UNPACKING SOCIAL CAPITAL

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ABSTRACT

We use novel and unique survey data from Italy to shed light on key questions regarding the measurement of social capital and the use of social capital indicators for empirical work. Our data cover a sample of over 600,000 respondents interviewed between 2000 and 2015. We identify four distinct components of social capital – i) social participation, ii) political participation, iii) trust in others, and iv) trust in institutions – and examine how they relate to each other. We then study how each dimension of social capital relates to various socioeconomic factors both at the individual and the aggregate level, and to various proxies of social capital commonly used in the literature. Finally, building on previous work, we investigate to what extent different dimensions of social capital predict differences in key economic, political, and health outcomes. Our findings support the view that social capital is a multifaceted object with multiple dimensions that, while related, are distinct from each other. Future work should take such multidimensionality into account and carefully consider what measure of social capital to use.

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1. INTRODUCTION

Over the past decades a vast interdisciplinary literature has studied the concept of social capital and its impact on various economic and political outcomes.[1] Yet, despite this considerable body of work, the very definition of social capital remains unclear. While social capital is generally believed to be inherently multidimensional,[2] the various definitions that have been proposed often emphasize rather different objects which can be grouped into two broad categories: i) social networks and relations (both formal and informal) and ii) beliefs and norms (e.g., trust, civic-duty, law-abidingness). While some scholars define social capital in terms of the former category and others in terms of the latter, others argue it should be viewed as a combination of the two.[3]

A similar lack of consensus applies to the question of how to measure social capital empirically.[4] Indeed, common proxies of social capital include variables as diverse as the number of voluntary associations or non-profit organizations, participation in voluntary social and political organizations, newspaper readership, church attendance, time spent with friends, trust in others, trust in institutions, indicators of good government, work effort, blood or organ donations, turnout in elections or referenda, cheating in school tests, tax evasion, spending in education, and the fraction of people living in small and isolated communities.[5] More recent work has instead measured social capital using the

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[1] Social capital is one of the most studied concepts in the social sciences. A search for "social capital" on Google Scholar returns 2,670,000 results. Web of Science returns 25,962 articles published since 1988 with social capital as topic, and 10,824 with social capital in the title (results from searches conducted on January 12, 2023). There are entire websites which carefully and rigorously survey the research on social capital, such as Social Capital Gateway (https://www.socialcapitalgateway.org) and Social Capital Research (https://www.socialcapitalresearch.com).

[2] According to Coleman (1988), who first popularized the term, social capital is "not a single entity but a variety of different entities." This view is shared, among others, by Serageldin and Dasgupta (2001).

[3] Bourdieu (1986), Burt (1997), Portes (1998), and Lin (2001) focus on the first category; Fukuyama (2000), Arrow (1999), Guiso et al. (2011), Giuliano and Wacziarg (2020) and Ginzburg and Guerra (2023) focus on the second; Coleman (1988) and Putnam et al. (1993) argue for both. Other distinctions discussed in the literature include that between "bonding" and "bridging" social capital (e.g., Gittell and Vidal (1998); Aldridge and Fitzpatrick (2002)), and between "structural" and "cognitive" social capital (e.g., Uphoff and Wijayaratna (2000)). For a more comprehensive discussion of the definition of social capital see, among others, Adler and Kwon (2002), Fulkerson and Thompson (2008), Anderson et al. (2004) and Bjørnskov and Sønderskov (2013).

[4] According to Fukuyama (2000): "one of the greatest weaknesses of the social capital concept is the absence of consensus on how to measure it."

[5] Examples of empirical papers using these measures are: Putnam (1993), Buonanno et al. (2009), Guiso et al. (2016), Brehm and Rahn (1997), Li et al. (2003), Kaasa (2009), Guillen et al. (2011), Farris and Holman (2014), Durante et al. (2021), Nannicini et al. (2013a), Liu et al. (2009), Franzen (2003), Aizlewood and Pendakur (2005), Buggle and Durante (2021), Butler et al. (2016), Tabellini (2010), Knack and Keefer (1997a), Paxton (1999), Kaasa (2009), Hunecke et al. (2017), La Porta et al. (1996), Ichino and Maggi (2000), Guiso et al. (2004), Alm and Gomez (2008a), Goldin and Katz (1998), Millo and Pasini (2010).

