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A New Proxy of Social Capital and the Economic Performance across the Italian Regions

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Abstract

In the last 20 years, social capital, has been evoked in several field of social science research and used to explain a vast range of phenomena: political participation, institution performance, corruption, economic success of countries and so on. Unfortunately, dealing with social capital at a scientific level presents, at least, three main problems. First social capital's definition is still elusive, especially due to its multi-dimensional nature. Second, it is a particular form of capital related to a very high level of intangibility. Finally, because of lack of suitable data there is neither a universal measurement method, nor a single underlined indicator commonly accepted by the literature. These are some of the reasons for which social capital measures are considered as proxies. By using the density of workers within industrial districts, we have constructed an alternative proxy to those that already exist in the literature in order to empirically analyse the difference, in terms of economic performance, across the Italian regions. The methodology we have applied to derive the index is identical to that one used to construct the Putnam's instrument. Empirical evidence shows that our measure does not affect macroeconomic indicators such as investment and income per capita. However, it significantly influences unemployment disparities, and the level of innovation.

JEL Classification: R100, R320, Z130

Keywords: Social capital, Industrial districts, Economic performance

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Introduction

According to Coleman (1988) there exist at least three kinds of capital in which economic studies are interested: physical, human, and social capital.

Physical capital is created by changes in materials to form tools that facilitate the production.

Human capital is created by changes in persons that bring about skills and capabilities that make them able to act in new ways.

Social capital is created by changes in the relations among persons that facilitate actions.

Still Coleman (1988) points out that like the other forms of capital, social capital is productive, making possible the achievement of certain ends that in the absence would not be possible. On the other hand, unlike the other forms of capital, social capital inheres in the structure of relations between actors and among actors. It is not lodged in the actors themselves or in physical implements of production.

In the last 20 years, social capital (SC) has been invoked in several fields of social science research and used to explain a vast range of phenomena: political participation, institution performance, corruption, economic success of countries and so on. Unfortunately, dealing with SC at a scientific level presents, at least, three main problems. First, social capital's definition is still elusive, especially due to its multi-dimensional nature. Second, it is a particular form of capital related to a very high level of intangibility. Finally, because of lack of suitable data there is neither a universal measurement method, nor a single indicator commonly accepted by the literature. These are some of the reasons for which social capital measures are considered as proxies. By using the density of workers within industrial districts, we have constructed an alternative proxy to those that already exist in the literature in order to empirically analyse the difference, in terms of economic performance, across the Italian regions.

Our proxy, theoretically can solve three main problems related to the Putnam's instrument highlighted by Martin Paldam (2000) which are: the definition of voluntary association, the intensity of the contacts and the so called "Beningnness-weight problem"

Our finding shows that the index together with the variable of "associational activity" is negatively and significantly related to the unemployment rate. While the

associational activity does not have any significant influence on innovation, our proxy positively affects innovation in terms of the number of patents. These results convince us to employ the new proxy in further works especially in connection with what the OECD report called “economic well-being”.

The paper is divided into the following sections.

Section 1 explains the concept of social capital and its bonding and bridging side by also using a general schematic visual model.

Section 2 presents the so called dark side of social capital by describing the Woolcock’ dilemma according to which both “too little” and “too much” social capital at any given institutional level can impede economic performance.

Section 3 describes the different measures employed in the literature in order to empirically analyse the economic effects of this particular asset.

Section 4 focuses on the network and the embeddedness that an industrial district is likely to create. The section considers the Italianate industrial districts a la Markusen (1996) and explains the concept of the “custom of reciprocal cooperation” developed by Dei Ottati (1994).

Section 5 presents the index and its construction and shows why, according to our analysis, the index is likely to avoid the three problems faced by the Putnam’s instrument.

Section 6 develops the empirical analysis first at a descriptive level, and by using regressions. The data comes from the Italian National Statistical Office (ISTAT) and are based on year 2001. The analysis is developed through cross sections since the data used to derive our index comes from a CENSUS on “Industry and Industrial Districts 2001”.

Section 7 presents the conclusions (At the end of the paper “Appendix A” shows the model use by the ISTAT in order to identify the Industrial Districts).

1. Social Capital and Definitions

Within the family of the social capital theorists it is generally accepted that Social capital (SC) describes the pattern and intensity of networks among people and the shared values which arise from those networks. Greater interaction between people generates a greater sense of community spirit. Considering a more simple definition used by the Office for Economic Co-operation and Development (OECD), SC refers to "networks together with shared norms, values and understandings that facilitate co-operation within or among groups". It may be useful to analyse the key elements underlined in the OECD definition.

Networks indicate personal relationships which are accumulated when people interact with each other in families, workplaces, neighbourhoods, local associations and a range of informal and formal meeting places

Shared norms and values are related to shared attitudes towards behaviour that are accepted by most individuals/groups as a “good thing”: for example not parking in a disabled parking space at a supermarket, recycling etc…

Finally, Groups are classified considering different characteristics:

- Geographical groups: people living in a specific neighbourhood
- Professional groups: people in the same occupation, members of a local association or voluntary organisation
- Social groups: families, church-based groups
- Virtual groups: networks generated over the internet in chat rooms through common interest groups

Considering these basic terminologies, other definitions have been promoted in the literature. I will concentrate on those developed for economic purposes and that refer to a common basic idea: social networks are a valuable asset.

Bourdieu (1983) underlines that **“**Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition”. In other words, social capital is made up of social obligations and connections within members in a group (Lin 2001).

Coleman (1988) considers that **“**Social capital is defined by its function. It is not a single entity, but a variety of different entities, having two characteristics in common: they all consist of some aspect of a social structure, and they facilitate certain actions

of individuals who are within the structure". Still Coleman (1990) highlights that social capital represents the resources, real or potential, gained from relationships. In other words, it is a public good, and as a public good, it depends on the willingness of the members of the community to avoid free riding. For this purpose, norms, trust, sanctions and values become important in sustaining this collective asset.

According to Putnam et al. (1993) **"**Whereas physical capital refers to physical objects and human capital refers to the properties of individuals, social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense social capital is closely related to what some have called "civic virtue." The difference is that "social capital" draws attention to the fact that civic virtue is most powerful when embedded in a network of reciprocal social relations. Putnam underlines that "a society of many virtuous but isolated individuals is not necessarily rich in social capital".

If all the previous definitions describe the concept from different perspectives, it seems that they present a common view: it is the interactions between members that make possible this social asset to be produced and maintained.

To this purpose Lin (2001) points out that if social capital may be defined operationally as resources embedded in social networks (or ties) accessed and used by its members, then two components have to be taken into account. First, social capital represents resources embedded in social relationships rather than individuals. Second, the access and the use of such resources reside with the members. This implies that "ego must be cognitively aware of the presence of such resources in his relations and networks". Only if this particular condition is satisfied the individual can capitalise on such ties and resources.

From this initial presentation two key elements are brought out: the importance of the network and the importance of the embedded resources.

By combining the two elements within a single analysis, Granovetter in 1973 formalised the concept of "The Strength of the Weak Ties". Let's consider an individual embedded in a social circle. This individual will tend to interact first with other members having similar characteristics or resources (eg. An immigrant builds relationships at a first stage with other immigrants speaking the same language and coming from the same country). These similarities, of course, will affect the type of resources accumulated, for instance information. Within the same circle with the same people the information exchangeable will be similar. If individuals need different

information they will need to interact with individuals belonging to a different circle. In other words, between the two circles (the one to which the initial individual belongs and a potential different one) a link or a tie needs to be built. The ties between different social circles are called bridges. Using Lin's words, "without bridges the two circles will be independent".

The ties within a circle are usually stronger and lead to what in the literature is called bonding social capital which identifies closer connections between people with similar characteristics (same family, same ethnic group).

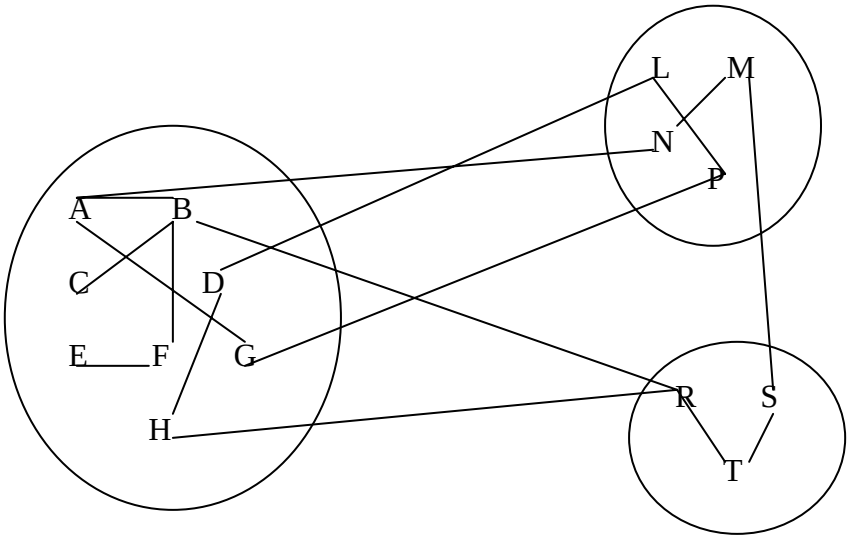
The ties between circles identify more distant and weaker connections (eg. Business associates, friends from different ethnic groups, people belonging to different companies and enterprises….) and lead to what is called bridging social capital. According to Granovetter, these weak ties might contribute to information flows since through these bridges a member of a group or association may learn and gain information about other groups.

In the Diagram1 we depict three different circles with different members belonging to each of the circle. The arrows identify the connections between two or more members.

The connections between two members belonging to the same circle (e.g. C-B or L-P or T-S) represent bonding connections (or strong ties) while connections between two or more different circles (e.g. R-B R-H or M-S or A-N) represent bridges (or weak ties).

An extra feature that can be derived from the diagram 1 is what Lin calls direct and indirect ties. Resources can be accessed through direct and indirect connections. A and N are directly connected, but M is connected to A through N. A potential scenario could be the following. Let's assume that M is interested in a particular job position and that "information X" (for instance extra details, not available in the market, about the job position and the interviewer) is the social resource we are considering to which M wants to have access in order to increase the probabilities to get that job. M starts to use her connections and she immediately contacts N. Unfortunately the direct contact does not possess this information but knows someone else, say A, who has it. A will represent for M an indirect tie. Hence Lin concludes that social capital extends as far as the social networks of the members of the groups..

