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## Putnam's Social Capital and the Italian Regions: An Empirical Investigation<sup>(0)</sup>

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### *Abstract*

In *Making Democracy Work*, Robert D. Putnam (1993) argues that (i) northern Italy has developed faster than southern Italy because the former was better endowed with social capital; and (ii) that the endowments of social capital across Italian territories have been highly persistent over centuries. This paper provides an empirical investigation of Putnam's case. To evaluate the relevance of social capital, we present a test based on five individual outcomes that are key issues for the underdevelopment of the south of Italy: worker productivity, entrepreneurship, female labor market participation, higher education, and job referrals. Exploiting regional differences in civic involvement in the late twentieth century as an instrument for current social capital, we show that social capital has a large effect on economic activity.

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One of the most fascinating topics in contemporary economics concerns the role of history. Is history important for the economic performance of countries and regions? Will the effects of history ultimately wash out or will they constrain the economies in the long run? The recent new institutionalism view suggests that history is important because history shapes institutions and institutions shape the economy.

What are institutions? Institutions are defined as “the humanly devised constraints that structure political, economic and social interaction” (North (1991): 97). They include both formal rules, such as constitutions, laws, and property rights, and informal constraints, such as sanctions, taboos, customs, traditions, and codes of conduct. In particular, informal constraints matter: “We need to know much more about culturally derived norms of behavior and how they interact with formal rules to get better answers to such issues. We are just beginning the serious study of institutions” (North (1990): 140).

Notwithstanding the importance of informal institutions, the economists’ emphasis has been so far mostly on formal rules. For instance, La Porta et al. (1998a, 1998b, and 2000) have argued that the fact of being colonized by the British Empire rather than other countries has a strong effect on the legal system and through that on the economies. Acemoglu, Johnson, and Robinson (2001 and 2002) have shown that mortality rates among early European colonialists explain the types of institutions adopted. In places where Europeans faced high mortality, they could not settle and they set up extractive institutions, which persistent to the present. Engerman and Sokoloff (1997, 2000, and 2002) suggest that the current differences between Brazil and the U.S. are due to the fact that in the early years after European conquest, Brazil was deemed to be suitable for growing sugar and the U.S. was not. Since sugar cultivation implied the use of slave labor, Brazil ended up with a much larger share of slaves. This initial higher inequality affected the subsequent process of institutional evolution, since elites were able to establish a legal framework that advantaged them. Finally, Banerjee and Iyer (2002) show that differences in the institutions set up by the British to collect land revenue in India lead to sustained differences in economic performance.

In this paper, we attempt to investigate the importance of history for economic performance by studying the role of informal constraints. We focus on one of the most

widely studied instances of informal rules, namely the concept of social capital proposed by Putnam (1993). This concept refers to trust, reciprocity, and habits of co-operation that are shared among members of a local community. We study the importance of social capital for economic performance in the context of the Italian regions where it was originally proposed. Our study will thus provide an empirical investigation of Putnam's theory.

Besides its historical importance, focusing on the Italian case has also additional advantages. First, since we are studying the variation of informal institutions within the same country, under the same set of formal institutions, it enables us to assess the relative importance of informal constraints versus formal rules. Moreover, focusing on within-country variations helps to avoid some of the omitted variable problems associated with cross-countries studies. Finally, since we estimate the effect of social capital by using a microeconomic unit of observation as the dependent variable, the potential problem of reverse causality, which is prevalent in the empirical literature on institutions and development, is minimized.

Oversimplifying, Putnam's 1993 theory can be summarized by two propositions. First, northern Italy has developed faster than southern Italy because the former was better endowed with social capital. Second, the endowments of social capital across Italian territories have been highly persistent over centuries. In particular, they were the local political regimes in place in the middle age that shaped the degree of local civic commitment that persisted through the centuries.

To evaluate the relevance of social capital, we start by regressing current performance on current social capital. The latter is proxied by the Guiso *et al.* (2003a) measure of social capital, which refers to voter turnout in referenda. Our test is based on five individual outcomes that are key issues for the underdevelopment of the south of Italy: worker productivity, entrepreneurship, female labor market participation, higher education, and job referrals. These activities represent aspects of economic performance that are trust-sensitive and for which there are clear-cut theoretical predictions as to the positive impact of social capital. For instance, low level of labor productivity in the south could depend on social norms that encourage shirking and low rates of entrepreneurship could be the result of a culture that discourage risk-taking activities. Linear regressions of

current performance on current social capital show that role of informal norms appear limited to entrepreneurship and female participation in the labor market. However, there are a number of reasons for not interpreting Linear regression results as causal. There could be a substantial measurement error since the social capital measure could correspond poorly with the social capital that matters in practice. This would create attenuation bias. Moreover, there could be omitted territorial characteristics along with endogeneity problems.

To solve these problems, we exploit Putnam's conjecture on the origins of social capital to derive a possible source of exogenous variation for current social capital. We use the regional data on social capital collected by Putnam for the period following the 1870 unification of Italy. These indicators refer to various aspects of civic traditions, such as membership in mutual aid societies and cooperatives, strength of mass parties, turnout in the few relatively open elections before Fascism brought authoritarian rule to Italy, and the longevity of local associations. There is a strong (first-stage) relationship between XIX century social capital and current social capital. Our Two-Stage Least Square estimates of the effect of social capital on individual outcomes is large for all our dependent variables, except job referrals. For instance, it implies that moving from the lowest social capital province to the highest social capital province would increase the likelihood of becoming an entrepreneur by 12 percentage points and that of earning at least a high-school qualification of 15 percentage points. These results suggest that measurement error in the social capital variable that creates attenuation bias is likely to be more important than problems introducing positive bias in the linear regressions, such as reverse causality or omitted variables.

The exclusion restriction implied by our approach is that, conditional on the controls included in the regression, the measures of social capital more than 100 years ago have no effect on individual economic outcomes today, other than their effect through social capital persistence. The plausibility of this exclusion restriction is the focus of the Chapter V of Putnam's book: historical accounts show that social capital differences have been far more stable than economic differences over almost a millennium. In particular, XIX century measures of social capital show no correlations with measures of economic well-being of the Italian regions for that time.

We adopt three strategies to substantiate our results. First, we use overidentification test to detect whether XIX century social capital has a direct effect on current performance. The results generate no evidence for a direct effect of social capital on the five trust-sensitive key economic activities. Second, we use alternative contemporary measures of social capital as instruments to check whether the measurement error in social capital is of the right order of magnitude to explain the difference between Linear and Two Stage Least Square results. We find that this is indeed the case. Interesting, this result validate the use of alternative contemporary measures of social capital as instruments in the work of Guiso *et al.* (2003a). Third, we control for a number of variables, both environmental and individual, which may be potentially correlated with the five trust-sensitive key economic activities and have been extensively used in previous literature. We find that none of these overturns our results.

Empirically, our work is linked to a number of other attempts to uncover the economic relevance of Putnam's theory. Putnam himself jointly with Helliwell provided a first empirical instigation in 1995. Using cross-regions growth regressions, they show that income convergence is faster for regions with relatively high levels of social capital. However, as recognized by Temple (2000), aggregate data might suffer of substantial shortcomings: the extent of trust may be correlated with other aspects of the regions that are omitted from the growth regressions (see, also, Durlauf and Fafchamps (2003)).

In an attempt to provide more informative empirical work, recent papers have shifted to micro data. Ichino and Maggi (2000) use individual data on absenteeism and misconduct episodes for a single Italian bank and conclude that workers born in the south are more likely to behave dishonestly. Even though they do not use any measure of social capital, they explicitly refer to Putnam's thesis to justify their results. Guiso *et al.* (2003a) use household micro data to show that measures of civic engagement help explain variation in financial practices across Italian regions. Similarly to Ichino and Maggi (2000) and Guiso *et al.* (2003a), this paper studies the impact of social capital by using micro data. However, in contrast with Ichino and Maggi (2000), we use data that are representative of the Italian population at large; while dissimilarly from Guiso *et al.* (2003a), we look at the real and not the financial effects of social capital. Moreover, in

contrast with all previous studies we refer to Putnam's theory on the origins of civic-ness to identify a source of exogenous variation in social capital.

The next section provides a snapshot of Putnam's theory. Section 2 motivates the use of our dependent variables. Section 3 presents OLS and LPM estimates of economic outcomes on social capital. Section 4 presents the main results. Section 5 investigates the robustness of our results, and Section 6 concludes.

## 1. Putnam's Theory

With the publication *Making Democracy Work* in 1993 by Robert D. Putnam (along with his collaborators Robert Leonardi and Raffaella Y. Nanetti) the notion of social capital started to attract great academic and journalistic attention. The book focuses on a unique experiment of institutional creation: the development in the seventies of new local governments for each of the Italian regions. By studying the functioning of the new regional governments, *Making Democracy Work* argues that the actual performance of institutions is shaped by the social context within which they operate.

