Trust and trustworthiness are important components of social capital and much attention has been devoted to the problems of their correct evaluation. Attitudinal survey questions as reported in the EVS – European Value Survey - are often regarded as inefficient indicators of trust, since they lack of behavioural underpinnings (Putnam, 1995) which one might desire when measuring trust.

In this paper, we consider alternative measures of trust and trustworthiness, based on behavioural assumptions. We construct two *relative behavioural measures* of trust (RBM1 and RBM2), both based on the *ex post* measurement of trust, once individuals are informed on the level of trustworthiness of the social group to which they have been allocated during the experiment. Our main finding is that the *relative behavioural measures* show that trust strongly varies once the individual is informed on the on the level of trustworthiness of the social group to which he\she has been allocated during the experiment. This difference is higher the higher is the family level of income and the parental education status. As for previous findings (Glaeser *et al*., 2000, Lazzarini, 2005) which have found no correlation between attitudinal and behavioural measures of trust, we find that *relative behavioural measures* are not correlated to attitudinal measures but they are strongly correlated to groups' trustworthiness. We also find that similar social preferences profiles (between Senders and Recipients) tend to enhance the individual level of trust, in the RBM2 context. This result seems to confirm the importance of the homogeneity of the social environment when studying the effects of policy interventions (Alesina and La Ferrara, 2002).

Keywords: *social capital, trust, experiments.*

J.E.L. classification: C91,C92.

[§] Corresponding author: Patrizia Sbriglia, Department of Law and Economics, University of Naples II, Via Gran Priorato di Malta, Capua, Caserta, 83043, Italy, tel: 00390823274355; fax: 00390823628694; e-mail addresses; patrizia.sbriglia@unina2.it;

1. Introduction

Trust and trustworthiness are important components of social capital and much attention has been devoted to the problems of their correct evaluation. Attitudinal survey questions as reported in the EVS – European Value Survey - are often regarded as inefficient indicators of trust, since they lack of behavioural underpinnings (Putnam, 1995), as one may desire when measuring trust.[1] Furthermore, a number of criticisms to their potential sources of biases have been raised. As noticed in Ciriolo (2007), self-reported attitudinal measures of trust can be affected by three different types of behavioural biases. In fact, when answering the question: "Generally speaking would you say that most people can be trusted or can't be too careful in dealing with people?", respondents may underestimate the importance of the issue, considering the abstract context as only a hypotetical setup (*hypotethical* bias); individuals may also wish to represent themselves as more virtuous than they actually are (*idealised persona* bias); finally the lack of incentives may induce false responses (*lack of incentive* bias).[2]

Another unsatisfactory aspect of the attitudinal measures is the implicit separation between trust and trustworthiness, seen as different components of the individuals' social preference utility functions. In the EVS survey, the basic measurement of *trust* is provided by the answers to the above reported question: "Generally speaking, etc.", whilst measures of *trustworthiness* are defined on the basis of the answers provided to questions like the ones involving *civic cooperation*[3], in which individuals report their dislike for free riding behaviour (tax evasion, etc). As for the trust question, the rationale

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[1] There has been a long debate on the measurement of non-economic sources of economic development. See Coleman (1990); Putnam *et al.* (1993); Paldam and Svendsen (2000). Also in Italy there have been a number of recent contributions, see for example Degli Antoni (2005).
[2] See Ciriolo (2007), p. 2.
[3] See T. Van Schaig 2002; Knack and Keefer 1997.

beyond the self reported measures of trustworthiness relies mainly on the unconditional ethical individuals' values .

There are a number of unsatisfactory aspects related to the separation of these two social capital components.