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intensity of personal connections on online social media platforms.[6]

Critics argue that many of these variables measure manifestations of social capital, rather than social capital itself, and that they suffer from unknown but likely large and non-random measurement error (Engbers et al., 2017).[7] Equally important, these variables capture diverse attitudes, behaviors, and cultural characteristics that are likely to influence different economic outcomes. For example, while social participation may be relevant for the study of collective action, trust is arguably an important driver of financial decisions. Unfortunately, separating the different dimensions of social capital is empirically challenging because high-quality data are usually scarce, are only available at the aggregate level, and are often only representative of very large geographical units.

This paper aims to shed light on several key questions regarding the measurement of social capital and the use of social capital indicators for empirical work. To do so, we leverage a novel and unique dataset from Italy, a country that has been the focus of much of the social capital literature (Banfield, 1967, Putnam et al., 1993, Guiso et al., 2004). The data come from a large, repeated cross-section, yearly survey conducted by the Italian National Institute of Statistics (ISTAT) and cover a sample of over 600,000 respondents interviewed between 2000 and 2015.[8] Three features of the survey allow us to tackle a number of important measurement issues: i) it contains a large battery of questions on various social attitudes and behaviors, ii) the sample size is very large, and iii) it contains detailed geographic identifiers which – combined with the large sample size – allow for a very fine-grained level of spatial disaggregation.

In the first part of the paper, applying principal component analysis, we identify four clearly distinct dimensions of social capital. We label these: i) social participation, ii) political participation, iii) trust in others, and iv) trust in institutions. The first two dimensions relate to the notion of social capital as social networks and relations. In par-

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[6] Prominent examples of this approach include Chetty et al. (2022a) and Chetty et al. (2022b) who use data from Facebook to study social capital and its relationship with economic mobility, cohesiveness, and economic connectedness. More information on this research, as well as the aggregate data, can be accessed through the project's portal: https://socialcapital.org. Similarly, Obradovich et al. (2022) expand the measurement of culture exploiting a very large dataset from Facebook of over two billion individuals across more than 200 countries.

[7] According to (Engbers et al., 2017, p. 550): "the field has become heavily dependent on proxies for the measurement of social capital. This dependence on proxies is a fact consistently bemoaned by even the most recent research... The quality of these proxies varies tremendously. Some proxies are merely correlational such as the use of crime rates to measure trust or measures of demographic diversity to measure shared norms. Others are more widely accepted and theoretically robust, such as the use of group memberships to account for the size or nature of a person's social network."

[8] The survey is the "Multipurpose Survey on Households: Aspects of Daily Life" (*Indagine Multiscopo sulle Famiglie: Aspetti della Vita Quotidiana*). More information on the survey is available at: https://www.istat.it/it/vita-quotidiana-opinione-cittadini?classificazioni.

ticular, social participation refers to citizens' propensity to participate in or support voluntary associations (e.g., cultural, religious, sport), while political participation refers to the propensity to participate in or support political parties or workers' unions and to engage in political activities besides voting (e.g., rallies, demonstrations, debates). The other two dimensions refer to the notion of social capital as norms and beliefs and capture, respectively, people's propensity to trust others (including strangers) and to trust institutions (both national and supranational). Within individuals, the four components only weakly correlate with each other, which indicates they reflect rather distinct facets of social capital. To demonstrate that these findings are not specific to Italy, we replicate the analysis using data from the World Values Survey (WVS) and find strikingly similar patterns in other countries.[9]

Next, we study how different dimensions of social capital relate to various socioeconomic characteristics, both at the individual and the aggregate (i.e. provincial) level.[10] In this respect, we find that while certain characteristics – i.e. employment status and, especially, education – are strongly associated with higher levels of social capital at the individual level, this relationship is generally weaker when looking at the aggregate (provincial) level. This finding suggests that, within a given area, more educated individuals tend to be especially engaged and socially active, but that the presence of a larger share of such individuals does not necessarily boost the overall level of social capital. One possible interpretation of this finding is that, even in small numbers, individuals who are more active and civically minded may operate as "catalyzers", making it easier for other members of the community to cooperate and act collectively. More generally, this result is relevant for empirical work as it highlights that, especially when studying social capital, the appropriate set of controls may depend on the level at which the analysis is carried out.

