FACOLTÀ DI ECONOMIA
UNIVERSITÀ DI BOLOGNA
SEDE DI FORLÌ

Corso di Laurea in Economia
delle Imprese Cooperative
e delle Organizzazioni Nonprofit

The Role of Social Capital in Economic Development

Fabio Sabatini

Working Paper n. 43
giugno 2007

in collaborazione con

A I C C O N
CULTURA COOPERAZIONE | NONPROFIT

Fabio Sabatini[1]

Dipartimento di Economia politica, Università di Siena

---

[1] f.sabatini@unisi.it

The Role of Social Capital in Economic Development[*]

Fabio Sabatini[**]

Abstract

This paper carries out an empirical assessment of the *causal* nexus connecting social capital's diverse aspects to the "quality" of economic development in Italy. The analysis accounts for three main social capital dimensions (i.e. *bonding*, *bridging* and *linking social capital*) and measures them through synthetic indicators built by means of principal component analyses performed on a dataset including multiple variables. The quality of development is measured through human development and indicators of the state of health of urban ecosystems, public services, social protection, gender equality, and labour markets. The causal relationship between social capital's and development's different dimensions is then assessed through structural equations models. The analysis in this paper provides a proof of Putnam's claims on the positive role of civil society organizations in development processes.

---

1. Introduction

Together with famous studies carried out by Bourdieu (1980), Coleman (1988) and Putnam (1993, 1995), the World Bank's research activity on social capital constitutes one of the most influential sources of inspiration for the literature on social and cultural factors of economic growth. Studies included in the World Bank's *Social Capital Initiative* Working Papers Series generally constitute standard citations for all the following work in this field. Every paper in the collection is introduced by a foreword written by Ismail Serageldin, vice president of the institution from 1992 to 2000, which begins stating that: 'There is growing empirical evidence that social capital contributes significantly to sustainable development' (see for example World Bank, 1998, I).

However, what do we really know on the relationship between social capital and economic development? Has the empirical research definitively demonstrated social capital's ability to foster economic growth and development processes?

To tell the truth, the evidence is still unconvincing and sometimes conflicting. The empirical research on social capital chronically suffers from different problems. First of all, there is not an universal measurement method, neither a commonly accepted definition of social capital. Secondly, empirical studies do not unanimously agree on the positive relationship between social capital and development. Thirdly, even when a positive correlation is proved, doubts remain on the form and direction of the causal nexus linking social capital to its supposed outcomes. Another critical shortcoming affecting this strand of the literature is the tendency to address the influence of social capital on economic growth, in spite of considering the broader concept of development. The extent to which well-being and development progress can be simply measured by income is open to question and widely discussed in the economic debate. Starting from the assumption that both social capital and economic development are multidimensional concepts, this paper aims to improve our understanding by introducing a new method for measuring social capital and carrying out an empirical assessment of the *causal* relationship connecting social capital's diverse aspects to the "quality" of economic development in Italy. The analysis accounts for three main social capital dimensions: strong family ties, or the so-called *bonding social capital*, weak ties connecting friends and acquaintances (i.e. *bridging social capital*) and more formal ties linking members of voluntary organizations (i.e. *linking social capital*). Each dimension is evaluated by a single, synthetic measure, built by means of a principal component analysis performed on a complex dataset including multiple indicators. The quality of development is measured through human development and indicators of the state of health of urban ecosystems, public services, social protection, gender equality, and the relevance of labour precariousness. The causal relationship between social capital's and development's various dimensions is then assessed through the use of structural

equations models (SEMs). This technique has grown up in psychometrics at the beginning of the 70s and, although its application is a novelty for economic studies, it proves to be particularly suitable for the investigation of multidimensional phenomena like social capital and economic development. Structural equation modelling (SEM) grows out of and serves purposes similar to multiple regression, but in a more powerful way which takes into account the modelling of interactions between independent variables, influences by unknown "environmental" factors, and correlations among error terms. Other relevant advantages related to the use of SEMs are the possibility to pose more flexible assumptions and to test models overall rather than coefficients individually.

The main findings of the paper can be summarized as follows: strong family ties exert a negative influence on human development and the economic performance. On the contrary, weak ties may act as bridges across different communities, fostering knowledge sharing and the diffusion of trust, and therefore benefiting the process of economic development. However, there are different kinds of weak ties. Bridging ties connecting friends and acquaintances are proved to negatively affect income and development, while the linking social capital connecting members of voluntary organizations exerts a positive influence on such outcomes. This finding is coherent with one of the most controversial theses standing in the social capital literature, that is Putnam's claim on the positive role of civil society and associational activity. According to Putnam, Leonardi and Nanetti (1993), voluntary organizations function as "schools of democracy", in which cooperative values and trust are easily socialized. The claim is that in areas with stronger, dense, horizontal, and more cross-cutting networks, there is a spillover from membership in organizations to the cooperative values and norms that citizens develop. In areas where networks with such characteristics do not develop, there are fewer opportunities to learn civic virtues and democratic attitudes, resulting in a lack of trust. As it will be better explained in section 4 and in the concluding remarks of this paper, this finding is not necessarily a proof against the arguments advanced by the voluminous strand of the literature nourished by Putnam's critics. Rather, it is to be intended as a new confirmation of the multidimensional, dynamic and context-dependent nature of social capital. The interpretation of results from any empirical investigations carried out in the field of social capital must be based on the following code word: contextualizing. One of the main claims sustained by Putnam's critics is that the associational activity may function as a powerful mean for the pursuit of narrow, sectarian, interests, thus harming community's well-being and hampering development. However, in Italy, civic participation through voluntary organizations is particularly embedded in centre and northern regions historically administered by centre-left coalition local governments. In these regions, civil society has grown in close contact with active political participation, and has been largely informed

by ideological principles, not directly connected to the pursuit of personal or sectarian advantages. Besides hampering development, bonding social capital also fosters the accumulation of bridging social capital and, interestingly, is proved to mitigate labour precariousness and thus, to a certain degree, to improve "social quality".

The contribution of this paper to the social capital literature is threefold. Firstly, it adopts a new method for measurement, which may offer the possibility to start a new generation of more precise and reliable empirical investigations, both at national and cross-country level. Secondly, it provides an accurate confirmation of the very multidimensionality of the concept of social capital, showing that its various dimensions exert diverse effects on a range of relevant economic outcomes. Thirdly, it introduces the use of structural equations models in the field of economic studies, pointing out the suitability of this technique for the investigation of multidimensional phenomena like social capital and development. The building of synthetic indicators - relying on a multiple datasets of basic variables – to describe diverse social capital's dimensions and the use of SEM for the evaluation of their impact on economic development are absolute novelties for this field of studies.

The outline of the paper is as follows: section 2 briefly reviews the main problems facing the empirical research on social capital and economic development. Section 3 is devoted to the description of data and methodology. Section 4 presents and comments results from the empirical analysis. The survey is closed by some concluding remarks and guidelines for further researches.