The role of social capital goes even beyond its impact on institutional performance. The book's thesis is that social capital, as measured by the vibrancy of associational life and indicators of political participation, is the most important single determinant of the differing levels of socio-economic development in the regions of Italy. "A region's chance of achieving socioeconomic development during this century have depended less on its initial socioeconomic endowments than on its civic endowments. [The] contemporary correlation between civics and economics reflects primarily the impact of civics on economics, not the reverse" (Putnam (1993): 157).<sup>1</sup>

As to the origins of social capital, Putnam proposes an historical path dependency thesis according to which "social patterns plainly traceable from early medieval Italy to

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<sup>1</sup> The importance of informal constraints for the development of the south of Italy was also underlined by Banfield (1958) in *The Moral Basis of a Backward Society*. In this book, southern Italy is characterized by instantiated informal norm that enjoins individuals to trust member of their immediate nuclear family but to take advantage of everyone else. Supported by the results of on-the-field research on the residents of a small village near Potenza (that was fictionally called Montegrano), Banfield concludes that "extreme poverty and backwardness is to be explained largely ... by the inability of the villagers to act together for their common good or, indeed, for any end transcending the immediate material interest of the nuclear family" (Banfield (1958): 38).

today turn out to be decisive in explaining why, on the verge of the twenty-first century, some communities are better able than others to manage collective life and sustain effective institutions” (Putnam (1993): 121). In particular, elaborating on the two distinct system of government, one monarchic in the south and the other republican in the north, he notes that “In the North, feudal bonds of personal dependence were weakened; in the South, they were strengthened. In the North, the people were citizens; in the South, they were subjects...Collaboration, mutual assistance, civil obligation, and even trust...were the distinguishing features in the North. The chief virtue in the South, by contrast, was the imposition of hierarchy and order on latent anarchy” (Putnam (1993: 121-30)).<sup>2</sup> To substantiate this argument, Putnam turns to the oldest available statistical evidence on civic traditions that refers to the period 1860-1920. He shows that “where Italians a century ago were most actively engaged in new forms of social solidarity and civic mobilization, exactly there Italians today are the most thoroughly civic in their political and social life” (Putnam (1993: 149-150)).<sup>3</sup>

## **2. Five Trust-sensitive Key Economic Activities**

Our aim is to understand whether social capital makes a difference in explaining the varying prosperity of Italian areas. At the same time, we hope to shed some light on the mechanisms through which social capital affects economic performance. We focus on five main aspects (the dependent variables in our investigation): worker productivity, entrepreneurship, female labor market participation, higher education, and job referrals. These aspects provide a natural and attractive territory to analyze the effects of social capital on economic activity. First, for each of them there are clear-cut theoretical

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<sup>2</sup> For the Italian case the notion of historical path dependency is not without appeal: it could well explain the repeated failures of the regional development policy since the 1950s: see Braunerhjelm *et al.* (2000).

<sup>3</sup> There was a considerable debate about Putnam’s theory among sociologists and political scientists (see, for instance, Boix and Posner (1998), Goldberg (1996), Laitin (1995), Maraffi (1994), and Sabetti (1996)).

predictions as to the positive impact of social capital<sup>4</sup>. Second, they represent some of the key features of the Italian dual development process.

## 2.1 Five Trust-sensitive...

Trust-sensitive transactions include employment contracts in which managers rely on employees to accomplish tasks that are difficult to monitor. Low-trust areas can display lower labor productivity because of higher shirking (Ichino and Maggi (2000)) or managers' diversion of resources accomplished in an effort to prevent shirking. Moreover, a higher reliance on personal networking in the job search in low-trust areas (see point V) might generate inefficiency in the matching process, impacting negatively on labor productivity (see: Bentolila *et al.* (2003) and Pistaferri (1999) for the Italian case).

A lack of trust can affect adversely entrepreneurship through a number of channels. To the extent that social capital promotes a better protection of property rights and deters crime, it stimulates business initiatives (Mauro (1995) and Hall and Jones (1999)). Social capital might also facilitate entrepreneurship by its impact on the credit market, along the lines suggested by Guiso *et al.* (2003b). As underscored by Putnam (1993), low-trust areas display a worse local government performance; in turn, this hampers private sector growth (see also Knack and Keefer (1997)).

Low-trust communities are features by social norms against working women. According to Putnam (1993: 175), in the south of Italy the pervasiveness of strong family ties comes at the expenses of the networks of civic engagement that feature the northern regions. In these traditional families, a male breadwinner conception would prevail. This echoes the Banfield's *amoral familism* archetype: in Montegrano's everyday life there was little left for women's professional aspirations beyond housekeeping, child-caring obligations, and, if needed, an heavy contribution to the agricultural family-firm. Close to our focus, the importance of cultural factors in explaining the gender gap in labor force participation has been recently highlighted by Antecol (2000); while Guiso *et al.* (2003c) and Algan and Cahuc (2003) study the impact of religion, a peculiar type of informal norms, on female participation.

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<sup>4</sup> As recognized by Arrow (1972: 357): "Virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence".

Trusting communities are likely to have stronger incentives to accumulate human capital. For instance, Coleman (1988) shows that social capital has a considerable value in reducing the probability of dropping out. Where trust improves access to credit market for the poor, enrollment in secondary education – which, unlike primary education has a high cost in fees and forgone income – may be higher (see, for instance, Galor and Zeira (1993) and Kane (2001)). To the extent that trust is linked to a better performance of local government institutions, the quality of publicly provided education (which in Italy represents a predominant share) would also benefit. Finally, as far as trust is associated with a larger role for education credentials in the search process (see next point), the incentives for investment in human capital would be higher.

Finally, in low-trust areas hiring decisions could be influenced more by trustworthy personal attributes of applicants, such as blood ties and personal knowledge, and less by educational or other CV's credentials (see: Fukuyama (1990)). While informal networks might help workers to find jobs more easily within the same area (Montgomery (1991) and Munshi (2003)), they can hamper the efficiency of the job matching process among different regions (Gil and Jimeno (1993)).

## **2.2 ...Key Economic Activities**

In Italy, territorial divergences in workers' productivity are pronounced. While the nation-wide labor productivity is not far from the OECD averages (see, for example, IMF (2002)), the southern gap is about 20 percent (see: Mauro *et al.* (1999))<sup>5</sup>.

The Italian economy relies more than other OECD countries on small business activity<sup>6</sup>. The distribution of firms across regions is far from uniform: Italian firms are concentrated in the north of Italy and in some selected areas of the center.<sup>7</sup> According to Alesina *et al.* (2001), the south of Italy is an area where the prevailing “culture” discourages private activity and entrepreneurship.

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<sup>5</sup> See also Castronuovo (1992). According to Chiades *et al.* (2000) and Aiello and Scoppa (2001) this figure could even be on the conservative side.

<sup>6</sup> According to Eurostat, in 2000 the average firm size in Italy was equal to 3.6 employees, representing the smallest size among European countries.

<sup>7</sup> As explained by Braunerhjelm *et al.* (2000), encouraging private sector development has been the focus of regional policy for five decades.

Female non-participation is essentially a southern issue: participation rate for southern women is equal to 35 percent, more than 15 percentage points below the northern average and even less than an half of that for man in the south.

The average education of the Italian population compares disappointingly with that of countries at a similar stage of development. The shares of Italians of working age that have at least a high-school diploma (44 percent) and, in particular, that of college graduates (10 percent) are well below the OECD averages (respectively, 64 and 23 percent). There are also north-south differences, even though not dramatic: the southern gaps amount, respectively for the two indicators, to 7 and 1 percentage points.

Finally, as shown by Casavola and Sestito (1995), Italy's labor market participants tend to rely to a disproportionate extent on family's and friends networks in their job-searching activities. Faini *et al.* (1997) and Padoa Schioppa Kostoris (1999) argue that southern people rely relatively more on primitive job-searching strategies.

### **3. The Effect of Social Capital: OLS and LPM Estimates**

#### **3.1 Data and Descriptive Statistics**

Our main data source is the Survey of Household Income and Wealth (SHIW). This survey is conducted every two years by the Bank of Italy on a representative sample of about 8,000 households (see Brandolini and Cannari (1994) for details). The SHIW collects individual data on demographics and economic behaviors, such as age, sex, marital status, number of children, wages, work status, schooling, work experience, branch of activity, household net wealth. The confidential version of the SHIW we use makes available data on the province of residence. This information allows us to augment our individual-data regressions with the variables defined at territorial level such as social capital. Since from 1993 the survey has maintained the same structure, we pool data from the last four waves (1993, 1995, 1998, 2000)<sup>8</sup>.