We then examine the relationship between our survey-based measures and other variables that have been commonly used in the literature to proxy for social capital. These include the density of non-profit organizations, voter turnout in elections (both national and local) and popular referenda, newspaper readership, blood donations, and a measure

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[9] Previous studies have applied principal component analysis, or other latent variable techniques, to batteries of survey questions or to collections of aggregate-level variables. Examples include Brehm and Rahn (1997), Paxton (1999), Onyx and Bullen (2000), Kaasa (2009), Sabatini (2009), Baum et al. (2009), Van Assche et al. (2013), Saukani and Ismail (2019) – which use individual survey data – and Putnam et al. (1993), Rice and Sumberg (1997), Bjørnskov (2006) and Coffé and Geys (2005) – which use aggregate data. While some of these studies use factor analysis to build a single measure of social capital, others use it to create several distinct social capital indicators, as we do here. While common in other disciplines, this approach is not yet widespread in economics.

[10] To ensure the data are largely representative of the population, we carry out our analysis at the provincial level (Italy had around 100 provinces over the period of analysis).

of cheating in birthdate registration.[11] We find that most variables tend to be correlated with some components of social capital but not with others. For example, newspaper readership, cheating in birthdate registration, and turnout at national elections, are related to social participation, general trust and institutional trust, but not with political participation. Other variables, such as the density of non-profit organizations and, especially, turnout in referenda, show instead a more consistent pattern and are highly correlated with all components. Interestingly, turnout in national and local elections is poorly correlated with political participation. This is arguably due to the fact that the survey measure captures other forms of political engagement, beyond voting, that respond less to transitory electoral considerations and reflect deeper socio-cultural factors. Taken together, these results further confirm the multidimensional nature of social capital, and the importance of choosing empirical measures that appropriately match one's conceptual framework. For example, blood donation, which is one of the most common proxies of social capital, shows a positive and significant correlation with social participation and general trust, but no relationship with political participation and institutional trust. Also, the correlation between blood donation and general trust is zero when conditioning on geography.

Next, we explore what facets of social capital tend to be associated with different socioeconomic outcomes the literature has investigated. First, we study the influence of social capital on financial development and crime, building on two prominent contributions by Guiso et al. (2004) and Buonanno et al. (2009), respectively. For each paper, we replicate the main analysis replacing the measures of social capital originally used with our four components. In this respect, the fact that our four measures of social capital are derived from the same survey, makes comparing their respective effects easier and more compelling. For financial development, we find that interpersonal trust is the only one of our four variables that consistently displays a positive and statistically significant effect. This finding is very much in line with the conceptual framework proposed by Guiso et al. (2004), which emphasizes the role of "generalized" trust (i.e., trust towards people outside the family) in determining people's attitudes towards and participation in financial markets. For crime, we find that political participation, and especially social participation, display a negative and significant effect on the outcome, while this is not the case for interpersonal and institutional trust. We also find the survey-based measure of social participation to be a strong and accurate predictor of crime. These findings support Buonanno et al. (2009)'s argument that an active civil society is instrumental in reducing crime, and that promoting civic participation may be an effective crime-

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[11] The measure of cheating in birthdate registration has been proposed by Anelli et al. (forthcoming).

deterring strategy. Interestingly, we find that both financial development and crime are significantly related to blood donations even when all survey-based measures of social capital are controlled for. This suggests that this variable may capture some other aspect of social capital – beyond political and social participation or trust – that has an independent impact on these outcomes.

Finally, we present some descriptive evidence of the link between our measures of social capital and a wider range of economic, political, and health outcomes. In this context, we observe that different dimensions of social capital relate to different outcomes in intuitive ways. For example, social participation and interpersonal trust are more strongly related to health outcomes (obesity, smoking) and economic outcomes (value added, female labor market participation), while political participation matters more for political outcomes (level of educational attainment achieved by local politicians, information about politics).

