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Social Capital, Poverty and Social Exclusion in Italy

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Abstract

The paper investigates whether social capital can affect the standard living of the Italian households based on poverty and social exclusion. The analysis is developed at the regional level through cross-sections based in the year 2002 and in the year 2003. The indices of social capital that we use are the associational activity a la Putnam and a new proxy based on the regional density of industrial districts. By using the empirical model advanced by Grootaert (2001) we find that our results confirm the theory of social capital and poverty transition mechanism advanced by Narayan and Woolcock (2000). Moreover we find significant and negative correlation between social capital and the measures of social exclusion. All these results, drive the paper to the conclusion that social capital is positively correlated to higher level of living standard.

Key Words: Social Capital, Industrial Districts, Poverty Incidence, Poverty Gap, Social Exclusion, Cross-Section

1. Introduction

Since the last two decades, governments in developed countries have increased the attention towards poverty and social exclusion. In European countries, in particularly, this concern has been ratified in the Treaty of Amsterdam and most recently in the Treaty of Lisbon according to which the European governments will consider the reduction of poverty and social exclusion as two major key targets in their political agenda. Among the results of this increasing attention, in the 2002 the ISTAT (Italian National Statistic Bureau) completes the first report on poverty and social exclusion in the Italian regions. This provides, for the first time during the country history, a general picture of socio-economic impoverishment at regional level. By taking advantage of this documentation, the aim of the paper is to investigate whether social capital reduces poverty and social exclusion. To this purpose we define social capital as the capital of connections generated by the links and the constant social interaction between individuals who share norms, attitudes of mutual trust, community belonging, solidarity and reciprocity. The measures of social capital we use are essentially two. Together with the density of the associational activity a la Putnam, we integrate the proxy of social capital proposed by Andriani, Karyampas (2009) which is based on the density of industrial districts at the regional level. Theoretical analysis (Dei Ottati, 1994, Sforzi 2002, Markusen 1996) shows that inside the industrial districts a system of intensive and weak ties are built constantly by fostering a system of connections based on mutual cooperation and trust.

Previous works about social capital and Italy have associated this concept with economic performances at local and country level. In the seminal work of Putnam et al (1993) social capital has been associated to the differences in terms of well-being among the Italian regions. These differences have been expressed mainly in well governance and income growth. Sabatini (2005a, 2005b, 2006) and Pistaferri (1999) associate social capital and informal network with employment stability, better access to the labour market and lower earnings in Italy. Guiso et al (2004) show that a higher level of social capital is positively associated with financial development in Italy. However, to our knowledge, there is still a missing link between this concept and a broader view of households' standard of living in developed countries. The main novelty of the paper is that by combining social capital with poverty and social exclusion the paper has the ambition to go beyond these single aspects of the

economic life. In other words, the analysis will capture the relationship across the region between social capital and the multidimensional sphere of the living standard. In doing so, the first initial problem we face is to operationally separate the concept of poverty from that one of social exclusion. The concept of social exclusion has been recognised in the literature to be complex and rich of dimensions (Townsend 1979, Negri 1995, Bohnke 2001, Capacci and Castagnaro 2003, Burchardt et al 1999). However, whether poverty and social exclusion has to be a single phenomenon or two distinct aspects of a society is still an open and unsolved question (Stranges 2007). This paper is far from solving this dilemma and it does not have even the intention. By completely respecting the different positions taken by the scholars, we will consider these two aspects as determinant for a better living condition. In terms of methodology and measurements, we will distinguish the two concepts with a certain "degree of freedom". While poverty definitions are essentially based on monetary values either in terms of consumption or in terms of income (Grootaert 2001, Gertler, Levine and Moretti 2006, Pritchett 1997, just to mention some of the numerous empirical works in the poverty literature), social exclusion combines economic, social and human aspects. In other words, this concept is not only limited to the individual sphere but to the society ones (Stranges 2007, Sen 1997). Therefore we consider poverty and social exclusion as a continuum process of the same socio-economic "degrade".

Previous works have associated social capital with poverty reduction especially relative to developing economies (Gertler et al 2003, 2006, Grootaert 2001, van Bastelaer 2000, and many others). Woolcock (1998, 2001) and Woolcok and Narayan (2000) theoretically show that the combination of weak and strong horizontal ties among individuals and groups represents one of the key factors for poverty reduction. One of their contributions to the literature is based on the theory of social capital and poverty transition mechanism. According to this theory bonding ties such as parental and family links are likely to be not sufficient for an individual to escape from a poverty condition. This is mainly due to a limitation of the resources of a closed group and to a system of mutually dependency and obligations among its members that does not give enough "freedom of movements" to any of them in order to rich resources external to the group. This negative scenario is called by Narayana and Woolcock *bonding trap*. A diversified system of connections may avoid these problems since it

might represent a sort of diversified social endowment portfolio that might reduce the risk to fall into the trap.

Positively inspired by the literature just mentioned, we develop our empirical analysis through two sections. Firstly, by using the empirical model advanced by Grootaert (2001) we investigate the relationship between social capital and different measures of poverty in Italy. Empirical evidence confirms the theory of social capital and poverty transition mechanism. Secondly, by using the indices of social exclusion *ISE* advanced by Stranges (2007) and by Capacci and Castagnaro (2003) we analyse the association between social capital and social exclusion. We find that social capital negatively affects both of the indices. More precisely the social capital measure based on industrial districts is significant relative to Stranges *ISE* while associational activity a la Putnam is significant relative to the Capacci and Castagnaro measure.

The analysis is developed through the following structure.

Section 2 presents a theoretical background about the social capital and the poverty transition mechanism. Section 3 describes the variables of social capital and the different poverty measures we consider in our analysis. Section 4 presents the empirical model associating social capital and poverty based on the model used by Grootaert (2001) and discuss the results. Section 5 develops the theoretical and empirical analysis associating social capital and social exclusion. The section describes the *ISE* variables adopted, set the empirical model and discuss the results. Section 6 presents the conclusions.

2. Social Capital and Poverty Transition Mechanism

In the last 20 years there has been ample evidence in the social science literature that social capital plays an important role in the analysis of economic activities and human well-being. In other words, social capital has been used not only in traditional models of growth, but also as a variable able to capture differences in quality of life, social exclusion, and poverty among countries or local communities.

The conventional idea regarding social capital can be summarised by the common aphorism "It's not what you know, it's *who* you know". It is not unusual that during hard times it is our family and friends who represent the final "safety net". Therefore, at the micro level, we can say that the basic idea of "social capital" is that one's family, friends and associates constitute an important asset, either during a crisis or,

less instrumentally, for its own sake (Woolcock in "Social Capital and Poverty Reduction" pg 22). As a first result, networks built through these interactions have measurable benefits to the members of these communities leading directly or indirectly to a higher level of well-being (Grootaert 2001). At a macro level, social capital might be considered a social asset derived from a system based on trust, share values and norms. Knack and Keefer (1997) found empirical evidence of strong relationship between trust and higher and more equal incomes by considering 29 countries. They have argued that "societies characterised by high levels of trust among individuals (generalised trust) are less dependent on formal institutions to enforce agreement" (pg. 1253) and entrepreneurs are likely to devote less resources on monitoring malfeasance by partners, employees and suppliers and devoting more time on investing on innovative products and processes. On the other hand, higher trust between the community and the institutions running that community (institutional trust) might imply important economic consequences. Government officials and policies are likely perceived as more trustworthy and credible. By share values and norms the literature refers to common convinctions and believes and their effects on the functioning of society as a whole (Fukuyama 1995). This system of common beliefs might facilitate cooperation and intensify a sense of civic engagement, both useful for collective actions.