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<sup>8</sup> The SHIW has a rotating panel component. Any year roughly one third of individuals have already been interviewed in previous years. Throughout the paper, we report the results obtained with the larger sample that includes the panel component. The results have however been checked (with no modifications) by using a smaller SHIW sample that excludes the repeated observations.

Table 1 reports summary statistics for the variables used throughout the paper. Panel A in Table 1 describes the five trust-sensitive key economic activities (the dependent variables in our regressions). Labor productivity is measured by log of hourly wages for a sample of 24,127 employees. Entrepreneurship is an indicator variable equal to one if the individual is the sole proprietor or owner of a business; or member of a family business; or an active shareholder/partner, for a sample of 15,932 household heads. Female non participation is an indicator variable for working-age women not employed and not actively looking for a job (the women sample includes 15,501 observations). Higher education takes on the value of one for those in a sample of 53,849 individuals who have earned a high school diploma or an academic qualification. Job referrals is an indicator variable of whether a worker got his 1993 current job<sup>9</sup> through referrals by relatives and friends (the sample comprises of 3,431 observations). The Appendix provides a detailed description of each variable. As can be seen from Panel A in Table 1, for all the five trust-sensitive key economic activities there are significant differences between center-northern and southern areas. For each economic activity, the difference represents the regression coefficients from the regression of the dependent variable on a dummy indicating that the individual is a southern resident. For instance, we see that the likelihood of being an entrepreneur is in the south 1/3 lower; while the chance for a woman of remaining out of the labor market is almost 40 percent higher. Panel B provides descriptive statistics for the main SHIW variables used in the paper.

Panel C in Table 1 describes the variables defined at the provincial level. It includes our (main) measure of social capital: the average provincial electoral referenda turnout for the six referenda held before the nineties. Each referendum invited citizens to express their view on controversial issues: the choice between republic and monarchy (1946); the legalization of divorce (1974) and abortion (1981), the hunting regulation (1987); the use of nuclear power (1987); the scope of public security norms (1978, 1981). As explained by Putnam (1993: 93-94), referenda turnout captures well civic engagement. Contrary to general elections, participation to referenda is neither a legal duty nor it leads to patronage-driven personal benefits. Referenda turnout represents the main measure of

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<sup>9</sup> In 1993 the survey's questionnaire was supplemented by a special section on labor market search: employees were also asked about how they got their current job (see the Appendix for details).

social capital in Guiso *et al.* (2003a). We use in this paper their measure of referenda turnout, which is calculated at the provincial level. Referenda turnout captures well north-south differences: the average referenda turnout amounts to 85% in the 67 northern provinces and to 70% in the 36 southern provinces.

### 3.2 Ordinary Least Squares and Linear Probability Model Regressions

Table 2 reports Ordinary Least Squares (OLS) and Linear Probability Model (LPM) regressions for the five trust-sensitive key economic activities. We will investigate the role of social capital by running regressions of the form:

$$(1) \quad y_{ipt} = \text{constant} + \alpha_t + \beta SC_p + X_{it}\gamma + Z_p\delta + \varepsilon_{it}$$

where  $y_{ipt}$  is our outcome of interest for individual  $i$  in province  $p$  and year  $t$ ,  $\alpha_t$  is a year fixed effect,  $SC_p$  is the measure of social capital in province  $p$ ,  $X_{it}$  are control variables defined at the individual level, and  $Z_p$  are control variables defined at the territorial level. The coefficient of interest throughout the paper is  $\beta$ , the effect of social capital on economic outcomes. Note that we do not include province fixed effects, since  $SC_p$  is fixed for province  $p$  over time. However, we do adjust our standard errors for within-province correlation.

For each dependent variable, the first column shows the results obtained by regressing it on social capital, a minimal set of individual controls (age or experience, years of schooling, sex, marital status, number of children), and the year fixed effects. Social capital enters significantly and with the expected sign for all the economic activities except *job referrals*. For this last dependent variable, social capital enters with the expected negative sign but no statistical significance<sup>10</sup>.

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<sup>10</sup> As for the individual controls, they enter with the sign and statistical significance close to what they have been found by previous literature. See, for instance, Cannari and D'Alessio (1995) and Colussi (1997) on *worker productivity*; Barca and Cannari (1997) and Alesina *et al.* (2001) on *entrepreneurship*; del Boca *et al.* (2000) on *female participation*; Barca and Cannari (1997) and Checchi *et al.* (1999) on *high education*; and Casavola and Sestito (1995) and Pistaferri (1999) on *job referrals*.

Clearly, these results are however hardly convincing. While high-trust areas are almost exclusively located in the center-north of the country, this area differs from the south also for a multiplicity of factors, such as geography, infrastructure, access to markets, etc. Thus, social capital can pick up differences between the center-north and the south that just happen to be correlated with it. To correct for this, we introduce in the second column three macro-regional dummies (north, center, and south)<sup>11</sup>. The consequences of this inclusion are noticeable. The role of social capital is now not statistically different from zero for both *worker productivity* and *high education*. The effect on *female non-participation* is reduced by 1/3, and that on *job referrals* remain not statistically significant. *Entrepreneurship* represents a notable exception: for this variable, the magnitude of the effect of social capital remains constant. For both the likelihood of being an entrepreneur and that of being a woman non-participating in the labor market, the effect of social capital is large. Moving from the lowest social capital province to the highest social capital province would increase the probability of being an entrepreneur of 7.5 percentage points and decrease the probability of non-participating in the labor market of 16 percentage points.

There are however a number of important reasons for not interpreting the results in Table 2 as casual. First, the social capital variable could be measured with error and, more importantly, it could correspond poorly with the true social capital that matters in practice; that is, the cluster of “trust, norms and networks that can improve the efficiency of society” (Putnam (2003): 167). This creates attenuation and may bias the linear estimates downwards. Second, rich areas may be able to afford or prefer higher civic-ness. This reverse causality problem introduces positive bias in the linear estimates<sup>12</sup>. Third, there are many omitted determinants of individual outcomes that will naturally be correlated with social capital. The omitted variable inconsistency also generates an upward bias. All of these problems could be solved if we had an instrument for social

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<sup>11</sup> Throughout the paper, we report results with three macro-regional dummies. Results do not change if more aggregated (center-north and south) or more disaggregated (5 macro-regions) dummies are used.

<sup>12</sup> However, by using a microeconomic unit of observation as dependent variable, the scope for endogeneity is minimized (see: Isham and Kaufman (1999)).

capital<sup>13</sup>. Such an instrument must be an important factor in accounting for the variation in social capital that we observe, but have no direct effect on individual economic performance.

## 4. The Effect of Social Capital: IV Results

### 4.1 The Historical Origins of Social Capital

Putnam's tracing of the roots of civic community begins in the middle age. At that time, the Italian peninsula was featured by two distinct system of government, one monarchic in the south and the other republican in the north. The Norman regime in the south was exceptionally advanced both economically and administratively<sup>14</sup>. However, as for the social and political arrangements the southern monarchy was an autocratic regime: barons had full feudal rights, there was no way to questioning the ruler's decision, a network of central and local officials responsible only to the king was in power in the towns. By contrast, in the northern and central Italy it emerged a form of self-government, known as communal republicanism. This system of government was based on horizontal collaboration among citizens. As Hyde (1973: 57) puts it, "communes ...were primarily concerned with the protection of their members and their common interests". Political participation was high: "men were able to take part in determining, largely by persuasion, the laws and decisions governing their lives" (Lane (1966): 535).<sup>15</sup>

In Putnam's view, the local political regimes in place in the middle age shaped the degree of local civic commitment that persisted throughout the centuries<sup>16</sup>. This is

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<sup>13</sup> To ameliorate the omitted variable inconsistency, Guiso *et al.* (2003a) control for available proxies of the omitted variables. As for the five trust-sensitive key economic activities, we show in Table 5 that this approach fails to uncover any role of social capital.

<sup>14</sup> For instance, under Frederick II there was the first codification of administrative law (1231) and the foundation of the first state university (1224) in Europe.

<sup>15</sup> See also the De Long and Shleifer (1993) classification of western government, according to which Frederick II regime falls into the absolutist category while the Venetian and Florentine republics are the best examples of city state-based non-absolutist government.

