

# Does social capital create trust?

## Evidence from a community of entrepreneurs

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### Abstract

Which kind of social capital fosters the diffusion of development-oriented trust? This paper carries out an empirical investigation into the causal relationships connecting four types of social capital (i.e. *bonding*, *bridging*, *linking*, and *corporate*), and different forms of trust (knowledge-based trust, social trust, trust towards public services and political institutions), in a community of entrepreneurs located in the Italian industrial district of the Tuscia. Our results suggest that the main factors fostering the diffusion of social trust among entrepreneurs are the perception that the local community is a safe place, and the establishment of corporate ties through professional associations. Trust in people is positively and significantly correlated also to higher levels of satisfaction and confidence in public services. Participation in voluntary organizations does not appear to increase trust in people. Rather, we find evidence of the other way round: interpersonal trust seems to encourage civic engagement.

JEL Classification codes: A13, J24, O15, Z13

PsycINFO Classification codes: 2910, 3020, 3040

Keywords: Trust, Social capital, Safety, Professional associations, Entrepreneurship, Corporate ties, Group and Interpersonal Processes, Social Perception and Cognition.

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**Acknowledgements:** I am grateful to Yukako Inamura, Eric M. Uslaner, Joseph Lewandowski, Francisco Herreros and Claudio Cecchi for comments and suggestions. Needless to say, usual disclaimers apply. This work is an outcome of the research project “Social capital in the industrial district of Tuscia” coordinated by the author jointly with Giuseppe Garofalo. Financial support from the University of Tuscia is gratefully acknowledged. Needless to say, usual disclaimers apply. Materials for the study of social capital are available on the *Social Capital Gateway*, web site edited by the author of this article, at the address [www.socialcapitalgateway.org](http://www.socialcapitalgateway.org).

## 1. Introduction

Social capital is one of the most popular and controversial topics in the contemporary debate. Following Putnam, Leonardi and Nanetti's seminal work, most studies define the concept as the features of social life – networks, norms, and trust – that enable participants to act together more effectively to pursue shared objectives (1993). Although such definition is widely accepted in the literature, it implies a range of relevant problems both for theoretical and empirical research. Networks, norms, and trust do not necessarily act in the same way, and the nature of their relationships needs to be carefully assessed every time. First, some kinds of networks can hamper the diffusion of trust and cooperative values, thereby exerting a negative influence on well-being and development. Second, considering trust *as* social capital leads to treat the concept as good and desirable *by definition*, without taking into the proper account its complexity. Trust is in fact an indispensable asset for the economic activity, due to its ability to promote cooperation and to improve the efficiency of markets (Arrow, 1974, Dasgupta, 2000). In the long run, trust has been acknowledged as a factor causing economic growth by the empirical literature (Knack and Keefer, 1999, Zak and Knack, 2001, Dincer and Uslaner, 2007). Hence, if we define (and measure) social capital as trust, any empirical testing will tautologically find that social capital plays a positive role for the economic activity. Moreover, trust must be considered as a multidimensional concept just like social capital. Besides the “social” trust referred to by growth studies, the literature has in fact identified other facets of the concept, each one being connected to certain interpersonal relationships.

Also due to such conceptual ambiguities, both in the social psychology and the economics literature there is a surprising lack of studies addressing the role of social capital's various sub-dimensions (as given by different types of networks) in the accumulation of social trust, with the few exceptions providing partial evidence and sometimes conflicting results.

In this paper, we take trust and social capital separately, providing a definition of social capital as networks of relationships cemented by repeated interactions and shared values, and suggesting that the economic effects of such networks should be assessed in relation to their role in the “socialization” of trust. The complexity of the two concepts is accounted for through the definition of four types of social capital – as shaped by *bonding*, *bridging*, *linking*, and *corporate* networks – and the consideration of different levels of trust – i.e. social trust, knowledge-based trust, trust towards the institutions and trust in public services.

Our empirical analysis carries out an assessment of the relationships connecting trust's and social capital's sub-dimensions. More in particular, we aim to shed light on which type of social capital may enhance the diffusion of “development-oriented” trust. To this purpose, we have collected

micro data on trust and social capital on the field through the submission of a questionnaire to a community of small entrepreneurs and other stakeholders of the Italian industrial district of the Tuscia, located about 60 miles north of Rome.

This case study is of general interest for at least two reasons. First, industrial districts (IDs) are a central feature of the Italian model of development, largely based on the driving force of small and medium enterprises. Starting from Marshall (1886), the related literature has emphasised concepts such as the “industrial atmosphere”, and the long-term socio-economic relationships among local firms, involving trust and a blend of competition and collaboration, to explain the superior economic performance of regions such as the Third Italy, or Silicon Valley in the US (Becattini, 2004, Becattini and Dardi, 2006, Bellandi, 2006). IDs can thus be seen as incubators for the development of those trust-intensive relations which stimulate transactions and growth. Second, this model of development is currently facing a major challenge, since globalization’s processes are posing a threat just to the socio-economic ties that function as the glue holding together IDs (Bertolini and Giovannetti, 2006, Amighini and Rabellotti, 2005, Mariotti et al, 2008).

The econometric strategy is articulated in two stages. First a series of probit analyses is run to explore the effects of different types of networks on “social” or “generalized” trust. Then, the relationships between the forms of social capital and the different types of trust are assessed by means of structural equations models (SEMs).

Our results suggest that, in the Tuscia district, the main factors fostering the diffusion of social trust are the perception that the local community is a safe place, and the establishment of corporate ties through professional associations. Trust in people is positively and significantly correlated also to higher levels of satisfaction and confidence in public services. Participation in voluntary organizations does not appear to increase trust in people. Rather, we find evidence of the other way round: interpersonal trust seems to encourage civic engagement. The correlation between participation and social trust may be created in a self-selection process where people who are already high social trusters are more likely to join and become active in organizations and networks. The contribution of this paper to the literature is threefold. First, we provide an assessment of the role exerted by different types of networks in the accumulation of trust, which is the catalyst sparking off the positive action of social capital on the economy and well-being. Second, we contribute to shedding light on some conceptual ambiguities that have plagued the previous literature. More in particular, the analysis acknowledges the multidimensionality of social capital, addressing the so far quite neglected role of family and corporate ties. Our findings also provide some hints for better understanding the “direction” of the causal nexus connecting trust and civic

participation. Third, we enrich the “traditional” tripartition of the forms of social capital by introducing a new category shaped by corporate ties.

The outline of the paper is as follows: the next two sections introduce the concepts of trust and social capital through a review of the literature. Section four presents some hypotheses on the determinants of trust. Sections five and six present the results of the probit and the SEM analyses. The survey is closed by a discussion of such results and some concluding remarks.