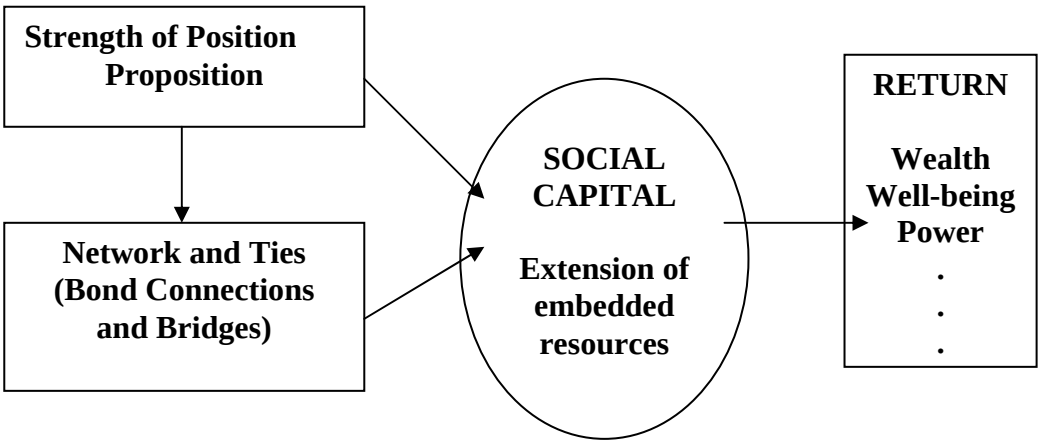
Diagram 1 Bridging VS Bonding Connections



Since we have established the importance of networks and of the embedded resources there is a postulate that social capital theorists take into account. This is what Lin calls the “Strength of Position Proposition”. This postulate indicates that, considering a member of a network, the better the position of origin, the more likely it is that this member will access and better use the social capital. For instance a better educated individual might use his connections in order to achieve higher goals than a less well educated individual. An individual with a high income or a high social status might have better connections inside the society and achieve higher level of wealth or well-being relative to an individual with a low social status or low income (it is more likely for a lawyer to have a doctor within her friends than for a plumber).

Considering all the elements we have described so far, social capital as collective asset, network and strength of position, we can now assemble in the diagram 2 in order to create a general picture of the concept.

Diagram 2 General Schematic Visual Model of Social Capital



The initial position may represent an advantage in terms of quality connections. Because of strong and weak connections through direct and indirect ties a member of a group can have access to the embedded resources (e.g. information about a job position) as long as this member is aware of the existence of such resources. The access to this form of capital can make the individual better off in terms of wealth, well-being, power etc…

2. The Dark Side of Social Capital

Social capital as economic asset has been supported but also criticized by part of the literature.

Arrow (1999) considers that "capital" is something "alienable" and its ownership cannot be transferred from one person to another. Therefore, it is difficult – as with human capital – to change the ownership of social capital[1].

Some other economists are quite critic, not of the idea and the importance of social capital, but particularly on the use that has been made of it in the literature in order to explain economic improvement.

[1] However, Uzzi (1997) shows that embeddedness made by two agents can be transferred to a third agent. In a way, this is like transferring the ownership of social capital

Routledge and Von Amsberg (2003) relate social participation to labour turnover. More precisely high labour turnover means that people devote more time to work and consumption, hence sustaining growth, and less time for social participation. On the other hand, reducing labour mobility implies lower labour efficiency and an increase in the proportion of trades that are cooperative.

Also supporters of social capital recognise that this particular asset has its dark side.

Recalling Putnam's definition, social capital refers to connections among individuals implying elements such as networks and trust.

Glaeser (in "Social Capital Critical Perspectives" pg113, Baron et al. 2000) defines trust as the commitment of resources to an activity where the outcome depends upon the corporative behaviour of others.

However, according to Fukuyama (2001), even though trust has a general positive value, it might represent an opportunity for those who wish to engage in fraud. The more an individual inside a community is trusted by the other members, the less his actions are monitored by the rest of the community. This implies that the individual has greater possibilities if he wants to engage in fraud.

Moreover, networks might represent a mechanism for both socio-economic inclusion and exclusion (Maloney, Smith and Stoker in Social Capital Critical Perspectives. Northern Ireland example pg 218).

The main dilemma pointed out by Woolcock is that: both "too little" and "too much" SC at any given institutional level can impede economic performance (Woolcock 1998).

We consider it opportune to explain this dilemma in more details, since it implies the presence/absence of strong and weak relations within a society.

We can easily consider a society made up of individuals, households and small groups of communities. The trust between the members of a community is called in the literature "generalised trust", while the trust that occurs between the members of a community and the institutions running that community is called "institutional trust"

Woolcock defines "Integration" as process that develops intra-community ties. The more intensive the social ties and generalised trust within a given community, the higher is the endowment of this form of social capital. On the other side, he defines "Linkage" as the extra-community networks, in other words, the bridges (using Granovveter's terminology) that can be built between two or more different

communities. The dilemma says that “more is not necessarily better”. To this purpose Woolcok identifies four cases (Tab. 1).

Table 1 Linkage VS Integration (a la Woolcock)

LINKAGE	**High**	Anomie	Social Opportunity
	Low	Amoral Individualism	Amoral Familism
		Low	**High**
	INTEGRATION		

First, when generalised trust is mainly present among family members or blood relatives and absent across different groups then non-developmental reality is likely to be present. A situation characterised by a strong social integration and the absence of linkage has been called by Edward Bonfield[2] (1958) “amoral familism”. Second, the absence of both integration and linkage leads to what Woolcock calls “amoral individualism” according to which members are isolated from all forms of cohesive and social networks. Third, the presence of the only “Linkage” is associated with what he calls “anomie”, where individuals have the freedom and opportunity to participate in a wide range of activities but lack the stable community base to provide guidance, support and identity (e.g. urban setting and modernisation). Finally, the last case is the best possible scenario where both integration and linkage work and therefore strong and weak ties together increase social opportunities.

It is clear that the main weakness of this particular form of capital is that it needs to be balanced between its bonding and bridging side.

A second critical point is related to the methodologies that have been used so far to measure this particular asset. This will represent the topic of the following chapter. We anticipate that, because of the large multidimensional nature of social capital, its different measures are considered as proxies. Moreover, because of the absence of a

[2] Banfield identified “amoral familism” as one of the main causes of Southern Italy’s underdevelopment (Sabatini, 2005)

common definition and the difficulty in quantifying this asset, to derive a potential measure is challenging and not always straightforward.

3. Measures of Social Capital

During the last ten years several methods of measuring SC and testing its ability to produce relevant economic, social and political outcomes have been used. However, there are still problems in accepting results and methods, due in particular to several shortcomings underlined by Sabatini.

First, the definition of social capital is still elusive. Coleman, for instance, defines social capital by its function. Actually, Lin notices that this functional view may imply a tautology: social capital is defined when and if it works. The causal factor is defined by its effectual factor. By using an example, for actor X kin ties are social capital because they channel X to get a better job, while for actor Y, kin ties are not social capital because they do not channel Y to get a better job. Recalling, instead Putnam's approach, the associational life represents a crucial element in measuring SC. Putnam, in analysing the difference in terms of collective well being between Northern and Southern Italy, uses the participation in voluntary organisations as one of the main instruments. One of the criticisms that this approach receives is that "group experiences might be more pronounced in their impact when members are diverse and from different background". Actually voluntary associations might be characterised by groups that are relatively homogeneous in character (Sabatini 2006). In other words, a high level of homogeneity within the group is likely to reduce new possible bridges between circles. Moreover, Putnam's analysis[3] is based on what in the literature is called a "bottom-up" approach, which indicates initiatives that take place at the local level without involving government intervention and policies that might influence the stock of social capital within a community. Actually, Woolcock (1998) considers that a possible solution to the social capital dilemma is to balance and integrate the bottom-up approach with the top-down approach where synergies between State and Society have to be involved in the analysis.

[3] Putnam's approach, according to John Field (2008) has been influenced and follows the de Tocqueville's thought. In analysing the democracy in the North America, de Tocqueville used the terms "Art of association" to describe the Americans' propensity for civil associations. "The vice of modern democracy is to promote excessive individualism that is a preoccupation with one's private life and family, and the unwillingness to engage in public affairs. Americans combated this tendency towards excessive individualism by their propensity for voluntary associations (de Tocqueville in "Democracy in America" – quoted in Fukuyama 2001)

Second, empirical works address different dimensions of SC, hence particular measures derive from different sources. There are two main approaches to measuring social capital. The first one is to use survey data on the level of trust and civic engagement. For this purpose a set of different questionnaires are used. For instance, cross-national studies use measures of trust drawn from the WVS (World Value Survey) which is based on the question: "generally speaking, would you say that most people can be trusted or that you can be too careful in dealing with people?" The possible responses to this question are: "Most people can be trusted", "Can't be too careful", or "Don't know". The trust indicator is given by the percentage of people giving the first answer. One of the problems related to this measure is that it is not clear if respondents interpret the meaning of "trust" or "most people" in the same way across countries, cultures and times (ages) (OECD 2001). The second approach is to conduct a census of groups and group memberships in a given society. On top of the problems discussed relative to Putnam's analysis, Narayan and Cassidy underline that measures that use associations are generally partial since they do not include characteristics of these organisations. In other words, many different types of organisations are put into the same set without considering that some of them may negatively influence the stock of social capital (see Putnam's Instrument VS our new proxy in chapter 5).

The third shortcoming pointed out by Sabatini is that some measures of social capital are derived by using indirect indicators which lead to confusion about what social capital is and what its outcomes are, and what the relationship between SC and its outcomes may be. According to the previous definitions, social capital represents the social resources emebedded in connections. This implies that norms of reciprocity and trust are important in order to maintain and maybe increase the stock of this particular asset. However, it is important to distinguish between elements such as trust and norms from social capital. It should not be assumed that they are all alternative forms of SC, or are defined by one another (Lin 2001). For instance, Woolcock stresses the idea that trust might represent a measure of social capital but it definitively does not represent social capital per se.

For completeness we want to briefly present a few examples of empirical works each of which has used different proxies and achieved different outcomes.

Guiso, Sapienza, Zingales (2004) relate social capital to financial development. The main idea is that social capital improves economic efficiency by increasing the level

of trust. Since financial contracts are the ultimate trust-intensive contracts, SC should have major effects on the development of financial markets. The authors measure social capital through blood donation and electoral participation, claiming that both measures are driven only by social pressure and internal norms (fundamental components of social capital). The result is a positive and significant relationship between SC and financial development. The only problem is still based on the fact that using indirect indicators leads to confusion between the concept of social capital and its outcomes.

Sabatini (2005) focuses his studies on the structural components of social capital identified with social networks. Contrary to Putnam he considers the multidimensionality of each type of social network. Empirical evidence shows that weak ties positively affect economic performance while strong ties reduce labour precariousness.

De Clercq and Dakhli (2003) analyse the effect of human and social capital on innovation. They consider how different dimensions of social capital (generalised trust, institutional trust, associational activities and norms of civic behaviour) may influence the level of innovation in a cross country analysis. The find partial support for the positive effect of trust and associational activity on innovation. On the other hand they find negative relationship between norms of civic behaviour and one of the innovation measures.