<sup>16</sup> In the south, despotism survived to Frederick's death: "Although southern Italy in the next seven centuries was to be the subject of much bitter contention between various foreign dynasties (especially Spain and France), [the] hierarchic structure would endure essentially unchanged" (Putnam (1993): 124). In the north, "despite the eclipse of communal republicanism ... after the fourteenth century, ... in the nineteenth century ... [one] could detect the continuing regional differences of culture and social structure that had appeared in the medieval era seven centuries earlier" (Putnam (1993): 136).

particular evident in the nineteenth century, which represented a time of great ferment in the associational life. Stimulated by the similar trends in the rest of Europe, there was a surge in social solidarity that promoted the “principle of association”. This took several forms. There was a development of mutual aid societies, which provided on a voluntary base a wide range of social insurance benefits to their members (unemployment benefits, medical and life insurance, school financing etc.). There was an expansion of cooperative organizations in all sectors of the economy and the birth of mass-based political movements both socialist and catholic. With reference to the period after the unification of Italy (1870), Putnam (1993: 148-151) collected five measures of social capital at the regional level: membership in mutual aid society; membership in cooperatives; strength of mass parties; turnout in the few relatively open elections before Fascism brought authoritarian rule to Italy; the longevity of local associations. These five variables, which are described in the Panel C of Table 1, are the measures we exploit to find a source of exogenous variation for social capital. As for the social capital persistence, two features of these variables should be noted. First, these measures are correlated with the local system of government in place in the middle age.<sup>17</sup> Second, they represent significant determinants of the average provincial electoral referenda turnout. This last relationship will represent the first-stage in our instrumental variable approach.

Our identification strategy will be valid as long as nineteenth century social capital has no effect on the five trust-sensitive key economic outcomes, other than their effects through referenda turnout. The plausibility of this exclusion restriction would weaken if XIX century social capital depended on other characteristics of the area in a systematic way. This does not seem to be the case. Civic differences between the north and the south have been far more stable than economic differences over almost a millennium. In particular, the north-south economic gap reversed its direction in several periods. For instance, the Norman kingdom was almost as advanced as the north but then the development of communal republicanism stimulated the northern economy; then, because of external shocks, the north supremacy disappeared again in the XV century.

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<sup>17</sup> “Although mutual aid society, cooperatives, and other manifestations of civic solidarity were established in all sector of the economy and in all parts of the peninsula, they were not equally extensive or equally extensive everywhere. In north-central Italy, mirroring almost precisely that area where the communal republics had longest endured five centuries earlier (...), the medieval traditions of collaboration persisted (...)” (Putnam (1993): 142).

For the period after unification to which the data refers, Putnam (1993: 153) shows that there was no correlation between social capital and the economic well-being of the regions. The correlations at the regional level of social capital with the agricultural share of the workforce and infant mortality were essentially zero, while the correlation between social capital and the industrial share of the workforce was even negative. Why was the role of social capital quite modest at the time of the Italian unification and then it became a powerful source of economic prosperity? To answer to this question one should remind that after the Second World War Italy has experienced a spectacular process of growth and industrialization (see, for instance, Rossi and Toniolo (1994)). As underscored by North (1990), the importance of social capital increases when economic development proceeds. The reason is that as the economy develops the scope for social capital in reducing transaction cost increases since greater specialization increases the number of transitions between strangers both over time and across space. In our opinion, the evidence on the absence of correlation between social capital and economic performance in the XIX century can be read as a confirmation that our results for the 1990s are not driven by some unobservable time-invariant regional characteristics.

As additional check, in the next section we use a simple overidentification test to detect whether nineteenth century social capital has a direct effect or an effect working through a variable other than social capital on the five trust-sensitive key economic activities.

#### **4.2 2SLS Results with XIX Century Instruments**

Two-Stage Least Square (2SLS) estimates of equation (1) are presented in Table 3. Social Capital,  $SC_p$ , is treated as endogenous, and instrumented by the XIX century social capital variables. Panel A of Table 3 reports 2SLS estimates of the coefficient of interest,  $\beta$  from equation (1), and Panel B gives the corresponding first-stages.

The specifications used in Table 3 replicate those illustrated in Table 2. All covariates that are included in the second stage (age or experience, years of schooling, sex, marital status, number of children) are also included in the first stage. Covariates are however not reported to save space. For each dependent variable, the second column show results obtained by introducing the macro-regional dummies. Since the XIX

century measures of social capital are available at the regional level, standard error are corrected for within-region correlation.

For all the five trust-sensitive key economic activities, there is a strong first-stage relationship between XIX century social capital and referenda turnout. The first-stage R-squared ranges between 50 and 83 percent and the instruments are highly jointly significant (the p-value of the F-statistic is always zero in the first four decimals)<sup>18</sup>. With the exception of *job referrals*, all the IV coefficients are larger than their OLS and LPM counterparts, suggesting that measurement error in the social capital variable that creates attenuation bias is likely to be more important than reverse causality and omitted variable biases. The standard errors for the IV estimates are also larger than Table 2 counterparts, but social capital still enters at reasonable levels of statistical significance.

We also investigate the validity of our exclusion restriction by using overidentification tests (see Wooldridge (2002) for general reference, and Acemoglu, Johnson, and Robinson (2001) for the use of this test in a context very similar to ours). The overidentification test presumes that one of the instruments, say, Mutual Aid Society, is truly exogenous, and tests for the exogeneity of the others, such as Mass Parties, Cooperatives, Turnout, and pre-1860 Associations. The overidentification test will reject the validity of our approach if at least one of the instruments has a direct effect on the dependent variable (i.e., one of the instrument is correlated with the error term in equation (1))<sup>19</sup>. However, since this test may not lead to a rejection if all instruments are invalid but still highly correlated with each other, the results have to be interpreted with caution.<sup>20</sup> As it can be seen from the reported Hensen J-statistic p-values in Table 3, the data support the overidentifying restriction implied by our approach. There is no evidence that XIX century variables have a direct effect – or an effect working through a variable other than social capital – on the five trust-sensitive key economic activities.

Do the 2SLS estimates imply that social capital can explain a significant fraction of the territorial variability of the individual outcomes? Let us compare the provinces at

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<sup>18</sup> To check for the potential bias caused by many weakly correlated instruments, we also estimate the same equations using a single instrument, the index of civic traditions calculated by Putnam (1993). The index that summarizes the five indicators in a single factor score. The results are very similar to the IV estimates using the five instruments (but slightly less precise since they use less variation).

<sup>19</sup> Another cause for rejection could be that the coefficient for social capital in equation (1) is not constant.

<sup>20</sup> It could also be that the test has low power for detecting endogeneity of some of the instruments (Wooldridge, 2002).

the two ends of social capital range. Our estimations of Table 3 imply that moving from the lowest social capital province to the highest social capital province would have large effects on economic activity. It would increase labor productivity by over 20 percentage points; increase the probability of being an entrepreneur of 12 percentage points; decrease the probability of non-participating in the labor market of 30 percentage points; and increase the likelihood of earning at least a high-school qualification of 15 percentage points. It should be also noted that the effect of social capital on job referrals remains not significantly different from zero.

### **4.3 2SLS Results with Contemporary Instruments**

We can check whether the difference between the OLS/LPM results and the 2SLS is due to measurement error in the social capital variable by making use of alternative contemporary measures of social capital. As explained by Woolbridge (2002), using these measures as instruments for the referenda turnout would resolve the measurement error, but not the endogeneity problem. If, as our previous results suggest, the difference between OLS/LPM and 2SLS results is determined predominantly by the measurement error, then the 2SLS results obtained by using contemporary instruments should not differ substantially from those obtained by using the XIX century instruments.

To carry out this exercise, we make use of two additional measures of social capital: blood donation and volunteering. The first denotes the number of (16 oz) blood bags collected (per 1,000 inhabitants) in 1995 by AVIS, the Italian association of voluntary blood donors. This variable, which aims to capture solidarity and altruism, also comes from Guiso *et al.* (2003a). As explained in this paper, the blood collection by AVIS is quite representative of the whole blood donations in the country and it is not affected by the territorial differences in the quality of medical infrastructures. Blood donation is defined for 99 of the 103 Italian provinces. Volunteering represents the number of voluntary members in non-profit organizations (per 100 inhabitants) as registered by the 2001 ISTAT (Italian National Statistical Institute) Census on non-profit institutions. A volunteer is defined as a person who freely and not in performance of specific moral obligations or legal duties pursues philanthropic activities in favor of the local needs, giving priority to attending the poor, the deprived and marginalized, and the

powerless. This proxy represents a measure of altruistic actions for the community well-being whose individual economic payoff are negligible<sup>21</sup> (descriptive statistics for blood donation and volunteering are reported in Panel C of Table 1).