## **2. Trust and the economic activity**

Although the huge amount of research on trust, a concise and universally accepted definition of the concept remains elusive. As a consequence, the term trust is used in a variety of distinct, and not always compatible, ways (Kramer, 1999).

Influential definitions consider trust as a general attitude or expectancy about other people and the social system in which they are embedded (Garfinkel, 1963, Luhmann, 1988, Hardin, 2001). In other words, trust is people’s belief in others’ good intentions, that is, others’ intentions not to harm them, to respect their rights, and to carry out obligations (Igarashi et al, 2008). According to Schul et al (2008), “A state of trust is associated with a feeling of safety. The environment is as it normally is and things really are as they appear to be. Thus, individuals see no reason to refrain from doing what they routinely do. Ordinarily, when the stakes are not high, trust is the default state, so that without thinking much about the other, individuals feel the environment is normal and there is no need to worry” (2008, 1293). Distrust, in contrast, is associated with the concealment of truth and a lack of transparency. It is a state of uncertainty, but not the kind associated with outcomes that are inherently probabilistic, as in playing a slot machine or roulette. Rather, distrust reflects the receiver’s perception of the source’s intention (to mislead) and, potentially, the receiver’s theory about the truth (Schul et al, 2007).

Given such definitions, it is easy to state that the diffusion of trust is an indispensable lubricant for the economic activity: if individuals feel safe and act routinely, their behavior is more easily foreseeable, thereby causing a reduction in monitoring costs which stimulates transactions. In the words of Arrow: “Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence” (1972, 357). Most studies show that enterprises devote an ever more share of their financial resources to activities which are not directly related to their production processes. Nurturing a cooperative climate inside the workforce and building trustworthy relationships both inside the firm and with external partners generally constitute a key task for management. If human interactions within the

workforce are trustworthy and relaxed, employees are more inclined to do their best at work, and are more likely to sanction shirking behaviours through peer monitoring. Salamon and Robinson (2008) show that, when employees in an organization perceive they are trusted by management, increases in the presence of responsibility norms, as well as in the sales performance and customer service performance of the organization, are observed in a sample of 88 retail stores in Canada. In a study on the Italian regions, Sabatini (2008a) finds that operating in a social environment rich of bridging and linking ties significantly raises labour productivity in small and medium enterprises. The results from a study of 545 managers in China carried out by Zhang et al (2008) show that trustworthy and supportive relationships between employees and managers nurture workers' trust in the organization, with beneficial effects in terms of effort and productivity.

### **3. Trust: definition and measurement**

While the importance of trust is commonly accepted by the literature, the definition of which kind of trust works as a lubricant for the economic activity is still open to question. In one of the most influential economic studies on trust, Knack and Keefer (1997) state that "Trust-sensitive transactions include those in which goods and services are provided in exchange for future payment, employment contracts in which managers rely on employees to accomplish tasks that are difficult to monitor, and investments and savings decisions that rely on assurances by governments or banks that they will not expropriate these assets" (1997, 1252). Even if the authors do not draw any classification of the concept, it is possible to argue that their notion of trust involves people who never met before or, in a simple word, *strangers*. Trust towards strangers is often referred to as "generalized trust". Uslaner (2002) prefers to call it "moralistic trust", in that it does not depend upon information and experience. Instead, "It is a commandment to treat people *as if* they were trustworthy ... Moralistic trust is the belief that others share your fundamental moral values and therefore should be treated as you would wish to be treated by them ... Moralistic trust is not a prediction of how others will behave. Even if other people turn out not to be trustworthy, moral values require *you* to behave *as if they could be trusted*" (Uslaner, 2002, 19). The "moral" roots of trust are acknowledged also in the social psychology literature: according to Yamagishi (1998), generalized trust is a general belief in human benevolence: that is, it suggests that trustworthiness is an aspect of human nature.

Still, theoretical studies in economics generally account for a kind of trust which is based on information and experience. According to Dasgupta (2000), we trust people only when we know something about their disposition, their available options, their ability and so forth, so we think they

are trustworthy and expect they will choose to behave themselves. Burt and Knez (1996) define trust as anticipated cooperation, arguing that the issue is not moral.

This notion of trust is referred to by Yamagishi and Yamagishi (1994) with the term “knowledge-based” trust, which is obviously of crucial importance for the economic activity. Still, this is not the kind of trust that can benefit the economy “as a whole”, for the simple reason that it is based on the knowledge we accumulate through experience: in large societies, it is impossible to interact with every people, so the inference on their behaviour cannot be based on knowledge or experience. According to Uslaner (2001), “The difference between generalized and particularized trust is similar to the distinction Putnam (1993, 93) drew between “bonding” and “bridging” social capital. We bond with our friends and people like ourselves. We form bridges with people who are different from ourselves. While Putnam argued that both can lead to trust, he held that bridging organizations would produce much more trust”.

The aim of our empirical analysis is just to shed light on the relationship between the different dimensions of social capital (i.e. the bonding and the bridging cited above, plus two more types shaped by linking and corporate ties) and the various forms of trust. More in particular, we will test whether, and on which bases, social participation could lead us to trust unknown people *as if* we had previously encountered them.

Our basic idea is that, in some cases, being part of a network can make us feel more confident both in the good faith of “others” and in our ability not to be injured by the others’ possible free-riding behaviours. In other terms, a network member may feel stronger and not defenceless towards the uncertainty related to social interactions.

### *3.1 Generalized or social trust*

Generalized trust has been measured through the famous question developed by Rosenberg (1956): “Generally speaking, would you say that most people can be trusted or that you can be too careful in dealing with people?”. Possible responses to this question are: “Most people can be trusted”, “Can’t be too careful”, or “Don’t know”. In a second moment, we asked interviewees to assign a score to the statement “people can be trusted”, the score ranging from 1 to 5, with the aim to build a social trust indicator to be used within the SEM analysis<sup>1</sup>.

It is noteworthy that trust measured through surveys is a “micro” and “cognitive” concept, in that it represents the individuals’ perception of their social environment, related to the particular position that interviewed people occupy in the social structure. The advisability to aggregate the individuals’

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<sup>1</sup> The relative question is: to what extent do you agree with the statement “people can be trusted”, where possible responses are not at all, very little, so-so, quite a lot, very much.

responses to create a measure of “macro” or “social” trust has been questioned by some authors. Aggregated data may lose the linkage with the social and historical circumstances in which trust and social capital are located. As pointed out by Foley and Edwards (1999), empirical studies based on cross-country comparisons of trust may be a *cul de sac*, because of their inability to address macro outcomes, in view of the absence of the broader context within which attitudes are created and determined. Fine (2001) argues that “if social capital is context-dependent – and context is highly variable by how, when and whom, then any conclusion are themselves illegitimate as the basis for generalisation to other circumstances” (Fine 2001, 105). In this paper data have been used only at the micro level, without carrying out any form of aggregation.