2. The problems of measuring social capital and assessing its relationship with development

Despite a long intellectual history in the social sciences, the concept of social capital has gained celebrity only in the 90s, due to Bourdieu's (1980, 1986), Coleman's (1988, 1990) and Putnam's (1993, 1995) seminal studies. In particular, the famous research on the Italian regions carried out by Putnam, Leonardi and Nanetti in 1993 has massively drawn the economists' attention. In this study, the authors find social capital - identified with features of social life-networks, norms, and trust, that enable participants to act together more effectively to pursue shared objectives – to be positively and significantly related to the institutional and economic performance of the Italian regions across a period of 20 years. Subsequently, the last decade has registered an impressive amount of economic studies aiming to test the ability of different aspects of the social structure, often grouped under the common umbrella label of social capital, to exert a positive influence on the economic performance (Heliwell, 1996, Knack and Keefer, 1997, Temple and Johnson, 1998, Temple, 2001, Zak and Knack, 2001, Guiso, Sapienza and Zingales, 2004). However, the empirical evidence is still unconvincing and sometimes conflicting. We do not want to carry out a survey of this voluminous strand of the literature, which can be found elsewhere (Woolcock, 1998, Fine, 2001,

Quibria, 2003, Durlauf and Fafchamps, 2004). The objective of this brief review is rather to point out some critical weaknesses virtually affecting most studies belonging to the field. In particular, we can identify eight main shortcomings:

1. despite the great amount of research on it, the definition of social capital remains substantially elusive. Following Coleman (1988), great part of the literature refers to social capital as all 'the aspects of the social structure that facilitate certain actions of actors within the structure … Making possible the achievement of certain ends that, in its absence, would not be possible' (Coleman, 1988, 98). Such "productive" aspects of the social structure can vary according to different environmental situations and agents' needs: 'A given form of social capital that is valuable in facilitating certain actions may be useless or even harmful for others' (*ibidem*). According to this approach, it seems virtually impossible to provide a single, universal, definition of what social capital is, and a unique, underlying, method of measurement to be used within the empirical research.

2. The idea that social capital is a multidimensional concept is by now commonly accepted in the debate. This allows each author to focus on a particular aspect of the concept, according to the aims and scope of his own study. Empirical works every time address different dimensions, therefore adopting particular measures, derived from diverse data sources. This makes any general assessment difficult, due to incomparability in sampling designs and question wording (Wuthnow, 1997, Paxton, 1999).

3. 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 are very popular in the economics 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). 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 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 simply "sterilizes" the social capital literature, making it unable to foster the explanatory power of economic studies addressing the socio-cultural factors of growth.

4. Great part of existing cross-national studies on the economic outcomes of social capital is based on measures of trust drawn from the *World Values Survey* (WVS). 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 aggregation of such data, however, creates a measure of what can be called "macro" or "social" trust which looses its 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).

5. Also studies focusing on social networks instead of social trust generally do not take into the appropriate account the multidimensional, context-dependent and dynamic nature of social capital. They usually analyze just one kind of network (for example voluntary organizations), which is considered as representative of the social capital concept as a whole, through a single measure. However, a simple descriptive analysis of available data allows us to point out that, even if they constitute just one aspect of the multifaceted concept of social capital, social networks are themselves a multidimensional phenomenon. They are characterized by different aspects, which can be described by a composite set of multiple indicators. This paper clearly shows that it is possible to take into account the different qualitative aspects characterizing each kind of network through the building of synthetic indicators by means of factorial analyses. Such indicators contain almost as much information as there is in the original variables describing social networks, and can be used as new raw data in further empirical analyses.

6. Following Putnam's (1993) hints, most studies focus on voluntary organization as a proxy for measuring social capital. The claim is that in areas with stronger, dense, horizontal, and more cross-cutting networks, there is a spillover from membership in organizations to the cooperative values and norms that citizens develop. In areas where networks with such characteristics do not develop, there are fewer opportunities to learn civic virtues and democratic attitudes, resulting in a lack of trust. However, there are several reasons to doubt of the efficacy of social capital measures simply based on the density of voluntary organizations. Firstly, 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. Secondly, the group experiences might be more pronounced in their impact when members are diverse and from different backgrounds. Until now the literature has not provided a micro theory explaining trust's transmission mechanism from groups to the entire society, and the logic underlying the connection between social ties and generalized trust has never been clearly developed (Rosenblum, 1998, Uslaner, 2002). Thus, every finding on the correlation and/or the causal nexus connecting membership in civic associations to supposed social capital's economic outcomes must be handled with extreme caution.

7. The role of strong family ties is generally neglected by empirical investigations on the role of social capital in economic development. Besides the early intuition of Banfield (1958), who identified "amoral familism" as one of the main causes of Southern Italy's underdevelopment, until now quantitative economic studies have not accounted for the effects of family social capital on growth and development.

8. Even when a significant relationship between social capital and economic development is proved, doubts remain on the form and direction of the causal nexus connecting variables. Of course, it can be argued that higher levels of economic development determine the accumulation of positive endowments of social capital, and not vice versa. For example, Southern Italy's underdevelopment could be seen as a main cause for the growth of amoral familism.

3. Data sources and methodological issues: structural equations models as a suitable tool for the analysis of multidimensional phenomena[2]

The analysis in this paper is based on a dataset collected by the author, including about 200 indicators representing the "structural" dimensions of social capital and different aspects of the quality of economic development. An operational definition of social capital as formal and informal networks of agents sharing definite interests is provided, thus excluding from the measurement toolbox the concept of trust and all indirect indicators popularized by the empirical literature. This constitutes an attempt to overcome shortcomings underlined in points 1, 3 and 4 of the previous section. Social networks are acknowledged in their multidimensionality, since three main kinds of networks are considered within the analysis and each one is described by a subset of multiple indicators representing different dimensions for each subdimension, thus addressing the problems pointed out in points 5, 6 and 7. Rough data on social capital are drawn by a set of multipurpose surveys carried out by the Italian National Bureau of Statistics (Istat) on a sample of 20.000 households between 1998 and 2002 (see Istat, 2000, 2001, 2002a, 2002b, 2002c, 2002d, 2003, 2004a, 2004b, cited in bibliography). Such data catch people's effective behaviour and their use allows to overcome problems reported in points 4 and 5 of section 2. Principal component analyses (PCAs) are performed on three subsets of multiple variables with the aim to build synthetic, latent, measures of strong family ties (i.e. bonding social capital), weak informal ties among friends, neighbours and acquaintances (i.e. bridging social capital) and weak ties connecting members of voluntary organizations (i.e. linking social capital).Basic variables are reported in tables A1, A2 and A3, annex A. The quality of development is measured through four synthetic indicators, elaborated by *Lunaria* (2004) in the context of a campaign assessing national budget law's contents, promoted by 35 NGOs. They are an adjusted version of the human development index, described in detail in table B1, annex B, an indicator capturing the state of health of urban ecosystems, and an index of "social quality".

Relationships connecting all these variables are then investigated by means of a structural equations model (SEM). A SEM is '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. The use of structural models instead of regression models implies a complete revision of the parameters' estimation mechanism. In the regression model, parameters can be estimated through the ordinary least squares

---

[2] The methodological framework for the building of social capital's synthetic indicators is described in detail in Sabatini (2005b).

(OLS) method. In a model including two or more structural equations, where the same variables are independent within an equation and dependent in all the others, the estimation process is remarkably more complicated. Instead of equations estimates, we have to compute "system estimates", and it is not possible anymore to adopt the OLS method. Another peculiarity of SEMs is the possibility to account for other parameters in addition to structural b linking endogenous and exogenous variables. More in particular, it is possible to account for variances and covariances among exogenous variables - which, however, are neglected in the analyses performed in this paper, to the seek of simplicity – and for variances and covariances among errors e, which, on the contrary, play a fundamental role in defining the models built within the empirical investigations carried out in this thesis. The matrix Ψ of covariances among errors ζ is carefully defined in each model, allowing to account for variables which, although not explicitly considered within the model, may play a role in the real scenario described by observed data.

When a model is perfectly specified, i.e. it includes all the variables effectively interacting in the real world, and correctly accounts for their dynamics, then each equation's stochastic error component is just a negligible detail. However, generally, this component includes all those factors that in the real world affect the model's dependent variable, but that we have not accounted for in the model's design because they are unknown or not measurable. If one of these unknown variables affects two of the model's endogenous variables at the same time, for example social capital and human development, and if we do not explicitly consider this possibility within the model, then the empirical investigation will necessarily find a spurious correlation between social capital and human development, which could be without precedent in the real world. On the contrary, if we explicitly consider a correlation between the errors respectively related to social capital and human development, then the effect of the unknown variable will be included in the model, making the spurious correlation disappear. In the light of the arguments summarized in this section, SEM appears to be a particularly suitable technique for the analysis of the relationship between multidimensional concepts like social capital and economic development and may constitute a possible response to the causality problems underlined in point 8 of the previous section.