Still according to Grootaert (2001), the benefit deriving from this system of connections and sense of community is the result of three main mechanisms.

First, the sharing of information among association members is likely to facilitate the diffusion of innovations. In this sense the local level spillovers may play a crucial role in the technological performance of the regions (See Sexenian "Regional Advantages" for a more accurate analysis). Moreover, greater associational activity may reduce imperfect information and therefore lower transaction costs either in the labour or in the credit market. Social capital could facilitate a better flow of information between borrower and lender in the credit market and between principal and agent in the labour market.

Second, solidarity and reciprocity may reduce opportunistic behaviours. Ostrom (1990) work shows that cooperative actions within the local community play an important role in managing "common property" resources and in avoiding or, at least, reducing excessive exploitation.

Third, shared attitudes and the sense of community belonging may facilitate collective decision making. Putnam (1993) showed that in the regions of the Northern Italy a more intensive level of social associations and a higher degree of civic engagement, compare to the Southern regions, promote collective norms and trust that are central in the production and maintenance of the society well-being in terms of economic growth and well governance. These two double levels of social capital have been integrated

Considering the concept of poverty as "a pronounced deprivation in well-being" (World Bank 2005, pg. 9), social capital, as an asset, might be used to reduce this deprivation.

The hypothesis that social capital might positively affect poverty has been empirically confirmed in the development literature by using different methodologies and perspectives.

Ferroni et al. (2008) Show that social capital through social cohesion positively affects economic growth, investment and innovation capacity in Latin American countries. Social cohesion in that sense is treated as an asset and the composite index they build refers to a combination of social capital dimensions, such as interpersonal and institutional trust, and distribution of opportunities in terms of education, income and other socio-economic variables. They find that social capital is positively related not only to economic growth, innovation capacity, but also to quality of development policy and political stability.

Grootaert (2001) analyses the link between social capital, households' welfare and poverty in Indonesia. Empirical evidence shows that households with higher social capital have higher households expenditure per capita, more assets, better access to credit and less likely to have their children not attend the school. Moreover, by using a probit model, Grootaert finds that the average household with high associational activity (membership measure) has lower probability to be poor than a household with no memberships.

Oxendine (2007) by using a survey data involving twenty-nine states across the United States finds a negative and significant relationship between economic inequality and social capital.

Narayan and Pritchett (1997) demonstrate that social capital at the household level has a positive effect on the household welfare in Tanzania. Moreover, they show that this effect works primarily at the village level.

Isham (1999) shows that social capital favourites the technology adoption (increasing adoption of improved fertilizer) due to the fact that farmers in villages with higher level of social capital have more cumulative information.

We are going to use the diagram presented by Woolcock and Narayan (2000) in order to describe the dynamic between social capital and poverty transitions.

According to the definitions of social capital two elements are crucial for this asset to work. The first one is the importance of the network (links and the constant social interaction between individuals), the second one is importance of embedded resources (ex. the flow of information and the attitude towards the cooperation). These two elements can be combined through a system of strong and weak ties (Granovetter 1973, 1995) or, in other words, through the balance between "bonding" and "bridging" connections. In simple words, the economic development occurs through a mechanism where bonding social capital (mutual cooperation and interaction between individuals belonging to the same community or to the same group: family, enterprise...) and bridging social capital (mutual cooperation and interaction between individuals belonging to different communities or groups: friends, group of workers belonging to different enterprises...) coexist. If in the former scenario, individuals acquire skills and resources embedded in their initial community, in the latter they acquire "the skills and resources to participate in networks that transcend their community, thereby progressively joining the economic mainstream" (Woolcock and Narayan, 2000, pg. 232).

Figure 1 shows the dynamic between social capital and poverty transitions.

(A) Poor village individuals (for ex. women) with no material collateral receive loans or help thanks to their membership in a small peer group. This helps them to start or to expand a small business and therefore to improve their families' welfare.

(B) Because of the limited extension and resources (material and non-material) of any given group, the return will reach a maximum after which will start to decrease.

(C) This happens especially when the group exclusively rely on endowments deriving from "bonding" social capital

(D) Moreover, long-term members of the group might find (especially in the case of group-based credit programs) that obligations and commitments with their

colleagues represent serious obstacles for further advancement, especially for the more ambitious.

(E) In order to escape from this *bonding trap,* members try to build a more diversified network, creating ties with members belonging to other groups. This increases the level of "bridging" social capital and, therefore, rises economic opportunities.

According to the figure, while social groups belonging to poor villages intensify bonding links in order to fight against uncertainty ("defence" approach), non-poor groups tend to create a system of bridging network and play "offense". This view is in line with the concept of the "Strength of Position Proposition" advanced by Lin (2001). This is a postulate indicating that the better is the member's position of origin, the more likely it is that this member will access and better use the social capital. In poor words, people starting with a higher endowment, have more probability to diversify their social capital between bonding and bridging side.

As Woolcock and Narayan (2000) underline, one of the main challenges is to identify the conditions under which helping the communities of poor to have access to a more diverse stock of bridging social capital without, simultaneously, undermining the many positive aspects of their bonding social capital stock.

Figure 1. *Social Capital and Poverty Transitions*
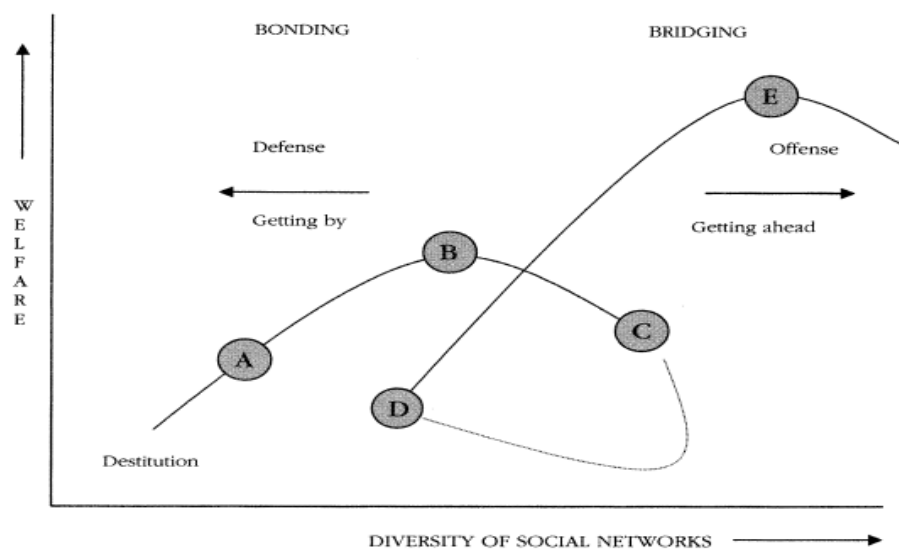
3. Social Capital and Poverty: Data and Methodology

The data set used to construct the social capital indicators is based on the "8th General Census on Industry and Industrial Districts (2001)" (ISTAT 2001) and the report "Voluntary Organizations in Italy" ISTAT (2001). The poverty indicators, the human capital indicator, the demographical and geographical characteristic variables derive from the "General Census on Population and Households (2001)" (ISTAT - Italian National Institute of Statistics), the survey on "Poverty and Social Exclusion" referring to the period 2002 (ISTAT 2003) and data at the regional level on a yearly basis in "System of territorial indicator" still from ISTAT. The purpose of the survey on poverty and social exclusion is to achieve, for the first time, more accurate information about the regional poverty condition in order to better address structural policies at a local level. In the survey, the sample is based on 27,000 families but the results have been weighted at the average regional level, providing us with N=20 observations. Finally the financial variables derive from the reports on "regional Economics" provided by the Bank of Italy on a yearly basis.