### 3.2 Trust towards the institutions

The empirical analysis accounts for two types of trust towards public institutions:

- a. trust towards political institutions, as measured through the question: “I am going to name a number of organizations. For each one, could you tell me whether do you feel confidence in them? Is it a great deal of confidence, quite a lot of confidence, not very much confidence or none at all?”. The relative indicator is the arithmetic mean of the scores given by respondents to the following items: the national government, the parliament, politicians in general, and political parties.
- b. Trust in public services. This is computed through the same question reported above as the arithmetic mean of the scores given by interviewees to the court system, bureaucrats of the public administration, the public health care system, and public transports<sup>2</sup>. This variable has been accounted for with the purpose to test Kumlin and Rothstein’s (2005) claims on the role of the welfare state in the socialization of trust. According to the authors, citizens in developed welfare states frequently come into direct personal contact with many different types of public agencies and services. Social insurance, public healthcare, and public transports are but a few examples of this. In many cases, such institutions can be pervasive factors in people’s daily lives. So, “It is reasonable to suspect that people’s views of the society around them and of their fellow human beings are shaped to a great extent through their contacts with such public state institutions” (Kumlin and Rothstein, 2005, 349). The authors’ empirical analysis, based on Swedish survey data, suggests that contacts with universal welfare-state institutions and efficient public services tend to increase social trust. In this paper, we address the possible relationship between the confidence and satisfaction in public services and the diffusion of social trust.

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<sup>2</sup> In the calculation of both the indicators of trust towards the institutions, scores have been conveniently recoded.

### 3.3 Knowledge-based trust

Knowledge-based trust is given by the confidence in well-known people and in people holding a similar status. This variable is computed as the arithmetic mean of the scores assigned by respondents to the trustworthiness of the following people: family members, friends, and people in the neighbourhood. Knowledge-based trust can be considered as one of the transmission channels promoting the socialization of trust outside the boundaries of closed networks: the trustworthiness of people we meet regularly could be a crucial factor shaping our confidence in the whole social environment surrounding us. In this sense, bonding social capital, or the ties we form with people like ourselves, may indirectly influence social trust through the accumulation of knowledge-based trust.

## 4 Social capital: definition and measurement

One of the most popular definitions of social capital refers to the set of “features of social life – networks, norms, and trust – that enable participants to act together more effectively to pursue shared objectives” (Putnam, 1995). In this paper, trust and social capital are separately taken, and the economic role of the latter is assessed just in relation to its ability to promote the “socialization” of trust. Of course, from a lexical point of view, it is possible to attribute the “social capital” label to every aspect of the economy’s social fabric providing a favourable environment for production and well-being. However, such kind of definition poses a “logic” problem: if social capital is everything can make agents cooperate or markets work better, then any empirical analysis will find that social capital causes cooperation among agents and improves the efficiency of markets. This approach “sterilizes” the empirical research on social capital, making it unable to foster the explanatory power of studies addressing the socio-cultural factors of growth<sup>3</sup>.

In our empirical analysis, social capital is identified with networks of relationships cemented by repeated interactions and shared values. However, both everyday-life experience and previous empirical studies suggest that social networks may play a double-sided role in economic development and well-being (Knack and Keefer, 1997, Coates and Heckelman, 2003, Sabatini, 2008b). On the one side, they are a fertile ground for nurturing trust and shared values, which reduce monitoring costs and facilitate transactions. Repeated interactions among group members

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<sup>3</sup> This statement applies not only to studies defining social capital *as* trust. Most empirical studies measure social capital through “indirect” indicators, not representing the social capital’s key components already identified by the theoretical literature (commonly social networks, trust and social norms). Such indicators – e.g. crime rates, teenage pregnancy, blood donation, participation rates in tertiary education – are quite popular in the empirical research, but their use has led to considerable confusion about what social capital *is*, as distinct from its *outcomes*, and what the relationship between social capital and its outcomes *may be*. Research reliant upon an outcome of social capital as an indicator of it will necessarily find social capital to be related to that outcome. Social capital becomes tautologically present whenever an outcome is observed (Portes, 1998, Durlauf, 1999, Fine, 2001).



foster the diffusion of information raising reputations' relevance. The higher opportunity cost of free-riding in prisoners' dilemma kind of situations makes the agents' behaviour more foreseeable causing an overall reduction of uncertainty. Therefore, an increase in trust-based relations may reduce the average cost of transactions, just as an increase in physical capital reduces the average cost of production. However, networks can work in the opposite direction as well: members of a group may use their ties as a means for the pursuit of narrow sectarian interests, and organizations may lobby against the interest of other groups. The distinction between bonding, bridging, linking, and corporate social capital reflects the different roles that networks may play in shaping the economic development of a society.

#### *4.1 Bonding social capital*

The term "bonding" holds a negative connotation and generally refers to small circles of homogeneous people that do not cooperate with other outside the boundaries of the group. The literature has often focused on the family as a potential form of bonding social capital. In his pioneer study, Banfield (1958) partly attributed the backwardness of Southern Italy to the inability of citizens "to act together for their common good or, indeed, for any end transcending the immediate, material interest of the nuclear family" (1958, 10). According to the author, any family activity was oriented towards the protection and consolidation of the isolated family unit. "Moral" activity (i.e. any action informed by moral norms of trust and reciprocity) was seen as limited to family insiders, with outsiders only being significant as a potential resource to exploit for the family. Applying Banfield's claims to the purposes of this paper, we can argue that strong family ties may act as a factor hampering the diffusion of social or generalized trust. In our analysis, we have measured bonding social capital as the arithmetic mean of the frequency of the encounters with a range of familiars, as measured through the question "How many times in the past 12 months did you meet your familiars?", where possible responses are "everyday", "once or more a week", "once or more a month", "once or more a year", "never", and "I have not living familiars", with reference to the interviewee's parents, brothers, and children<sup>4</sup>.