Firstly, if the economist's interest lies in assessing the role played by these factors in influencing the level of cooperation in a community and the strength of its political and economic institutions, so that economic development is favoured, the relative importance of the two factors cannot easily be disantangled. In other words, economic welfare thrives when in a community there is a high level of trust or when there is a high level of trustworthiness (Degli Antoni, 2005). Furthermore, recent research by Alesina and La Ferrara (2000, 2002) has argued that race and ethnic heterogeneity are key factors in explaining the overall decrease in the self reported level of trust.[4] According to this point of view, one may argue that, when individuals are aware of the social preference attitudes (therefore both trust *and* trustworthiness) of the agents with whom they currently interact and, moreover, when *they share with them part of their views and values,* then there are higher individual incentives to trust. Thus, trusting attitudes depend not only the information on the community level of trustworthiness but also on the ethical similarities between individuals.

Secondly, there is a theoretical reason why trust and trustworthiness cannot be disantangled. New game theory models and experimental implementation of bargaining games have clearly shown that *trust can be viewed as the strategic response to trustworthiness.* In fact, according to Fehr and Schimdt, 1999, 2006, individuals tend to reciprocate and to respond to the social behaviour they observe in real life contexts. More than the *absolute levels of trust*, as in the EVS survey, what we should therefore observe and measure are the *conditional levels of trust*, where we take into account not only the

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[4] The proportion of people providing positive answers to the question: "Generally speaking, etc." Has sharply decreased in the US in the period 1960-1995 (Putnam, 2000).

ethical, cultural and psycological foundations of trusting behaviour but also the strategic behavioural decision rule that is inserted in the concept.

In other words, the arguments reported above seem to point out that, when measuring trust, we should ideally separate _two_ definitions of trusting behaviour: an _ex ante_ definition of trust, which is dependent only on the individuals' ethical and social characteristics, and an _ex post_ definition of trust, which reflects, in addition to those characteristics, the behavioural response to the perceived trustworthiness (and heterogeneity) of the social environment in which individuals operate.

Attitudinal biases, lack of behavioural underpinnings, incorrect decision model' specifications of the concepts of trust and trustworthiness have spurred alternative lines of empirical research in the study of the primitives of social capital.

An important field of study relates to economic experiments on bargaining games where individuals are financially motivated.

In a seminal paper by Glaeser _et al_., 2000,[5] subjects were asked to answer questions on trust and trustworthiness, as reported in the World Value Survey. Subsequently, they were asked to participate in a trust game (Berg _et al._ , 1995) in the roles of Senders and Recipients.[6] The main scope of the research was to test whether there were significant differences between attitudinal self reported measures of trust and behavioural measures

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[5] The experiments reported in the paper have been reproduced in Lazzarini _et al._, 2005.

[6] The structure of the sequential game is well known: at the begininng of the experiments, subjects are divided into two groups S and R (Senders and Recipients). Senders are allocated a number of experimental tokens which will be converted into cash at the end of experiment. They have to decide whether to keep the tokens or to send a part (or the entire amount) of the total to a Recipient with whom she/he is playing. If they decide to send tokens to the Recipient, the number of tokens sent is multyplied by a factor $\alpha \geq 1$, so that the Recipient's endowment is equal to αs, where s is the initial number of tokens sent by the partner. The Recipient can take now her/his decision and send back any number of tokens to the Sender. There is a unique Nash equilibrium in the game, where no token is sent by S (and – if the game reaches her/his decision node – no token is sent back by R); if the observed number of tokens is greater than zero, players are assumed to have a utility function in which they take into account the rival's level of utlity along with their own. If S (R) send (return) the entire tokens' endowment, they are defined _altruistic_ players, if they prefer an equal share of the total endowment, they are defined _fair_ players. Bargaining games experiments are often used to test cooperative or individualistic behaviour among individuals. A new stream of application is represented by _field experiments_ on bargaining games, where cooperation is tested among different ethnic groups (see Barr, 2004). In some cases, such implementations have been sponsored by international organizations and their results have been used in country studies.

of trust, as derived by the results of the experimental games. The main result of the study was that there was a very low correlation between attitudinal measures of trust and behavioural measures. The authors however found a higher correlation between the latter ones and the attitudinal measures of trustworthiness.