Overall, our analysis harnesses the potential of new large-scale survey data to measure and utilize the different components of social capital, a popular concept that has proved difficult to define and measure empirically. Our findings provide several important insights. First, they confirm that social capital is a multifaceted object with several dimensions intertwined but clearly distinct from each other. Second, they shed light on the link between social capital and socio-demographic characteristics, both at the individual and at the aggregate level, and on the importance of separating these two levels of analysis. Third, they stress the need to use accurate measures to "unpack" the different dimensions of social capital when testing its impact on different outcomes, to reduce the risk of interpreting spurious relations as causal. Fourth, they call for caution in the use of some common proxies of social capital – such as blood donations – and for a better understanding of what factors they may truly capture. Last but not least, our analysis speaks to the need to improve the design of social capital surveys so they capture certain aspects that are currently neglected but that are essential to improve our understanding of this phenomenon.

The remainder of the paper is organized as follows. Section 2 described the data. Section 3 presents how we measure the different components of social capital. Section 4 presents how the different dimensions of social capital correlate with individual and area level characteristics. Section 5 explores the relation between our measures and standard proxies of social capital used in the literature. Section 6 studies the influence of social capital on financial development and crime, revisiting two influential studies and section 7 presents an analysis of the relationship between social capital and a wider range of economic, political, and health outcomes. Section 8 concludes.

2. DATA

2.1. SOCIAL CAPITAL

Our analysis exploits unique large-scale data from the "Aspects of Daily Life" survey (ADL henceforth) conducted by the Italian National Institute of Statistics (ISTAT). The ADL is part of an integrated system of social surveys – the Multipurpose Household Surveys – aimed to collect comprehensive information about the daily life of Italian households. The ADL is a repeated cross-section conducted every year in March on a sample of about 40,000 individuals.[12]

The ADL survey is especially suitable to study social capital for a number of reasons. First, in addition to standard questions about socio-demographic characteristics, labor-market, and educational outcomes, the survey contains a battery of questions about various aspects of the respondents' social activities and attitudes.[13] In particular, respondents are asked whether they participate in and/or support the activities of different types of organizations (cultural, religious, and sport associations, political parties, workers' unions, etc.), whether they engage in political activities besides voting, and how much they tend to trust their fellow citizens as well as institutions. The full list of 24 questions relevant to our analysis is reported in Appendix Table A1, while their descriptive statistics are reported in Appendix Table A2.

Second, the ADL survey has been conducted for over 20 years and, during this period, the set of questions has remained fairly stable. Hence, these data are suitable to study the state and evolution of social capital over a long time span. In particular, our analysis uses data from 2000 up until 2015 that were made accessible to us, with the exception of 2004 when the survey was not administered, and is based on an overall sample of almost 600,000 individuals. Although children are also surveyed, our analysis focuses on individuals aged 16 and above.

Third, the ADL data allow us to study social capital at a fine geographical level. Italy has 20 regions, 110 provinces, and approximately 8,000 municipalities. While almost all of the previous analyses of social capital in Italy have been conducted at the regional

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[12] All members of the households included in the ADL sample are interviewed. Interviews are conducted in person; if a household member is absent or unavailable, another meeting is arranged within a fixed time frame. If a person cannot be interviewed, another member of the household answers the questions in her/his place. In years 2000, 2001, 2002 and 2003 the survey was carried out in November. More information are available here: https://www.istat.it/it/vita-quotidiana-opinione-cittadini?classificazioni

[13] The ADL questionnaire is divided into three parts: i) a general questionnaire to collect socio-demographic information for all family members (i.e., age, sex, marital status, educational attainment, etc.), ii) a household questionnaire to collect general information about the household, and iii) an individual questionnaire administered to each household member.

or provincial level, our agreement with ISTAT gives us access to confidential information on the respondents' municipality of residence. Yet, we do not use this information in the analysis presented in this paper which is performed at the provincial level so as to facilitate the comparison between our results and those in previous studies. In this regard, it is important to note that, while the ADL survey is designed to be representative at the regional level, given the large sample size, the data reflect well many key underlying characteristics of the population at the provincial level (as shown in Figure A1).

2.2. OTHER DATA

We also use data from a number of several sources.

Socio-demographic characteristics. We collect information on a battery of geographic and socio-demographic characteristics at the province level including area, altitude, presence of airports, population, population density, age, education, employment, home ownership, labor market participation, and the share of migrants. Information on these variables comes from the 2011 census.

World Values Survey. We use data on 34 questions about social attitudes and behavior from the World Values Survey. We focus in particular on the 2010-12 round which covers 60 countries.