Knack and Keefer (1997) by using the World Value Survey data analyse the influence of trust and civic cooperation on economic performance across 29 markets. They find the two elements to be positively correlated to income and education but they find that Putnam's measure (calculated as memberships in formal groups) is not associated with trust of with improved economic performance.

Casey and Christ (2005) by using Putnam's index relative to economic performance across American States find that social capital does not affect aggregate measures of output and employment, even though it has a positive and significant influence on economic equality and employment stability.

4. Industrial Districts between Network and Embeddedness

As we have seen so far, social capital theorists stress the idea that network and embeddedness represent the framework of social capital. Since in the previous chapters we have described different types of relationships involving two or more actors within a network, we consider it opportune at this stage to briefly clarify the concept of embeddedness. By using Uzzi's works (1997, 1999) if we consider an economic environment and the firms as main actors of this community, then one of the concepts used in the literature to understand inter-firm networks is so called "Embeddedness". To this purpose, Uzzi identifies two forms of relationship: the arm's-length relationship based on the "one shot deal" and the embeddedness relationship, consisting of a more personal business relationship, or even better, a business friendship. The latter has three main components.

The first component is trust, which is seen by the partners more under a heuristic[4] approach rather than a typical self-interest approach. Trust is developed through extra efforts (called "favours") that are voluntarily given and reciprocated without any formal devices used to enforce this reciprocation (e.g. contracts, fines, overt sanctions…). Of course, trust can break down in case of repeated abuse by one part.

Second, fine-grained information transfer which is more than a matter of asset specific know how or reducing informational asymmetry between parties, because the social relationship imbues the information with veracity and meaning beyond its face value.

Finally, joint problem-solving arrangements which indicate a problem-solving mechanism that enables actors to coordinate functions and work out problems "on the fly". This refers to routines of negotiation and mutual adjustment that flexibly resolve problems. The mechanism implies that firms, in an embeddedness relationship, work through problems and get direct feedback, increasing learning and the discovery of new combinations. The result is a reduction of production errors and an increase in innovation.

[4] In the analysis of the trust the "traditional" self-interest approach supported by game theory studies is not considered the most correct one, especially for this kind of relationship. Instead, according to a heuristic approach, the author underlines the predilections to assume the best when interpreting another's motives and actions.

The industrial districts (IDs) may represent a particular environment in which network and embedded resources are maintained and possibly grow over the time and among its members. We define industrial districts as a local system characterised by the active co-presence of a human community and a dominant industry consisting of a set of small independent firms specialising in different phases of the same production process (Sforzi 2002). Marshall is one of the pioneers who analysed industrial districts. Marshallian industrial districts are characterised by small locally owned firms that make investments and production decision locally (Markusen 1996). This particular cluster of small and medium sized enterprises (SMEs) is integrated within the community where it is located. Therefore economic relations are likely to be influenced by social relations by facilitating, in this way, the building of a community whose elements (individuals, households, firms and local administration) share the same system of norms, values and original culture. This, in turn, facilitates the creation of a more consistent system of trust within the environment itself. By using a Marshallian expression, all the members of this community benefit from the fact that "the secrets of industry are in the air".

We are going to show the industrial districts scenario through two steps. First, we consider Markusen's analysis of IDs with particular attention to the so called Italianate type. Second we present the concept of what Dei Ottati calls "The Custom of reciprocal Co-operation" that he refers to the industrial district scenario.

Diagram 3 on Marshallian industrial districts (a la Markusen) shows a community in which there are ties between members belonging to different companies that develop a system of competition and collaboration. In simple words the scenario depicted in the diagram is the following. The ID presents many small companies buying and selling from each other for eventual export outside the region. They need to purchase raw materials and business services from outside the area (on the left) and they sell to external markets (on the right).

Diagram 3 Marshallian's industrial Districts (a la Markusen)

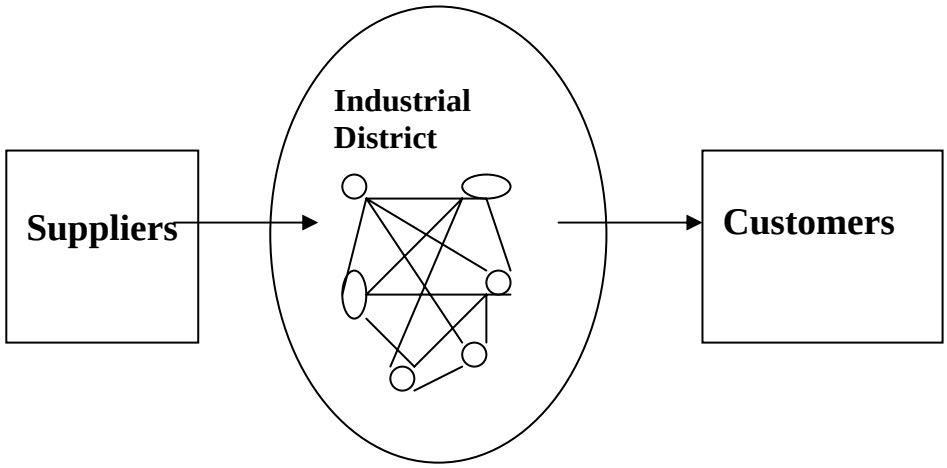


Table 2 shows the features of the Marshallian ID and the Italianate Version. From the table, it appears that the structure of the ID is based on small local companies that constantly trade among each other and that plan their investments locally. Moreover inside the districts the relationships are based on long-term contracts. This identifies the ID as a long-term network with long term relationships that help to create an environment able to promote inter-firm cooperation (Knorringa and Stammer 1998). Conversely, time-limited agreements are only established in order to achieve a particular goal within a particular period of time. Using Uzzi's terminology, the relationships inside the districts are more of the type of embeddedness relationships rather than arm's-length relationships.

Markusen underlines that "what makes the industrial districts so special and vibrant, in Marshall's account, is the nature and quality of the local labour market". This is based on two particular characteristics. First, it is very flexible with workers moving from a company to another bringing with them, of course, not only the acquired knowledge (human capital) but also the previous connections with ex-colleagues or workmates (social capital). Second, the workers' commitments are first with the district and second with the firms. This explains why there is a very low degree of (out)migration since the individual considers himself first a member of an embedded

community endowed with a particular identity and culture, and only secondly a worker of a firm.

Table 2

Features of Marshallian and Italianate Industrial Districts (a la Markusen)		
Features	**Marshallian ID**	**Italianate Version**
Prevailing Mraket Structure	Local SMEs	Local SMEs
Economies of Scale	Low	Low
Intra-district Trade	Highly developed	Highly developed
Key Investments	Local decision	Local decision
Buyer-Producer Cooperation		Important
Regulation of Relationships	Long-term contracts	Long-term contracts
Labour Market	Internal to the ID highly flexible	Internal to the ID highly flexible
Relationship External to the District	Low cooperation with firms outside the district	Low cooperation with firms outside the district
Workers' Commitment	1st with ID, 2nd with enterprises	1st with ID, 2nd with enterprises
Labour Immigration	High	High
Labour (out)migration	Low	Low
Local Cultural Identity	Developed	Developed
Sources of Financing and Technical Assistance	Internal to the ID	Internal to the ID
Patient Capital*	Exists	Exists
Personnel Exchanges		High
Cooperation among Competitors		High in order to share risk and innovation
Innovation		Disproportionate shares of workers engaged in design and innovation
Local Trade Association		Strong presence
Local Government		Important

Source: Integration between Markusen (1996) and Guerrieri-Pietrobelli (2000)

***** Presence of financial institutions willing to take long-term risks, for the confidence and information they possess

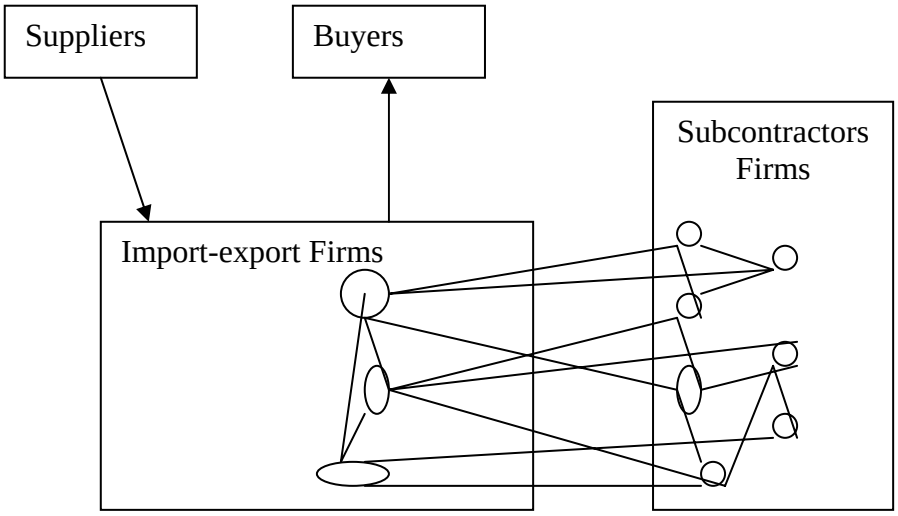
A particular characteristic of Marshallian industrial districts is the presence of what is called "patient capital". This indicates local financial institutions, integrated within the ID, willing to take long-term risks because of a high level of inside information and trust in local firms.

The Italianate version presents some extra features. First of all, there is cooperation between buyers and producers and among competitors (see Sexenian 1996). This has at least two important implications. First, competitor firms share risks making the market more stable. Second, the flow of information resulting from the tendency to cooperate and the ability to work together have a positive effects on the innovation capacity in the area (see Sexenian 1996). As Guerrieri and Pietrobelli point out, most of the technological knowledge is tacit, complex and systemic. Therefore frequent and informal personal contacts and exchanges represent crucial elements because innovation develops. Moreover, unlike Marshallian IDs, the Italianate version seems to imply an higher level of associational activities through the local trade associations that provide technical support, organise meeting and forums and spread a sense of collective spirit.

The Italianate versions of the industrial districts shows that a system of strong and weak connections exists and that it facilitates the accumulation of these types of collective assets such as trust and information. However it does not explain the dynamic that permits this high level of trust to be so common within an industrial district. Dei Ottati describes this dynamic through the concept of what he calls “the custom of reciprocal cooperation”. The analysis is based on three initial main points (or facts). First, the labour mobility between firms reinforces the reciprocal interdependence and favours the perception of the human capital at the local industry as a kind of collective property. Second, because of the limited geographical dimension of the environment in which an ID grows, the local agents can easily observe and remember the past behaviour of the people with whom they have had previous business relations. Finally, due to the last point, in case of incorrect behaviour, the widespread possibility of punishing by withdrawing the willingness to conclude future transactions with them more a social disapproval represents a useful grim strategy. Therefore, the “custom of co-operation” (strictly linked with a long term network) helps to reproduce trust, reducing the demand for substitutes for trust and the need to monitor which, in turn, implies less direct costs (monitoring costs *in primis*) and the possibility to generate distrust.