4. Social capital and the quality of economic development: investigating the causal relationship through structural equations models

Models are tested using SEM goodness of fit tests to determine if the pattern of variances and covariances in the data is consistent with structural (path) models theoretically specified. In this chapter, only the model with the best goodness of fit is presented. However, it must be remembered

that, as other unexamined models may fit the data as well or better, an accepted model is only a not-disconfirmed model. Variables considered in the analysis are as follows:

- bonding social capital, shaped by strong ties connecting family members. This variable is measured by the first factor obtained from a principal component analysis (PCA) performed on a dataset of variables measuring the intensity and quality of family relationships, spatial proximity among members, and the relevance of other relatives besides the family unit. Basic indicators adopted within the PCA are described in table A1, annex 1.

- Bridging social capital, shaped by weak informal ties connecting friends and acquaintances. This variable is measured by the first factor obtained from a PCA performed on a dataset of variables representing people social engagement or, in other terms, what can be referred to as "relational goods". Basic indicators are described in table A2.

- Linking social capital, shaped by weak formal ties connecting people from different socioeconomic backgrounds within the boundaries of voluntary organizations. This measure is given by the first factor resulting from a PCA performed on a set of indicators representing different dimensions of associational participation. Adopted variables are described in table A3.

- Human development, as measured by the adjusted human development index, i.e. the human development index suitably corrected to take into account Italy's level of wealth. Particularly, the index of life expectancy has been computed adopting 50 and 85 years respectively as minimum and target levels, the index summarizing literacy and schooling has been replaced by the rate of high school attendance, and the index of per capita income has been computed adopting 5.000 € and 40.000 € as minimum and target levels. Adopted variables are described in table B1, annex B.

- Social quality, as measured by the index of social quality. This index aims to account for four dimensions of well-being: the efficiency of public health services, gender equality, labour precariousness and the quality of public school infrastructures. Health services efficiency is measured through an index expressing people's opinion on the national health care system, with regard to three particular aspects given by medical assistance, nursing assistance, and hygienic conditions. Gender equality is measured through an index aiming to capture

women's integration into the labour market (as expressed by the difference between men's and women's employment rates) and women's involvement in local politics (as expressed by membership in regional councils). Labour precariousness is measured by an index summarizing the number of casual workers having provisional contracts like the so called *co-co-co* (*collaborazioni continuate e coordinate*) or looking for a job. Finally, public school infrastructures are assessed through the weighted average of 52 indicators of the school environment's quality collected by *Legambiente* (2003b) at the provincial level (weights are given by each province's population). The index of social quality is the arithmetic mean of these four indexes, which are described in detail in table B2.

- The state of health of urban ecosystems, as measured by an index of urban ecosystems drawn by *Lunaria* (2004) from *Legambiente*'s (2003a) annual report on the quality of urban environments. The index is computed as the weighted average of 20 key indicators including, for example, air monitoring results, pedestrian precincts, the efficiency of public transports services and of water softening systems. Basic variables adopted in building the synthetic indicator are described in Table B3.

In the structural equations model, hypotheses on causal relationships between variables are guided by results from the empirical investigation on social capital and the quality of economic development carried out by means of multivariate analyses in Sabatini (2005c), where evidence is provided of a positive and significant correlation between social capital and various "quantitative" and "qualitative" aspects of economic development. In particular, in this paper it has been shown that bonding social capital is strongly and negatively associated with human development and social well-being, while bridging and linking ties are positively correlated with such outcomes. Two more positive and strong correlations have been found between linking social capital and the quality of urban ecosystems, and between bridging social capital and the index of "social quality".

Let η_1 be bridging social capital, η_2 linking social capital, η_3 adjusted human development, η_4 social quality, η_5 the state of health of urban ecosystems, and ξ_1 bonding social capital. ζ_i, with $i = (1,...,6)$, are the errors related to endogenous variables.

In the model with the best goodness of fit, bridging social capital is influenced by bonding social capital, human development and unknown variables sorting their effect also on bonding and linking social capital, on urban ecosystems and on social quality:

$$\eta_1 = \beta_{13}\eta_3 + \beta_{16}\eta_6 + \zeta_1 \qquad (1)$$

Linking social capital is affected by human development and by an unknown variable exerting its influence also on bridging social capital:

$$\eta_2 = \beta_{23}\eta_3 + \zeta_2 \qquad (2)$$

Human development is influenced by the three types of social capital and by unknown factors affecting also social quality, urban ecosystems and bonding social capital

$$\eta_3 = \beta_{31}\eta_1 + \beta_{32}\eta_2 + \beta_{36}\eta_6 + \zeta_3 \quad (3)$$

Social quality is affected by the three types of social capital, by human development and by unknown factors influencing also bridging social capital and human development:

$$\eta_4 = \beta_{41}\eta_1 + \beta_{42}\eta_2 + \beta_{43}\eta_3 + \beta_{46}\eta_6 + \zeta_4 \ (4)$$

The state of health of urban ecosystems is affected by bridging and linking social capital and by other variables influencing also bridging social capital and human development:

$$\eta_5 = \beta_{51}\eta_1 + \beta_{52}\eta_2 + \zeta_5 \qquad (5)$$

Bonding social capital is affected by bridging social capital, human development and unknown factors influencing also the latter two variables:

$$\eta_6 = \beta_{61}\eta_1 + \beta_{63}\eta_3 + \zeta_3 \qquad (6)$$

The following couples of errors are correlated: ζ_2 and ζ_1, ζ_4 and ζ_1, ζ_4 and ζ_3, ζ_5 and ζ_1, ζ_5 and ζ_3, ζ_6 and ζ_1, ζ_6 and ζ_3. This implies the need to estimate, besides parameters β, also covariances ψ between errors. In fact, if the same independent variable has been omitted both, for instance, for η_1 and η_2, then the corresponding errors ζ_1 and ζ_2 will be correlated, and we have to pose the hypothesis that the covariance between errors, ψ_{21}, is different from zero and has to be estimated. In this way, as already pointed out in section 3, we are more likely to avoid the existence of spurious relationships between variables which could be without precedent in the real world.

In the model, other assumptions are carried out to the seek of simplicity: independent variables and errors are not correlated in the same equation: $E(\xi\zeta') = 0$; structural equations are not redundant; this condition means that η-equations are independent between them, and each endogenous variable η 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 (1) to (6) with the error covariance matrix, the specification of the model is as follows:

$$
\begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \\ \eta_6 \end{bmatrix} = \begin{bmatrix} 0 & 0 & \beta_{13} & 0 & 0 & \beta_{16} \\ 0 & 0 & \beta_{23} & 0 & 0 & 0 \\ \beta_{31} & \beta_{32} & 0 & 0 & 0 & \beta_{36} \\ \beta_{41} & \beta_{42} & \beta_{43} & 0 & 0 & \beta_{46} \\ \beta_{51} & \beta_{52} & 0 & 0 & 0 & 0 \\ \beta_{61} & 0 & \beta_{63} & 0 & 0 & 0 \end{bmatrix} \cdot \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \\ \eta_6 \end{bmatrix} + \begin{bmatrix} \zeta_1 \\ \zeta_2 \\ \zeta_3 \\ \zeta_4 \\ \zeta_5 \\ \zeta_6 \end{bmatrix} \quad \begin{bmatrix} 1 & & & & & \\ \psi_{21} & 1 & & & & \\ 0 & 0 & 1 & & & \\ \psi_{41} & 0 & \psi_{43} & 1 & & \\ \psi_{51} & 0 & \psi_{53} & 0 & 1 & \\ \psi_{61} & 0 & \psi_{63} & 0 & 0 & 1 \end{bmatrix} \quad (7)
$$