In the present paper, as in Glaeser *et al.* (2000), we compare attitudinal and behavioural measures of trust in a sample of 184 students from the Universities of Salerno and Siena. Again, as in Glaeser *et al.* (2000), students are first asked to fill a questionnaire in which the relevant EVS survey questions are reproduced, and then they participate in a *trust game* experiment.

In addition to that, however, we construct two *relative behavioural measures* of trust (RBM1 and RBM2), both based on the *ex post* measurement of trust, once individuals are informed on the level of trustworthiness of the social group to which they have been allocated during the experiment.

In the case of the RBM1 measure, we adopt a social preference elicitation technique (see Selten, 1967), known as *the strategy method*, in order to derive the individual level of trustworthiness of the subjects who are then asked to participate as Recipients in the trust game, in a specific social group.[7]

In the case of RBM2, we derive the individual level of trustworthiness of respondents directly from the attitudinal questionnaires' answers. In both cases, Senders in the trust game are informed of the level of Recipients' trustworthiness, before making their decision.

The aim of our study is twofold.

First, we apply the experimental methodology in order to derive behavioural measures of trust and trustworthiness in Italy, so to compare them with the existing country-based measures.

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[7] Details of the strategy method experimental procedure are given in section 2.

Second, by estimating absolute and relative behavioural measures of trust, we are able to assess the relevance of the *ex ante* (individuals' ethical and social characteristics- or absolute trust) and the *ex post* (individuals'strategic response to observed trustworthiness – or conditional trust) factors in determining the incentive to trust.

There are two main results to our research. First, in reproducing the Glaser's experiments in Italy, we found a strong similarity between the US and the Italian sample, both in the answers to the questionnaires and in the trusting behaviour. As for the previous paper, we find a low correlation between the answers to the trusting questions and the actual behaviour of Senders in the TG (without information). A higher correlation is however found between the latter and the questionnaires' answers to the trustworthiness questions.

Second, and more importantly, all correlation between qustionnaires answers and individuals' behaviour disappear when the information on the co-players types is introduced, indicating that the main determinant of the incentive to trust are the perceived levels of trustworthiness of the individuals' social environment, rather than the ethical and psychological values.

The paper is organised as follows. Section 2 provides a description of the experimental designs and incentives. Section 3 reports the results of our research. Section 4 concludes and suggests new possible extensions to our line of research.

2. The Experimental Design

The experiments were conducted in Siena and Salerno (May 2007) and 184 students participated in the 6 sessions in which the experiment was organised. Session 1-4 were

designed to test the relative behavioural measure RBM1, while the experimental design of Sessions 5-7 aimed to test the relative measure RBM2.

All sessions were divided into three different stages. In the first stage, the subjects were asked to fill in a questionnaire in which the EVS questions in relation to trust and trustworthiness were reproduced. Table 1 reports the whole set of questions that appeared on the students' computer screens.

Table 1: Questionnaire on Trust and Trustworthiness

Subjects' characteristics		Trust	
1s	Sex (M/F)	1t	Trust in others (y/n)
2s	Age (19/30)	2t	Trust in family (1-4)
3s	Father education (1-6)	3t	Trust in friends (1-4)
4s	Mather education 1-6	4t	Trust new encounters (1-4)
5s	Degree (1-3)	5t	Trust immigrants (1-4)
6s	Year (1-3)	6t	Ethnical diversity (1-10)
7s	Family income (1-4)	7t	(S)Trust others motivations (1-10)
8s		8t	

Table 1: continues.....

Trust and Institutions		Trustworthiness	
1ti	Trust Government (1-4)	1tw	Accept undeserved benefits
2ti	Trust Parliament (1-4)	2tw	Tax evasion
3ti	Trust Parties (1-4)	3tw	Stealing&using car
4ti	Trust Public Sector (1-4)	4tw	Lying
5ti		5tw	Deceiving partner
6ti		6tw	Accept bribery
7ti		7tw	Paying for illegal work, e.g., immigrants
8ti		8tw	Evading bus fares

The criteria we followed in selecting these specific questions are related to our hypotheses testing. In fact, we concentrated our attention on the set of questions which are aimed at assessing the individual's level of trust and trustworthiness, together with some general characteristics which, in past research, have proved to be influential as far as trusting behaviour is concerned.[8]

As for the second stage, as in previous analyses of behavioural trust, we adopted the experimental setting of the *trust game* (see footnote 6) (Berg *et al.* 1995).