#### *4.2 Bridging social capital*

Bridging social capital is given by horizontal ties shaping heterogeneous groups of people with different backgrounds. The term bridging refers to the ability of such networks to create "bridges"

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<sup>4</sup> Responses have been conveniently recoded. We chose indicators of the intensity of relationships, instead of accounting for alternative measures, with the purpose to focus on a "structural", not cognitive, and more reliable measure of family ties. Of course, the choice of indicators for the measurement of intangible phenomena is always questionable. For extensive reviews on social capital's measurement problems, see for example Durlauf and Fafchamps (2006) and Sabatini (2007).

connecting sectors of society that, otherwise, would have never come into contact. The common claim is that such relationships have positive effects on the diffusion of information and trust, thus fostering transactions and economic growth. In this paper, bridging social capital is measured by the frequency of the encounters with friends, as captured through the question “How many times in the past 12 months did you meet your friends?”. The basic idea is that bridging social capital can be accumulated not only through individual investment decisions, but also as an accidental by-product of the simultaneous production and consumption of relational goods. It is worth noting that the relationship between (production and consumption of) relational goods and the accumulation of social capital has a double direction. On the one side, a higher social capital increases the returns to the time spent in social participation. For instance, it is easier and more rewarding going out with friends in a context that offers many options for socially enjoyed leisure. On the other side, a higher social participation brings about social capital accumulation as a by-product. According to Antoci, Sacco and Vanin (2007), trust and empathy may be reinforced and generalized through social interactions.

#### *4.3 Linking social capital*

The term linking social capital describes ties connecting individuals, or the groups they belong to, to people or groups in position of political or financial power. For example, civil society organizations allow citizens to come into contact with the institutions to carry out advocacy activities through collective action. This kind of networks is critical for leveraging resources, ideas and information beyond normal community linkages and, therefore, may play a significant role for social well-being. However, the role of organizations in development is widely debated in the literature. Economic studies suggest that much depends on the context where NGOs’ activities take place. Knack and Keefer (1997) sustain that cooperation and solidarity connected with the presence of voluntary associations work better at the level of smaller communities. In the authors’ words: “If the economic goals of a group conflict with those of other groups or of unorganized interests, the overall effect of group memberships and activities on economic performance could be negative ... Although the ability of groups to articulate their interests is likely to be an important restraint on government, it also provides groups a way to capture private benefits at the expense of society” (1997, 1271).

Networks related to civic engagement have been historically measured through the density of voluntary organizations. However, there are some reasons to doubt the efficacy of such indicator: besides a range of problems like self-selection and homogeneity among group members, it is worth pointing out that face-to-face interactions inside voluntary organizations could be modest and not

necessarily imply the sharing of information and values. This is particularly true in advanced economies, where participation in voluntary organizations is often limited to an annual subscription related to the payment of a membership fee. This kind of civic participation may have small spillovers effects, scarcely contributing to the diffusion of trust. In the light of these arguments, following a path traced in Sabatini (2008c), we measure civic participation through the density of voluntary organizations (i.e. the average number of organizations in which interviewees are involved, or the so-called “Putnam’s instrument”), and the degree of members’ involvement in the associational life. The latter is captured through the frequency of meetings<sup>5</sup>, the performance of unpaid work as a volunteer for an association<sup>6</sup>, the making of payments for funding associational activities<sup>7</sup>, and the willingness to give concrete help to strangers in need in the context of volunteering activities, considered as the most demanding way of participation<sup>8</sup>. The synthetic indicator of linking social capital is computed as the weighted mean of the basic variables, where weights reflect the level of relational involvement.

#### *4.4 Corporate social capital*

As argued by Knack and Keefer (1997), organizations can behave pro-socially as well as anti-socially. Volunteer organizations, ecological, human rights and peace associations are generally considered as a form of positive social capital fostering the socialization of trust. However, other kinds of formal networks may work in the opposite direction. Olson (1965) was the first to stress that professional associations, labour unions and political parties pursue the special interests of their members thereby generating social costs and reducing cohesion. In this paper, we label this kind of associations as “corporate social capital”, measured by the weighted mean of four variables capturing a) the density of professional organizations protecting entrepreneurs’ interests and b) the degree of members’ involvement in the associational life<sup>9</sup>.

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<sup>5</sup> The frequency of meetings is measured through the question: “In the last year, have you taken an active part in gatherings of any of the following groups or associations: associations/groups involved in social, environmental, religious, cultural, sports or recreational, or voluntary activities? With which frequency?”

<sup>6</sup> The relative question is: “In the last year, have you performed unpaid work for any of the following groups of associations: associations/groups involved in social, environmental, religious, cultural, sports or recreational, or voluntary activities?”

<sup>7</sup> The relative question is: “In the last year, did you make payments to fund any of the following groups of associations: associations/groups involved in social, environmental, religious, cultural, sports or recreational, or voluntary activities?”

<sup>8</sup> The relative question is: “In the last year, did you give some form of concrete help to strangers in need, in the context of your associational activity?”, where the people in need cannot be relatives, friends, colleagues and other known people.

<sup>9</sup> The relative items in the questionnaire are as follows: “Are you a member of a professional association?”, “How many?”, “In the last year, have you taken an active part in gatherings of a professional association? With which frequency?”, “In the last year, did you make payments to fund the activity of a professional association?”

## 5. Methodological issues

The questionnaire has been submitted in spring 2007 to a group of 82 people through customized interviews. Participants have been selected following qualitative criteria, and do not constitute a representative sample of the entire population. Interviewees are stakeholders belonging to a network of small and medium enterprises (SMEs) of the Italian industrial district of the Tuscia, located about 60 miles north of Rome. This case study is of general interest for various reasons. First, industrial districts (IDs) are a central feature of the Italian model of development, largely based on the driving force of SMEs. The extent to which such stakeholders feel confident about the social and economic environment is a crucial factor of local development (or underdevelopment). Second, networks of entrepreneurs running small business are unanimously considered as the glue holding together industrial districts. Finally, the IDs-based model of development is currently facing a major challenge, since globalization's processes are posing a threat just to those socio-economic ties which shape entrepreneurial networks. The group is composed by entrepreneurs and other professionals involved in the network's activities. More in particular, 49% of the group are entrepreneurs (sole proprietors, owners or members of family businesses, or active shareholders), 27% are self-employed professionals strictly cooperating with entrepreneurs, and 24% are managers or headmasters of the enterprises under consideration. The empirical analysis is structured in two stages. The possible effect of networks on generalized trust is preliminarily assessed through a simple probit model in section 6. Hints from the analysis are then used as the basis of a more in-depth investigation into the relationships between social capital's and trust's various dimensions carried out by means of structural equations models (SEMs) in section 7. Results from the empirical analyses carried out in sections 6 and 7 are discussed in the concluding remarks of the article (section 8).