Other measures of social capital. We collect data on a set of variables that have commonly been used in the literature to measure social capital. These include: the number of non-profit organizations per capita, available from the Italian National Institute of Statistics (ISTAT) and previously used, among others, by Buonanno et al. (2009) and Butler et al. (2016); the turnout rate in national elections, local elections, and popular referenda, available from the Italian Ministry of Interior for the years 2009 and 2011 and previously used by Guiso et al. (2004) and Buonanno et al. (2009); per capita circulation of non-sport newspapers, available from *Accertamenti Diffusione Stampa* (ADS) for the period 2005-2010, and previously used by Nannicini et al. (2013b) and Durante et al. (2021); the number of blood donations per capita, available from the Italian Association of Blood Donors (AVIS) for the year 1995, and previously used by Guiso et al. (2004); and the estimated incidence of cheating on birthdate registration, computed by Anelli et al. (forthcoming) based on data from the 1991 ISTAT census.

Local politicians. To proxy for the quality of local politicians, we use information on the level of education of local elected officials. Specifically, we consider the share of mayors elected in a province that have at least a college degree. This information is

available from the Registry of Local Administrators, assembled by the Italian Ministry of Interior.

Data on other outcomes. In Section 6 we use data from several additional sources. First, when studying the relationship between social capital and health outcomes, we use two variables derived from the ADL survey: i) the average BMI Index, computed as the ratio between weight and the square of the height, and ii) the share of respondents in a province who report having smoked in the past twelve months. Regarding economic outcomes, we use information on value added and female labor market participation, available from the 2011 Census. Third, for political outcomes, we use a measure of the level of political information at the province level. Specifically, we consider the share of ADL respondents in a province who report regularly getting informed about politics. Finally, we use two measures of the incidence of tax evasion, both actual and perceived. First, we consider the share of households in a province that paid the TV license fee ("canone"). This is a fee that all Italian families owning a television (or a radio) are legally required to pay every year, but the payment of which was, until recently, poorly enforced and largely left to users' discretion.[14] Second, we consider the share of respondents in the ADL survey in a province who mention tax evasion as the most important problem in the country.

3. MEASURING SOCIAL CAPITAL

3.1. PRINCIPAL COMPONENT ANALYSIS AND SOCIAL CAPITAL MEASURES CONSTRUCTION

Previous research suggests that the concept of social capital comprises several aspects that are distinct but intertwined. To identify relevant dimensions of social capital in our data, we apply a principal component analysis (PCA) to the 24 survey questions introduced above. We use only the years for which all questions are available.[15] Based on the scree plot of eigenvalues reported in Figure 1, we decide to focus on the first four components, which, together, explain 48.2% of the overall variation in the underlying variables, and to disregard additional ones that increase explanatory power only marginally.

In Table 1 we report the 24 variables, the four components, and their respective fac-

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[14] Data on the payment of the television fee are available from the Italian national public broadcasting company (RAI). Previous studies have used this variable as a measure of tax compliance and of the tendency to free-ride on contributions to a public good; these include Buonanno and Vanin (2017), Buonanno et al. (2009), and Buonanno et al. (2022).

[15] Using all years does not change the results of the PCA analysis.

FIGURE 1: SCREE PLOT FOR PCA OF SOCIAL CAPITAL ITEMS
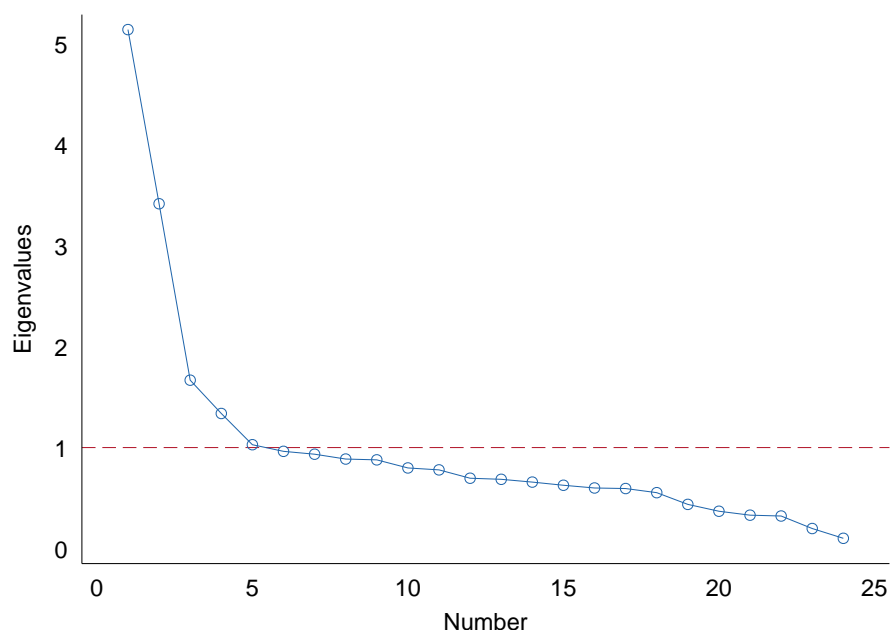
Notes. The figure plots the factors and the corresponding eigenvalues after a principle component analysis of the correlation matrix of the 24 items from the ADL Survey. The dashed horizontal line corresponds to Eigenvalues of 1. We use only the years for which all questions are available. Sample size: 143,913. Years: 2012-2015