As it has already been reported, the Trust game (often defined as an Investment game) portrays a bargaining context in which two different types of players – S and R decide how to share a well defined amount of money[9]. In our experiments, we adopted a standard Trust game (TG, hereafter) design, in as much as subjects were randomly

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divided into two groups (S and R) at the beginning of the second stage, and then the game was played according to the rules described above.[10]

Finally, in the third part of the sessions, subjects were divided into groups (8-12 individuals in each group, according to the total number of participants, equally divided between Senders and Recipients) and they repeated the trust game, keeping the roles (Senders or Recipients) assigned by the computer at the beginning of stage 2.[11]

However, before making their choice, Senders received information on the level of trustworthiness of the Respondents of their group. Such information differed between Session 1-4 and Session 5-7.

In Session 1-4, we assessed the Recipients' trustworthiness by asking them to declare – on a separate sheet of paper and before the actual game started - how many tokens they would return, for each possible amount of tokens sent by their anonymous partner. Such preference elicitation technique is known as the strategy method (Selten, 1967).[12]

Figure 1 reports a description of the Table Recipients were asked to fill, during stage 2.

Figure 1: The Strategy Method (RBM1)

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[10] There are two main differences between our work and those of Glaeser *et al*, 2000 and Lazzarini *et al*, 2005. Firstly we set the multiplying factor – α – equal to 3, rather than 2 as in the original paper. The reason why we changed the value of α was that, higher values of the coefficient place a higher weight on trustworthiness, so that its influence can be monitored in the strategic interaction. Secondly, Senders and Recipients were selected randomly and anonymously by the computer and no personal communication was allowed during the sessions. In Glaeser *et al.*, 2000, friends were allowed to participate in the same trust game. The effect of friendship or , more generally, of a previous social relationship on trusting behaviour was however unclear. The reason why we adopted the anonymous partnership protocol is that we wanted to focus the attention on "social trustworthiness" and to avoid any previous information effect.

[11] In the Instructions – which are available on request – the details of the experiments were explained and further information on the payoff and the rules were given at the beginning of each session.

[12] See Barr *et al.*2004, for extensive references. The strategy method tend to assess the strategic response of the player in each of the possible state of the world which can be accounted in the specific context of the game.

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On the Senders' screens, a table would consequently appear (see figure 2). The table contained a summary of the main statistics related to the declared behaviour of the Recipients allocated to their group. Specifically, the table reported for the intervals 1-10, 11-20 and 21-30 tokens received by R, the minimum and the maximum number of tokens that would be returned according to their ex ante declaration. Once the Senders were given the opportunity to look at the table, they were asked to repeat their investment decision as in stage 2, matched to an anonymous R selected in the group.

Figure 2: Information provided to Senders at Stage 3, based on the strategy method (RBM1)

Several experimental methodologies have been used to measure individualistic, reciprocating or cooperative and altruistic behaviours. We recall here the use of questionnaires, pre-play one shot or repeated games and finally some variations of the strategy method (see Burlando and Guala, 2005, for extensive references). Each of these methodologies has been criticised on several grounds. In the case of the strategy method, possible disadvantages are related to the weakening of incentives , since each state of the world occurs with less than unitary probability and problems of cognition and understanding may arise, as the number of observations on the players' (in our case, the Respondents) behaviour increases (in our case, Respondents were asked to indicate 10 values of the number of tokens they would return to the Sender). Finally, according to some authors (Guth *et al.* 2001), the strategy method may have an impact on individuals'
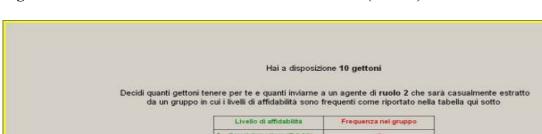
social preferences, thus weakening the validity of its application as a mean to classify reciprocating behaviours. In our opinion, however, similar remarks may be made about the methodologies of the one-shot and the repeated pre-play games, whilst, in the case of the questionnaires, the reliability of the answers may be questioned.