## 6. Probit analysis

In this section, we carry out a first exploration of the possible determinants of social trust by means of a probit analysis. The dependent variable  $Y$  is the probability to trust strangers (as captured through the "Rosenberg question" described in section 3), which is equal to 1 if the interviewee thinks that "most people can be trusted", and 0 if he thinks that "you can't be too careful" in dealing with people. Thus a negative coefficient implies that including this independent variable reduces the probability to trust others. The independent variables are bonding social capital  $x_1$ , measured by the indicator described in section 4.1, bridging social capital  $x_2$  (section 4.2), linking social capital  $x_3$  (section 4.3), corporate social capital  $x_4$  (section 4.4), knowledge-based trust  $x_5$  (section 3.3), trust in

public services  $x_6$  (section 3.2, point b), trust towards political institutions  $x_7$  (section 3.2, point a). To these dimensions of social capital and trust, we added a further explanatory variable  $x_8$  given by “subjective safety”. The concept of “safety” can have many different meanings. The *Concise Oxford Dictionary* defines it as “freedom from danger and risks”. Here we define safety as the subjective perception that the local community is a safe place, where, for example, there is no fear of walking alone after dusk. The indicator is computed as the arithmetic mean of the scores assigned by respondents to a series of statements on the local community<sup>10</sup>. The probit model is as follows:

$$P(Y = 1|X = x) = \Phi(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8) \quad (1)$$

Parameters estimates are presented in table 1:

Table 1. Parameters estimates and goodness of fit chi-square for model (1)		
Variable	Regression coefficient	Coeff. / St. error
Bonding social capital	-0,0939570	-0,8773
Bridging social capital	0,0544135	0,2190
Linking social capital	0,485418	2,320
Corporate social capital	0,0977526	0,5066
Knowledge-based trust	0,252731	0,4899
Trust in political institutions	0,199306	0,3252
Trust in public services	0,601348	0,8478
Safety	2,95614	2,662
Intercept	-3,37272	-2,637
Goodness-of-fit chi square = 27,7927; DF = 8; p-value = 0,000515		
Log-likelihood = -36,8378		

Subjective safety and linking social capital are the only variables exhibiting a positive and significant relationship with social trust, while the coefficients related to all the other explanatory variables are not significant. The model predicts respondents’ attitude to trust others with a satisfactory accuracy of 79.7 percent. The p-value indicates the probability of obtaining the

<sup>10</sup> Statements are: “I feel safe walking down my street after dark”, “In my local community I feel at home”, “My local community is renowned as a safe place”, “If I drop my purse or wallet in the neighbourhood, someone will see it and return it to me”.

goodness-of-fit chi-square statistic (27.79) if there is no effect of the independent variables, taken together, on the dependent variable. In this case, the model is statistically significant because the chi-square statistic is higher than the critical value with 8 degrees of freedom ( $27.79 > 13.36$ ), and the p-value is less than 0.000, so the null hypothesis is rejected.

### 6.1 Model refinements and robustness checks

The low significance of  $\beta_2$ ,  $\beta_4$ ,  $\beta_5$ , and  $\beta_6$  suggests to test the hypothesis that  $x_2$ ,  $x_4$ ,  $x_5$ , and  $x_6$ , taken together, do not affect trust in people. The null hypothesis is  $H_0 : \beta_2 = \beta_4 = \beta_5 = \beta_6 = 0$  and the new model is:

$$P(Y = 1|X = x) = \Phi(\beta_0 + \beta_1 x_1 + \beta_3 x_3 + \beta_7 x_7 + \beta_8 x_8) \quad (2)$$

The likelihood chi-square test statistic is calculated as  $2[l(\hat{\beta}) - l(\beta_0)]$ , where  $l(\beta_0)$  is the log-likelihood under the null hypothesis (-37,2944) and  $l(\hat{\beta})$  is the log-likelihood of model (1). Its value is equal to 0,913264, which is lower than the critical value of the chi-square with four degrees of freedom at 0.100 level of significance (7.78), so the null hypothesis is not rejected and bridging and corporate social capital ( $x_2$  and  $x_4$ ), knowledge-based trust  $x_5$  and trust towards political institutions  $x_6$  can be excluded from the model. Model (2) is statistically significant because the chi-square statistic is higher than the critical value for 4 degrees of freedom ( $27,27 > 7.78$ ), and the p-value is less than 0.000, so the null hypothesis that all parameters are equal to zero is rejected. The probit equation predicts respondents' attitude to trust others with a satisfactory accuracy of 75,0 percent. Parameters estimates for model (2) are reported in table 2.

Table 2. Parameters estimates and goodness of fit chi-square for model (2)		
Variable	Regression coefficient	Coeff. / St. error
Bonding social capital	-0,0863525	-0,8470
Linking social capital	0,525065	2,665
Trust in public services	0,475110	0,7862
Safety	3,07526	2,867
Intercept	-3,02953	-3,384
Goodness-of-fit chi square = 27,2713; DF = 4; p-value = 0,000018		
Log-likelihood = -37,5134		

The model's results suggest that people feeling that the surrounding environment is safe exhibit a higher probability to be high-trusters. Subjective safety is the variable exerting the highest positive and significant influence on generalized trust. Linking social capital also positively and significantly correlates with trust, but to a weaker extent. The model is robust to the addition of a series of control variables, like the educational qualification of respondents, their age, work status and firm size.

## 7. SEM analysis

Goldberger defines a SEM as “A stochastic model where each equation represents a causal linkage, rather than a simple empirical association” (Goldberger, 1972, 979). SEMs are composed by regression equations, which are included in the model only so far as it is possible to interpret them as causal relationships, theoretically justifiable and not falsified by data (Garson, 2008). While designing the structural model, the researcher puts forward some hypotheses on the linkages connecting the phenomena under consideration. The consistency of such hypotheses with the pattern of variances and covariances in the data is then assessed through the goodness-of-fit tests. In practice, this approach combines exploratory and confirmatory purposes: first, a model is theorized and tested using SEM procedures. If it is found to be deficient, an alternative model is then tested based on changes suggested by SEM modification indexes. However, it must be stated that, as other unexamined models may fit the data as well or better, an accepted model should be considered only as a *not-disconfirmed* model. Thus, even if the use of SEMs certainly allows us to make a further step towards a better understanding of the multifaceted effects of social capital, the problem of causality still remains open to question, and causal ambiguities are not solved. A peculiarity of SEMs is the possibility to account for other parameters in addition to structural  $\beta$  linking endogenous and exogenous variables. More precisely, it is possible to account for variances and covariances among errors  $\varepsilon$ , which play a decisive role in defining the model presented in this paper. The matrix  $\Psi$  of covariances among errors  $\zeta$  has been carefully defined in each of the models that have been tested within the analysis, with the aim to account for variables which, although not explicitly considered within the model, may play a role in the real scenario described by observed data.