Figure 1 provides a graphic representation of the model. The graphic representation of structural equations models 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. In the Lisrel (LInear Structural RELationships) praxis, the graphic representation is based on the following criteria[3]: latent variables are inscribed in an ellipse, while observed variables in a rectangle. In models presented in this chapter, 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 or correlation) between two variables is represented by a bidirectional curved arrow connecting them. The absence of arrows

---

[3] The term Lisrel is the acronym of LInear Structural RELationships, a software for factor analyses developed by Karl Jöreskog, a statistician and psychometric, at the beginning of the 70s (Jöreskog and van Thillo, 1973). The software has rapidly developed until becoming the main tool for the analysis of models based on structural equations systems. In the research practice of following decades, conceptual principles adopted by Jöreskog in the software's development have become the theoretical framework for different methods like measurement models, path analysis, not recursive models, simultaneous equations systems, covariances' structure analysis and so on. (Corbetta, 1992). Actually, the name Lisrel, although remaining the label of Jöreskog's software, is the most utilized term for describing the structural equations models approach.

means the absence of linkages between variables. The strength of relationships is indicated reporting the regression (or the correlation) coefficient near the arrow.
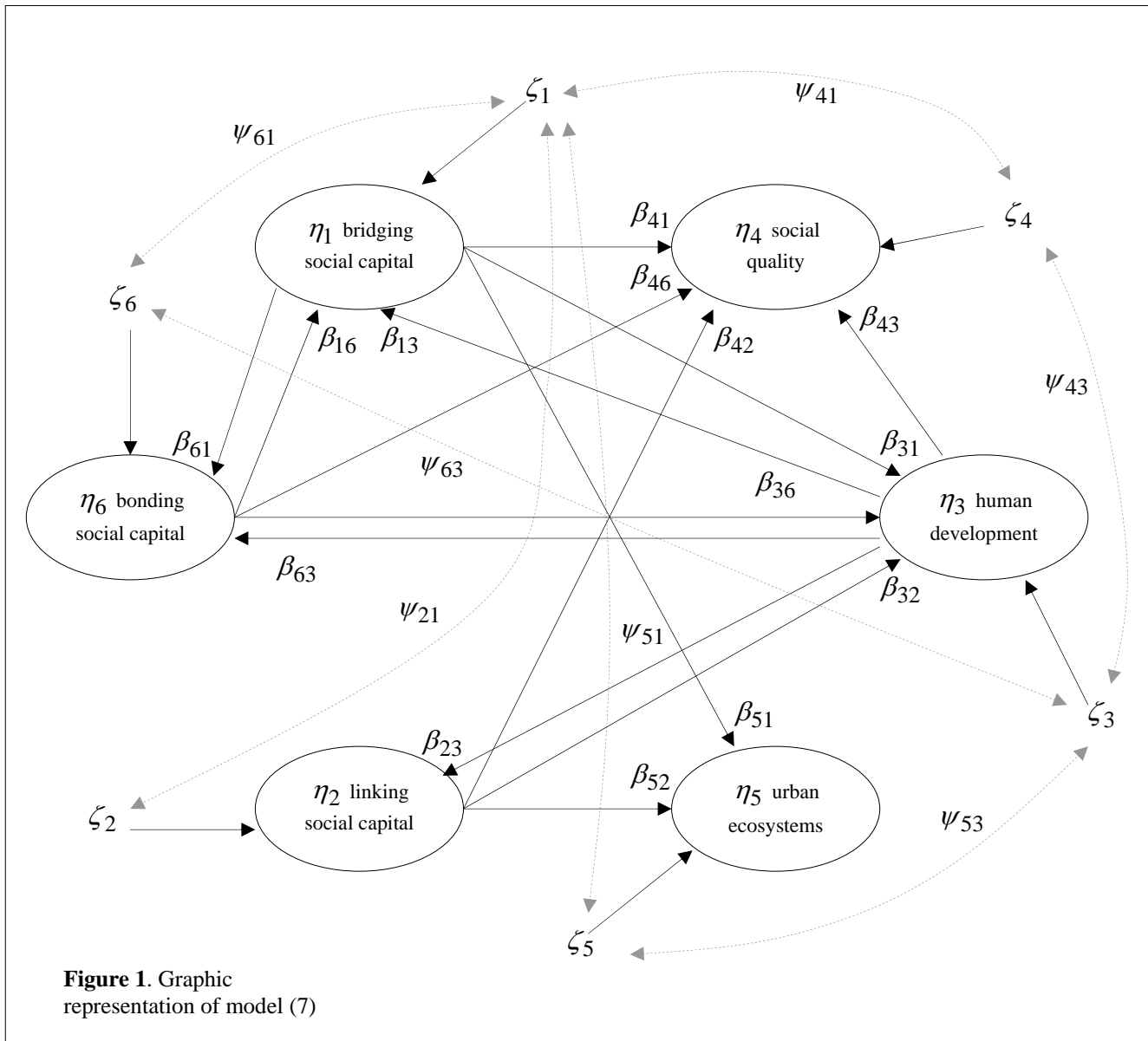

Figure 1. Graphic representation of model (7)

The model excellently fits the data. Measures of the model's goodness of fit are in fact 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 χ^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

15

of fit the residual function for the model must be compared with critical values reported in χ^2 distribution tables with a probability $P = 0.100$. Since the value for this model is significantly lower than the critical value for a χ^2 with one degree of freedom ($\chi^2 = 0.039 < 2.70554$), 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 root mean square residual (RMR) is equal to 0.012, the goodness of fit index (GFI) is equal to 1.00, thus indicating perfect fit, and the adjusted goodness of fit index (AGFI) is equal to 0.99 (goodness of fit measures are briefly described in annex C). The correlation matrix is reported in table 1, while parameters estimates are presented in table 2.

Table 1. Correlation matrix of variables representing social capital and the quality of development

	Bridging social capital	Linking social capital	Human development	Social quality	Urban ecosystems	Bonding social capital
Bridging social capital	1					
Linking social capital	0.827	1				
Human development	0.689	0.398	1			
Social quality	0.821	0.680	0.766	1		
Urban ecosystems	0.611	0.622	0.659	0.801	1	
Bonding social capital	-0.638	-0.480	-0.830	-0.700	-0.479	1

Table 2. Maximum likelihood estimates for model (7)

Variables η	Bridging social capital	Linking social capital	Human development	Social quality	Urban ecosystems	Bonding social capital
Bridging social capital			2.34 (0.55) 4.28			0.92 (0.68) 1.35
Linking social capital			1.31 (0.22) 5.84			
Human development	-1.37 (0.40 -3.46	1.07 (0.56) 1.92				-1.64 (0.25) -6.53
Social quality	0.84 (0.72) 1.16	-0.20 (0.61) -0.34	2.08 (0.62) 3.37			1.74 (0.44) 3.95
Urban ecosystems	0.88 (0.47) 1.86	-0.64 (0.43) -1.48				
Bonding social capital	1.37 (0.37) 3.75		-1.47 (0.47) -3.15			

The negative relationship between bonding social capital and economic development proves to be biunique: not only strong family ties may hamper human development, but they also deteriorate themselves with higher levels of development. As firstly argued by Banfield (1958), amoral familism can thus be reinforced by situations of underdevelopment.

Bridging and linking social capital are positively affected by human development, but only linking social capital exerts a positive reverse effect. On the contrary, bridging social capital negatively influences human development. In Italy, weak ties connecting friends and acquaintances are reinforced by bonding social capital, and join to strong family ties in determining the perverse developmental effects that Banfield (1958), just referring to the Italian context, ascribed to the "amoral familism". The model presented in this section suggests that, in the Italian regions, strong family ties, besides giving raise to the amoral familism phenomenon, may concur in shaping forms of "amoral friendships". This intuition probably finds an indirect confirmation in the analysis of the role of family ties in mitigating labour precariousness, carried out in Sabatini (2005d). Here bonding social capital is found to reduce the degree of labour precariousness, corroborating the common knowledge according to which the work status mainly depends on *who*, and not on *what*, people knows.