The circulation of inside information, together with the relatively high level of trust, represents another collective resource of the industrial district (Diagram 4).

Diagram 4 Networks and embeddedness related to the Industrial Districts



As we have seen from Markusen's analysis, high level of mobility facilitates the flow of information among members. Moreover, Dei Ottati shows that there also exists a high level of what we call here "mutual information" among firms. Dei Ottati considers two types of firms that co-exist within an ID. The first type is represented by the companies that are generally specialised in buying and selling (or "import-export"). This means that they possess the information on end-market conditions. The second type refers to firms (Dei Ottati calls them "subcontractors") specialised in different phases of the production process that, therefore, possess information on the conditions of production. This scenario implies different types of information (about the market conditions, and about the production process) hold by different types of actors that, in turn, are responsible for different stages of the same "project". As a result this system of mutual information facilitates reciprocal co-operation inside the industrial district network by increasing, in this way, the capital of collective assets.

From the analysis made so far about the IDs we might probably derive a first general outcome. A district is a network with embedded resources (information for instance) where the connections among the actors (members and firms belonging to the district) are used constantly through mutual cooperation which may help to build an idiosyncratic system of mutual trust. If this is true, the industrial district may represent

a network where the “capital of connections” is crucial not only for the single member but for the entire community.

5. Putnam’s Instrument and a New Social Capital Proxy.

As I mentioned previously, the multidimensional nature of social capital leads us to construct measures of this particular asset that are considered as proxies[5].

Information and trust are vital for a network since they represent most of the network’s “intangible” resources which might help the society to achieve either economic and social outcomes that are tangible (well-being, higher employment rate, innovation in terms of patents and products …) or intangible (sense of social security, sense of well-being, innovation in terms of tacit knowledge….). If information represents the primary resource that an individual or a group wants to achieve through the available “capital of connections”, “trust” might be one of the engines that makes (at least partially) this system work.

Recalling Putnam, networks and associational activities are important frameworks where social capital can take place and grow. This kind of approach is known in the literature as Putnam’s Instrument. In analysing the difference in terms of governance, institutional performance and well-being between Northern and Southern Italy (Putnam, Leonardi and Nanetti 1993), Putnam et al. consider the associational life as one of the crucial variables (other variables are newspaper readers, electoral turnout, preference voting patterns). In simple words, participation in voluntary organisations and social associations promotes among the members collective norms and trust which is fundamental for the production and the maintenance of the community’s well-being. We are going to present the “instrument” by using the formalisation made by Martin Paldam (2000).

Consider a region (or an area) and, hence, consider a population A_i belonging to that region. The associational activity inside the region is based on the voluntary organisations (VOs) that work locally. The goal is to calculate the density of VOs and to consider it as a proxy of social capital. The process is the following.

Consider the following ingredients:

[5] Even though measures of physical and human capital are likely to be considered proxies especially if we refer to these forms of capital under their functional aspects.

A_i where i = 1, 2, ….., n is the population

Π = density of Voluntary Organisations (VOs) which is a proxy of SC (This is Putnam's instrument)

Two ways of deriving Putnam's index

1) by asking people how many organisations they belong to
2) by asking the organisations how many members they have

1) = 2): the survey should give the same result. In case there is a difference, it is possible that this is due to missing observations or other interesting problems.

First way

P_i = a person belonging to y_i organisations

$$N = \sum_{i=1}^{n} y_i \quad \text{for} \quad i=1,2,\ldots,n \text{ people}$$

hence

$$\Pi = \frac{N}{n}$$

Second way

The organisation j has z_j members

$$M = \sum_{j=1}^{m} z_j \quad \text{for } j=1,2,\ldots, m \text{ organisations}$$

Hence

$$\Pi = \frac{M}{n}$$

1) = 2) means that $\Pi = \frac{N}{n} = \frac{M}{n}$

Note that in a homogeneous country, Π may not likely vary much through the country.

Putnam's index is recognised as one of the principal SC indices for at least three reasons. First, it is easy to calculate (it is quite simple to construct). Second, it

combines the element of “trust” with that of “cooperation”. Finally, empirical evidence shows that it is “significant” (even though mainly at a correlation level), proving that there is a positive correlation between SC and economic performance.

However, the critics from the literature are based on three main problems connected with the index.

First, the definition of VOs. Some voluntary organisations are more business-oriented (Bs), some others are government organisations (GOs). Moreover, some of them change their status from GOs to NGOs (Non-government organisations) or from Bs to NGOs and vice versa creating confusions regarding the sample to use.

Second, the intensity of the contacts. One of the problems is to weight the index. Because several VOs exist with memberships that cost little in terms of times and do not demand intensive and frequent contacts, some people, holding a membership, may even not remember that they are members. Therefore each VO is weighted by the number of contacts that p_i has with the organisation. This is not easy to verify or to calculate.

Finally, what in the literature is called the “Benignness-weight problem”. Some VOs are clearly non-benign such as violent organisations, criminal and racist organisations. They do not provide social benefits for the community (especially considering that one of the characteristics of the social capital system is the free exit. This is something not allowed in organisations such as the “Mafia” – See Martin Paldam 2000)

Given the characteristics of the industrial districts, we consider the ID as a particular community and the workers inside the districts as members of this community. The idea is, therefore, to construct a new index by using the same structure and method applied in the Putnam’s one.

As in Putnam’s instrument we consider a population and the members of the associational activities, IDs in our case rather than VOs.

To construct our index we need to follow few steps.

First of all, we need to empirically identify this particular type of network.

The model that has been used to identify the industrial districts within a particular area is presented in the Appendix A. This represents the standard model that is used not only by the Italian National Institute of Statistics but also in the literature (Russo and Rossi 2001, Baffigi, Pagnini and Quintiliani 1997, Sforzi 2002)

If we consider the Italian national territory (the following chapter presents a descriptive analysis of Local Labour Systems and IDs in more details), this is divided

into twenty regions with their own “regional government” and administration. In socio-economic terms, each region is composed by what are called local labour systems (LLS) which indicate territorial groupings of municipalities (*comuni*) statistically comparable such that:

- Each grouping may only include neighbouring municipalities belonging to no other territorial group
- Each grouping is self-contained, in the sense that residents in each area mainly work for local firms, whose head-office is in one of the municipality making up the LLS.

Therefore, according to the empirical definition, IDs are LLS that meet particular industrial concentration criteria and, in particular, two conditions need to be satisfied.

First, the level of employment of small firms operating in the LLS specialised in manufacturing activity must be greater than 50% of total employment in the same activity at the LLS level. Second, in case there is only one medium sized companies in the clusters, then the number of the workers in the small companies has to be greater than the 50% of the number of the workers in the medium sized company (such that the industrial system is not polarised).

Following the same structure of Putnam’s index, consider a socio-economic area, for instance a region. There exists a population of workers $j = 1, 2,\ldots, m$ which is the sum of all the workers belonging to the Local Labour System of the region.

We want to know how many workers in the area work for the IDs

d_j industrial district has l_j workers

$$L = \sum_{j=1}^{m} d_j$$

Therefore $\frac{L}{m} = DIND$

We want to test if the index is significant in an empirical analysis either from an economic perspective or an econometric one

The idea is that by using this index instead, we might solve, conceptually, the three problems related to the Putnam’s instrument.

The first problem will not occur, since the IDs are business-oriented and based on a common structure. Actually, the firms inside the IDs develop together the shape of this particular cluster industry according to the local system of values, norms and the market in and for which they work. However, the general structure with its system of

links is extremely similar from one industrial district to another. In fact, in the literature, empirical works, especially at the macro level, do not distinguish between industrial districts (Russo Rossi 2001, Baffigi Pagnini Quintiliani 1997). Because of this common structure they do not change nature or status as it might more likely happen to the VOs considered by Putnam.

The second problem is solved by the production system of the ID itself. Within a district each firm is specialised in one or few phases of the same production and because of the system of "mutual cooperation" (Dei Ottati 1994) it does not have any incentive in free riding. Moreover, the "membership and the contacts" are represented by the work commitments that all the members respect on a daily basis in order to maximise the profit of their own firm or, in most of the case, to survive.

About the third problem, so far it does not seem that the IDs hide or are based on "shadow criminal organisations" therefore also this problem is voided.

6. Empirical Analysis

The empirical analysis is based on a descriptive analysis of our index (DIND) and on a series of regressions in order to capture the potential importance that the DIND might have for the economic performance across the regions (the variables are described in the Appendix B). The data set used has been constructed from the "8th General Census on Industry and Industrial Districts (2001)", "General Census on Population and Households (2001)" (ISTAT - Italian National Institute of Statistics), data at the regional level on a yearly basis in "System of territorial indicator" still from ISTAT, data on gross capital formation are drawn from Eurostat data set, as well as the data for patent and innovation coming from "ICT Patent Application to European Patent Office".