In the next sub-sections we are going to introduce a brief description of the social capital index based on the regional density of the industrial district and of the poverty measures. Finally, we will provide a general descriptive analysis.

3.1 Social Capital Indicators

As anticipated in the introduction, in our analysis we use a new index of social capital (Andriani, Karyampas 2009) based on a particular type of communities network called industrial district. This type of network refers to 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). According to Markusen (1996), economic relations inside the district are influenced by social relations. This particular scenario facilitates the development of a society whose elements (individuals, households, firms and local administration) share the same system of norms, values and original culture.

The index of social capital implemented in our analysis (we have named $dind_i$, for i = 1, ..., N) has been constructed under the main assumption that workers in the

industrial districts can be considered as people holding memberships in a community (See Appendix 1 for a complete description of the index).

To construct the index, we have used the same methodology applied to the Putnam's instrument. The Putnam's instrument is an index of associational activity and indicates the density of voluntary associations in a particular area (for instance a region). This density is the ratio between the individuals belonging to the associations and the total people living in that region. Similarly, *dind*$_i$ is the ratio between the total workers *L* belonging to the industrial districts of the ith region over the total workers *m* belonging to the ith region (equation 1).

$$dind_i = \frac{L_i}{m_i}$$

Like the Putnam's instrument the possible range of this index is between 0 and 1. Regions having *dind* = 0 present no level of industrial district density while regions with value close to 1 have a higher level of industrial district density.

By using the median, table 2 ranks the regions according to the social capital proxy (with the exception of the regions that do not have industrial districts and for which our index is zero). A first conclusion that we can infer from this ranking is that the intensity of industrial districts is more developed in the northern regions rather than in the southern. Actually, table 2 indicates that with the exception of Piemonte (Pie) there is no northern region whose value is below the median. On the other way round, with the exception of Abruzzo (Abr), there is no southern region whose value is above the median.

Table 2

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

Source: Andriani Karyampas (2009)

3.2 Measures of Poverty

Our ambitious here is not to review all of the literature on poverty but to describe the indices we use and to discuss some issues of relevance to our studies. The literature in

development studies constructs the measures of poverty through two main magnitudes: income and consumption[1]. Regardless the dispute in the literature whether consumption is more appropriate than income in order to better capture the poverty rate or the other way round, the OECD measures of poverty, and therefore those identified in the ISTAT survey, are mainly based on the consumption (expenditure) approach. In developed countries, one of the reasons that plays in favour to this indicator is related to the "permanent income hypothesis" (fig. 3). The basic idea is the following. While during the lifetime cycle, an individual's income is likely to rise and falls from year to year, consumption remains relatively stable. In poor words, while transitory income is saved, long-term ("permanent") income is largely consumed (World Bank 2005).

Fig 2 "Life time Cycle"
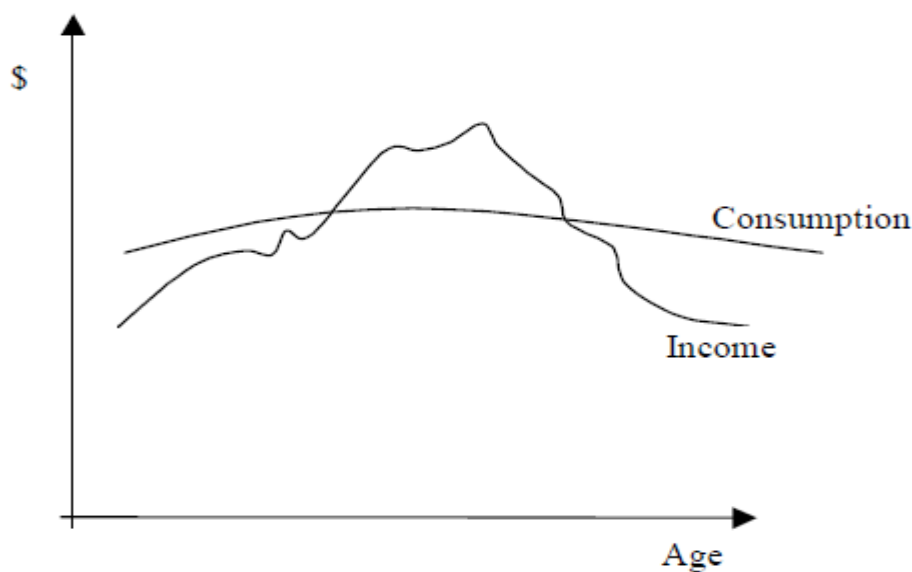
Source: "Introduction To Poverty Analysis" World Bank Institute 2005, pg. 28

In order to identify the quantitative poverty measures we have to set the so called poverty line, which is the level of consumption that a family needs to escape poverty. The relative poverty line z set by the ISTAT (2003) refers to the consumption per capita c adjusted by a standardising factor β called "equivalence scale" used to

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[1] There is still an open and unsolved discussion among scholars and social scientists about which one of the two variables is more appropriate in order to identify the well-being of an individual or family (See Goodman et al. 1997, Atkinson 1983, World Bank 2005 for a complete analysis about this particular diatribe).

determine the poverty line when the number of the family members is different from "2" (see Appendix for more formal details)

$$z = \beta c \qquad (2)$$

According to the ISTAT (2003) the relative poverty line in the 2002 for a family of two members is $z = 823.45$ € while for a family of four members is $z = 1342.22$ €. Hence, a family of two members is considered to be poor if it has a monthly mean expenditure of consumption less or equal to the national per capita average (823.45 €).

To our purpose we are going to use more than one quantitative measure: the Headcount index (or incidence of poverty), the poverty gap index (or intensity of poverty), the "surely poor" index and the "just poor" index (for a more formal analysis and description of each index see Appendix).The last two indices are used by the ISTAT in order to analyse the poverty at different levels.

The Headcount index (HC) measures the proportion of the population that is counted as poor (World Bank 2005). More precisely, it measures the percentage of families whose consumptions are below the relative poverty line. The poverty gap index (PG) indicates the intensity of poverty. In simple words, it measures, on average, how much, in percentage, the mean expenditure of poor families is below the poverty line (ISTAT 2003, World Bank 2005).

The "surely poor index" (SP) identifies the percentage of families whose expenditure is less than 80% of the relative standard poverty line z (ISTAT 2003).

$$SP \rightarrow \mu < \alpha z \qquad (3)$$

where $\alpha = 0.8$. This means that the surely poor index refers to a "surely poor" poverty line μ whose value is 80% of the relative standard poverty line z.

The "just poor index" (JP) identifies the percentage of families whose expenditure is between the surely poverty line μ and the standard relative poverty line z itself (ISTAT 2003).

$$JP \rightarrow z \leq \gamma \leq \mu \qquad (4)$$

Notice that the Headcount and the poverty gap indices are based on the year 2003. This provides to the analysis the possibility to make comparisons between this

quantitative index and the social exclusion variables calculated by Stranges (2007) and by Capacci et al (2003) based on the year 2003. Unlike HC and PG the indicators SP and JP are based on the year 2002 since to our knowledge the ISTAT did not replicate these measures the following years.