Table 4 shows the results of the 2SLS estimates using blood donation and volunteering as instruments for social capital. Standard errors are now adjusted for clustering at the province level; however, since there are no data on blood donation for three provinces, the number of observations is slightly trimmed (for comparison purposes, OLS/LPM results are presented in Panel C). As expected, the two contemporary alternative measures of social capital are highly correlated with referenda turnout. The first-stage R-squared ranges between 56 and 82 percent and the two instruments are highly jointly significant (the p-value of the F-statistic is always zero in the first four decimals). The estimates of social capital are always of the right order of magnitude to explain the difference between the OLS/LPM estimates of Table 2 and the IV estimates of Table 3. They are slightly higher than the estimates obtained by using the XIX century instruments. This supports the idea that OLS/LPM estimates are downward biased because of measurement error, while endogeneity/omitted variable positive biases playing a minor role.

## **5. Robustness**

### **5.1 Additional Environmental Controls**

In this section, we substantiate our results further by controlling for the environmental variables that have been used in previous applied work on social capital. A reasonable alternative strategy to ameliorate the omitted variable inconsistency is to control for available proxies of the omitted variables. Following this strategy, Guiso *et al.* (2003a) include three additional controls at the province level: per capita GDP, human capital and judicial inefficiency (see the appendix for details on these variables). Should these additional controls be included in our IV specifications? These additional controls are clearly endogenous respect to both social capital (or to the exogenous component of

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<sup>21</sup> Therefore volunteering represents a better proxy of altruism than the widely used indicators of membership in associations. As underscored by Portes (1998) and Fukuyama (2000), membership gives frequently advantages to associates while excluding outsiders.

social capital that depends on the XIX century civic traditions) and the five trust-sensitive key economic activities. Therefore, their inclusion is not warranted. As shown by Acemoglu *et al.* (2002: Appendix 1), in an IV setting the inclusion of an endogenous variable positively correlated with the dependent variable or with social capital will bias the coefficient on social capital downwards.

With this caveat, we investigate in Table 5 the robustness of our estimates to the inclusion of the additional environmental controls. Overall, we find that our results change remarkably little. Our estimates of  $\beta$  are now lower than that of Table 3 but still significant, except for the specifications in columns 6 and 7. This is not worrying, since as stated before, these estimates are likely to understate the effects of social capital. Interesting, the level of provincial GDP is a significant determinant of *worker productivity* and *female participation*, but it does not play any role for *entrepreneurship*, *high education* and *job referrals*. The provincial level of human capital has a positive effect on the likelihood of earning a higher qualification. Our estimates suggest that living in area in which human capital is abundant discourages the women from participating in the labor market (once the socio-cultural effects captured by social capital are controlled for). Finally, judicial inefficiency (and its square) never enters significantly.

Panel B of Table 5 presents the OLS/LPM counterparts. It shows that for the five trust-sensitive key economic activities the strategy proposed by Guiso *et al.* (2003a) would largely fail to find a role for social capital. Curiously enough, this strategy would reveal that the only statistical significant effect of social capital concerns *job referrals*.

## 5.2 Additional Individual Controls

In Table 6, we control our results also with respect to the inclusion additional variables at the individual level. These variables are also from the SHIW dataset. Yet, they are available only for a subsample of individuals and therefore the number of observations is again slightly trimmed (OLS/LPM are however provided in the Panel B of Table 6). As regard to the controls to be included, we follow the previous literature. However, the warning of the previous section still applies: some of the additional

controls can be endogenous and therefore they are likely to lead to downward biased estimates.

As for *worker productivity* and *job referrals*, we include: nine dummies to pin down the branch of activities for which the individual works; seven dummies for the employee's work status; and seven dummies that divide employment per firm in size classes (see the Appendix for details). These controls are intended to take care of industry-, status-, and firm size-differentials, which are substantial in the Italian case (see, for instance, Mauro *et al.* (1999), Cannari and D'Alessio (1995), and Colussi (1997)). Dummies for the father's work status and included in the equation for *entrepreneurship* (as in Alesina *et al.* (2001)). This captures the strong intergenerational links that feature the occupational choices in Italy (see, also, Checchi *et al.* (1999)). We introduce the familiar net wealth (and its square) along with father's and mother's years of education, in the equations for *high education* (see, for instance, Kane (2001)). In the specifications for the *female non participation* (Altonji and Blank (1999)), we add in addition to the familiar wealth, also a dummy that takes on the value of one if the mother was not employed. This dummy captures the persistence of cultural aspects as to the decision of not participating (see: Algan and Cahuc (2003)).

All the additional individual controls enter with high significance (and with the signs predicted by theory. Notwithstanding, they have little effects on our estimates. The effect of social capital is even higher on *worker productivity*, and moderately lower for *entrepreneurship*, *high education* and *female non participation*.<sup>22</sup>

## 6. Concluding Remarks

When Robert Putnam published *Making Democracy Work* in 1993, scholars and observers immediately ranked this book as a major step forward. According to *The Economist*, the book was “great work of social science...alongside de Tocqueville, Pareto

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<sup>22</sup> In Table 5 and 6 we report only a selection of the robustness test performed. For instance, we included the local female unemployment rate in the equation for *female non participation* and the Guiso *et al.* (2003b) measure of local financial development in the equation for *entrepreneurship*. Our results were nicely confirmed.

and Weber”.<sup>23</sup> After 10 years, one can safely say that the assessment by *The Economist* was by no means overstated. A blooming research has been originating by Putnam’s book: social capital represents now one of the most popular metaphors in current social science research.

Beyond making the case for social capital, *Making Democracy Work* provides also a more subtle contribution. As recognized by Durlauf and Fafchamps (2003), the task of estimating the effect of social capital on economic performance relies critically on the possibility of isolating exogenous sources of variation in social capital. In other words, because the problem of endogeneity is endemic, it is very difficult to make the point that social capital is relevant if no explanation is offered as to what determines social capital. In this perspective, Putnam’s book provided a seminal contribution because, in addition to popularize the concept of informal norms, it makes available a theory of the determinants of social capital.

In this paper, we exploited Putnam’s theory on the historical origins of social capital to identify a source of exogenous differences in social capital. We estimate large effects of social capital on individual economic performances using this source of variation. We also document that this relationship is robust to a number of econometric checks and controlling for environmental and individual variables that might be correlated with social capital.

It is useful to point out that our study does not imply that informal norms today are predetermined by the middle age political experience and cannot be changed. Indeed, for our empirical approach to work, we do not need that past social capital is the only, or even the main, cause of variation in social capital. All we need is that it is a source of exogenous variation.

As pointed out by North (1991), the question of the respective roles of informal constraints and formal rules remains crucial to uncover the role of history for economic performance.<sup>24</sup> In this perspective, our results provide evidence that informal constraints matter: differences in trust, reciprocity, and habits of co-operation lead to large

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<sup>23</sup> This is reported on the cover of Putnam’s book.

<sup>24</sup> “What is it about informal constraints that gives (the institutions) such a pervasive influence upon the long-run character of the economy? What is the relationship between formal and informal constraints? How does an economy develop the informal constraints that make individuals constrain their behavior so that they make political and judicial systems effective forces to third part enforcement?” (North (1991): 111).

differences in economic outcomes across areas characterized by identical formal institutions. Still, we believe there is a long way to go before an answer to North's question can be attempted. The extent to which informal norms are being shaped by past institutions or the latter have adapted to pre-existent endowments of social capital, remain a challenging topic for further research.

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**Table 1. Descriptive Statistics****A. SHIW Dataset: Dependent Variables**

	Observations	Mean	Standard deviation	Difference(1)	Standard error of difference
WORKER PRODUCTIVITY	24,127	2.47	0.41	-0.08	(0.01)
ENTREPRENEURSHIP	15,932	0.09	0.29	-0.03	(0.00)
FEMALE NON PARTICIPATION	15,501	0.52	0.50	0.20	(0.01)
HIGH EDUCATION	53,849	0.33	0.47	-0.07	(0.00)
JOB REFERRALS	3,431	0.46	0.50	0.16	(0.02)

Notes: (1) Difference reports the average difference between residents in the center-north and the south computed as the regression coefficient on the south residents. The difference is calculated after controlling for year fixed effects.