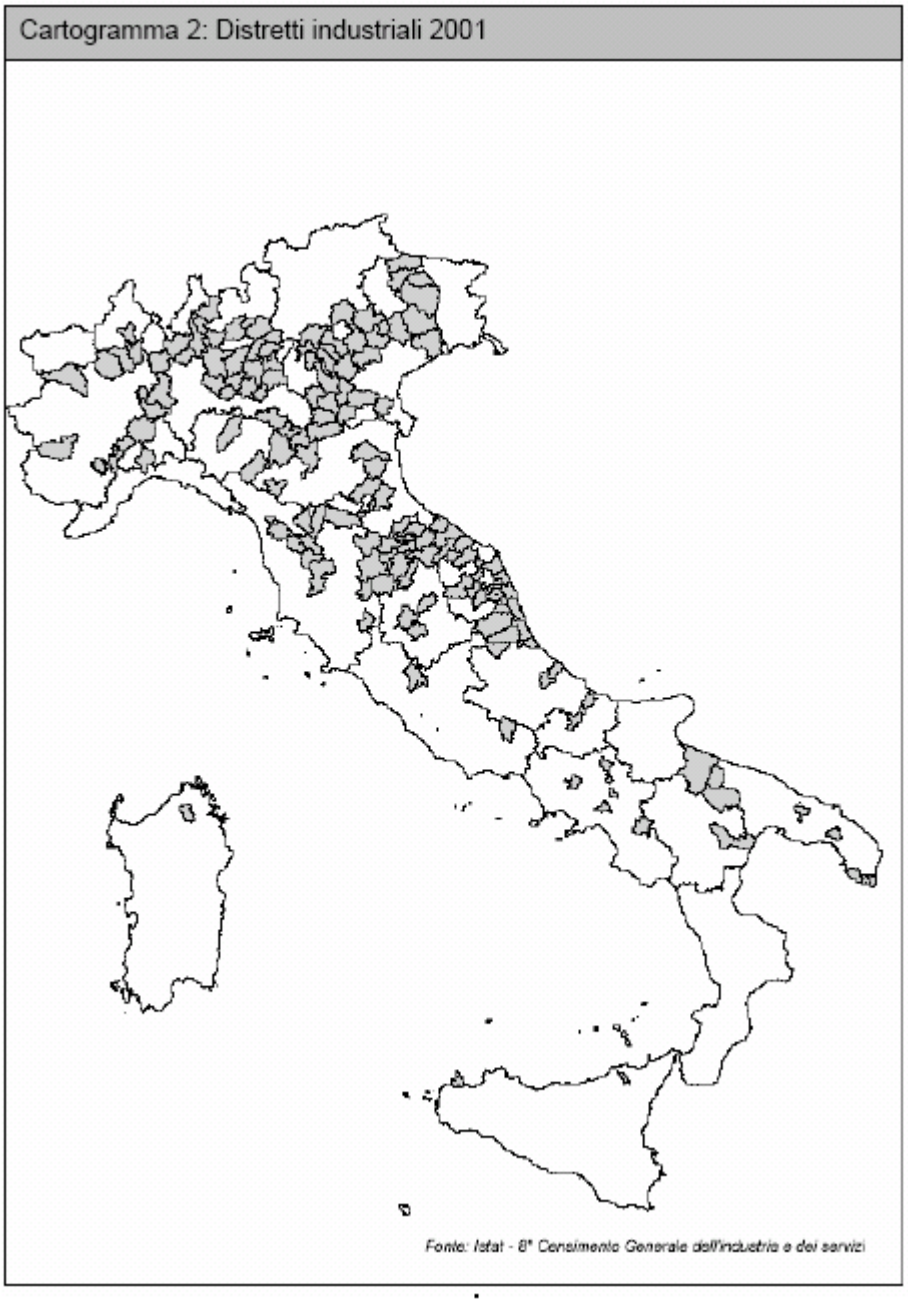
As we have already anticipated in the previous chapter, according to the empirical definition used by the ISTAT "Industrial districts are local labour systems that meet particular industrial concentration criteria". Before proceeding with the empirical analysis of our proxy, we provide a general descriptive picture of industrial districts and local labour systems in Italy. We believe that this approach might help to better understand the "macro-structure" situation either at the national level or at the regional one.

Fig. 1 Local Labour System in Italy 2001

Source "8th General Census on Industry and Services" (2001)

Fig. 1 shows the net of the local labour systems characterising the industrial composition of Italy under the geographic perspective. Some of the LLS correspond to industrial districts. Fig.2 and fig. 3 depict the distribution of the IDs within the countries and across the regions

Fig. 2 Industrial Districts in Italy 2001



Source "8th General Census on Industry and Services" (2001)

As we can see the distribution of the industrial districts is mainly concentrated on the Centre and on the North of the peninsula. Tab. 3 may help in the general analysis. In Italy, according to the last Census, there are 156 industrial districts over 686 local labour systems.

Table 3 Industrial Districts and Local labour Systems per regions 2001

REGIONS	IDs		LLS	
	N. Districts	Labour Units	N. LLS	Labour Units
Piemonte	12	297,034	37	1,652,362
Valle d'Aosta	-	-	3	51,568
Lombardia	27	1,745,042	58	3,920,631
Bolzano-Bozen	-	-	16	207,611
Trento	4	46,814	17	197,612
Veneto	22	861,546	34	1,896,143
Friuli-Venezia Giulia	3	123,244	11	474,146
Liguria	-	-	16	537,251
Emilia-Romagna	13	574,432	41	1,755,422
Toscana	15	466,494	53	1,375,783
Umbria	5	61,823	17	294,930
Marche	27	435,063	33	592,336
Lazio	2	31,542	25	1,745,432
Abruzzo	6	96,859	19	396,422
Molise	2	4,307	9	88,222
Campania	6	26,177	54	1,267,384
Puglia	8	144,096	44	940,182
Basilicata	1	9,927	19	152,103
Calabria	-	-	58	399,995
Sicilia	2	3,236	77	1,034,949
Sardegna	1	2,085	45	430,072
ITALIA	**156**	**4,929,721**	**686**	**19,410,556**

Source "8th General Census on Industry and Services" (2001)

Italian territory is divided in 20 institutional and physical regions[6] each of them with a "regional government" provided with the right to marginally employ some macroeconomic policies (such as expenditure in public goods, local fiscal policy, expenditure in regional investment on different forms of capital and so on).

The observations drawn by the ISTAT are 21 because of the division of the region of Trentino Alto Adige into Bolzano and Trento. We can immediately notice that four of the 21 regions do not have industrial districts. Three of these regions are located in the North of the country and only one in the South. All of these three regions are located near the borders: Liguria in the North-West coast neighbouring with France, the Valle d'Aosta neighbouring with France and Switzerland, Bolzano's inter-land with Austria. On the other hand, the region in the South where the industrial districts are absent is Calabria, apparently, the poorest economic area of the peninsula.

[6] Constitutionally Italy is divided in 20 regions, however the ISTAT decides to split the region Trentino Alto Adige into two "sub-regions" called "Province Aoutonome": Trento and Bolzano because of their socio-cultural-economic characteristics (especially Bolzano, historically quite proximity to Austria, German language as second official one, higher level of "minority groups" …)

Even though three of the "missing regions" are located in the North, properly that area presents the highest number of IDs while in terms of geographical concentration (number of districts per hectares) the first two regions are Veneto (North-East) and Marche (Centre) with respectively values of 0.0354 and 0.0319. The region in the South with the highest density of IDs per hectares is Campania, but the value is quite far from the previous two (Density IDs = 0.0135).

Tab. 4 shows an example of ID drawn from the "8th General Census on Industry and Services" (2001). More precisely it presents the principal indicators of the industrial district of Clusone in Lombardia.

Table 4 Industrial Districts (example)

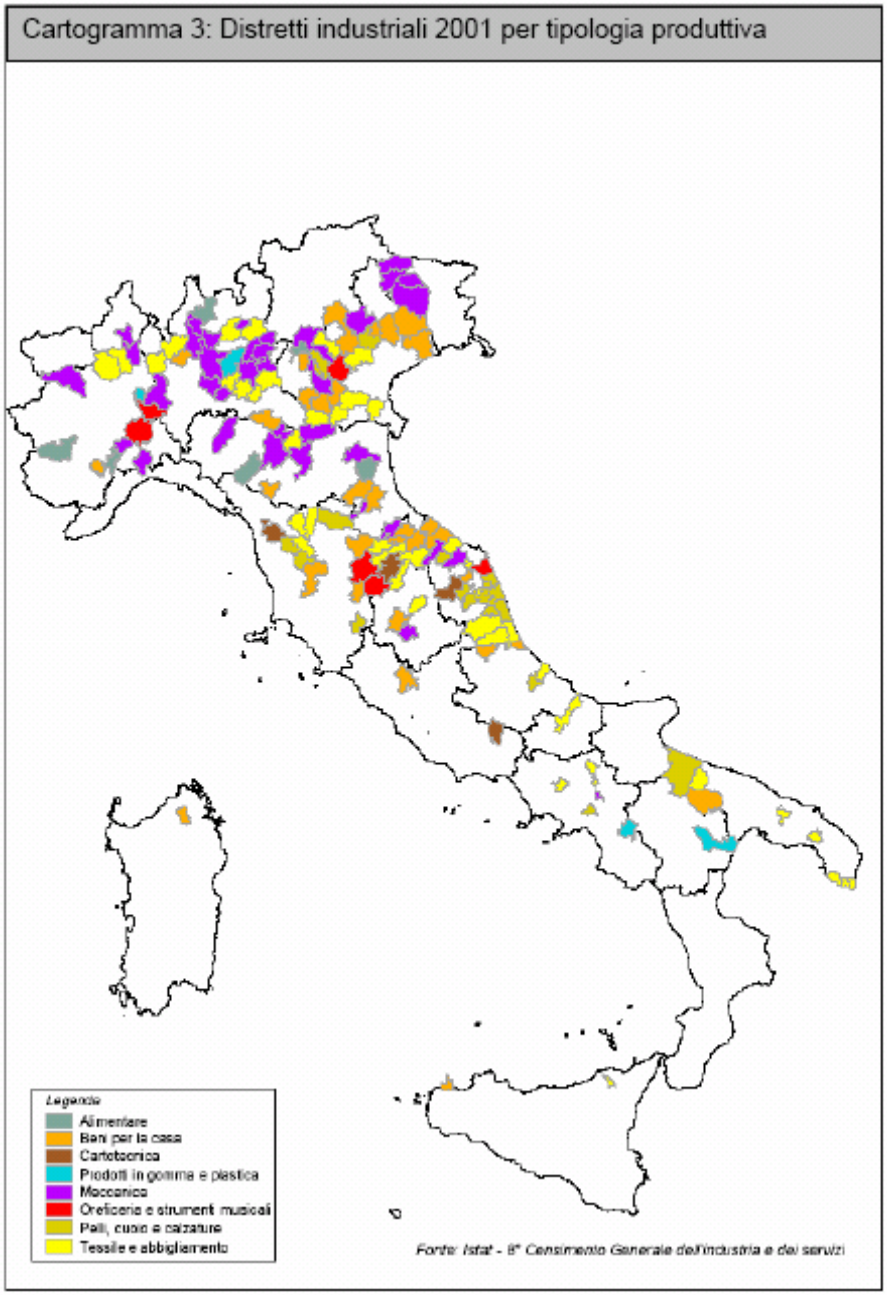
IDs = LLS Clusone – Lombardia **Type of Industrial District = Textile**					
Labour Units	**N. Municipalities**	**Geographical Extension (Km sq.)**	**Residents**	**Households**	**Houses and Buildings**
13,204	20	459,78	37,684	15,261	35,387

Source "8th General Census on Industry and Services" (2001)

The example shows that the district of Clusone is composed by twenty municipalities with more than 13 thousands labour units working in the district area. According to the ISTAT Census (the table does not show this value that we have derived from the "8th General census on Industry and Services Tab. 16), in the district of Clusone there is an average of 3.4 workers per local unit, which intuitively indicates a very high percentage of small firms in the area. The average of the other districts is not far from that of Clusone

Returning to the country level discussion, the economic activity in the typical industrial district area is mainly manufacturing and it is divided into few sub-sectors such as food industry, mechanic textile and so on. Fig. 3 shows the distribution of the IDs according to the sub-sectors.