3.3 Descriptive Analysis

According to Emanuele Felice (2005, pg.1) "Italy is probably the European country with the widest and historically deep-rooted regional disparities within it". This might be true not only in terms of economic performances, but also in terms of poverty. Table 2 shows that poverty varies quite a lot across the regions and this occurs for each of the different poverty dimensions we consider. In terms of Headcount index, Sicilia, a southern region, is the region presenting the highest percentage of families (25.5%) whose consumption per capita is below the relative poverty line while Basilicata, still in the South, is the region with the maximum score relative to the poverty gap (25.8). This means that poor families in Basilicata spend on average 25.8% less than the average Italian family whose expenditures lay on the relative poverty line z. Not surprisingly Basilicata, hence, is also the region with the highest percentage of surely poor families (15.5%) while Calabria is the region with the highest percentage of "just poor" families (15.1%).

Table 2

stats	HC	PG	SP	JP
mean	12.13	20.51	6.215	6.785
p50	8.55	20.55	4.1	4.8
sd	7.935536	3.006116	4.914348	4.142498
max	25.5	25.8	15.5	15.1
min	4	14.9	1.5	2.2
range	21.5	10.9	14	12.9
N	20	20	20	20

If we focus the attention to the incidence of poverty (HC) the range between the poorest region and the least poor one is quite impressive (21.5%). In particular, in Veneto, a region located in the North-East has only 4% of families that can be considered poor, 21.5% less than in Sicilia. The mean of HC index is around 12.13%. All the Southern regions present values above the mean. However, if we consider the mean value of the poverty gap also two of the Northern regions present values above the mean such as Piemonte and Trentino Alto Adige. The latter presents a poverty gap

value higher than that one of Sicilia. In terms of geographical distribution of poverty in Italy, table 2 and graph 1 depict a more clear and general picture. Table 3 confirms that the highest percentage of poor families is concentrated in the regions of the south (for the geographical partition of the regions among North-West, North-East, Centre, South and Islands see Appendix). More precisely, table 2 shows that the proportion of poor families over the total population is higher in the South and Islands (20.7% and 22.5% against 5-6% in the rest of the country). However, the poverty gap presents a less disparity across the geographical partitions. It is interesting to notice that in the northern regions of Piemonte, Emilia Romagna, Trentino Alto Adige and Friuli Venezia Giulia, the poverty gap value is above 20%. These values are higher than in any regions belonging to the Centre of Italy and quite close to the south average.
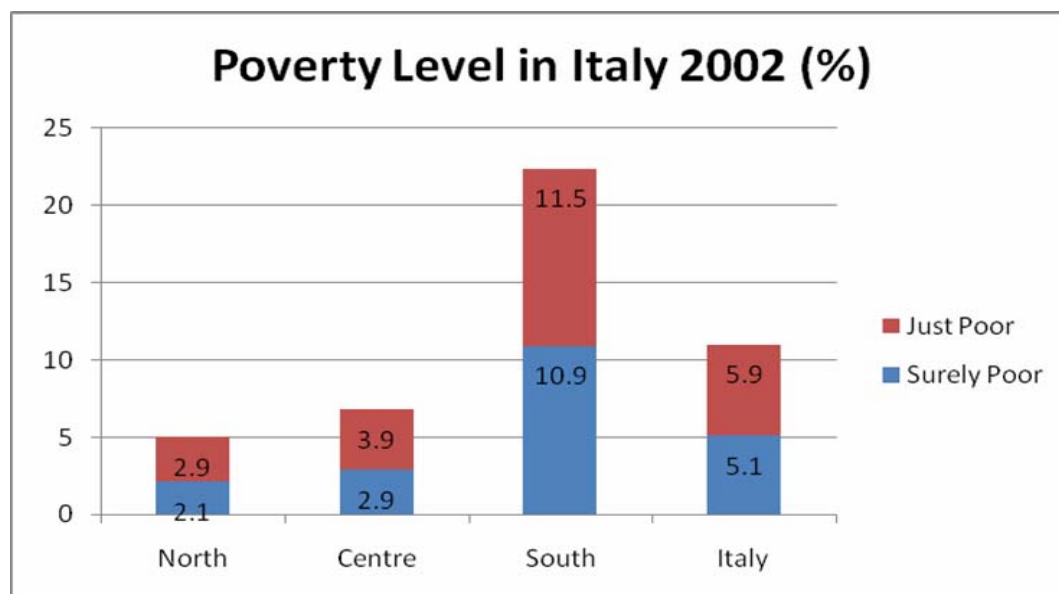
Table 3

Geographical Distribution of Poverty in Italy (2003): Incidence of Poverty and Poverty Gap		
Areas	Headcount index	Poverty gap index
North-West	5.4%	18.7%
North-East	5.2%	19.7%
Centre	5.7%	18.2%
South	20.7%	23.2%
Islands	22.5%	22.1%
Italy	10.6%	21.4%

Source: ISTAT www.istat.it

Graph 2 indicates the distribution of poverty by taking into account the different poverty levels measured by the ISTAT (2003). While the average of surely poor families in Italy is around 5.1%, in the south this proportion more than doubles. We can also notice a similar scenario for the proportion of families that have been labelled as "just poor".

Graph 1

Source: data from ISTAT (2003)

Table 4 shows the correlation matrix between the poverty measures and the social capital indicators.

```
(obs=20)
                   hc        pg        SP        JP      dind  associ~n

      hc       1.0000
      pg       0.8277    1.0000
      SP       0.9639    0.8628    1.0000
      JP       0.9616    0.8177    0.9618    1.0000
    dind      -0.5478   -0.5007   -0.5566   -0.5391    1.0000
association   -0.3538   -0.0858   -0.2981   -0.3287    0.0709    1.0000
```

Both the indicators, the Putnam instrument and the *dind*, are negatively correlated with the different poverty indicators. Notice that, even though SP and JP indicators are lagged by one year relative to *HC* and *PG*, the correlation among the former poverty measures and the latter is very high. The correlation coefficient among the different poverty indicators is between 0.81 and 0.96. This might suggest a certain persistency in the poverty trend across the regions.

Graph 2
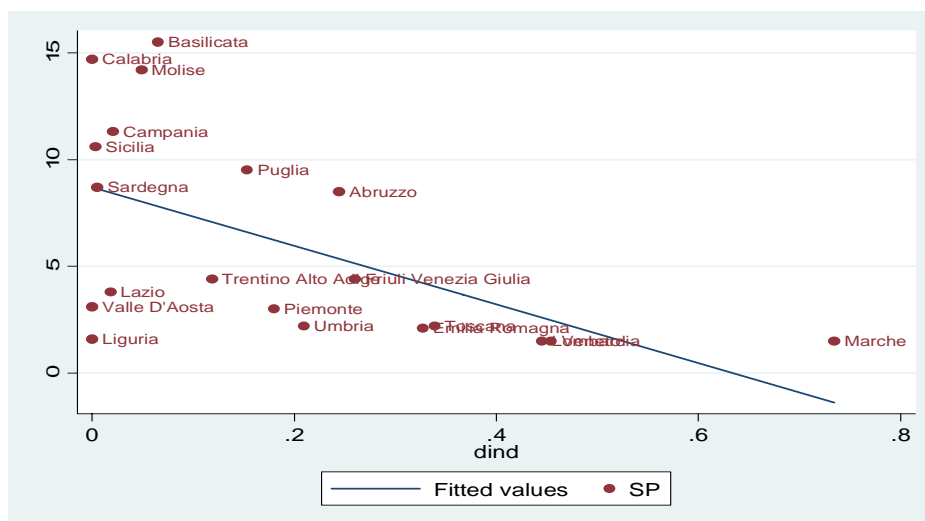
Graph 2 considers the relationship between the lowest relative poverty line (SP indicator) and the social capital indicator (*dind*). According to the graph all the regions above the 10% level of poverty (Sicilia, Campania, Molise etc…) present a very low level of social capital. On the other hand, the region with the highest social capital level (Marche) is far away from a dramatic poverty condition even though this region is not located in the North of the country.