The positive developmental effect of linking social capital sounds as a relevant proof of Putnam's (1993) claims on the role of voluntary organizations, therefore contradicting great part of the economics and political science literature in the field. According to Putnam, Leonardi and Nanetti (1993), associations function as "schools of democracy", in which cooperative values and trust are easily socialized. The claim is that in areas with stronger, dense, horizontal, and more cross-cutting networks, there is a spillover from membership in organizations to the cooperative values and norms that citizens develop. In areas where networks with such characteristics do not develop, there are fewer opportunities to learn civic virtues and democratic attitudes, resulting in a lack of trust. Several notable studies, however, question Putnam's thesis, pointing out a negative relationship between the density of voluntary organizations and economic growth (Keefer and Knack, 1993, Heliwell, 1996, Knack and Keefer, 1997). As effectively explained by Knack and Keefer (1997) in their cross-country investigation on 29 market economies, 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. Consistent with the view that these two effects tend to counteract each other, "interest articulation" proves to be an insignificant predictor of growth when introduced into Barro-type cross-country tests' (Knack and Keefer, 1997, 1271). The authors' argument is convincing, but it is not necessarily suitable for the Italian context.

In Italy, the density of voluntary organizations is in most cases connected with a deep tradition of civic involvement and social participation. As explained by Putnam, Leonardi and Nanetti (1993), 'Stocks of social capital, such as trust, norms and networks, tend to be self-reinforcing and cumulative. Virtuous circles result in social equilibria with high levels of cooperation, trust, reciprocity, civic engagement, and collective well-being … Defection, distrust, shirking, exploitation, isolation, disorder, and stagnation intensify one another in a suffocating miasma of vicious circles. This argument suggests that there may be at least two broad equilibria toward which all societies that face problems of collective action (that is *all* societies) tend to evolve and which, once attained, tend to be self-reinforcing' (Putnam, Leonardi and Nanetti, 1993, 177).

Although this explanation sounds suitable for Italy, there is still something missing, and this is the role of politics. The Italian regions exhibiting higher levels of civic participation and civic awareness are those historically administered by centre-left coalition local governments. In these regions, civil society has developed in close contact with active political participation, and has been largely informed by ideological principles, not directly connected to the pursuit of personal or sectarian advantages. Let us consider figure 1 again. It provides a quite complicated graphic representation of model (7). A quick look at the left-bottom side of the figure allows us to point out the existence of a "missing link": bonding social capital influences bridging social capital and social quality (at the top of the graphic) and human development (in the middle), but there are not connections between strong family ties and the linking social capital of voluntary associations. Adding such linkages to theoretical models markedly worsens their goodness of fit. This is probably because there are other exogenous, not measurable, variables affecting linking social capital. As figure 2 shows in a stylized version of figure 1, such "missing links" are civic traditions, as argued by Putnam, and politics, as suggested by Putnam's critics. This is not necessarily a proof against the arguments advanced by Knack and Keefer (1997) and by Putnam's critics, but rather a new confirmation of the multidimensional, dynamic and context-dependent nature of social capital. As argued by Coleman (1988), 'Social capital is defined by its function … Like physical capital and human capital, social capital is not completely fungible, but may be specific to certain activities. A given form of social capital that is valuable in facilitating certain actions may be useless or even harmful for others' (Coleman, 1988, 98).

Figure 2. The "missing links"
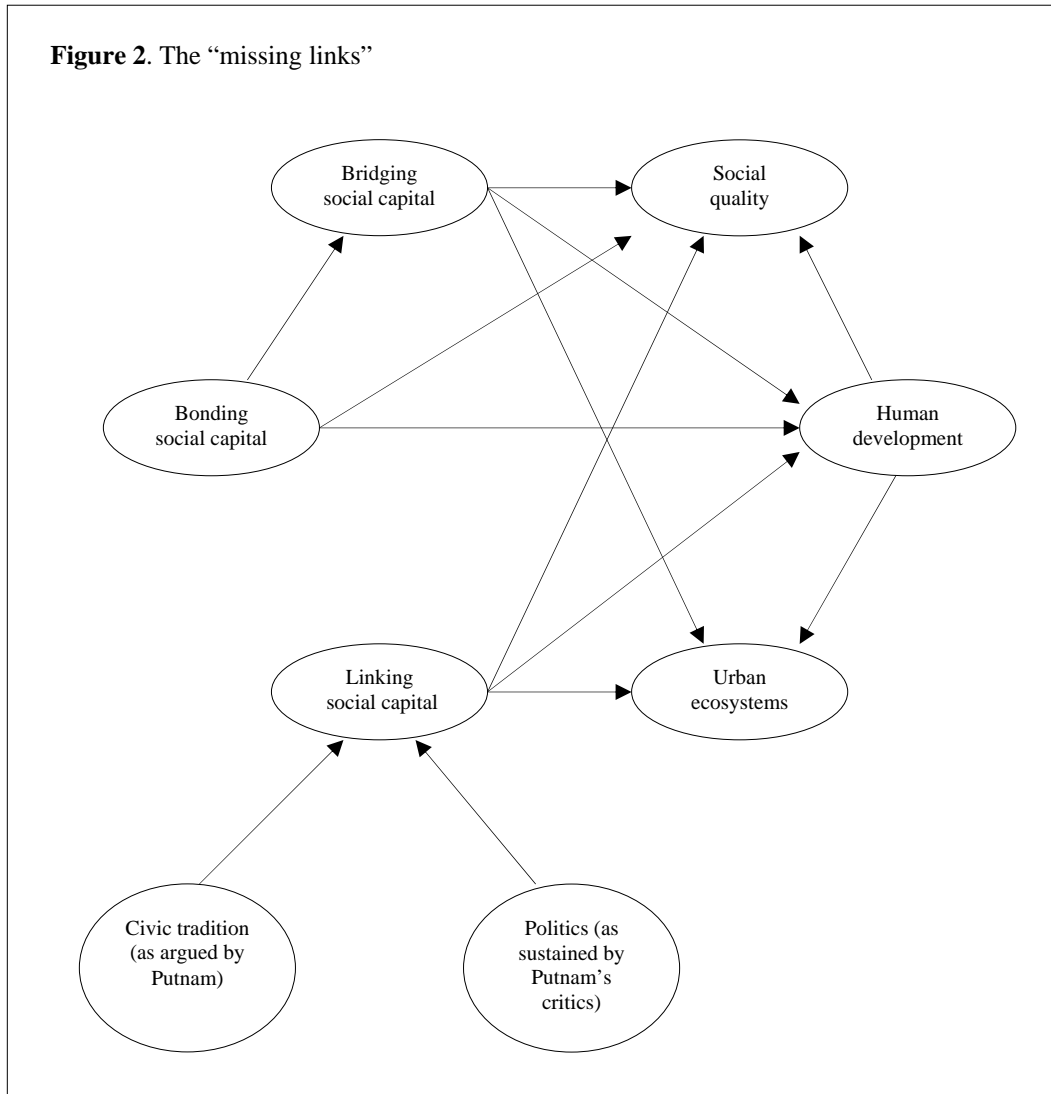
Summarizing, the structural equations model proposed in this section suggests that weak ties connecting people from different backgrounds within the boundaries of associations exert a positive influence on human development, while weak ties connecting friends and acquaintances do not. This poses an inescapable question for further researches. Since, as argued by Granovetter (1985), the ability of social networks to enhance economic development is strongly related to the problem of trust, a further step in improving our understanding could be to test which kind of social networks is able to foster trust's diffusion.

5. Concluding remarks and guidelines for further researches

Summarizing, strong family ties shaping bonding social capital do not exert a positive influence on economic development's dimensions considered in this paper. On the contrary, weak ties may act as

bridges across different communities, fostering knowledge sharing and the diffusion of trust, and therefore benefiting the process of development.