**B. SHIW Dataset: Other Selected Variables**

	Observations	Mean	Standard deviation	Min	Max
Years of schooling	53,849	8.57	4.40	2	20
Experience	24,127	22.25	11.98	1	57
Age	53,849	52.19	14.76	16	103
Dummy if Female	53,849	0.53	0.50	0	1
Dummy if Married	53,849	0.83	0.37	0	1
Number of Children	53,849	0.43	0.77	0	6

**C. Variables defined at the provincial level**

	Observations	Mean	Standard deviation	Min	Max
Social Capital	103	0.80	0.08	0.62	0.92
Blood Donation	99	0.29	0.20	0.01	1.05
Volunteering	103	6.13	4.02	1.21	22.78
Per capita GDP	103	0.14	0.04	0.07	0.22
Human Capital	103	7.27	0.47	6.32	8.62
Judicial Inefficiency	103	3.79	1.40	1.44	8.32

**C. Variables defined at the regional level**

	Observations	Mean	Standard deviation	Min	Max
Mutual Aid Society 1873-1904	20	0.05	1.07	-1.84	1.86
Mass Parties 1919-1921	20	0.16	1.01	-1.50	1.39
Cooperatives 1889-1915	20	0.08	0.94	-1.11	2.34
Turnout 1919-1921	20	0.19	1.09	-1.87	2.26
Associations founded before 1860	20	0.01	0.01	0	0.03

**Table 2. OLS and LPM Regressions**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Dependent variable</i>	WORKER PRODUCTIVITY		ENTREPRENEURSHIP		FEMALE NON PARTICIPATION		HIGH EDUCATION		JOB REFERRALS	
Social Capital	0.328 (0.072)	0.051 (0.114)	0.245 (0.043)	0.256 (0.088)	-0.831 (0.103)	-0.546 (0.245)	0.381 (0.091)	-0.008 (0.204)	-0.107 (0.140)	0.367 (0.293)
Years of Schooling	0.060 (0.001)	0.060 (0.001)	-0.005 (0.001)	-0.005 (0.001)	-0.042 (0.002)	-0.042 (0.002)			-0.023 (0.003)	-0.023 (0.003)
Experience/Age	0.029 (0.001)	0.029 (0.001)	-0.013 (0.002)	-0.013 (0.002)	-0.024 (0.004)	-0.025 (0.004)	-0.013 (0.002)	-0.013 (0.002)	-0.016 (0.005)	-0.016 (0.005)
Experience/Age Squared ( $\times 100$ )	0.034 (0.002)	0.033 (0.002)	0.017 (0.003)	0.017 (0.003)	0.037 (0.005)	0.037 (0.005)	0.003 (0.002)	0.003 (0.002)	0.011 (0.007)	0.011 (0.007)
Dummy if Female	-0.087 (0.007)	-0.087 (0.007)	-0.030 (0.007)	-0.030 (0.007)			-0.069 (0.005)	-0.069 (0.005)	0.013 (0.023)	0.013 (0.023)
Dummy if Married	0.089 (0.008)	0.090 (0.008)					-0.027 (0.007)	-0.025 (0.007)		
Number of Children					0.043 (0.007)	0.042 (0.007)				
Centre		-0.055 (0.018)		-0.006 (0.011)		0.034 (0.028)		-0.018 (0.019)		0.044 (0.035)
South		-0.073 (0.022)		0.000 (0.019)		0.070 (0.044)		-0.084 (0.033)		0.110 (0.055)
R2	0.40	0.40	0.29	0.29	0.23	0.23	0.11	0.11	0.05	0.05
Observations	24,127	24,127	15,932	15,932	15,501	15,501	53,849	53,849	3,431	3,431

Notes: The White robust standard errors reported in parentheses are corrected for the potential clustering of the residuals at the provincial level. Regressions include calendar year dummies, except for Job Referrals that refer only to 1993. Experience instead of Age is used only for Worker Productivity. See the Appendix for more detailed variable definitions and sources.

**Table 3. 2SLS Regressions with XIX Century Social Capital Variables as Instruments**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Dependent variable</i>	WORKER PRODUCTIVITY		ENTREPRENEURSHIP		FEMALE NON PARTICIPATION		HIGH EDUCATION		JOB REFERRALS	
<i>Panel A: Two Stages Least Squares</i>										
Social Capital	0.500 (0.087)	0.790 (0.311)	0.239 (0.089)	0.415 (0.219)	-0.967 (0.164)	-1.069 (0.511)	0.503 (0.087)	0.542 (0.217)	-0.175 (0.177)	0.259 (0.478)
<i>Test of Overidentification (Hansen J-statistic: p-value)</i>	0.26	0.38	0.35	0.25	0.46	0.36	0.81	0.67	0.66	0.82
<i>Panel B: First Stage for Social Capital</i>										
Mutual Aid Society	0.007 (0.000)	0.004 (0.001)	0.007 (0.001)	-0.007 (0.001)	0.007 (0.001)	-0.009 (0.001)	0.008 (0.000)	-0.007 (0.000)	0.001 (0.001)	-0.007 (0.001)
Mass Parties	0.052 (0.001)	0.057 (0.002)	0.052 (0.001)	0.009 (0.002)	0.053 (0.001)	0.009 (0.002)	0.051 (0.001)	0.007 (0.001)	0.014 (0.004)	0.009 (0.003)
Cooperatives	0.004 (0.001)	-0.000 (0.001)	0.004 (0.001)	0.006 (0.001)	0.003 (0.001)	0.006 (0.001)	0.004 (0.001)	0.007 (0.001)	-0.002 (0.001)	0.004 (0.001)
Turnout	0.007 (0.001)	0.005 (0.001)	0.009 (0.001)	0.020 (0.000)	0.030 (0.001)	0.021 (0.005)	0.009 (0.000)	0.020 (0.000)	0.003 (0.001)	0.016 (0.001)
Associations founded before 1860	5.169 (0.087)	6.129 (0.231)	4.821 (0.109)	4.068 (0.103)	4.012 (0.115)	3.894 (0.107)	5.061 (0.060)	4.237 (0.057)	8.708 (0.387)	5.161 (0.236)
<i>R-Squared</i>	0.78	0.79	0.78	0.83	0.78	0.83	0.78	0.83	0.52	0.83
<i>Test of Joint Significance of the Instruments (F-statistic: p-value)</i>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Macro-area dummies	no	yes	no	yes	no	yes	no	yes	no	yes
Observations	24,127	24,127	15,932	15,932	15,501	15,501	53,849	53,849	3,431	3,431

Notes: The White robust standard errors reported in parentheses are corrected for the potential clustering of the residuals at the regional level. Regressions include calendar year dummies, except for Job Referrals that refer only to 1993. The specifications replicate those illustrated in Table 2. All covariates that are included in the second stage are also included in the first stage. Covariates are not reported to save space. Experience instead of Age is used only for Worker Productivity. Panel A reports the two stage least squares estimates, instrumenting for social capital using the XIX Century Social Capital variables; Panel B reports the corresponding first stage. The corresponding OLS/LPM regressions are reported in Table 2. See the Appendix for more detailed variable definitions and sources.

**Table 4. 2SLS Regressions with Contemporary Alternative Measures of Social Capital as Instruments**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Dependent variable</i>	WORKER PRODUCTIVITY		ENTREPRENEURSHIP		FEMALE NON PARTICIPATION		HIGH EDUCATION		JOB REFERRALS	
<i>Panel A: Two Stages Least Squares</i>										
Social Capital	0.636 (0.133)	0.856 (0.385)	0.309 (0.076)	0.459 (0.239)	-1.107 (0.140)	-1.524 (0.711)	0.459 (0.126)	0.512 (0.249)	-0.188 (0.217)	0.995 (0.912)
<i>Test of Overidentification (Hansen J-statistic: p-value)</i>	0.71	0.25	0.12	0.76	0.61	0.30	0.81	0.45	0.39	0.28
<i>Panel B: First Stage for Social Capital</i>										
Blood Donation	2.001 (0.017)	0.977 (0.015)	2.061 (0.022)	1.006 (0.019)	2.076 (0.023)	0.980 (0.021)	2.066 (0.012)	0.998 (0.000)	1.867 (0.042)	0.918 (0.038)
Volunteering	0.008 (0.000)	0.002 (0.000)	0.008 (0.000)	0.003 (0.000)	0.009 (0.000)	0.003 (0.000)	0.009 (0.000)	0.002 (0.000)	0.008 (0.000)	0.002 (0.000)
<i>R-Squared</i>	0.56	0.82	0.57	0.82	0.58	0.82	0.58	0.82	0.56	0.81
<i>Test of Joint Significance of the Instruments (F-statistic: p-value)</i>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>Panel C: OLS and LPM Regressions</i>										
Social Capital	0.336 (0.073)	0.027 (0.120)	0.250 (0.042)	0.282 (0.094)	-0.835 (0.106)	-0.466 (0.250)	0.402 (0.090)	0.078 (0.195)	-0.118 (0.141)	0.374 (0.314)
Macro-area dummies	no	yes	no	yes	no	yes	no	yes	no	yes
Observations	23,250	23,250	15,316	15,316	14,906	14,906	51,780	51,780	3,338	3,338

Notes: The White robust standard errors reported in parentheses are corrected for the potential clustering of the residuals at the provincial level. Regressions include calendar year dummies, except for Job Referrals that refer only to 1993. The specifications replicate those illustrated in Table 2. All covariates that are included in the second stage are also included in the first stage. Covariates are not reported to save space. Experience instead of Age is used only for Worker Productivity. Panel A reports the two stage least squares estimates, instrumenting for social capital using Blood Donation and Volunteering; Panel B reports the corresponding first stage. Panel C reports the corresponding OLS/LPM regressions. See the Appendix for more detailed variable definitions and sources.