4. Social capital and Poverty: Empirical Analysis

In this section we are going to present our empirical models in order to capture the relationship between the social capital indicators and the poverty measures we have mentioned in the previous sections.

Due to the low number of observations, and therefore a scarce degree of freedom, in our empirical models we have chosen the control variables according to a severe selection taking into account methodological and theoretical reasons.

Actually, the analysis and the empirical models we present here take inspiration from different works quite popular in this particular literature such as Narayan and Pritchett (1997), Helliwell (2002), Putnam (1993, 2001), Grootaert (2001), Pradham, Ravallion (2000) and several others. More specifically, we will reproduce the empirical model advanced by Grootaert (2001) by integrating two important modifications. Firstly, we integrate the social capital proxy *dind* within the social capital indicators. Secondly, one of the problems point out by Grootaert (2001) is the reverse causation that his

empirical model can have. An element of robustness of our model is based on the different lagged variables of social capital relative to the poverty indicators. While the former derive from surveys referring to the year 2001, the latter refer to years 2002 (SP and JP) and 2003 (HC and PG). Social capital regressors lagged by one and two years can dramatically reduce the probability of incurring in reverse causality problems.

Equation (5) represents the set of regressions on objective poverty.

$$Poverty_i^j = \beta_0 + \beta_1 sc_i^k + \beta_2 education_i + \beta_3 logasset_i + \beta_4 X_i + \beta_5 Z_i + u_i$$

Where

$Poverty_i^{(j)}$ indicates the *j*th (j = HC PG , SP, JP) measure of objective poverty presented in the previous section for *i*th regions.

sc indicates the *k*th (k = *dind, association*) measure of social capital for for *i*th regions.

education is the human capital variable

logasset is the household endowment of other assets (in our case financial assets)

X is a vector of household characteristics (family size)

Z is a vector of region characteristics

u is the error term

Notice that like Grootaert (2001) we did not include in the regression the income per capita variable. There is more than one reason supporting this choice. Firstly, the poverty indices we are using are based on consumption variables. Consumption and income in the short run are strongly correlated. Because our analysis is based on a cross section this might cause problems of endogeneity. Secondly, as Stranges (2007) points out, the quantitative measurement of regional poverty in Italy is characterised by a series of problems. One of these problems is related to the high differentiation existing between regions. This creates sever difficulties in comparing them using a single threshold, not weighted on the base of real purchasing power of the different area of the country. For instance, Helliwell (2002) underlines the disadvantages in identifying linkage between income and well-being. To compare income across countries, Helliwell (2002) uses real GDP per capita measured at purchasing power parities. The problem with our data set is that each regional income, even though

belonging to the same country, should be adjusted by different "regional inflation" if not measured at PPP. Thirdly, still according to Helliwell (2002), theory and some previous research suggest that the effect of income may be non-linear in nature, with smaller well-being effects attached to increases in income beyond level sets by each individual's or societies expectations and habits. Due to a low number of observations we have avoided the use of non-parametric estimation models.

The intuitions and the reasons behind the choice of the specific variables used in equation (5) are the following:

The variables *education* and *logasset* represent the capital endowment holding by families. Higher level of education and better financial wealth should represent important instruments for a household to escape poverty. The variable of "education" comes from the Census made by the ISTAT in the 2001. This variable indicates the proportion of individuals holding a diploma. The variable *logasset* has been derived by the "regional economic" surveys that the Bank of Italy develops on a yearly basis. This variable indicates the amount of financial asset per capita at the regional level. More precisely it indicates the collective investment in the stock market per capita. In the economic literature it is not unpopular to associate the level of financial wealth to the level of well-being and economic growth of a society. Even though in the theory of finance and growth there is still an open dispute about whether finance causes growth or the reverse scenario, however, it seems there is a large consensus about the positive association between the two variables (Levine 1997, 2004, Driffill 2002). The vector *X* of household characteristics represents the demographic profile. More precisely, the variable we consider in the model is the family size. Households in poverty condition assign a higher proportion of their budget on food and necessary goods. Studies on Engel curve and poverty, with particular attention to food insecurity, (Gabbert et al 2005, Sheng et al 2009, Chen et al 2009) show that the relationship between food budget share and family size is positive while food budget shares decrease with income. In simple words, as income increases, families devote less share of the income on food expenditure. On the other hand, larger families spend higher amount of share income to food than small family size. This implies that in case of poverty condition the size of the family plays a crucial rule in mapping the expenditure on necessary goods. Larger size of the families, therefore, negatively affects the welfare of its members since the resources have to be shared among more individuals. This, of course, occurs particularly when a family belongs already to the

lower bound of the poverty line. The vector *Z* represents the geographic profile. In our case the regional characteristic we consider is the population density. A quite consistent proportion of studies on poverty and social capital (Van Bastelaer, 2000; Pradham and Ravallion, 2000; Quintano et al. 2007; Hirschl and Rank 1991; Oxendine 2007 and so on) have showed that population density plays an important role in the poverty distribution. For instance Van Bastelaer (2000) underlines how in the Arkansas microfinance mechanisms for poor, families face more difficulties in the presence of low level of population density. Higher concentration and, therefore, proximity among members facilitate the poor's access to local credit due to the holding of regular meeting, a higher mutual knowledge of creditworthiness and monitoring. Hirschl and Rank (1991) find similar results in analysing welfare programs across counties in U.S. They find that population density positively affects the participation of the residents in welfare programs. Again, one of the possible reasons they point out is based on the hypothesis that reduced physical distance decreases the lack of information and therefore the obstacles to access to the programs which might be more problematic where residents are more widely dispersed. We might add an extra reason. A higher population density is likely to increase social interaction. This does not refer to "bonding" interaction but to a higher level of associational activities due to more opportunities in meeting people and hold meetings more regularly. This might increase the family's network and the connections that the members of the family build outside their "bonding" groups.

Table 4

	HC b/se	PG b/se	SP b/se	JP b/se
dind	-15.244***	-7.480***	-6.913***	-6.485***
	(3.931)	(1.949)	(2.069)	(1.350)
association	-5.780**	-0.529	-1.275	-1.622
	(2.190)	(1.287)	(0.877)	(0.923)
education2	-0.283	-0.072	0.119	-0.022
	(0.330)	(0.145)	(0.218)	(0.195)
logasset	-1.991	1.299		
	(2.648)	(0.801)		
size03	14.740*	12.224***		
	(7.745)	(3.202)		
density03	-0.009	-0.011**		
	(0.011)	(0.004)		
logasset02			-2.644***	-1.624***
			(0.634)	(0.458)
size02			8.088***	8.967***
			(1.758)	(1.443)
density02			-0.011**	-0.007**
			(0.005)	(0.003)
_cons	8.871	-16.046	9.611	2.461
	(42.349)	(14.954)	(10.256)	(8.218)
r2_a	0.767	0.544	0.836	0.845
N	20.000	20.000	20.000	20.000