The analysis carried out in this paper therefore provides a proof, for the Italian context, of theoretical insights coming from the new economic sociology literature. As stated by Granovetter (1973), 'Whatever is to be diffused can reach a larger number of people, and traverse greater social distance, when passed through weak ties rather than strong. If one tells a rumor to all his close friends, and they do likewise, many will hear the rumor a second and third time, since those linked by strong ties tend to share friends' (Granovetter, 1973, 1366). According to author, the problem of trust is closely related: wheter an agent trusts another heavily depends on wheter there exist intermediary personal contacts who can, from their own knowledge, assure him that the other agent is trustworthy. Trust in the others is therefore integrally related to the capacity to predict and affect their behaviour. In his famous essay on the embeddedness of economic action, Granovetter (1985) stresses the role of concrete personal relations and of structures of such relations (i.e. social networks) in generating trust and discouraging opportunistic behaviours therefore fostering transactions and the economic performance. 'The widespread preference for transacting with individuals of known reputation implies that few are actually content to rely on either generalized morality or institutional arrangements to guard against trouble' (Granovetter, 1985, 490). Information get to personal relations is better 'for four reasons: (1) it is cheap; (2) one trusts one's own information best – it is richer, more detailed and known to be accurate; (3) individuals with whom one has a continuing relation have an economic motivation to be trustworthy, so as not to discourage future transactions; and (4) departing from pure economic motives, continuing economic relations often become overlaid with social content that carries strong expectations on trust and abstention from opportunism' (*ibidem*).

The new hint provided by the analysis in this paper regards which type of weak ties are good for economic development. Bridging and linking social capital are positively affected by human development and the economic performance, but only linking social capital exerts a positive reverse effect. On the contrary, bridging social capital negatively influences income and development. Weak ties connecting friends and acquaintances are reinforced by bonding social capital, and join to strong family ties in determining the perverse developmental effects that Banfield (1958), just referring to the Italian context, ascribed to the "amoral familism". The model presented in section 4 suggests that, in the Italian regions, strong family ties, besides giving raise to the amoral familism phenomenon, may concur in shaping forms of "amoral friendships". These findings are coherent with one of the most controversial theses standing in the social capital literature, that is Putnam's claim on the positive role of civil society and associational activity. According to Putnam, Leonardi

and Nanetti (1993), associations function as "schools of democracy", in which cooperative values and trust are easily socialized. The claim is that in areas with stronger, dense, horizontal, and more cross-cutting networks, there is a spillover from membership in organizations to the cooperative values and norms that citizens develop. In areas where networks with such characteristics do not develop, there are fewer opportunities to learn civic virtues and democratic attitudes, resulting in a lack of trust. We have seen that several notable studies question Putnam's thesis, pointing out a negative relationship between the density of voluntary organizations and economic growth (Keefer and Knack, 1993, Heliwell, 1996, Knack and Keefer, 1997). Arguments proposed by this strand of the literature are convincing, but not necessarily suitable for the Italian context.

In Italy, the density of voluntary organizations is in most cases connected with a deep tradition of civic involvement and social participation. Italian regions exhibiting higher levels of civic participation and civic awareness are those historically administered by centre-left coalition local governments. In these regions, civil society has developed in close contact with the active political participation, and has been largely informed by ideological principles, not directly connected to the pursuit of personal or sectarian advantages. This is not necessarily a proof against theses advanced by Knack and Keefer (1997) and by Putnam's critics, but rather a new confirmation of the multidimensional, dynamic and context-dependent nature of social capital. This is the umpteenth proof that the interpretation of results from any empirical investigations carried out in the field of social capital must be based on an accurate contextualization.

6. Bibliography

Banfield, E.G. (1958), *The Moral Basis of a Backward Society*, New York, Free Press.

Bonnet, D.G., Bentler, P.M. (1983), "Goodness-of-fit Procedures for the Evaluation and Selection of Log-linear models", *Psychological Bulletin*, 93, 149-166.

Bourdieu, P. (1980), Le capital social, *Actes de la Recherche en Sciences Sociales*. 31 (1980) : 2-3.

Bourdieu, P. (1986), "The forms of capital", in: Richardson, John G. (ed.), *Handbook of Theory and Research for the Sociology of Education*, New York: Greenwood Press: 241-258.

Coleman, J. (1988), "Social Capital in the Creation of Human Capital", *American Journal of Sociology*. Vol. 94: S95-S120.

Coleman, J. (1990), *Foundations of Social Theory*, Cambridge: Harvard University Press.

Corbetta, P. (1992), *Metodi di analisi multivariata per le scienze sociali*, Bologna, Il Mulino.

Durlauf, S.N. (2002), "On the Empirics of Social Capital", The Economic Journal, Vol. 112, Issue 483, November 2002, 459-479.

Durlauf, S.N., Fafchamps, M. (2004), "Social Capital", The Centre for The Study of African Economies Working Paper Series, No. 214, The Berkeley Economic Press.

Fine, B. (2001), *Social Capital versus Social Theory. Political Economy and Social Science at the Turn of the Millennium*, London and New York: Routledge.

Foley, M.W., Edwards, B. (1999), "Is It Time to Disinvest in Social Capital?", *Journal of Public Policy* 19, No. 2, 199-231.

Fukuyama, F., (1999), "Social Capital and Civil Society. Paper presented at the IMF Conference on Second Generation Reforms", November 8-9, 1999, IMF Institute and the Fiscal Affairs Department, Washington, D.C.

Goldberger, A.S. (1972), "Structural Equations Models in the Social Sciences", *Econometrica*, 40, 979-1001.

Granovetter, M. (1973), "The Strength Of Weak Ties", in *American Journal of Sociology*, 78, pp. 1360-80.

Granovetter, M. (1985), "Economic Action And Social Structure: The Problem Of Embeddedness", in *American Journal of Sociology*, n. 91, pp. 481-510.

Gregg P., Wadsworth, J. (1996), "How Effective Are State Employment Agencies? Jobcentre Use and Job Matching in Britain", *Oxford Bulletin of Economics and Statistics*, 58, 43-67.

Guiso, L., Sapienza, P, and Zingales, L, (2004), "The Role of Social Capital in Financial Development", *The American Economic Review*. Vol. 94, No. 3: 526-556.

Heliwell, J.F. (1996), "Economic Growth and Social Capital in Asia", NBER Working Paper No. W5470.

Ires-Cgil (2005), *Nuovo contratto, stessi problemi. Gli effetti della legge 30/03 nel passaggio dalle collaborazioni coordinate e continuative al lavoro a progetto*, Roma, Ires-Cgil.

Istat (2000), I cittadini e l'ambiente. Indagine multiscopo sulle famiglie "Aspetti della vita quotidiana", Anno 1998, Rome: Istat.

Istat (2001a), Parentela e reti di solidarietà. Indagine multiscopo sulle famiglie "Famiglia, soggetti sociali e condizioni dell'infanzia", Anno 1998, Rome: Istat.

Istat (2001b), Indicatori regionali per la valutazione delle politiche di sviluppo, Rome: Istat.

Istat (2002a), I cittadini e le tecnologie della comunicazione. Indagine multiscopo sulle famiglie "I cittadini e il tempo libero", Anno 2000, Rome: Istat.

Istat (2002b), Le attività del tempo libero. Indagine multiscopo sulle famiglie "I cittadini e il tempo libero", Anno 2000, Rome: Istat.

Istat (2002c), Letture e linguaggio. Indagine multiscopo sulle famiglie "I cittadini e il tempo libero", Anno 2000, Rome: Istat.

Istat (2002d), L'offerta di servizi sportivi in Italia, Rome: Istat.

Istat (2003), Famiglia, abitazione e zona in cui si vive. Indagine multiscopo sulle famiglie "Aspetti della vita quotidiana", Anno 2002, Rome: Istat.