Furthermore, the strategy method has the important advantage of providing each player with a wide representation of the other player's choices, motivations and social tendencies.

In Session 5-7, a different procedure was followed in order to assess the individuals' level of trustworthiness of Recipients. As before, Senders were divided into groups of equal size. The first and second stages of the game were as before. At the third stage, however, rather than receive information on the distribution of tokens returned by Recipients, Senders received information on the trust/trustworthiness of their counterparts in the same group. Specifically, an index of trustworthiness was constructed from responses to the questions 7t, 1tw, 4tw and 8tw, with the first of these being given greater weight[13]. The index took theoretical values in the range 5-50 and values for individuals were attributed a value from 1 to 5 (from completely untrustworthy to completely trustworthy according to their responses)[14]. Senders were given complete information on the distribution of values attributed to the Recipients in their group (from which, their actual correspondent would be drawn at random). An example is given in Figure 3 below.

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[13] Formally the index was defined as: Score = 2*7t + (11-1tw) + (11-4tw) + (11-8tw).
[14] Again, specifically these were divided as follows: (Score ≤ 10) 1: Completely untrustworthy; (10 < Score ≤ 20) 2: untrustworthy; (20 < Score ≤ 30) 3: more or less trustworthy; (30 < Score ≤ 40) 4: rather trustworthy; and, (40 < Score ≤ 50) 5: completely trustworthy.

Figure 3: Information on Trust and Trustworthiness (RBM2)

Hai a disposizione **10 gettoni**

Decidi quanti gettoni tenere per te e quanti inviarne a un agente di **ruolo 2** che sarà casualmente estratto da un gruppo in cui i livelli di affidabilità sono frequenti come riportato nella tabella qui sotto

Livello di affidabilità	Frequenza nel gruppo
1 = Completamente inaffidabile	1
2 = Poco affidabile	0
3 = Mediamente affidabile	2
4 = Abbastanza affidabile	1
5 = Completamente affidabile	1

I punteggi e livelli di affidabilità sono stati computati sulla base delle risposte più significative al questionario

Gettoni che tieni per te [ ]

Gettoni che invii [ ]

Inserisci due numeri tra 0 e 10

OK

3. Results

3.1 *Attitudinal measures of Trust and Trustworthiness in the Italian sample*

We first look at the questionnaires' answers as they result from our experiments. Table 2 focuses on the relation between the individuals' social characteristics (sex, age, parental social status and education) and the self reported measures of trust and trustworthiness. In this regard, indices were calculated from the questionnaire corresponding to different aspects of these concepts. Specifically, indices were calculated for trust in the family (from 2t), trustworthiness (from 1tw-8tw), trust in institutions (from 1ti-4ti) and trust in others (from 3t-5t & 7t). For each of the trust indices, the values of the index are increasing in trust (e.g. a value of 40 for "trust in others" is indicative of a person with a

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high degree of faith in others), whereas the index of trustworthiness might better be seen as an index of untrustworthiness in as much as the index increases as the 'trustworthiness of the respondent falls, so that, for example, a respondent indicating that 'untrustworthy' behaviour is always justified would end up with an index value of 50! Table 2 reports the values of these indices across different characteristics of the experimental participants including also the summary index variable of trust, Score, which was used to provide information on the trustworthiness of counterparts in the RBM2 sessions.