Fig. 3 Distribution by type of Industrial Districts 2001



Source "8th General Census on Industry and Services" (2001)

The picture shows that the textile and the sector of house furniture (yellow and orange) is present almost in any region. The sub-sector of mechanics is mainly concentrated in the North of the country where a higher level of industrialization

process has taken place in the last 60 years[7]. Felice (2006) empirically shows that income disparities across the regions increased tremendously between 1891 and 1951 with the dramatic result of a country divided into a North side richer and more developed and the South quite far from the European standard in terms of economic performance, and education. Those "variables" definitively improved in the last thirty years by reducing this particular asymmetry, but they still do not achieve a sufficient level to create a more homogeneous country. In the so called "Italian Work", Putnam, Leonardi and Nanetti attribute these disparities mainly to a significant difference between the level of civic engagement in Northern and Southern Italy. They stress the idea that the tendency towards civic associations in the North of Italy facilitates the creation of dense horizontal networks and many opportunities for the people to "learn trust and social norms".

In the analysis of the Italianate industrial districts, Markusen (1996) points out the presence of long-term relationships not only between different entrepreneurs and workers, but also between them and the local institutions. This, indirectly, reinforces Putnam's theory that sees the institutional trust between citizens and local government higher in Northern Italy relative to Southern.

In relationship to Putnam's theory we use our proxy in order to test if it can help in understanding the different economic performance that occurs across the regions.

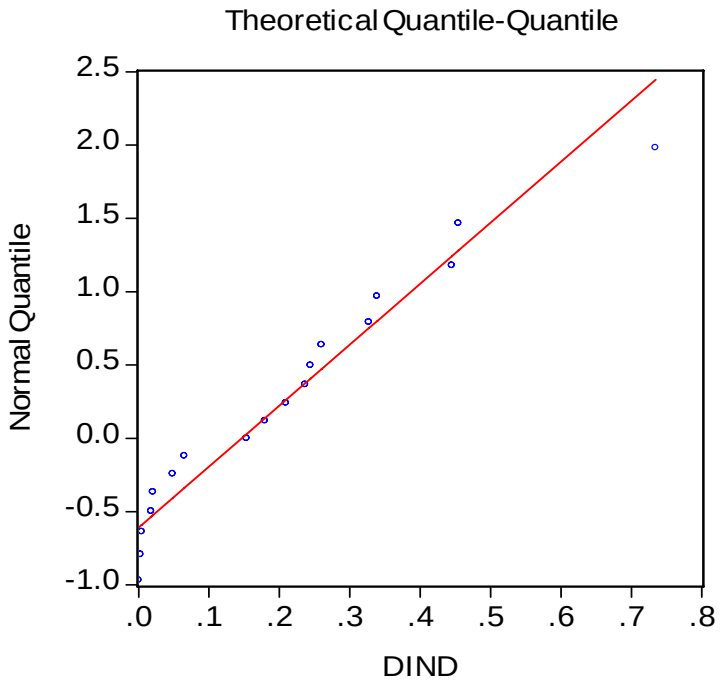
We have already described the index in the previous chapter as the concentration of the active population belonging to the industrial districts relative to the population working for the LLS.

Tab. 5 presents the summary statistics for the index. The mean value is equal to 0.178 and its standard deviation is 0.199. It exhibits an excess kurtosis of 0.894, although the Jarque-Bera statistic shows that the assumption of normal distribution cannot be rejected. A Quantile-Quantile plot – Graph (a) - shows that the distribution is close to normal, but again the number of observations cannot help us to extract a consistent estimate relative to the distribution of DIND.

[7] For an accurate analysis about the regional disparities in Italy from the 1861 until the 2001 see Emanuele Felice (2006)

Table 5

Summary Statistics	DIND
Mean	0.178326
Median	0.153264
Maximum	0.734487
Minimum	0.000000
Std. Dev.	0.198599
Skewness	1.148664
Kurtosis	3.894424
Jarque-Bera	5.317994
Probability	0.070018
Sum	3.744847
Sum Sq. Dev.	0.788834
Observations	21



The median derived in the Summary statistics takes into account also the regions where the industrial districts are absent. If we consider, instead, only the regions where the DIND is greater than zero then the table 6 provides some interesting results.

Table 6

Median = 0.2096 (Umbria)
(Ma Ve Lo To ER FVG Abr Tr) > **Um** > (Pie Pu Ba Mo Cam La Sar Sic)

In table 6 we list the regions in descending order with respect to their median (from left to right). Umbria is the median region. Marche (Ma) is the region with the maximum level of our index ($DIND_{Ma}$ = 0.7345) while Sicily (Sic) is the region with the minimum level ($DIND_{Sic}$ = 0.0031). In terms of geographical distribution, Umbria is in the Centre of Italy and, within the group of the regions having positive DIND, there is no Southern region whose value is above the median. In the below-Median group, Piemonte is the only Northern region with a value below the median. If we exclude it then we will have a country divided into two sides which almost corresponds to the North and the South. This division is extremely similar to that one derived by Emanuele Felice, although he was referring to economic and well-being disparities in Italy between 1891 and 2001. In our case we are just considering an "artificial" proxy we have constructed and it would be too ambitious to associate a preliminary descriptive analysis with Emanuele Felice results.

The table of correlations (Tab. 7) and the figs. 4, 5 and 6 show the relationship between the index and the main macroeconomic variables.

From the correlation matrix we can see that DIND is positively correlated with export, gross capital formation (GKF) and income per capita (YAB). Within this group of variables, the highest positive correlation coefficient is with the level of export (r = 0.395). Considering "labour market variables", the index is positively correlated with the rate of employment (OCC) but not strongly positively correlated with the labour productivity (YLU). On the other hand, DIND is negatively correlated with the level of unemployment and even a stronger correlation coefficient with youth unemployment (UN1) rather than with the general rate of unemployment (UN2). The lowest coefficient is with the net import over GDP (NMY) which is around -0.677.

Table 7 "Table of Correlations"

	EXPORT	GKF	DIND	NMY	OCC	UN1	UN2	YAB	YLU
EXPORT	1	0.859	0.395	-0.653	0.318	-0.291	-0.297	0.428	0.545
GKF	0.859	1	0.375	-0.677	0.185	-0.127	-0.125	0.331	0.544
DIND	**0.395**	**0.375**	**1**	**-0.637**	**0.470**	**-0.568**	**-0.539**	**0.378**	**0.208**
NMY	-0.653	-0.677	-0.637	1	-0.572	0.604	0.638	-0.651	-0.643
OCC	0.318	0.185	0.470	-0.572	1	-0.961	-0.950	0.949	0.713
UN1	-0.291	-0.127	-0.568	0.604	-0.961	1	0.990	-0.893	-0.626
UN2	-0.297	-0.125	-0.539	0.638	-0.950	0.990	1	-0.899	-0.651
YAB	0.428	0.331	0.378	-0.651	0.949	-0.893	-0.899	1	0.886
YLU	0.545	0.544	0.208	-0.643	0.713	-0.626	-0.651	0.886	1

Fig. 4

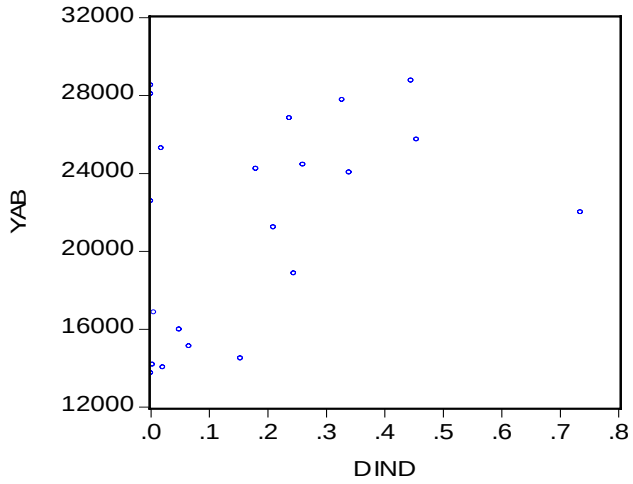


Fig. 5

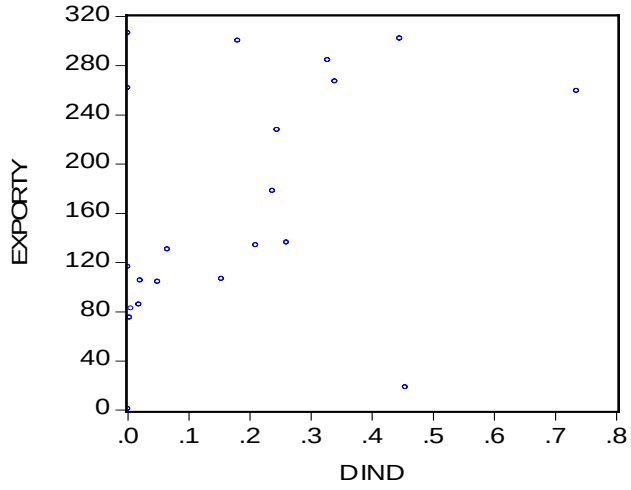


Fig. 6

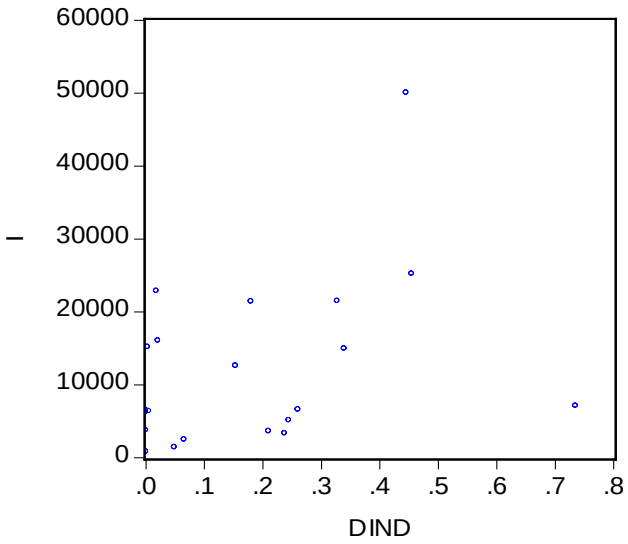


Fig. 6 presents a positive relationship between the index and the level of investment. This is in line with Knack and Keefer perception, according to which a higher level of social capital within a community should imply higher trust, therefore "Government officials may be perceived as more trustworthy and their policy pronouncements as thus being more credible. To the extent that this is true, trust also triggers greater investment and other economic activity" (Knack and Keefer 1997). In other words, societies with higher level of social capital might have stronger incentive to innovate and to accumulate physical capital.

However, in the regressions analysis, DIND does not have a significant coefficient either with respect to capital formation or to income per capita.

The index, on the other hand, seems to provide a significant influence on unemployment, and innovation.

In the regression analysis we first consider few important elements.

Firstly, only 17 out of 21 regions have industrial districts in their territory which means that four regions present an index equal to zero. For this reason we decide to include a dummy variable for those four regions by setting DUMMY = 1 when the DIND = 0 and DUMMY = 0 otherwise.