**Table 5. Robustness Checks with Additional Environmental Variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Dependent variable</i>	WORKER PRODUCTIVITY		ENTREPRENEURSHIP		FEMALE NON PARTICIPATION		HIGH EDUCATION		JOB REFERRALS	
<i>Panel A: Two Stages Least Squares</i>										
Social Capital	0.210 (0.096)	0.372 (0.122)	0.240 (0.126)	0.490 (0.220)	-0.481 (0.263)	-0.451 (0.576)	0.184 (0.129)	0.518 (0.300)	0.302 (0.348)	0.361 (0.658)
Per Capita GDP	0.011 (0.002)	0.006 (0.002)	0.006 (0.003)	0.002 (0.003)	-0.022 (0.007)	-0.021 (0.007)	0.004 (0.004)	0.002 (0.006)	-0.013 (0.008)	-0.006 (0.009)
Human Capital	-0.007 (0.007)	0.019 (0.009)	-0.035 (0.012)	-0.020 (0.015)	0.091 (0.024)	0.092 (0.035)	0.056 (0.026)	0.074 (0.032)	0.065 (0.041)	0.060 (0.049)
Judicial Inefficiency	-0.006 (0.009)	0.013 (0.009)	0.011 (0.011)	0.013 (0.012)	-0.014 (0.027)	-0.014 (0.028)	-0.027 (0.015)	0.020 (0.022)	0.050 (0.043)	0.048 (0.044)
Judicial Inefficiency Squared ( $\times 100$ )	0.091 (0.096)	-0.053 (0.098)	-0.132 (0.114)	-0.115 (0.127)	0.008 (0.303)	0.004 (0.280)	0.438 (0.162)	0.414 (0.204)	-0.466 (0.429)	-0.466 (0.429)
<i>Test of Overidentification (Hansen J-statistic: p-value)</i>	0.31	0.32	0.41	0.19	0.63	0.27	0.46	0.63	0.96	0.51
<i>Test of Joint Significance of the Instruments (F-statistic: p-value)</i>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>Panel B: OLS and LPM Regressions</i>										
Social Capital	-0.151 (0.138)	-0.058 (0.138)	0.159 (0.084)	0.141 (0.100)	-0.388 (0.203)	-0.259 (0.225)	0.050 (0.135)	0.044 (0.183)	0.275 (0.275)	0.584 (0.328)
Macro-area dummies	no	yes	no	yes	no	yes	no	yes	no	yes
Observations	24,127	24,127	15,932	15,932	15,501	15,501	53,849	53,849	3,431	3,431

Notes: The White robust standard errors reported in parentheses are corrected for the potential clustering of the residuals at the regional level. Regressions include calendar year dummies, except for Job Referrals that refer only to 1993. The specifications replicate those illustrated in Table 3. All covariates that are included in the second stage are also included in the first stage (some covariates and the first stage are not reported to save space). Experience instead of Age is used only for Worker Productivity. Panel A reports the two stage least squares estimates, instrumenting for social capital using the XIX Century Social Capital variables; Panel B reports the corresponding OLS/LPM regressions. See the Appendix for more detailed variable definitions and sources.

**Table 6. Robustness Checks with Additional Individual-level Variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Dependent variable</i>	WORKER PRODUCTIVITY		ENTREPRENEURSHIP		FEMALE NON PARTICIPATION		HIGH EDUCATION		JOB REFERRALS	
<i>Panel A: Two Stages Least Squares</i>										
Social Capital	0.500 (0.112)	0.877 (0.343)	0.235 (0.078)	0.358 (0.245)	-0.789 (0.140)	-0.826 (0.439)	0.241 (0.083)	0.385 (0.217)	-0.203 (0.185)	0.051 (0.390)
P-Value for Job Qualification	[0.000]	[0.000]							[0.000]	[0.000]
P-Value for Industries	[0.000]	[0.000]							[0.000]	[0.000]
P-Value for Firm Size	[0.000]	[0.000]							[0.000]	[0.000]
P-Value for Father's Occupation			[0.000]	[0.000]						
Familiar Net Wealth					-0.025 (0.014)	-0.024 (0.014)	0.224 (0.023)	0.133 (0.010)		
Familiar Net Wealth Squared					0.002 (0.001)	0.002 (0.001)	-0.008 (0.002)	-0.004 (0.001)		
Dummy for Mother Not Employed					0.107 (0.013)	0.108 (0.014)				
Father's Schooling							0.039 (0.001)	0.039 (0.001)		
Mother's Schooling							0.027 (0.001)	0.027 (0.002)		
<i>Test of Overidentification (Hansen J-statistic: p-value)</i>	0.36	0.45	0.42	0.27	0.45	0.38	0.78	0.62	0.73	0.79
<i>Test of Joint Significance of the Instruments (F-statistic: p-value)</i>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<i>Panel B: OLS and LPM Regressions</i>										
Social Capital	0.350 (0.065)	0.142 (0.097)	0.240 (0.054)	0.234 (0.100)	-0.668 (0.134)	-0.434 (0.284)	0.145 (0.067)	-0.177 (0.198)	-0.120 (0.157)	0.348 (0.305)
Macro-area dummies	no	yes	no	yes	no	yes	No	yes	no	yes
Observations	23,972	23,972	15,280	15,280	14,064	14,064	48,089	48,089	3,391	3,391

Notes: The White robust standard errors reported in parentheses are corrected for the potential clustering of the residuals at the regional level. Regressions include calendar year dummies, except for Job Referrals that refer only to 1993. The specifications replicate those illustrated in Table 3. All covariates that are included in the second stage are also included in the first stage (some covariates and the first stage are not reported to save space). Experience instead of Age is used only for Worker Productivity. Panel A reports the two stage least squares estimates, instrumenting for social capital using the XIX Century Social Capital variables; Panel B reports the corresponding OLS/LPM regressions. See the Appendix for more detailed variable definitions and sources.

## Appendix: List of Variables and Sample Details

### *Proxies of social capital and other variables defined at the territorial level*

**SOCIAL CAPITAL.** This variable is the voter turnout average of the referenda held between 1946 and 1987 on provincial basis. The referenda questioned about the following matters: choice between republic and monarchy in 1946; divorce legislation in 1974; public financing of parties in 1978; public security and anti-terrorism in 1981; abortion legislation in 1981; wage escalator clauses in 1985; nuclear power and hunting regulation in 1987. Source: Guiso *et al.* (2003a) on data from the Ministry of Interior. Figures for the provinces created after 1995 (Biella, Verbania-Cusio-Ossola, Lodi, Lecco, Rimini, Prato, Crotone and Vibo Valenzia) are single out from those to which they belonged previously: respectively Vercelli, Novara, Milan, Como-Bergamo, Forli, Florence and Catanzaro. Lecco province was made by municipalities which belonged partly to Como and partly to Bergamo. Thus, we imputed to Lecco a simple arithmetic average of the values of the Bergamo and Como provinces.

**MUTUAL AID SOCIETIES.** A factor score summarizing the membership in such societies, standardized for regional population in 1873, 1878, 1885, 1895, and 1904. This is a regional variable. Source: Putnam (1993). Three regions present missing values (most of the territories that later became Friuli Venezia Giulia and Trentino Alto Adige were annexed to Italy only at the end of World War I and Valle d'Aosta was in this period part of Piemonte). We imputed to them the values of the region that is socio-geographically closer. We imputed Veneto's figures to Friuli Venezia Giulia and to Trentino Alto Adige, and Piemonte's figures to Valle d'Aosta.

**MASS PARTIES.** A factor score summarizing the strength of the mass-based parties (socialist and Catholic *popolari*) in the national elections of 1919 and 1921, as well as their strength on local councils in this period. This is a regional variable. Source: Putnam (1993). Three regions present missing values (most of the territories that later became Friuli Venezia Giulia and Trentino Alto Adige were annexed to Italy only at the end of World War I and Valle d'Aosta was in this period part of Piemonte). We imputed to them the values of the region that is socio-geographically closer. We imputed Veneto's figures to Friuli Venezia Giulia and to Trentino Alto Adige, and Piemonte's figures to Valle d'Aosta.

**COOPERATIVES.** A factor score summarizing the number of cooperatives, standardized by population in 1889, 1901, 1910, and 1915. This is a regional variable. Source: Putnam (1993). Three regions present missing values (most of the territories that later became Friuli Venezia Giulia and Trentino Alto Adige were annexed to Italy only at the end of World War I and Valle d'Aosta was in this period part of Piemonte). We imputed to them the values of the region that is socio-geographically closer. We imputed Veneto's figures to Friuli Venezia Giulia and to Trentino Alto Adige, and Piemonte's figures to Valle d'Aosta.