Table 2: Indices of trust and trustworthiness by individual characteristics

		Trust in the Family (1-4)	Trustworthiness (5-50)	Trust in Institutions (5-50)	Trust in others (5-50)	Score (5-50)
Sex	Male	3.9	16.4	24.7	27.2	30.9
	Female	3.8	14.4	26.4	27.1	31.9
Degree Course	*Economics*	3.9	15.5	25.0	25.9	31.0
	Communication Sciences	3.9	16.8	25.9	27.6	31.4
	Political Science	3.7	14.8	26.5	27.3	30.8
	Specialisation	4.0	15.5	26.1	30.0	32.9
	Masters	3.9	14.7	24.3	30.4	32.7
	Doctorate	3.7	14.0	27.8	31.0	32.6
Family Income	*High Income*	4.0	17.5	26.6	18.2	19.5
	Mid-High Income	3.9	15.9	26.3	28.1	30.7
	Mid-Low income	3.8	15.5	24.8	26.8	31.5
	Low income	3.8	14.1	25.4	26.8	33.5

The table illustrates in general that trust and trustworthiness are often inversely related at least as regards their relation to other characteristics[15]. The correspondence between individual characteristics and indices of trust is, however, fairly weak. Females tend to be both less trusting (apart from trust in institutions) and more trustworthy than males.

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[15] Although, overall the index of (un)trustworthiness is negatively albeit weakly correlated with the indices of trust.

Income appears to be negatively related to trustworthiness and positively to trust in institutions and the family, with the relation to trust in others being less clear[16].

3.2: Trust, Trustworthiness and Senders' Behaviour

In order to examine the impact of individual characteristics, trust and trustworthiness on behaviour in the trust game, ordered probit models were employed to estimate:

i)   the number of tokens sent by 'Senders' at the second stage of the game; and,

ii)   the variation in the number of tokens sent by 'Senders' between the second and third stages of the game.

The first of these is intended to examine in particular, the relation between the degree of trust of senders and their behaviour in the absence of information on the nature and/or behaviour of their correspondents.

Some of the individuals' characterics and self-reported measures of trust and trustworthines are included in the model. Various specifications were tried. Table 3 reports the results of our preferred specification including just age, sex and trust indices.

It is interesting to notice that our results are very similar to that of Glaeser *et al.,* 2000, and Lazzarini *et al.*, 2005, in as much as , the model is not powerful in explaining behaviour. There is low correlation between the answer to the basic "trust" question and the effective behaviour in the second stage. As in the previous study, however, it can be observed that 'trust in others' is positively related to the number of tokens sent and this is clearly statistically significant. Thus, the results in Table 3 clearly indicate that there are similarities between the results of the Italian and the US and Brazilian samples.

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[16] Although if one excludes the high income group which only contains two persons, one also has a positive relation between income and trust.

Table 3: Ordered probit model of the number of tokens sent during the first round of the trust game.

	Coef.	Std. Err	. z
Female	**-0.522**	0.228	-2.28
Age	0.039	0.050	0.78
Trust in the Family	-0.163	0.252	-0.65
Trustworthiness	0.015	0.016	0.92
Trust in Institutions	-0.005	0.018	-0.29
Trust in others	**0.043**	0.017	2.62
/cut1 |	-0.620	1.602	
/cut2 |	0.013	1.581	
/cut3 |	0.974	1.566	
/cut4 |	1.447	1.566	
/cut5 |	1.803	1.573	
/cut6 |	1.990	1.580	
/cut7 |	2.158	1.586	
/cut8 |	2.458	1.596	
/cut9 |	2.583	1.600	
/cut10 |	2.652	1.603	
Log-Likelihood	-185.72		
Pseudo-R^2	0.04		
N	92		

Note: Coefficients which are statistically significant at at least $p < 0.05$ are reported in bold

Table 4 and 5 report the results of estimating models which try to isolate the strategic component in the measurement of social capital. In the Tables, in fact, the estimated effect of information is reported. As explained above, in the first experimental design, Senders were given some information on the numbers of tokens which would be sent back in response to the number of tokens sent. In order to include the essence of the information in the estimation of Senders' behaviour, the average 'rate of return'[17] observed by senders was included in an ordered probit

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[17] That is (no. of tokens to be sent back)/(no. of tokens recieved) averaged over the possibilities (3-30).

model of the variation in the number of tokens sent between first and second rounds of the trust game. The results are reported in Table 4.