Table 4 shows the result of our regressions. The social capital indicator *dind* is negatively and significantly associated to all the poverty variables. Higher level of social capital reduces poverty under different dimensions. The index negatively affects the general poverty incidence and, more important, it affects the poverty gap indicator. Empirical evidence shows that families holding a system of diversified connections are more able to escape the poverty condition, while regions with a higher level of social capital present, an average, lower intensity of poverty. Notice that unlike the headcount index, the poverty gap measure shows how much deep the poverty is in the region. In our case this relationship between PG and social capital confirms the poverty transition mechanism described in section 2. The index *dind* is a combination of bonding and bridging ties. This might facilitate families to extend their social resources and escape from the *bonding trap.* Therefore, the higher is the average level of social capital in the region, the lower is the proportion of the families classified as poor and also the smaller is the distance of the average poor families' expenditure from the poverty line. These reasons are quite evident also in relationship with the variables SP and JP In regions where diversified connections are more common, the percentage of families extremely poor is lower. Associational activity presents the same co-movements of our social capital index, even though it is significant relative to the headcount index only. Higher associational life might broader a deeper sense of civic engagement and increase the ability of cooperating among each other. This might have a positive influence in distributing the proportion of poor families inside the area. Unlike the social capital indicators, the level of education we have considered is not significantly correlated to the poverty variables. There might be several candidate reasons able to explain this particular result. The possible "years of schooling" variable has been found quite week and rather imprecise also in previous works (Felice, 2005; Coccia et al. 1995, Helliwell 2002). According to Coccia et al. (1995) the poverty trend for the years 1980-1995 has raised independently of the education level of the head of the family. Felice (2005), in analysing regional disparities in Italy from the nineteen century up to the present, underlines that this human capital variable is associated with an important problem. The variable does not take into account the interregional mobility of students which according Felice has remarkably increased during the last twenty years, in particular from the southern regions to the northern ones. The immediate result is that education seems to be quite homogeneously spread within the country. Of course, in the

northern regions there are more people holding a degree but much more residents comparing to the southern regions. In our analysis the size of the family is significant and positively correlated to the poverty measures as the Engel curve predicts. The financial wealth of the family is negatively related to the poverty variables and becomes significant especially when we consider the variables SP and JP. In other words, when we consider more specific levels of poverty the financial wealth of households plays an important role. We might infer that families holding securities are less negatively affected by income shocks and income volatility.

5. Social Capital and Social Exclusion

Unlike poverty that can be measured as the economic constraint facing by the families, social exclusion refers more to the difficulties in the access to resources. These resources are of different nature such as human (access to education), social (access to a better housing condition) and economical (access to the labour market and to food for instance). At a first instance, relating social exclusion to social capital might appear as a tautological exercise. However, we argue that this relationship is far from being composed by two identical concepts. The definition of social capital employed in this paper is quite operational and it follows the Putnam's approach. As we have introduced at the beginning of the paper, we consider social capital as the capital of connections that arise among individuals. One of the key assumptions advanced in our analysis is that combination between bonding and bridging links that occur among individuals represent an important asset for the well being of the society. Actually, this system of connections should facilitate on one hand a better access to information and should foster, on the other hand, a sense of reciprocity and trustworthiness inside the society. Individuals, hence, should tend to cooperate and trust each others in societies where the level of social capital is higher. Social exclusion, instead, refers to a series of discomforts that individuals and families face on a regular basis. Recalling Stranges (2007) social exclusion refers to an impoverishment process caused by the accumulation and the interaction of social risk factors. This implies that social exclusion combine factors such as unemployment, low education, health and food insecurity conditions which we want to test whether they can be affected by the level of social capital but which they do not correspond to its definition. In other words, this section will investigate whether a mechanism of

diversified connections in which reciprocity, cooperation and trust among the individuals of a society can facilitate a better access to multi-dimensional resources for the households and improve their standard of living.

5.1 Measures of Social Exclusions: Data and Methodology

The variables of social exclusion we consider are two synthetic measures: that one advanced by Stranges (2007) and that one calculated by Capacci and Castagnaro (2003). One of the limitations of the synthetic indices recognised by Stranges (2007) is the inability of distinguishing the effect provided by the single dimensions used to construct the index. However, as Stranges (2007) underlines, these indicators have at least two appeals. Firstly, they range from 0 to 1, which means that it is possible to rank regions or countries according to these indices. Secondly, they are easy to understand which implies that it is possible to make comparisons among different indicators and among different indicators and different regions and/or countries. Thirdly, in our case, those two variables are very useful to our purpose since they have been constructed at the regional level.

The measure proposed by Stranges (2007) combines three main dimensions. Firstly, the economic discomfort based on the rate of unemployment. Secondly, the social discomfort measured as the proportion of households facing housing problems (physical problems, such as electricity, leaking problems etc…) and facing difficulties in purchasing necessary goods. Thirdly, human discomfort based on lack of education (percentage of individuals having the elementary licence as the highest degree of education). The methodology applied to construct this index follows the methodology used by the United Nation in order to construct the Human Development Index (HDI) and Human Povery Index (HPI).

The social exclusion index is the result of a simple arithmetic mean of the three dimensions (economic, social and human) through the following formula (equation 6) (for a more accurate explanation of the methodology used see Appendix)

$$ISE_i = \sum_{j=1}^{n} \frac{I_{ji}}{n}$$

Where *I* is the discomfort indicator, *j* = 1…*n* and *n* = 3 as the number of dimensions taken into account. Finally, *i* = 1…*s* where *s* = 20 as the number of regions considered (Piemonte, Valle d'Aosta, Lombardia…. Sardegna).

The second measures of social exclusion we consider is that one advanced by Capacci Castagnaro (2003). The main difference from this one and the previous one is based on the choice of the dimensions. Unlike Stranges (2007), Capacci and Castagnaro (2003) consider five dimensions: unemployment, lack of education, incidence of food expenses on the general ones, bad perception of the health's state and families declaring housing problems.

Both of the indices have a range from 0 to 1. A region having a value *ISE* close to 1 is a region suffering of high level of social exclusion while a region with a very low *ISE* should present a general high level of standard living.

Table 5 shows the main statistical differences between the two indicators.

Table 5

stats	stranges	capacci
mean	.4592	.48125
p50	.3755	.447
sd	.2232725	.2279388
range	.712	.833
max	.889	.92
min	.177	.087
N	20	20

Stranges' indicator shows a lower mean, median and range than Capacci and Castagnaro indicator, even though the standard deviation does not present any significant difference between the two indices. Depending on the index we consider, the regions change position in a potential ranking from the most social exclusion level region to the least one. However, Stranges (2007) underlines, that when the sample is divided between the regions having a value of *ISE* higher than 0.5 (for Stranges this interval identifies high social exclusion regions) and value of *ISE* lower than 0.5 (low social exclusion regions) no significant differences in the ranking occurs.

Table 6 shows the correlation matrix between the measures of social exclusion, social capital and poverty.

Table 6

(obs=20)

	stranges	capacci	HC	PG	dind	associ~n
stranges	1.0000					
capacci	0.7803	1.0000				
HC	0.7655	0.8491	1.0000			
PG	0.5589	0.5054	0.8277	1.0000		
dind	-0.6115	-0.4103	-0.5478	-0.5007	1.0000	
association	-0.2908	-0.5766	-0.3538	-0.0858	0.0709	1.0000

The social capital indicators are negatively correlated to the social exclusion indicators. At the same time poverty indicators and social exclusion indicators are positively correlated. This last result reinforces our initial idea of considering both of types of measures as a continuum of the socio-economic impoverishment of the society. Graph 5 and graph 6 indicate respectively the relationship between the *ISE* of Stranges and the *dind* and Capacci-Castagnaro *ISE* and *dind* by using a bivariate analysis. Both of the graphs show clearly a negative relationship between social exclusion and social capital. In both of the scenarios the group of regions showing higher level of social exclusion and low level of social capital belong to the South (Sicilia, Sardegna Campania, Calabria and Basilicata).