**TURNOUT.** A factor score summarising turnout in the national elections of 1919 and 1921, as well as turnout in the local and provincial election of 1920; these were the only elections under universal manhood suffrage before the advent of Fascism. Source: Putnam (1993). Three regions present missing values (most of the territories that later became Friuli Venezia Giulia and Trentino Alto Adige were annexed to Italy only at the end of World War I and Valle d'Aosta was in this period part of Piemonte). We imputed to them the values of the region that is socio-geographically closer. We imputed Veneto's figures to Friuli Venezia Giulia and to Trentino Alto Adige, and Piemonte's figures to Valle d'Aosta.

**ASSOCIATIONS FOUNDED BEFORE 1860.** Proportion of all local cultural and recreational organizations in the 1982 associational census that had been founded before 1860 (this measure excludes active in the earlier period that did not survive). Source: Putnam (1993). Three regions present missing values (most of the territories that later became Friuli Venezia Giulia and Trentino Alto Adige were annexed to Italy only at the end of World War I and Valle d'Aosta was in this period part of Piemonte). We imputed to them the values of the region that is socio-geographically closer. We imputed Veneto's figures to Friuli Venezia Giulia and to Trentino Alto Adige, and Piemonte's figures to Valle d'Aosta.

**BLOOD DONATION.** The number of blood bags per 1,000 inhabitants in the province collected by Avis, the Italian association of blood donation. In Italy, Avis collects over 90% of the whole blood donation. There is no Avis local branch in four provinces (Genova, Caserta, Avellino, Caltanissetta). Therefore, in the

regressions of Table 4, the observations of these provinces are excluded. Source Guiso *et al.* (2003a) on data from Avis.

**VOLUNTEERING.** Number of voluntary members participating into non-profit organizations (NPOs) per 100 inhabitants at province level. A volunteer is defined as a person who freely and not in performance of specific moral obligations or legal duties pursues philanthropic activities in favor of the local needs, giving priority to attending the poor, the deprived and marginalized, and the powerless. Source: ISTAT 1<sup>st</sup> Census on NPOs.

**Per Capita GDP.** Per capita net disposable income at province level in 1995, reported in euros. Source: ISTAT Provincial Economic Accounts 2000.

**HUMAN CAPITAL.** Average number of schooling years calculated at the province level. Source: ISTAT Census 1991.

**JUDICIAL INEFFICIENCY.** This variable is an indicator of court inefficiency computed as the average across courts located in the same province of the mean number of years it takes to complete a first-degree trial. Source: Guiso *et al.* (2003a) on data from the Ministry of Justice. We imputed the value of Torino to Valle d'Aosta that was missing.

*Individual variables. Source: SHIW*

**WORKER PRODUCTIVITY.** Our measure of worker productivity is given by log hourly wages. Hourly wages are calculated by dividing the annual earnings (from any activity as employee, including fringe benefits, net of taxes and social security contributions) by the total amount of hours worked in a year (Average Hours Worked per Week  $\times$  Months Worked  $\times$  4.3333). We trim the sample at the 1<sup>st</sup> and 99<sup>th</sup> and percentile of the distribution of earnings.

**ENTREPRENEURSHIP.** The SHIW identifies five categories of self-employment: (1) member of the arts or professions; (2) sole proprietor; (3) free-lance; (4) owner or member of a family business; (5) active shareholder/partner. Our measure for entrepreneurship is a dummy variable that equals one if the individual (only household heads) is the sole proprietor; or owner of a business or member of a family business; or an active shareholder/partner. We thus exclude professionals and free-lance. The former category includes lawyers and tax consultants, whose weight over the population may be interpreted as consequence of a lack of social capital (see Sobel (2002)). The latter group takes in (legal or illegal) payroll employment, recorded as self-employment for social security avoidance purposes.

**FEMALE NON PARTICIPATION.** The dependent variable takes on the value of one for a woman that is not employed (as declared by herself) and is not actively looking for a job (that is, she answered "no" to the question: "In [year of the interview] did you do anything to find employment (temporary or otherwise) or to change your employment?"). We exclude from the sample, women that cannot participate to the labor market: pensioners, students, and women aged less than 15 or more than 65 years. We also restrict the analysis to female spouses/wives, for which the male breadwinner conception applies.

**HIGH EDUCATION.** Dummy variable that takes on the value of one for individuals for whom their highest qualification is one of the following: high school diploma; associate degree or other short course university degree; bachelor's degree; postgraduate qualification. In Italy, below high school level education is compulsory. The sample is restricted to household heads and spouses/partners, for whom the SHIW provides family background information.

**JOB REFERRALS.** Dummy that equals one for workers who obtained a job through referrals by relatives and friends or acquaintances to potential employers. These information comes from the following question in the 1993 wave of the SHIW: "How did you get your current job?". The interviewed was allowed to choose one answer only among the following: through a state employment agency; through an open competition in the public administration or other public institution; replying to a job advertisement published on a newspaper magazine; through a "head hunter" agency; through referrals by relatives and friends or acquaintances to potential employers; inserting the CV in a database; helping a relative in his/her job; becoming self-employed; receiving a direct job offer by a firm; other. Since public sector hiring occurs

by law only through open competition, we exclude public sector workers from the sample. As shown by Alesina *et al.* (2001), public employment in the south can represent mostly a redistribution device. We also exclude self-employment, given that it does not require a formal hiring process (Pistaferrri (1999)). However, none of these two sample restrictions is relevant for the conclusions reported in the text.

AGE. Individual's age at the survey date.

YEARS OF SCHOOLING. This variable is the number of years of studies required to achieve the highest qualification earned by the individual. We derived the length of education by assigning: 2 years to no qualification; 5 years to elementary school; 8 years to middle school; 11 years to professional secondary school diploma; 13 years to high school; 16 years to an associate degree or other short course university degree; 18 years to a bachelor's degree; and 20 years to a postgraduate qualification.

EXPERIENCE. It is calculated as the difference between worker's age at the survey date and the age at first job held, which is a data available from the SHIW.

DUMMY IF MARRIED. Dummy variable that equals one if the individual is a female.

DUMMY IF MARRIED. Dummy variable that equals one if the individual is married.

NUMBER OF SONS. Number of sons living in a household aged under 13 years.

CENTRE. Dummy variable that takes on the value of one for the following regions: Toscana, Umbria, Marche, e Lazio.

SOUTH. Dummy variable that takes on the value of one for the following regions: Abruzzi, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, e Sardegna.

JOB QUALIFICATION. Set of dummies for the seven main employment work status collected by the SHIW: 1) blue collar worker or similar; 2) office worker or school teacher 3) junior manager/cadre 4) manager; 5) member of arts or professions; 6) sole proprietor, freelance and unpaid family member; 7) not employed.

INDUSTRIES. Series of dummies for the sector of activity of the firm in which the individual works: agriculture; manufacturing; building; trade; transportation; credit and insurance; real estate, IT and research; private services; government; extraterritorial organisations; others.

FIRM SIZE. Set of dummies for the size of the firm in which the individual works: up to 4 regular employees; from 5 to 19 employees; from 20 to 49 employees, from 50 to 99 employees, from 100 to 499 employees, 500 employees or more; not applicable NA (public sector employees).

FATHER'S OCCUPATION. Set of dummies for the following father's work status: blue-collar worker; office worker; teacher; junior manager, official/senior manager, member of the professions, entrepreneur, free lance, not employed.

FAMILIAR NET WEALTH. Sum of family real assets (property, companies, and valuables), financial assets (deposits, government securities, equity, etc.), net of financial liabilities (mortgages and other debts).

DUMMY FOR MOTHER NOT EMPLOYED. Dummy that takes on the value of one if the mother of the respondent was not employed.

FATHER'S SCHOOLING. This variable is the number of years of studies required to achieve the highest qualification earned by the father's individual. We derived the length of education by assigning: 2 years to no qualification; 5 years to elementary school ; 8 years to middle school; 11 years to professional secondary school diploma; 13 years to high school; 16 years to an associate degree or other short course university degree; 18 years to a bachelor's degree; and 20 years to a postgraduate qualification.

MOTHER'S SCHOOLING. This variable is the number of years of studies required to achieve the highest qualification earned by the mother's individual. We derived the length of education by assigning: 2 years to no qualification; 5 years to elementary school; 8 years to middle school; 11 years to professional secondary school diploma; 13 years to high school; 16 years to an associate degree or other short course university degree; 18 years to a bachelor's degree; and 20 years to a postgraduate qualification.