Table 4: Ordered Probit Model of the variation in the tokens sent at the second round, RBM1

	Coef.	Std. Err	z
tokens sent during round 1	**-0.238**	0.075	-3.16
Female	*0.653*	0.387	1.69
Age	-0.005	0.068	-0.08
Trust in the Family	-0.044	0.027	-1.64
Trustworthiness	0.040	0.028	1.42
Trust in Institutions	-0.036	0.025	-1.45
Trust in others	-0.310	0.307	-1.01
Observed rate of return	**0.114**	0.047	2.44
/cut1 |	-2.722	2.177	
/cut2 |	-1.915	2.150	
/cut3 |	-0.096	2.127	
/cut4 |	0.041	2.128	
/cut5 |	0.339	2.126	
/cut6 |	0.681	2.124	
/cut7 |	0.980	2.125	
/cut8 |	1.332	2.127	
/cut9 |	2.096	2.156	
/cut10 |	2.593	2.194	
Log-Likelihood	-77.96		
Pseudo-R^2	0.13		
N	47		

Note: Coefficients which are statistically significant at at least p < 0.05 are reported in bold, coefficients with statistical significance of 0.10 > p > 0.05 are reported in italics.

Here, there are two interesting observations to be made. First, the model is better identified this time, despite the fewer observations. Second, information on the observed (or in this context, expected) rate of return is positive and strongly statistically significant.

In other words, if we compare the results in Table 3 and 4, we can say that information on co-players behavioural trustworthiness is influential in determining Senders behaviour.

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All correlation between "trust in others" and the amount sent in the second and third stage is in fact sweeped off by the weight individuals posit on the information on the strategic behaviour of Recipients. Thus, the measurement of the *ex post* trust differs from *ex ante* trust, mainly based on the unconditional individuals' values.

Turning now to the alternative experimental design in which Senders received information concerning the general trustworthiness of correspondents, a similar exercise was undertaken. As before a summary indicator of the information provided to Senders was constructed. In this case, the mean   value of 'Score' for the group of Recipients on which Senders' had information was included in the model. Table 5 reports the results.

Table 5: Ordered Probit Model of the variation in the tokens sent at the second round, RBM2

	Coef.	Std. Err	z
tokens sent during round 1	-0.077	0.064	-1.21
Female	-0.036	0.390	-0.09
Age	0.084	0.099	0.85
Trust in the Family	-0.008	0.023	-0.36
Trustworthiness	0.031	0.026	1.19
Trust in Institutions	-0.004	0.027	-0.16
Trust in others	-0.402	0.574	-0.7
Mean observed Score value	*0.112*	0.064	1.74
/cut1 |	1.907	3.784	
/cut2 |	2.196	3.765	
/cut3 |	3.130	3.759	
/cut4 |	3.661	3.764	
/cut5 |	4.839	3.768	
/cut6 |	5.421	3.791	
/cut7 |	6.318	3.861	
Log-Likelihood	-71.56		
Pseudo-R^2	0.05		
N	45		

Note: Coefficients which are statistically significant at at least $p < 0.05$ are reported in bold, coefficients with statistical significance of $0.10 > p > 0.05$ are reported in italics.

It is observable, that the model has less explanatory power than the Strategy method estimation reported in Table 4. Moreover, the impact of information, although almost exactly the same as before, in terms of the value of the estimated coefficient, is in this case much less statistically significant, just breaking the 10% threshold. It might be added that, although not reported here, the key results – statistical significance of the information variable in the strategy method and weak or no statistical significance of the behavioural trust indicator – along with the parameter values themselves, are consistent across a range of specifications.