Let  $\eta_1$  be linking social capital,  $\eta_2$  knowledge-based trust,  $\eta_3$  trust in public services,  $\eta_4$  generalized or social trust,  $\eta_5$  subjective safety,  $\zeta_1$  bonding social capital,  $\zeta_2$  corporate social capital,  $\zeta_3$  bridging social capital.  $\zeta_i$ , with  $i = (1, \dots, 5)$  are the errors related to endogenous variables. In the model with

the best goodness of fit, linking social capital is influenced by social trust, subjective safety, and other unknown factors affecting also confidence in public services and generalized trust:

$$\eta_1 = \beta_{41}\eta_4 + \beta_{51}\eta_5 + \zeta_1 \quad (3)$$

Knowledge-based trust is mostly affected by bonding and bridging social capital:

$$\eta_2 = \gamma_{21}\xi_1 + \gamma_{23}\xi_3 + \zeta_2 \quad (4)$$

Trust in public services is affected by linking and bridging social capital and by other variables influencing also linking social capital:

$$\eta_3 = \beta_{31}\eta_1 + \gamma_{33}\xi_3 + \zeta_3 \quad (5)$$

Social trust is affected by linking, bridging, and corporate social capital, confidence in public services, subjective safety, and other unknown factors influencing also civic engagement:

$$\eta_4 = \beta_{41}\eta_1 + \beta_{43}\eta_3 + \beta_{45}\eta_5 + \gamma_{42}\xi_2 + \gamma_{43}\xi_3 + \zeta_4 \quad (6)$$

Subjective safety is influenced by linking social capital:

$$\eta_5 = \beta_{51}\eta_1 + \zeta_5 \quad (7)$$

Errors  $\zeta_3$  and  $\zeta_1$ , and  $\zeta_4$  and  $\zeta_1$  are correlated. This implies the need to estimate, besides parameters  $\beta$ , also covariances  $\varphi$  between errors. In the model, other assumptions are carried out to the seek of simplicity: independent variables and errors are not correlated in the same equation:  $E(\xi\xi') = 0$ ; structural equations are not redundant; this condition means that  $\eta$ -equations are independent between them, and each endogenous variable  $\eta$  can not be a linear combination of the others; finally, we have supposed that all variables have been measured without errors, therefore there is a perfect identity between latent and observed variables. This allows us to omit measurement models for endogenous and exogenous variables and to focus exclusively on the structural equations model and on the explanation of the causal relationships linking variables. Combining equations from (3) to (7) with the error covariance matrix, we can write the model as:

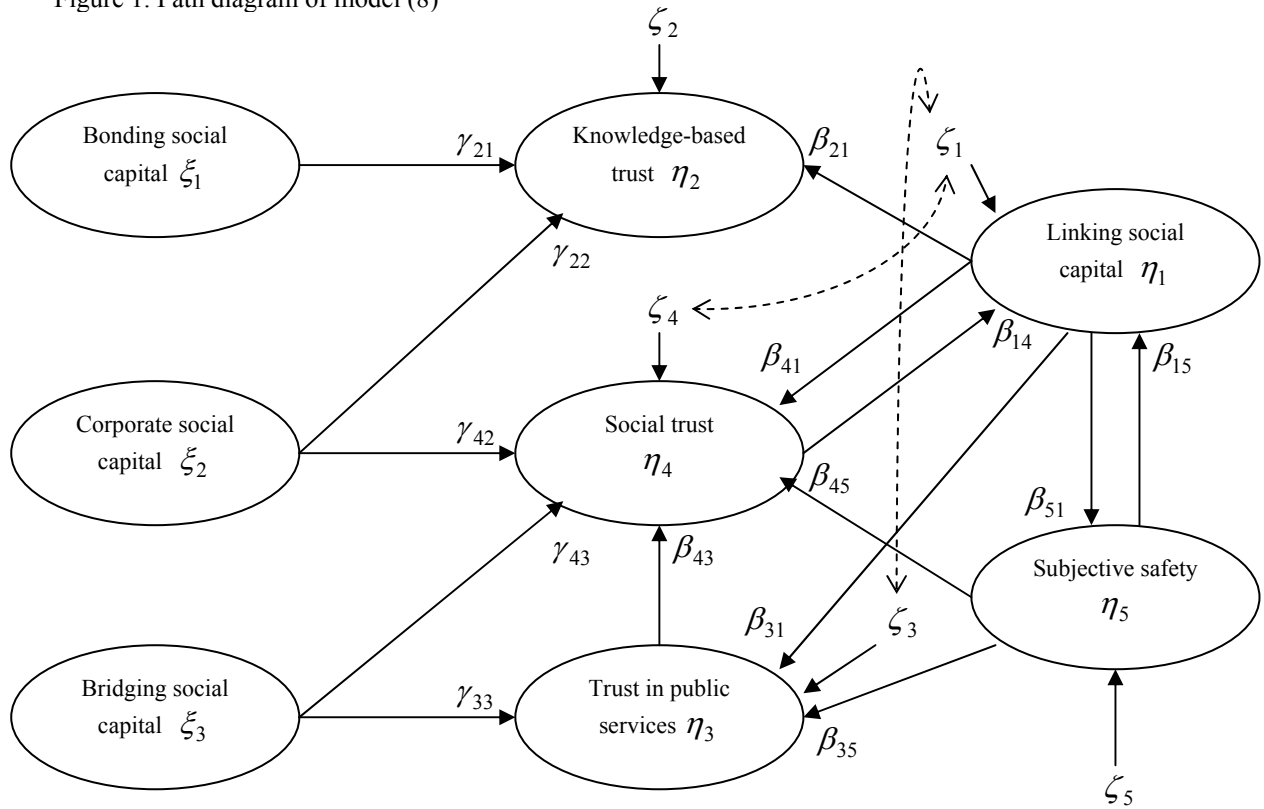


$$\begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 & \beta_{14} & \beta_{15} \\ \beta_{21} & 0 & 0 & 0 & 0 \\ \beta_{31} & 0 & 0 & 0 & 0 \\ \beta_{41} & 0 & \beta_{43} & 0 & \beta_{45} \\ \beta_{51} & 0 & 0 & 0 & 0 \end{bmatrix} \cdot \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \end{bmatrix} + \begin{bmatrix} 0 & 0 & 0 \\ \gamma_{21} & \gamma_{22} & 0 \\ 0 & 0 & \gamma_{33} \\ 0 & \gamma_{42} & \gamma_{43} \\ 0 & 0 & 0 \end{bmatrix} \cdot [\xi_1 \quad \xi_2 \quad \xi_3] \begin{bmatrix} 1 & & & & \\ 0 & 1 & & & \\ \psi_{31} & 0 & 1 & & \\ \psi_{41} & 0 & 0 & 1 & \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} \quad (8)$$

It is noteworthy that the absence of a variable from the model can arise in two ways: a) a relationship was originally assumed to be insignificant for conceptual reasons; b) or a relationship was hypothesized to be potentially significant but was empirically found not to be. For example, variables  $\xi_1$  and  $\xi_2$  (bonding and bridging social capital) were allowed to enter in equation (7) describing subjective safety. They do not appear in the model because they were statistically insignificant when allowed to enter, not because they were excluded in the first place.