tor loadings, which indicate how much each variable contributes to each component. The loadings are obtained from an orthogonal varimax rotation and are reported in bold when above -/+0.2.[16] The first component, labelled as "social participation" (SP), relates primarily to six questions about participation in and support for associations (i.e., voluntary, non-voluntary, environmental or civil rights, cultural or recreational). The second component, labeled "political participation" (PP) loads on seven questions about participation in and support for political parties and unions, and participation in different political activities besides voting (i.e., rallies, demonstrations, debates). The third component, labeled "general trust" (GT), loads heavily on three questions about trust in other people, neighbors, and strangers. Finally, the fourth component, labeled "institutional trust" (IT), loads on eight questions concerning respondents' trust in both national and supranational institutions (i.e., national and European parliament, local governments, political parties, judicial systems, and the police).

The results of the PCA are quite stark: the loadings of each variable for the relevant

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[16] We rotate the principal components results to facilitate interpretation. Varimax rotation – which rotates the principal components to maximize the sum over the columns of the within-column variances – is one of the most commonly used methods. The total variance explained by the four components is by construction the same as in the non-rotated case, i.e., 48.2%.

TABLE 1: PCA RESULTS: FOUR COMPONENTS OF SOCIAL CAPITAL

ID	Social Participation	Political Participation	General Trust	Institutional Trust	Unexplained
SP1: *Gives money to voluntary assoc*	**0.315**	0.079	0.137	-0.011	0.622
SP2: *Non-paid activity for voluntary assoc*	**0.534**	-0.052	-0.029	0.004	0.342
SP3: *Non-paid activity for non-voluntary assoc*	**0.337**	0.038	-0.021	-0.002	0.697
SP4: *Attend meeting of voluntary assoc*	**0.528**	-0.050	-0.044	0.007	0.358
SP5: *Attend meeting of enviro or civil right assoc*	**0.243**	0.109	-0.026	0.003	0.784
SP6: *Attend meeting of cultural or recreational assoc*	**0.385**	0.063	0.042	-0.003	0.561
PP1: *Attend political rally*	-0.041	**0.431**	-0.021	-0.005	0.567
PP2: *Participate in demonstration*	0.017	**0.326**	-0.030	-0.011	0.730
PP3: *Listens to political debate*	0.039	**0.322**	0.099	-0.013	0.681
PP4: *Gives money to political party*	-0.051	**0.402**	0.005	0.017	0.624
PP5: *Non-paid activity for political party*	-0.046	**0.425**	-0.060	0.014	0.583
PP6: *Non-paid activity for trade union*	-0.030	**0.300**	-0.024	0.001	0.792
PP7: *Attend meeting of party and trade unions*	0.048	**0.371**	0.054	-0.012	0.604
GT1: *Can trust most people*	-0.004	0.014	**0.525**	0.008	0.549
GT2: *Neighbor will give back wallet*	-0.008	-0.021	**0.567**	-0.006	0.497
GT3: *Stranger will give back wallet*	-0.021	-0.004	**0.588**	-0.010	0.461
IT1: *Trust in Italian parliament*	-0.019	0.002	-0.033	**0.392**	0.255
IT2: *Trust in the EU parliament*	0.008	0.008	-0.003	**0.374**	0.308
IT3: *Trust in local government (regional)*	0.017	-0.013	-0.012	**0.403**	0.201
IT4: *Trust in local government (provincial)*	0.023	-0.022	-0.014	**0.401**	0.210
IT5: *Trust in local government (municipal)*	0.037	-0.021	0.041	**0.330**	0.434
IT6: *Trust in political parties*	-0.032	0.062	-0.039	**0.358**	0.369
IT7: *Trust in the judiciary system*	-0.023	0.017	0.045	**0.307**	0.511
IT8: *Trust in the police*	-0.009	-0.030	0.091	**0.227**	0.707