Graph 5 Stranges *ISE* and *dind*
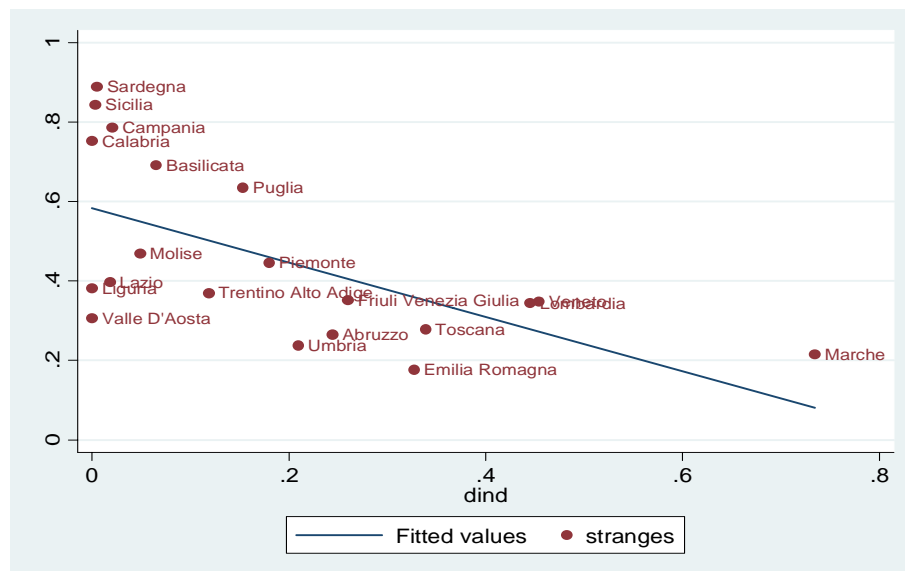
Graph 6 Capacci-Castagnaro *ISE* and *dind*
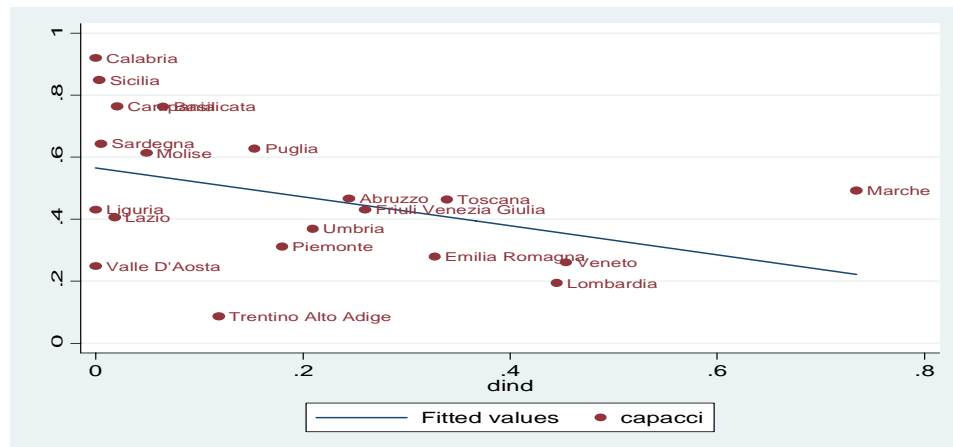
5.2 Empirical Analysis

From the concept of social capital we infer that in absence of social interaction, sense of community belongings and civic engagement, the level of social exclusion can rise inside a society. However, it might be true also the opposite. Actually, a society where economic, social and human discomforts are deep and persistent, risks to see reduced the possibility to build social capital in its different dimensions. To make our analysis more robust, we set our model by using social capital variables and social exclusion variables based on different years. More precisely, our social capital variables ("dind" and associational activity) are based in year 2001 while the variables of social exclusions refer to the period 2003.

Equation (7) shows the empirical model we estimate.

$$ISE_i^m = \alpha_0 + \alpha_1 sc_i^k + \alpha_2 logasset_i + \alpha_3 logasset02_i + \alpha_4 X_i + u_i$$

ISE_i^m indicates the mth (m = Stranges, Capacci-Castagnaro) measure of social exclusion for ith regions.

Equation (7) presents some modifications relative to equation (5). The main differences are related to the omitted variables of education and population density. This decision has been taken in order to minimise endogeneity problems that these variables might cause. First of all, both ISE indices include the level of education. Secondly, we found that population density is not significant in any of the two regressions and the coefficient is quite close to zero. Including or not this variable

does not either change the level of "fit" of the regressions or the behaviour of the other variables. In order to analyse this mechanism more accurately, in its very theoretical concept social exclusion implies social polarization: being part of society or not Bonke (2001). In a more operational approach the ISE considers this "social non-belonging" as accumulated economic social and human disadvantages. It is likely possible that in composite indices different dimensions risk offset each other by causing the index to be less sensitive to some geographical characteristics.

Table 7

	stranges b/se	cap_cast b/se	HC b/se	PG b/se
dind	-0.505***	-0.146	-15.244***	-7.480***
	(0.123)	(0.146)	(3.931)	(1.949)
association	-0.035	-0.264***	-5.780**	-0.529
	(0.061)	(0.042)	(2.190)	(1.287)
logasset	0.018	-0.090	-1.991	1.299
	(0.051)	(0.064)	(2.648)	(0.801)
logasset02	-0.092***	-0.068*		
	(0.024)	(0.036)		
size03	0.387*	0.062	14.740*	12.224***
	(0.198)	(0.175)	(7.745)	(3.202)
education2			-0.283	-0.072
			(0.330)	(0.145)
density03			-0.009	-0.011**
			(0.011)	(0.004)
_cons	0.283	1.909**	8.871	-16.046
	(1.093)	(0.885)	(42.349)	(14.954)
r2_a	0.642	0.746	0.767	0.544
N	20.000	20.000	20.000	20.000

Table 7 shows the results of the regressions relative to social exclusion and recall those relative to poverty incidence and poverty gap. The social capital index *dind* is negatively and significantly related to Stranges' *ISE* while it is still negative but not significant relative to Capacci and Castagnaro one. On the other hand, the associational activity is significant relative to Capacci and Castagnaro *ISE* and negative but not significant relative to the index advanced by Stranges. There might be many candidate reasons for these results. Most of them plausibly related to the composition of the measures of social exclusion and the choice of the social capital measures rather than to the two concepts themselves. Unlike Stranges (2007), Capacci and Castagnaro (2003) include in the composite index also food insecurity and health insecurity. It might be easily probable that voluntary organizations focus part of their activities in alleviating these problems. A system of informal network described by the *dind* might not capture these issues and it might focus much more on unemployment and economic problems (Andriani and Kariampas 2008). An alternative reason might be related to the nature of synthetic indices. As Stranges

(2007) and Capacci and Castagnaro (2003) underline, the synthetic index does not indicate which of the dimensional component is the dominant one. This is likely to affect the results of the regressions, if not in the sign of the coefficients, in their level of significance. Keeping this last explanation as a candidate reason, we can infer that the social capital dimensions we have employed condition the level of social exclusion in the Italian regions. Table 7 shows similar results with respect to poverty measures. As with poverty, the size of the family presents a positive relationship with social exclusion and in the case of Stranges' *ISE* is also significant. Financial asset lagged by one year seem to be negatively and significantly related to both social exclusion measures. Economic resources might help in case of housing problems or sickness period.