Figure 1 provides a graphic representation of the model. The graphic representation of SEMs follows the path analysis symbology. It reports the variables, their errors and the linkages connecting variables. Such connections are represented both graphically, by arrows, and numerically, by regression coefficients. Latent variables are inscribed in an ellipse, while observed variables in a rectangle. In model (8) all variables are inscribed in ellipses, due to the hypothesis that variables have been measured without errors. The causal nexus between two variables is represented by a straight arrow moving from the independent variable to the dependent variable. The association (covariation) between two variables is represented by a bidirectional curved arrow connecting them. The absence of arrows means the hypothesis of the absence of linkages between variables, or the statistical insignificance of such linkages.

Figure 1. Path diagram of model (8)



The model excellently fits the data and all the goodness of fit indexes exhibit satisfactory values (goodness of fit measures are briefly described in Annex A). Parameters estimates are presented in Table 3, where blank cells represent coefficients constrained to be zero.

The results suggest that social trust is positively and significantly affected by subjective safety and, to a quite lesser extent, by confidence in public services and corporate social capital. According to the SEM analysis, there is a negative significant association between trust in people and civic engagement through voluntary organizations. Associational participation seems to be negatively influenced by subjective safety, but is significantly reinforced by social trust. Such correlation suggests the possibility that high-trusters are more inclined to civic engagement and tend to self-select into voluntary organizations. Corporate ties positively and significantly affect trust towards strangers and, to a higher extent, knowledge-based trust among entrepreneurs.

Table 3. Maximum likelihood estimates for model (8)

	Linking social capital	Knowledge based trust	Trust in public services	Social trust	Subjective safety	Bonding social capital	Corporate social capital	Bridging social capital
Linking social capital				2.79 (0.24) 11.74	-2.26 0.22 -10.46			
Knowledge- based trust						0.19 (0.11) 1.67	0.31 (0.11) 2.73	
Trust in public services	-0.24 (0.17) -1.36							-0.39 (0.12) -3.41
Social trust	-0.61 (0.11) -5.38		0.48 (0.18) 2.59		0.70 (0.21) 3.33		0.25 (0.11) 2.24	0.03 (0.13) 0.26
Subjective safety	0.31 (0.22) 1.41							

These results are robust to different model specifications. First, in the process of refining the theoretical model and testing its consistency with the data, we have estimated some refinements resulting from the inclusion of additional parameters, accounting for the possible existence of further linkages connecting the variables under consideration. Second, we tested the model again after the inclusion of the same control variables adopted within the probit analysis in section 6, i.e. educational qualification, age, work status and firm size. In any of these cases, the sign, the size, and the significance of the parameters' estimates presented in Table 3 changed significantly, nor the overall goodness of fit of the model worsened.

The findings from the SEM analysis partly contradict the results of the probit analysis performed in section 6, which suggested the possibility of a positive influence of linking social capital on social trust. In order to test the self-selection hypothesis advanced in this section, we run a new probit analysis where linking social capital – as measured by a very simple indicator capturing membership in associations – is the dependent variable, and generalized trust is moved to the second member. Differently from section 6, generalized trust is now measured by the score assigned to the statement “most people can be trusted” (see section 3.1). Membership is a binary variable, which is equal to one when the respondent is member of at least one association, and 0 if the interviewee does not belong to any organization. The probit equation is as follows:

$$P(Y = 1|X = x) = \Phi(\beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \beta_6x_6 + \beta_7x_7 + \beta_8x_8) \quad (9)$$

with  $x_i$  ( $i = 1, \dots, 8$ ) having the same meaning as in section 6 with the only exception of  $x_3$ , now representing generalized trust. Parameters' estimates are presented in Table 4:

Table 4. Parameters estimates and goodness of fit chi-square for model (9)		
Variable	Regression coefficient	Coeff. / St. error
Bonding social capital	-0,00285917	-0,02569
Bridging social capital	0,730843	2,547
Social trust	0,822198	2,426
Corporate social capital	0,493714	2,319
Knowledge-based trust	-0,825483	-1,402
Trust in political institutions	0,175118	0,2664
Trust in public services	1,11666	1,368
Safety	-1,30771	-0,5570
Intercept	-4,57651	-2,973
Goodness-of-fit chi square = 31,9419; DF = 8; p-value = 0,000095		
Log-likelihood = -33,3384		

Results from the SEM analysis are confirmed: social trust positively and significantly affects linking social capital, thereby supporting the self-selection hypothesis. An interesting additional finding is given by the positive and significant influence of bridging and corporate social capital on social participation<sup>11</sup>. Due to the insignificance of  $\beta_1, \beta_5, \beta_6, \beta_7, \beta_8$ , we have tested the null hypothesis  $H_0 : \beta_1 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$ . The new equation is:

$$P(Y = 1|X = x) = \Phi(\beta_0 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4) \quad (10)$$

<sup>11</sup> The model predicts membership in associations with a satisfactory accuracy of 75.9 percent. The model is statistically significant because the chi-square statistic is higher than the critical value with 8 degrees of freedom (31.94 > 13.36), and the p-value is less than 0.000, so the null hypothesis that all parameters are equal to zero is rejected.

As it is reported in Table 5, results are confirmed<sup>12</sup>.

Table 5. Parameters estimates and goodness of fit chi-square for model (10)		
Variable	Regression coefficient	Coeff. / St. error
Social trust	0,583801	3,930
Bridging social capital	0,506589	2,142
Corporate social capital	0,371674	2,057
Intercept	-4,10780	-4,066
Goodness-of-fit chi square = 28,5839; DF = 3; p-value = 0,000003		
Log-likelihood = -36,9288		

## 8. Discussion of results and concluding remarks

The essay has carried out an empirical investigation into the determinants of trust in other people within a community of entrepreneurs running small and medium businesses in the context of an industrial district. The results suggest that the main factors fostering social trust are a sense of safety (i.e. the perception that the local community is a safe place), confidence in public services, and, to a quite lesser extent, corporate ties created through membership in professional associations.