Istat (2004a), Cultura, socialità e tempo libero. Indagine multiscopo sulle famiglie "Aspetti della vita quotidiana", Anno 2002, Rome: Istat.

Istat (2004b), Le organizzazioni di volontariato in Italia, Anno 2001, Rome: Istat.

Jöreskog, K.G., van Thillo, M. (1973), "Lisrel: A General Computer Program for Estimating a Linear Structural Equations System Involving Multiple Indicators of Unmeasured Variables", Research Report 73-5, Uppsala University, Department of Statistics.

Keefer, P., Knack, S. (1993), "Why Don't Poor Countries Catch Up? A Cross-National Test of an Institutional Explanation." IRIS Center Working Paper No. 60, University of Maryland, College Park, 1993.

Knack, S., Keefer, P. (1997), "Does Social Capital Have An Economic Payoff? A Cross Country Investigation", *Quarterly Journal of Economics*, 112/4, 1251-1288.

Legambiente (2003a), *Ecosistema urbano 2004*, Rome: Legambiente.

Legambiente (2003b), *Ecosistema scuola 2003*, Rome: Legambiente.

Lunaria (2004), *Come si vive in Italia? Qualità sociale, diritti umani, ambiente, politiche pubbliche regione per regione*, Rome: Lunaria.

Paxton, P. (1999), "Is Social Capital Declining in the United States? A Multiple Indicator Assessment", *The American Journal of Sociology*, Vol. 105, No.1, 88-127.

Portes, A. (1998), "Social capital: its origins and applications in modern sociology", *Annual Review of Sociology* 24, 1-24.

Putnam, R.D. (1995), "Bowling Alone: America's Declining Social Capital", *Journal of Democracy*. VI: 65-78.

Putnam, R.D., Leonardi, R. and Nanetti, R.Y. (1993), *Making Democracy Work*, Princeton: Princeton University Press.

Quibria, M.G. (2003), "The Puzzle of Social Capital. A Critical Review", *Asian Development Review*, Volume 20, Number 2.

Rosenblum, N.L. (1998), *Membership and Morals*, Princeton: Princeton University Press.

Sabatini, F. (2005a), "Resources for the Study of Social Capital", *The Journal of Economic Education*, Vol. 36, No. 2, Spring 2005: 198.

Sabatini, F. (2005b), "Social Capital as Social Networks. A New Framework for Measurement", Working Paper No. 83, University of Rome La Sapienza, Department of Public Economics.

Sabatini, F. (2005c), "Social Capital, Public Spending and the Quality of Economic Development", University of Rome La Sapienza, Department of Public Economics, mimeo.

Sabatini, F. (2005d), "Social Capital, Labour Precariousness and the Economic Performance", University of Rome La Sapienza, Department of Public Economics, mimeo.

Temple, J. (1998), "Initial Conditions, Social Capital, and Growth in Africa", *Journal of African Economies*, 7(3):309–47.

Temple, J. (2001), "Growth Effects of Education and Social Capital in the OECD Countries", *OECD Economic Studies*, No. 33, 2001/2, 57-101.

Temple, J., Johnson, P.A. (1998), "Social Capability and Economic Growth", *The Quarterly Journal of Economics*, 113(3), 965-990.

Uslaner, E.M. (2002), *The Moral Foundations of Trust*, Cambridge, Cambridge University Press.

Woolcock, M. (1998), "Social capital and economic development: toward a theoretical synthesis and policy framework", *Theory and Society* 27,2 (1998), 151-208.

World Bank (1998), "The Initiative on Defining, Monitoring and Measuring Social Capital. Overview and Program Description", Washington, The World Bank, Social Development Family Environmentally and Socially Sustainable Development Network.

Wuthnow, R. (2002), "The Changing Character of Social Capital in the United States, in Putnam", R.D. (ed), *Democracies in Flux: The Evolution of Social Capital in Contemporary Society*, Oxford, Oxford University Press.

Zak, P., Knack, S. (2001), "Trust and Growth", *The Economic Journal*, 111, 295-321.

Annex A. Tables on the measurement of social capital in Italy

Table A1. Indicators of family social capital

Label	Description	Year	Source	Mean	St. Dev
CONTPAR	People aged 14 and more particularly caring relatives other than parents, children, grandparents and grandchildren, or counting on them in case of need, for every 100 people of the same area.	1998	Istat (2001)	3,905	1,037
COPFIG	Couples with children, for every 100 families of the same area.	2001/02	Istat (2003)	18,470	4,861
COPNOFIG	Couples without children, for every 100 families of the same area.	2001/02	Istat (2003)	71,500	5,424
FAM5COMP	Families with 5 components and more for every 100 families of the same area.	2001/02	Istat (2003)	10,990	3,995
FAMSINGL	Singles-families for every 100 families of the same area.	2001/02	Istat (2003)	72,790	5,022
FIG16KM	People aged 15 and more with children living 16 kilometres away or more (in Italy or abroad) for every 100 families with children of the same area.	1998	Istat (2001)	10,225	3,958
FIG1KM	People aged 15 and more with children living within 1 kilometre (cohabitants or not) for every 100 families with children of the same area.	1998	Istat (2001)	86,245	3,594
FRATELTG	People meeting their brothers and/or sisters everyday for every 100 people with brothers and/or sisters of the same area.	1998	Istat (2001)	6,955	3,199
GIOBAM2S	People aged 6 and more playing with children once a week or more for every 100 people of the same area.	2000	Istat (2002b)	32,11	2,33
INCPARTG	People aged 6 and more meeting family members or other relatives everyday for every 100 people of the same area.	2000	Istat (2002b)	59,735	5,448
MUM16KM	People up to 69 having their mother living 16 kilometres away or more (in Italy or abroad) for every 100 people with an alive mother of the same area.	1998	Istat (2001)	28,595	5,408
MUM1KM	People up to 69 having their mother living within 1 kilometre (cohabitant or not) for every 100 people with an alive mother of the same area.	1998	Istat (2001)	46,055	9,139
NOGIOBAM	People aged 6 and more never playing with children for every 100 people of the same area.	2000	Istat (2002b)	36,22	4,19
NOINCPA	People aged 6 and more never meeting their family members and other non cohabitant relatives for every 100 people of the same area.	2000	Istat (2000b)	10,790	4,937
NOPARENT	People aged 6 and more having neither a family nor other non cohabitant relatives for every 100 people of the same area.	2000	Istat (2000b)	23,075	4,900
SODDPAR	People aged 14 and more declaring themselves satisfied of relationships with their relatives for every 100 people of the same area.	2002	Istat (2004a)	36,27	6,34
VFIGTG	People meeting their children everyday for every 100 people with non cohabitant children of the same area.	1998	Istat (2001)	43,245	4,176
VMUMTG	People meeting their mother everyday for every 100 people with non cohabitant mother of the same area.	1998	Istat (2001)	17,075	3,253

Table A2. Indicators of the informal networks of friends and neighbours					
Label	Description	Year	Source	Mean	St.dev
ASSPORT	Non profit sport clubs for every 10.000 people of the same area.	2002	Istat (2002d)	11,440	4,829
BAR2S	People aged 6 and more attending bars, pubs, and circles at least once a week for every 100 people of the same area.	2000	Istat (2002b)	21,500	4,076
CENAF2S	People aged 6 and more having dinner outside more than once a week for every 100 people of the same area.	2000	Istat (2002b)	5,045	1,198
INCAMI2S	People aged 6 and more meeting friends more than once a week for every 100 people of the same area.	2002	Istat (2004)	28,735	1,485
MUBAR	People aged 14 and more attending pubs and bars to listen to music concerts for every 100 people of the same area.	2000	Istat (2002b)	18,620	2,411
NOBAR	People aged 6 and more never attending bars, pubs and circles for every 100 people of the same area.	2000	Istat (2002b)	47,865	6,513
NOCENF	People aged 6 and more never having dinner outside for every 100 people of the same area.	2000	Istat (2002b)	17,265	4,954
NOPARLCO	People aged 6 and more never talking with others for every 100 people of the same area.	2000	Istat (2002b)	8,510	1,269
NOPARVIC	People aged 6 and more never talking with neighbours for every 100 people of the same area.	2000	Istat (2002b)	25,585	3,314
PARCON2S	People aged 6 and more talking with others once a week or more for every 100 people of the same area.	2000	Istat (2002b)	46,965	6,074
PARVIC2S	People aged 6 and more talking with neighbours once a week or more for every 100 people of the same area.	2000	Istat (2002b)	22,940	3,328