By following empirical works in the literature (Knack and Keefer, 1997, Clercq and Dakhli, 2003, Casey and Christ, 2005, Knack, 1999) in our regressions we consider not only our proxy, but also a variable that we call "associational activity". The

associational activity is calculated by the proportions of voluntary organisations over residents for each region. This should identify the density of voluntary activities and the willingness of a group, or community, to have a common goal in terms of what Putnam calls “civic virtue”. On the other hand, for our analysis this proxy might represent an extra test, since we are able to compare the performance of our proxy with the associational activity a la Putnam from which our index took inspiration.

Actually, as Knack (1999) underlines, the contribution of the “group memberships” is quite controversial in the literature. Putnam (1993) believes that associational activities intensify a system of horizontal networks able to spread a sense of community and therefore trust and higher respect for civic norms and civic behaviour. This, in turn, is likely to improve economic performance within the region (or country) where this system is developed. On the other side, Olson (1982) emphasises the rent-seeking function that group memberships might have. So, instead of an increasing horizontal network, these associations may behave as lobbies and follow their own interests, maybe in contrast with the needs of the society. In Knack and Keefer, associational activity appears to be unrelated to growth and investment, giving, in this way, no much support to Putnam’s view. According to De Clercq and Dakhli, instead, associational activity is positively and significantly related to innovation in terms of R&D expenditure as a share of GNP.

Our finding is closer to Knack and Keefer results. We found that both “associational activity” and DIND are not significant in explaining investment and income per capita. However, they have a significant effect on unemployment disparities and innovation.

We have constructed two tables (Tab. 8 and Tab.9) showing regional unemployment disparities. More precisely, we consider both youth unemployment and general unemployment.

If we put Italy equal to 1 then the index of each region in the North and in the Centre is below this value with the exception of Lazio. In case of youth unemployment disparities, the gap between Southern and Northern Italy is tremendous. If this variable reflected the expectation of the new labour force, we should say that in the North of Italy young people have an expectation that is double relative to their peers in the South.

The scenario becomes even worse if we consider the general unemployment disparities (Tab. 9). From this perspective, Campania, Calabria and Sicilia present an

index that is more than double with respect to the index for Italy. This means that considering that the unemployment rate in Italy in 2001 is 11.5%, in those three regions the unemployment rate is, at least, more than 22%

Table 8

Regional Youth Unemployment Disparities			
Pie	0.589	Ma	0.459
VdA	0.483	La	1.250
Lo	0.436	Abr	0.902
Bo	0.171	Mo	1.201
Tr	0.332	Cam	1.971
Ve	0.331	Pu	1.439
FVG	0.415	Ba	1.475
Lg	0.828	Cal	1.841
ER	0.372	Sic	1.891
To	0.593	Sar	1.612
Um	0.606	**ITALY**	**1**

Table 9

Regional Unemployment Disparities			
Pie	0.544	Ma	0.478
VdA	0.463	La	1.114
Lo	0.408	Abr	0.896
Bo	0.200	Mo	1.187
Tr	0.340	Cam	2.327
Ve	0.355	Pu	1.732
FVG	0.425	Ba	1.584
Lg	0.734	Cal	2.114
ER	0.364	Sic	2.289
To	0.555	Sa	1.870
Um	0.583	**ITALY**	**1**

When we set the regressions (Tab. 10 and Tab. 11), our findings are quite interesting especially if we consider that the empirical literature shows that results on the relationships between social capital and labour economy are quite controversial. Some studies, for instance, (Granovetter 1973, 1995, Holzer, 1998, Montgomery, 1991 et al.) indicate that a great percentage of employed workers are hired thanks to their direct connections (friends and relatives) and indirect ties (connections possessed by their friends and their relatives).

However, Fontaine (2004) underlines that because people with fewer social contacts may have lower opportunities than others. This means that a high density of workers

embedded in the social networks may have the effect to rise the unemployment rate by consolidating the distance between insiders and outsiders in the labour market.

Table 10 Disparities in Labour Market (Youth unemployment)

	Equation 1	Equation 2	Equation 3
Constant	3.127285*** (0.82884)	3.120656*** (0.878902)	4.073255*** (0.949088)
DIND	-1.66625* (0.817074)	-1.85195** (0.774932)	-1.65031** (0.565361)
Dummy	-0.17285 (0.361186)	-0.05687 (0.377377)	-0.05008 (0.207988)
Associational activity	-1.75643** (0.675905)	-1.74516** (0.658037)	-1.25102* (0.637936)
ED	-0.03651 (0.021905)	-0.02314 (0.029085)	-0.05078** (0.022447)
GRAD	0.000363 (0.000516)	0.000103 (0.000653)	-0.00041 (0.000488)
FR		-0.00615 (0.007125)	
MOB			-0.05851** (0.021885)
Adj. R	0.614163	0.617206	0.758543
S.E	0.357	0.355	0.282

Table 11 Disparities in Labour Market (Inter-generations unemployment)

	Equation 1	Equation 2	Equation3
Constant	4.63568*** (1.140855)	4.62716*** (1.187324)	5.877533*** (1.202434)
DIND	-1.96633* (1.008224)	-2.20503** (0.942435)	-1.94541** (0.680031)
Dummy	-0.23794 (0.463133)	-0.08885 (0.501705)	-0.07678 (0.267717)
Associational activity	-2.29261** (0.83683)	-2.27813** (0.814492)	-1.62912* (0.776683)
ED	-0.07211** (0.0302)	-0.05493 (0.040441)	-0.09085*** (0.028259)
GRAD	0.000216 (0.000648)	-0.00012 (0.00081)	-0.0008 (0.000569)
FR		-0.0079 (0.009353)	
MOB			-0.07681** (0.028012)
Adj. R	0.576115	0.57904	0.740889
S.E.	0.461	0.459	0.360

Tables 10 and 11 present six equations three for each type of unemployment disparities we have considered. We regress unemployment on DIND, “associational activity”, level of education (tertiary – ED – and degree level – GRAD), fraud and intra-region mobility. Interestingly, contrary to Casey and Christ (2005) our finding shows that either the index DIND or the associational activity positively influences

the regional disparities in both types of unemployment rates. This seems to be in line with the outcomes obtained by Sabatini (2005): in his model, bonding social capital together with linking social capital can reduce labour precariousness. If we control for regional distrust (regional level of fraud = FR) then the social capital index becomes more significant and its coefficient increases. A possible explanation might be that if we include distrust within a society then higher ability to cooperate and higher level of social capital need to be present in order to achieve the same economic performance that occurs without considering elements of fraud. When we include the level of intra-region mobility in both of the tables it results negatively and significantly correlated with the unemployment disparities, besides the variable "education" becomes significant as well. A possible explanation might be related to the effect that higher mobility may have on the labour market making it more flexible and affecting workers holding at least a sufficient educational level. Moreover, higher intra-region mobility might favourite the development of a larger system of weak ties within the population that might increase the inside accumulation of capital of connections and therefore it might facilitate a more stable labour economy. Actually, from equation 1 to equation 2 (in both of the tables), when we include an element of distrust, "fraud", as we have already noticed, a higher level of social capital is required (the coefficient of DIND increases). Instead, when mobility is part of the equation, the DIND is still strongly significant but with a lower coefficient and the associational activity becomes less significant and the coefficient is reduced by about 0.5 points. This might be due to a higher level of capital accumulation thanks to a more flexible mobility of the individuals from a group to another facilitating, in this way, the creation of bridges among groups inside the region. However, our results need caution in the interpretation, especially, with regard to the Italian contest. To this purpose there are at least two elements that have to be taken into account. First, Italy is characterised by a rigid labour market with a lack of intermediary bodies (private or public) that efficiently may play the search-matching function. This, of course, implies on some extent that personal connections represent more a rule rather than an option or an added value. Second, the Italian industrial and service system is based mainly on small and medium sized enterprises where the human resource sector works at a local level and through connections. If this attitude, in a way, might "stabilise" the labour market, on the other hand it might also cause inefficiencies in

the labour economy (in terms of wage and productivity). Actually, our index does not provide any influence on labour productivity and does not affect the level of wage.
Instead, the fact that the variable of associational activity negatively affects the rate of unemployment reinforces Putnam's theory according to which more intensive associational life facilitates economic development. More precisely, civic associations can create a dense horizontal network and rise the opportunities for the individuals to improve their social and economic position.
Our analysis tries also to capture the importance of the DIND on innovation.
Casey and Christ stress on the fact that trust lessens the need for rigid control system which enhances idea generation (tight monitoring and control mechanisms reduce creative thinking). Trust, then, is not only important for innovation through the interactions between individuals but also through inter-organisational corporation.
Following De Clercq and Dakhli (2003) we measure innovation by considering two main dimensions: the number of patents and the investment in R&D over the GDP (Tab.11)
As De Clercq and Dakhli point out, the number of patents capture an important aspect of the level of the technological activities since they need to satisfy some crucial conditions in order to be qualified for patent eligibility: the invention must be novel, useful and exhibit "inventive step" (which means that it is non-obvious). Our measure corresponds to the aggregate of patents per habitant. Moreover, it represents a more reliable index in terms of innovative products since it implies a legal certification. As Ughetto (2006) underlines, during a survey on industrial districts and innovation it is likely to deal with a possible wrong perception of the novelty of products and processes by firms. In simple words, products or processes could be indeed be "new to the firm" but not to the "market".
The control variables we use are, except our proxy and associational activity, human capital, physical capital, rate of employment in the field of research and development and the level of fraud. The reason of the variable "fraud" is related to the fact that associational activity and social capital imply elements of trust. Moreover, the innovation is a particular sector in which the spread of information has an extremely important spill over effect that could likely be undermined if elements of distrust within members are perceived. We use then five equations in order to develop our analysis and, unlike De Clercq and Dakhli, we find that our index is significant in all the regressions while the associational activity does not affect the level of innovation.