Confidence in public services is knowledge-based, in the sense that it probably reflects respondent's experience about their efficiency. Our empirical analysis suggests that extensive and efficient services may reinforce trust in other people. The transmission mechanism has been already analyzed by Kumlin and Rothstein (2005), who find that contacts with universal welfare-state institutions and efficient public services tend to increase social trust in Sweden. According to the authors, citizens in developed welfare states frequently come into direct personal contact with many different types of public agencies and services. The court system, public healthcare, and public transports are but a few examples of this. In many cases, such institutions can be pervasive factors in people's daily lives. So, "It is reasonable to suspect that people's views of the society around them and of their fellow human beings are shaped to a great extent through their contacts with such

<sup>12</sup> The likelihood chi-square test statistic's value is 4,71957, which is lower than the critical value of the chi-square with 5 degrees of freedom at 0.100 level of significance (9.24), so the null hypothesis is not rejected and bonding social capital, knowledge-based trust, confidence in public services, and trust towards political institutions can be excluded from the model. Model (10) is statistically significant because the chi-square statistic is higher than the critical value for 3 degrees of freedom (28,5839 > 6.25), and the p-value is less than 0.000, so the null hypothesis that all parameters are equal to zero is rejected. The probit equation predicts membership in associations with a satisfactory accuracy of 74.4 percent.

public state institutions” (Kumlin and Rothstein, 2005, 349). This argument is based upon the concept of procedural justice (Rawls, 1971), which has been used in the psychological research to show that people are concerned not only with the final results of personal contacts with public institutions, but also in whether the process that eventually led to the final result can be seen as fair (Thibaut and Walker, 1975; Lind and Tyler, 1988). Kumlin and Rothstein suggest that there are numerous aspects of procedural justice involved in citizens’ relations with public services provided by the state. “These may involve questions of whether the individual was received with respect and dignity, whether he or she was able to communicate opinions to the civil servants, if there are signs of discrimination or corruption” (2005, 350).

The positive association between corporate social capital and both knowledge-based and social trust was expected and sounds quite evident. In a small community, entrepreneurs can use membership in a professional association as an effective mean to establish linking ties with agents belonging to other socio-economic categories, like people in the institutions or strangers operating in other sectors of the economy. The strength of such ties reduces social distances, thereby fostering the perception that both strangers and people in the institutions may be treated *as if* they were known and trustworthy through at least three channels:

- even if there is not a history of past interaction with people in the institutions, the condition of belonging to an association raises the likelihood to interact with them again in the future.
- Associations are a powerful means for acquiring information on strangers. Moreover, the higher likelihood to repeat interactions raises the possibility of retaliation in case of free-riding.
- When they belong to a group, entrepreneurs do not feel defenceless against opportunist behaviours. So they are less anxious and do not need to be on the defensive every time they interact with strangers. This could lead to a more open-minded and trusting attitude towards “the others”.

Adopting Uslander’s (2002) terminology, we could state that the linking role played by certain networks enables the extension of the *knowledge-based* trust to unknown people, fostering the accumulation of *social* trust. This is not properly moralistic trust in the sense suggested by Uslander, but an extension to strangers of the knowledge-based trust described by Yamagishi (1998). In other words, associations may act as a *catalyst* for the *transformation* of particularized trust into generalized trust, which in turn fosters the economic activity. Such a mechanism is a relevant policy tool in social environments which are not characterized by a deep tradition of participation and shared values.

On the contrary, civic engagement through voluntary organizations is found to be negatively and significantly associated with the social trust of entrepreneurs. These results are only apparently conflicting with Putnam’s (1993) claims on the positive role of civil society and Olson’s (1965)

arguments “against” professional associations reported in section 4.4. Professional associations have for entrepreneurs the same “linking” role which Putnam (1993) attributes to civil society organizations in reference to the entire population. Even if such ties may be used to pursue special interests generating social costs and worsening social cohesion, they certainly reinforce entrepreneurs’ self-confidence and trust in others.

Engagement in associations seems to be significantly reinforced by social trust. Such correlation suggests that, even though individuals who join groups and who interact with others regularly show attitudinal and behavioural differences compared to nonjoiners, the possibility exists that people self-select into association groups, depending on their original levels of generalized trust and reciprocity. This result has some precedent in the literature: using survey data on Norway, Wollebaek and Selle (2003) show that participating in voluntary organizations does not increase trust in other people. Rather, the correlation between high levels of membership in organizations and higher trust seems to be created by “reversed causation”. Grounding on survey data collected in Germany and Sweden, Stolle (1998) finds evidence of the existence of a selection bias: people who join associations are significantly more trusting than people who do not join.

This phenomenon can be explained through the influence that attitude similarity exerts on attraction. Perceived similarity of others in attitudes and opinions about social issues is a key factor in determining our choice to approach them (Byrne, Ervin and Lamberth, 1970, Byrne, 1971, Duck, 1975). Moreover, people with high generalized trust tend to be quicker in the perception of value similarity of others than those with low generalized trust (Siegrist, Earle and Gutscher, 2003). Thus, they are more likely to join social networks and to engage together in collective actions.

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## **Annex A. Goodness of fit measures**

Measures of the model’s goodness of fit are a function of the residual, i.e. the difference between the empirical variance-covariance matrix and the model-created variance-covariance matrix. It is possible to show (Bonnet and Bentler, 1983), that, if the model is correct, the fitting statistic follows a  $\chi^2$  with  $df$  degrees of freedom, where  $df = \frac{1}{2}(p + q)(p + q + 1) - t$ ,  $p$  is the number of endogenous variables,  $q$  is the number of exogenous variables, and  $t$  is the number of estimated

parameters. In order to evaluate the goodness of fit, the residual function for the model must be compared with critical values reported in  $\chi^2$  distribution tables with a probability  $P = 0.100$ . Since the value for model (8) is significantly lower than the critical value for a  $\chi^2$  with 16 degrees of freedom, we can state that the difference between the two variance-covariance matrixes is stochastic in nature, and is not due to the inappropriateness of the theoretical model. All the other goodness of fit indexes exhibit satisfactory values.

The Goodness of Fit Index (*GFI*):

$$GFI = 1 - \frac{T}{\max(T_i)}$$

is equal to 0.98. This means a good fit.

The Adjusted Goodness of Fit Index (*AGFI*) takes into account also the model's number of degrees of freedom, i.e. its parsimoniousness:

$$AGFI = 1 - \left( \frac{k}{df} \right) (1 - GFI)$$

where  $df$  are degrees of freedom, and  $k$  is the number of variances-covariances in input;  $k$  is given by:

$$k = \frac{1}{2}(p + q)(p + q + 1)$$

The *AGFI* is equal to 0.96, thus indicating a good fit.

The Root mean squared residuals (*RMR*) is:

$$RMR = \sqrt{\frac{1}{k} \sum (s_{ij} - \sigma_{ij})^2}$$

is equal to 0 when the theoretical model-generated variance-covariance matrix fits the empirical matrix, and infinitely grows when the model's goodness of fit worsens. The *RMR* of model (8) is equal to 0.041, thus indicating a good fit.