Table A3. Indicators of social capital as voluntary organizations					
Name	Description	Year	Source	Mean	St. Dev.
AIUTOVOL	People aged 14 and more who have helped strangers in the context of a voluntary organization's activity, for every 100 people of the same area.	1998	Istat (2001)	5,080	1,407
AMIVOL	People aged 6 and more who, when meeting friends, carry out voluntary activities for every 100 people meeting friends of the same area.	2002	Istat (2004a)	3,920	1,287
ORGANIZ	Voluntary organizations for every 10.000 people	2001	Istat (2004b)	4,195	3,284
RIUASCU	People aged 14 and more who have joined meetings in cultural circles and similar ones at least once a year for every 100 people of the same area.	2002	Istat (2004)	8,485	3,862
RIUASEC	People aged 14 and more who have joined meetings in ecological associations and similar ones at least once a year for every 100 people of the same area.	2002	Istat (2004)	1,755	0,458
SOLDASS	People aged 14 and more who have given money to an association at least once a year for every 100 people of the same area.	2002	Istat (2004)	15,635	6,250

Annex B. The measurement of the state of health of urban ecosystems

Annex B. Measuring well-being in Italy

NGOs joining Lunaria's campaign of assessment of national budget law are: Altreconomia, Antigone, Arci, Arci Servizio Civile, Associazione Finanza Etica, Associazione Obiettori nonviolenti, Associazione per la Pace, Beati i Costruttori di Pace, Campagna per la Riforma della Banca Mondiale, Carta, CIPSI, Cittadinanzattiva, Cnca, Comitato Italiano Contratto Mondiale sull'Acqua, Coop. ROBA dell'Altro Mondo, CTM - Altromercato, Donne in nero, Emergency, Fondazione Responsabilità Etica, ICS, Legambiente, Lila, Lunaria, Mani Tese, Medici Senza Frontiere, Microfinanza, Pax Christi, Rete Lilliput, Terre desHommes, UISP, Unione degli Studenti, Unione degli Universitari, Un Ponte per…, WWF.

Table B1. Indicators of human development			
Label	Description	Year	Source
ISUA	Adjusted human development index, computed as the arithmetic mean of LIFE, SCHOOL and INCOME	2001/02	Lunaria (2004)
LIFE	Dimensional index of life expectancy. Minimum value = 50 years. Target value = 80 years	2001	Lunaria (2004) drawing on ISTAT (2001b)
SCHOOL	Dimensional index of high school attendance, given by the percentage of people aged from 14 to 18 who are enrolled in high schools. Minimum value = 0. Target value = 100	2001	Lunaria (2004) drawing on ISTAT (2001c)
INCOME	Dimensional index of per capita income. Minimum value = 5.000€ Target value = 40.000€ INCOME = [log (effective value) - log(5.000)] / [log(40.000) - log(5.000)]	2002	Lunaria (2004) drawing on Bank of Italy (2004)

Table B2: Basic indicators of urban ecosystems' state of health

1) **Air monitoring**. Number and type of surveying centres (according to DM 20/5/91, DM 25/11/94). Data provided by municipalities, 2002.
2) **NO2**, annual average value (µg/mc). Municipalities, 2002.
3) **PM10**, annual average value (µg/mc). Municipalities, 2002.
4) **Water consumption**, per capita water consumption in respect to the civil supplying (l/res/days). Municipalities, 2002.
5) **Nitrates**, average contents (mg/l) in the drinkable water. Municipalities, 2002.
6) **Water softening** percentage of civil supplying softening. Municipalities, 2002.
7) **Urban waste**. Per capita urban waste production (kg/res/year). Municipalities, 2002
8) **Differentiated waste raising**. Percentage on the total amount of waste. Municipalities, 2002.
9) **Public transport** trips/res/year. Municipalities, 2002.
10) **Circulating cars** cars/100 res. Data provided by the ACI (*Automobile Club Italia*), 2001.
11) **Pedestrian areas** sm/res. Municipalities, 2002.
12) **Controlled traffic areas** (ZTL, *Zone a traffico limitato*), sm/res. Municipalities, 2002.
13) **Cycle tracks**. m/res. Municipalities, 2002.
14) **Public parks and gardens**. sm/res of enjoyable parks and gardens. Municipalites, 2002.
15) **Green open spaces**. Green areas surface (including urban public parks and natural reserves) in respect to the total urban surface (sm/ha). Municipalities, 2002.
16) **Domestic electrical consumption**. Consumo elettrico domestico pro capite (kWh/ab/anno) GRTN, dati 2001 provinciali
17) **Fuels**. Per capita consumption of fuels (kep/ab/anno). Data drawn by the MICA Oil Bulletin, 2001.

18) **ISO 14001 certified firms**. Number of certificates for every billion of added value. Data provided by the Istat, 2000.

19) **Unauthorized buildings**. Number of unauthorized buildings for every 1000 households. Data provided by Cresme Legambiente at the provincial level, 2002.

20) **Eco management.** Latent indicator synthesizing: public administration purchase procedures of "ecolabel" products, use of biological foods in public refectories, use of recycled paper in public offices, public transport means exerting a low environmental impact. Data provided by Municipalities, 2002

Source: *Legambiente* (2003a)

Table B3. Indicators of social quality			
Label	Description	Year	Source
QUALSOC	Index of social quality, given by the arithmetic mean of SODDSAN, AMBSCUO, PARIOPP and PRECAR.	2000 /02	Lunaria (2004)
SODDSAN	Index of people satisfaction towards public health care services, given by the arithmetic mean of SODMED, SODING and SODIGI.	2000	Lunaria (2004)
SODMED	People aged 14 and more declaring themselves very satisfied with the national health care system, with regard to medical assistance, for every 100 public hospitals patients.	2000	Istat (2001b)
SODINF	People aged 14 and more declaring themselves very satisfied with the national health care system, with regard to nursing assistance, for every 100 public hospitals patients.	2000	Istat (2001b)
SODIGI	People aged 14 and more declaring themselves very satisfied with the national health care system, with regard to hygienic conditions, for every 100 public hospitals patients.	2000	Istat (2001b)
AMBSCU	Weighted average of 52 indicators of the quality of school infrastructures. Weights are given by each province's population. Basic indicators can be equal to 0 (unsatisfactory) or 1 (satisfactory)	2000	Legambiente (2003b)
PARIOPP	Index of gender equality, given by the arithmetic mean of two dimensional indexes measuring women's participation to political affairs and to the labour market. The former is given by women's membership in regional councils. Its maximum value is 1, when women's participation is equal to 50%. The latter is given by the absolute difference between men's and women's employment rates in 2002. It ranges from 1, when there is no difference, to 0, when the difference is equal to 100.	2002	Lunaria (2004)
PRECAR	Index of labour precariousness. It is the complement to the unity of a precariousness index, given by the ratio between three variables representing precariousness and the regional labour force. The three variables are workers with provisional contracts (*lavoratori interinali* and *lavoratori a tempo determinato*), the number of the so-called *co-co*-co (*collaboratori continuati e coordinati*) and the number of people looking for a job. The index ranges from 1 (highest precariousness) to 0.	2000 /02	Lunaria (2004)