Table 12

The Effect of DIND on Innovation					
	Eq. 1 Patent	Eq. 2 Patent	Eq. 3 R&Dexp/Y	Eq. 4 R&Dexp/Y	Eq. 5 Disparities
Constant	-1.90306 (1.188433)	-1.47513 (0.957315)	0.00521 (0.003402)	0.000744 (0.002848)	-1.02579 (0.944656)
DIND	2.209081*** (0.477073)	1.948987*** (0.388341)	-0.02886*** (0.005536)	-0.00894** (0.003327)	-2.06918** (0.75893)
DUMMY	-0.05936 (0.324839)	0.410375 (0.389762)	-0.00187 (0.00209)	-0.00617 (0.003741)	-0.12853 (0.188612)
ORGR	0.020578 (0.75369)	-0.29785 (0.606119)	-0.00416 (0.005056)	0.000578 (0.003536)	0.089017 (0.160976)
GRAD	-0.00066 (0.000874)	-0.00094 (0.000693)	8.18E-09*** (7.72E-08)	-2.58E-06 (2.15E-06)	
R&Dexp/Y	84.0705*** (18.90605)	121.4382*** (35.46077)			
GKF			-1.06E-05 (3.09E-06)	1.79E-08 (5.79E-08)	
ED1					0.046612* (0.025724)
R&DOCC			0.000438** (0.00015)		0.029631 (0.017468)
Capital/workers	0.128852 (0.113122)	0.162264 (0.095701)			-0.01289 (0.042228)
PATENT			0.003972* (0.00204)	0.003681** (0.001351)	0.375336** (0.127849)
FR		-0.01551* (0.008463)		0.000125** (4.67E-05)	
Adj. R	0.545795	0.613812	0.493968	0.586578	0.560127
S.E.	0.492	0.454	0.003	0.002	0.253

Table 12 shows that DIND positively affects innovation in terms of number of patents. In the second equation, relative to the first one, we add as a regressor the level of fraud. We notice that when this variable is included, the coefficient of the DIND decreases. A possible explanation might be that higher level of fraud could reduce trust within individuals by negatively affecting also the ability and the tendency of working together. Besides, considering all the equations we find that the level of fraud increases the level of expenditure in innovation.

Equations 4 and 5 show that DIND negatively affects the expenditure in R&D. To this purpose we add another equation where the dependent variable captures the disparities in terms of investment in innovation that occurs across the regions. The result is that DIND is negative and significant in that regression as well. Regarding this variable we need to consider at least two elements. First, R&D expenditures, as

Ughettto points out (2006), is a variable difficult to be assessed, in particular when it is related to SMEs. In small firms innovation activities are often embedded in standard production processes or, more frequently, based on informal research or even delegated externally to the firms. Second, it is not always possible to confirm the real amount invested in research since in Italy R&D expenditures are not compulsorily reported in the balance sheet. Considering these two elements above mentioned and the negative relationship resulting from the regression between the DIND and the variable of innovation, a possible explanation might be the following. According to Saxenian (1996), the R&D sector is often dependent on informal exchange of intellectual property rights and informal training, simply because formal exchange would entail excessive transaction costs and slow down the speed of interchange. Where the level of cooperation and trust is higher, also the information flow (informal exchange a la Saxenian) is more intensive which may represent a different type of local resource for R&D. This local resource may offset the need of extra-expenditures in R&D (for instance training expenses). In simple words, by considering all the five regressions, higher ability to cooperate and higher capital of connections imply a higher level in innovation in terms of innovative products (patents) and a more efficient and trustworthy way of using money for R&D.

Differently from De Clercq and Dakhli, in our regressions, it results that the associational activity is not significant either with respect to the number of patents or with respect to the investment in R&D over GDP. This result may reinforce Olson's view about voluntary associations acting as special interest groups lobbying for preferential policies that impose disproportionate costs on society.

Notice that in our regressions, either those relative to the labour economy or to innovation, the human capital variables (percentage of graduates GRAD and of people holding a diploma ED) have identical sign of the DIND but they are not significant. It seems that the labour market and the "innovation market" are not based on a "meritocratic" system. To this purpose the variables relative to the level of education might present two problems and therefore it might not be completely reliable. The first problem is that they might not represent a good proxy of human capital since they are not related to the percentage of workers. Knack and Keefer and other empirical works consider as potential human capital proxy the ratio between years of schooling over workers. We are considering, instead, people receiving a diploma or a degree over the residents. This is because it is very difficult to find this type of data at

the regional level. The second problem, and probably the most significant one, is related to the interregional mobility of students which according to Emanuele Felice has grown quite notably during the last decades, in particular from the southern regions to the northern ones. This mobility is not taken into account in the data set. Actually if we try to analyse the disparities in terms of education relative to the residents we will see that the country is quite homogeneous. In the northern regions there are more people holding a degree but much more residents comparing to the southern regions. Because of this problem we may also think that the variable relative to the highest education (GRAD which indicates graduates) is even less reliable than the variable corresponding to people holding a diploma since interregional mobility is less likely to occur at the tertiary school rather than at the university level. This is probably one of the reasons why in the last regression on the innovation the variable relative to the tertiary school is significant while that one relative to graduates is not. It is true that in the third equation the variable GRAD is positive and significant but the coefficient is so low that its effect on the dependent variable will not be really influential.

7. Conclusions

We have constructed a proxy (DIND) based on the density of active industrial districts members within each Italian region.

As Putnam's instrument, DIND is an aggregate proxy and, therefore, it is affected by two weaknesses points.

First, it focuses mostly on a bottom-up approach. This means that it does not take into account institutional interventions able to modify or to change the stock of social capital inside the community.

Second, it is not possible to distinguish inside the index the bonding from the bridging social capital (to this purpose, Sabatini, 2005, developed a model to separate the different forms of social capital and he applied the model to the Italian scenario).

The last point is also one of the reasons that drive us to do not identify the DIND with the term "trust". Actually, trust needs, first, to be identified (survey data on the level of trust like the World Value Survey), and then distinguished between its institutional and generalised side. From our data this attempt would be too ambitious and especially imprecise. From Markusen's analysis of the Italianate industrial districts, it results that relations between local institutions and members of the ID take place through meetings and forums. This might intensify the interactions between the members and increase the probabilities of further collective actions. However, it is not possible to quantify the level of attendance with which those active vertical connections are used, as well as it will not be possible to precisely measure the frequency with which horizontal relations and interactions between members occur.

Instead, the idea of our index is mainly based on the fact that inside an industrial district area, members communicate and interact frequently and connections are crucial. This attitude, according to the industrial district literature, fosters the level of trust inside the community. If we consider this scenario as the one belonging to our index, then the DIND might be identified as an alternative social capital proxy to those that already exist, at least with regard to the analysis of the economic situation across the Italian regions.

Empirical result shows that our index together with the variable of associational activity significantly influences the labour economy from the unemployment rate perspective. Moreover, the proxy seems to affect also innovation in terms of

increasing the amount of innovative projects, ideas and products since it is significantly related to the number of patents.

Further research will investigate the influence that this proxy might have on the well-being across the Italian regions. In this case disparities in terms of income, life expectancy and economic resource constraints will represent the dependent variables that we will consider.

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APPENDIX A

Census 2001

The Industrial Districts

The industrial district is a local system characterised by the active co-presence of a human community and a dominant industry constituted by a set of small independent firms specialised in different phases of the same production process.
This type of industrial system is part of the so called Local Labour System (LLS)

LLS: territorial grouping of municipalities statistically comparable
IDs are LLS that meet particular industrial concentration criteria.

How to identify IDs

The process used in the Census is based on three phases

1) Identify LLS mainly manufacturing
2) Identify LLS mainly manufacturing whose industrial economy is based on SMEs
3) Identify the main industrial sub-sector (ex. textile) of these LLS
4) Identify the IDs

IDs Identification

1) Identify LLS mainly manufacturing

a) Compute the Concentration coefficient relative to the economic activity for each LLS

$$\frac{LLSn,ateco / ITAn,ateco}{LLSn,tot / ITAn,tot}$$

LLSn,ateco = workers in each economic activity in a LLS
ITAn,ateco = workers in each economic activity in Italy
ateco = economic activity
LLSn,tot = total workers (in the good and service market) in a LLS

ITAn,tot = total workers (in the good and service market) in Italy

b) Compare the LLS with a coefficient in the manufacturing industry higher than the national mean in order to derive the dominant economic activity.

$$[(LLSn, ateco / ITAn, ateco) - (LLSn, tot / ITAn, tot)] * ITAn, ateco$$

If the highest coefficient is related to the manufacturing industry, then the LLS is mainly manufacturing

2) Identify LLS mainly manufacturing whose industrial economy is based on SMEs
Consider three dimensional classes of enterprises

- Small size 0-49 workers
- Medium size 50-249 workers
- Big size over 249 workers

Compute the coefficient for each dimensional class

$$\frac{LLSn(class), man / ITAn(class), man}{LLSn, man / ITAn, man}$$

LLSn(class),man = workers for each dimensional class in the manufacturing sector in the LLS
ITAn(class),man = workers for each dimensional class in the manufacturing sector in Italy
LLSn,man = workers in the manufacturing industry in a LLS
ITAn,man = workers in the manufacturing industry in Italy

3) Identify the main industrial sub-sector (ex. Textile) of these LLS

a) Compute the coefficient relative to each sub-sector (The census identifies 10 sub-sectors)

$$\frac{LLSn,sub / ITAn,sub}{LLSn,man / ITAn,man}$$

LLSn,sub = workers in each sub-sector in a manufacturing LLS
ITAn,sub = workers in each sub-sector in Italy
LLSn,man = workers in the manufacturing sector in a manufacturing LLS
ITAn,man = workers in the manufacturing sector in Italy

b) Compare the LLS with a coefficient greater than 1 in order to derive the dominant sub-sector.

$$[(LLSn,sub / ITAn,sub) - (LLSn,man / ITAn,man)] * ITAn,sub$$

The highest coefficient identifies the sub-sector

4) Identify the IDs
Two conditions need to be satisfied

a) The level of employment of small firms operating in the LLS specialised manufacturing activity must be greater than 50% of total employment in the same activity at the LLS level

$$\frac{LLSn(sme),sub\_p}{LLSn(tot),sub\_p} > 50\%$$

LLSn(sme),sub_p = workers in the principal sub-sector employed in the SMEs in a manufacturing LLS made by SMEs
LLSn(tot),sub_p = total workers in the principal sub-sector in a manufacturing LLS made by SMEs

b) In case there is only one medium companies in the clusters, then the number of the workers in the small companies has to be greater than the 50% of the number of the workers in the medium company (such that the industrial system is not polarised)

$$\frac{LLSn(small), sub\_p}{LLSn(medium), sub\_p} > 50\%$$

LLSn(small),sub_p = Workers for small companies in the main sub-sector in a manufacturing LLS made by SMEs

LLSn(medium)sub_p = workers for a medium company (when there is only one medium company in the industrial system) in a manufacturing LLS made by SMEs

APPENDIX B

List of the Variables

Associational Activity = Number of Voluntary Organisations over residents

Capital/worker

DIND = Number of industrial districts workers over number of workers in the Local Labour System

ED = educational level (percentage of individuals holding a diploma)

EXPORT

FR = Level of fraud

GKF = Gross Capital Formation

GRAD = educational level (graduates)

GRADLOSS = percentage of students that has left the university before the degree

I = investment

NMY = Net Import over GDP

OCC = employment rate

Patent = Aggregate number of patents over residents

R&Dexp/Y = investment in R&D over GDP

R&DOCC = percentage of workers in R&D

UN1 = Youth Unemployment rate

UN2 = Unemployment rate

YAB = Income per capita

YLU = Productivity of labour