6. Conclusions

The relationship between poverty and social exclusion is still object to analysis and discussion among scholars. Are they the two different faces of the same medal? Is poverty one minor category of the broader social exclusion concept (Bohnke 2001)? The aim of this paper is not to try to resolve this dilemma, rather to investigate whether social capital can reduce the socio-economic impoverishment of a society. Therefore we consider poverty and social exclusion as a continuum process of the same socio-economic "degrade". The empirical evidence presented in the paper shows that social capital negatively affects both poverty and social exclusion. Regions with higher level of social capital present lower level of socio-economic "degrade". The first part of the analysis gives empirical voice to the poverty transition mechanism advanced by Woolcock and Narayan (2000). We find that a more diversified system of network and higher sense of reciprocity reduce the poverty incidence at different levels and intensity of poverty. In the second part of the paper, we show that social capital negatively affects social exclusion. Both social capital measures are negatively correlated with the social exclusion measures. While our index (*dind*) becomes significant relative to the measure advanced by Stranges (2007), the Putnam's associational activity is significant relative to the *ISE* calculated by Capacci and Castagnaro (2003).

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Appendix 1. The New Social capital Proxy: *DIND*

As we have said in the section, the social capital proxy we have developed takes inspiration from the so called Putnam's Intrument. 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 Ai 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:

Ai where $i = 1, 2, \ldots, n$ 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

Pi = a person belonging to yi 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 *zj* 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.

In constructing our index, we consider the industrial districts (IDs) as particular communities 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.

If we consider the Italian national territory, 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 $j = 1, 2,…, m$ 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

dj industrial district has lj workers

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

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

Appendix 2. The Relative Poverty Line and the Poverty Measures

The **relative poverty line** "z" set by the ISTAT refers to the consumption per capita "c" adjusted by a standardising factor β called "equivalence scale" used to determine the poverty line when the number of the family members is different from "2"

Therefore if "c" is the consumption per capita then

$$z = \beta c \qquad (1)$$

Table (a) shows the different factors

Table (a) Family Members and "Equivalence Scale" (2002)

Family Members	β
1	0.6
2	1
3	1.33
4	1.63
5	1.9
6	2.16
7 (more)	2.4

Source: "La poverta' e l'esclusione sociale nelle regioni italiane" (ISTAT 2003)

According to the table 1 the relative poverty line in the 2002 for a family of two members is

$z = 1*823.45 = 823.45$ €

While for a family of four members is

z = 1.63*823.45 = 1342.22 €

where 823.45 € has been calculated as consumption per capita in Italy in the 2002.

Hence, a family of two members is considered to be poor if it has a monthly mean expenditure of consumption less or equal to the national per capita average (823.45 €).

The **Headcount index** measures the proportion of the population that is counted as poor (World Bank 2005). If P_0 is our index then

$$P_0 = \frac{1}{N} \sum_{i=1}^{N} I(y_i < z) \qquad (2)$$

where

y_i is the actual income of the family i and N indicates the total families of the sample

Note that $I(.)$ is an indicator function such that

$$I(.) = 1 \; if \; y_i < z$$
$$I(.) = 0 \; otherwise$$

The index can be expressed in a more simple way as in the equation below

$$P_0 = \frac{N_p}{N} \qquad (3)$$

where Np is the number of poor and N the total population.

For example if it results to identify 20 families classified as poor over a sample of 100 families then equation (3) will be

$$P_0 = \frac{20}{100} = 0.2 = 20\%$$

Hence in our hypothetical scenario the index is 0.2 which means that the proportion of the families that are counted as poor is 20%

The **poverty gap index** indicates the intensity of poverty. In simple words, it measures, on average, how far the expenditure of poor households falls below the poverty line. We can formalise the poverty gap index as it follows

$$G_i = (Z - y_i)I(y_i < z) \qquad (4)$$

where G_i is the poverty gap and again

$$I(.) = 1 \ if \ y_i < z$$

$$I(.) = 0 \ otherwise$$

therefore

$$P_1 = \frac{1}{N}\sum_{i=1}^{N} \frac{G_i}{z} \qquad (5)$$

where P_1 is the poverty gap index.

It is important to check how poverty incidence varies in relation to different poverty definitions. To this purpose, ISTAT set two extra poverty incidence indices. The "**surely poor" index** (SP) according to which the families or individuals classified according to the criteria of this index are surely poor and the "**just poor" index** (JP) indicating families and individuals that are "just poor".

The two indices may be formalised in the following way

$$SP \rightarrow \mu < \alpha z \qquad (6)$$

where $\alpha = 0.8$ which means that the surely poor index refers to a relative poverty line μ that identifies families whose expenditure is less than 80% of the relative standard poverty line z

While

$$JP \rightarrow z \le \gamma \le \alpha z \qquad (7)$$

Expression (7) means that the just poor index refers to a relative poverty line γ that identifies families whose expenditure is between 80% of the relative poverty line standard z and the standard relative poverty line itself.

APPENDIX 3. Measures of Social Exclusions

The measures of social exclusion are constructed by using the same procedure applied by the UN to compute the Human Development Index HDI.

$$ISE_i = \sum_{j=1}^{n} \frac{I_{ji}}{n}$$

Where I is the discomfort indicator, $j = 1...n$ and n is the number of dimensions taken into account. Finally, $i = 1...s$ where $s = 20$ as the number of regions considered (Piemonte, Valle d'Aosta, Lombardia.... Sardegna). The discomfort indicator is

$$I_{ji} = \frac{x_{ji} - \min(x_j)}{\max(x_j) - \min(x_j)}$$

where the numerator is the difference between the recorded value for each region in specific size discomfort and the minimum value of the same indicator (the region presenting the minimum value). The denominator is the range of the indicator. More specifically, the difference between the maximum value and the minimum value of the distribution.

APPENDIX 4. Geographic Partition of Italy

North - West: Valle d'Aosta (VdA) Piemonte (Pie) Lombardia (Lo), Liguria (Lg),

North - East Friuli-Venezia Giulia (FVG), Trentino Alto Adige (Ta), Veneto (Ve), Emilia Romagna (ER)

Centre: Toscana (To), Marche (Ma), Umbria (Um), Lazio (La)

South: Abruzzo (Ab), Molise (Mo), Campania (Ca), Puglia (Pu), Basilicata (Ba), Calabria (Cal), Sicilia (Sic), Sardegna (Sa)

Islands: Sicilia (Sic), Sardegna (Sa)

Appendix 4 Variables

Variables		
Dependent variables		
HC	regional headcount poverty index in 2003	ISTAT
PG	regional poverty gap index in 2003	ISTAT
SP	regional surely poor index in the 2002	ISTAT
JP	regional "just poor" index in the 2002	ISTAT
Stranges	regional index of social exclusion in the 2003 computed by Stranges	Stranges (2007)
Cap_cast	regional index of social exclusion in the 2003 computed by Capacci and Castagnaro	Capacci and Castagnaro (2003)
Independent variables		
dind	ratio between workers belonging to the IDs of the	Andriani Karyampas (2008)

	region *i* and total workers in the region *i* in the 2001	
Association	ratio between number of regional organisations and regional population in the 2001	ISTAT
Education2	regional proportion of individuals holding a diploma in the 2001	ISTAT
Logasset	collective investment in the stock market per capita in the 2003	Bank of Italy
Logasset02	collective investment in the stock market per capita in the 2002	Bank of Italy
Size03	average number of family members at the regional level in 2003	ISTAT
Size02	average number of family members at the regional level in 2002	ISTAT
Density03	regional density of population in the 2003 (habitants/squared km)	ISTAT
Density02	regional density of population in the 2002 (habitants/squared km)	ISTAT