The implication is then that it is actions rather than words that do the talking. People are more willing to trust when they see that such trust is likely to be reciprocated in fact rather than being prepared to put their fate in the hands of those they believe to act more 'fairly'. Therefore, self-reported measures of social capital are not only biased indicators of trusting behaviour, *but they are also inefficient signals of trusting behaviour*.

4. Conclusions

The research hypothesis which has been put forward in the present study is that there is a strategic component in the definition of social capital that the present (attitudinal and behavioural) measurement methodologies do not take into account thus producing highly biased evalutions of the non economic sources of economic development.

We have assessed the magnitude of such bias by conducting experiments in Italian Universities, along the research lines of Glaeser *et al.,* 2000. In line with preivous research we find a weak effect of ex ante measures of trust in determining behaviour. Going further we find that players adapt their behaviour much more to informaiton on the *ex post* trustworthiness of co-respondents than to information on their *ex ante* trustworthiness.

References

Alesina A., La Ferrara, E., (2000) "Participation in Heterogeneous Communities", *Quarterly Journal of Economics* **45**, 847-904.

Alesina A., La Ferrara, E., (2002) "Who Trust others?" *Journal of Public Economics*, **85**, 207-234.

Barr A., M Lindelow., J. Garcia-Montalvo, P. Serneels (2005), "Strategy Choice and Cognitive Ability in Field Experiments", GPRG – WPS - 034.

Berg J., Dickhaut J., McCabe K., (1995) , "Trust, Reciprocity and Social History", *Games and Economic Behaviour* **10**, 122-142.

Burlando R. M., F. Guala (2005), "Heterogeneous Agents in Public Good Experiments", *Experimental Economics*, 8: 35-54.

Coleman J. S., "Foundation of Social Theory", Belknap Press, Cambridge M.A.

Ciriolo E. (2007), "Inequity aversion and trustees' reciprocity in the trust game", *European Journal Political Economy*, article in press.

Fehr E. and K.M. Schmidt (1999), "A Theory of Fairness, Competition, and Cooperation", *Quarterly Journal of Economics*, 114: 816-818.

Fehr E. and K.M. Schmidt (2006), "Experimental Evidence and New Theories", in S-C. Kolm and J.M. Ythier (eds.), *Handbook of the Economics of Giving, Altruism and Reciprocity*, Vol. I, North-Holland, Amsterdam.

Degli Antoni G., (2005), "Le determinanti del Capitale Sociale. Analisi e Verifica Empirica a livello Micro e Macroeconomico", working paper Università di Ferrara.

Glaeser E. L., Laibson D., Scheinkman J. A., Soutter C. L., (2000) "Measuring Trust", *Quarterly Journal of Economics* **65**, 811-846.

Güth, W., S. Huck, W. Mueller (2001) "The relevance of equal split in ultimatum games", *Games and Economic Behaviour*, 37: 161-69.

Knack S., Keefer P., (1997) "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation" *Quarterly Journal of Economics* 112, 1251-1288.

Lazzarini S. G., Madalozzo R., Artes R., De Oliveira Sequeira J. (2005) "Measuring Trust: An Experiment in Brazil", IBMEC working Paper.

Paldam M., Svendsen, G. T., (2000) "An Essay on Social Capital: Looking for the Fire beyond the Smoke", *European Journal Political Economy*, **16**, 339-366.

Putnam R., Leonardi R., Nanetti R., (1993) "Making Democracy Work", Princeton University Press, Princeton NJ.

Putnam R., (1995) "The Case of Missing Social Capital", *mimeo*.

Putnam R., (2000) "Bowling Alone: The Collapse and Revival of American Community" Simon and Schuster, NJ.

Selten R. (1967), "Die Strategiemethode zur erforschung des eingeschränkt rationalen verhaltens in rahmen eimes oligopolexperiments" in Sauerman, H. (ed) Beiträge Zur Experimentallen Wirtschaftsforschung, Tübingen: J.C.B., Mohr (Paul Siebeck).

Van Schaig T., (2002) "Social Capital in the Euoropean Values Surveys", working paper series Tilburg University.