Notes. The table presents results from a principal component analysis of the 24 social capital-related variables in the ADL Survey. In particular, it reports the loadings, after orthogonal varimax rotation, indicating how much each variable contributes to a particular principal component (loadings with value above |0.2| are reported in bold). The last column reports the share of variance in each original variable left unexplained after the PCA. The fraction of the variance explained by each component is as follows: IT=0.206, SP=0.104, PP=0.104, GT=0.067. We use only the years for which all questions are available. Sample size: 143,913. Years: 2012-2015.

component are generally an order of magnitude larger than those for the other components, suggesting the existence of four clearly distinct dimensions of social capital. This pattern is further confirmed by looking at the simple pairwise correlations reported in Table A3, in which coefficients are much higher for variables associated with the same component than for variables associated with different components.

Based on these results, we aggregate the 24 original variables into four main social capital indicators (SP, PP, GT, IT). This can be achieved in two ways. One option is to use the rotated components derived from the PCA. An alternative and arguably more intuitive approach is to assign each variable to one component based on its highest loading, and then compute the arithmetic average of all variables associated with each component. The measures produced with these two approaches are highly correlated with each other (0.95). To facilitate the interpretation of the results, in the remainder of our analysis, we use simple averages. In creating the four components, we re-scale the original variables

so that each resulting measure ranges between 0 and 1. Pooling all years together, we can compute the social participation score for about 604,000 individuals and the political participation score for about 607,000 (since the relevant questions are available for the whole 2000-2015 period). We can construct the general trust and the institutional trust scores for only 231,400 and 151,500 individuals respectively, since the relevant questions are only asked starting in 2010 and 2012, respectively.[17]

3.2. RELATIONSHIPS AMONG SOCIAL CAPITAL COMPONENTS

Next, we explore how the different components of social capital introduced in the previous section correlate with one another and with various socio-demographic characteristics at the individual level.

Table 2 reports the pairwise correlation coefficients between the four social capital components. None of the coefficients is larger than 0.40, and some are around or below 0.10. To further explore these relationships, in Figure 2 we plot the conditional distributions of each of the four components. As shown in panel A, social participation is positively correlated to political participation (correlation coefficient: 0.379) and, to a lower extent, to general trust (0.215), while the correlation with institutional trust is rather low (0.052). As shown in panel B, political participation is only weakly correlated with general trust (0.137) and even less with institutional trust (0.046). Institutional trust is weakly correlated with all other components including general trust (0.227). The graphical evidence also indicates that the relationships between the various components are largely linear. Panels A and B also report the unconditional distribution of the social participation variable and of the political participation variable, respectively. [18]

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[17] We drop individuals with missing responses to one or more of the questions. However, including them does not affect our results.

[18] Both are skewed to the left which indicates they capture activities many respondents are unlikely to engage in.

TABLE 2: CORRELATIONS AMONG SOCIAL CAPITAL COMPONENTS

	Social Participation	Political Participation	General Trust	Institutional Trust
Social Participation	1.000			
Political Participation	0.379*	1.000		
General Trust	0.215*	0.137*	1.000	
Institutional Trust	0.052*	0.046*	0.227*	1.000

Notes. The table reports pairwise correlations between the four components of social capital. Correlation coefficients significant at the 0.05 level or more are indicated with a star. The correlations are calculated on the sample of 143,913 individuals who have a value for each of the four components. Calculating the correlations between components that are available for a longer span of years, i.e., social and political participation, yields almost identical results.

Thus, although participation in social activities, participation in political activities, and trust in others are positively correlated, each of these variables appears to capture a distinct facet of social capital.

FIGURE 2: CONDITIONAL DISTRIBUTIONS OF SOCIAL CAPITAL COMPONENTS
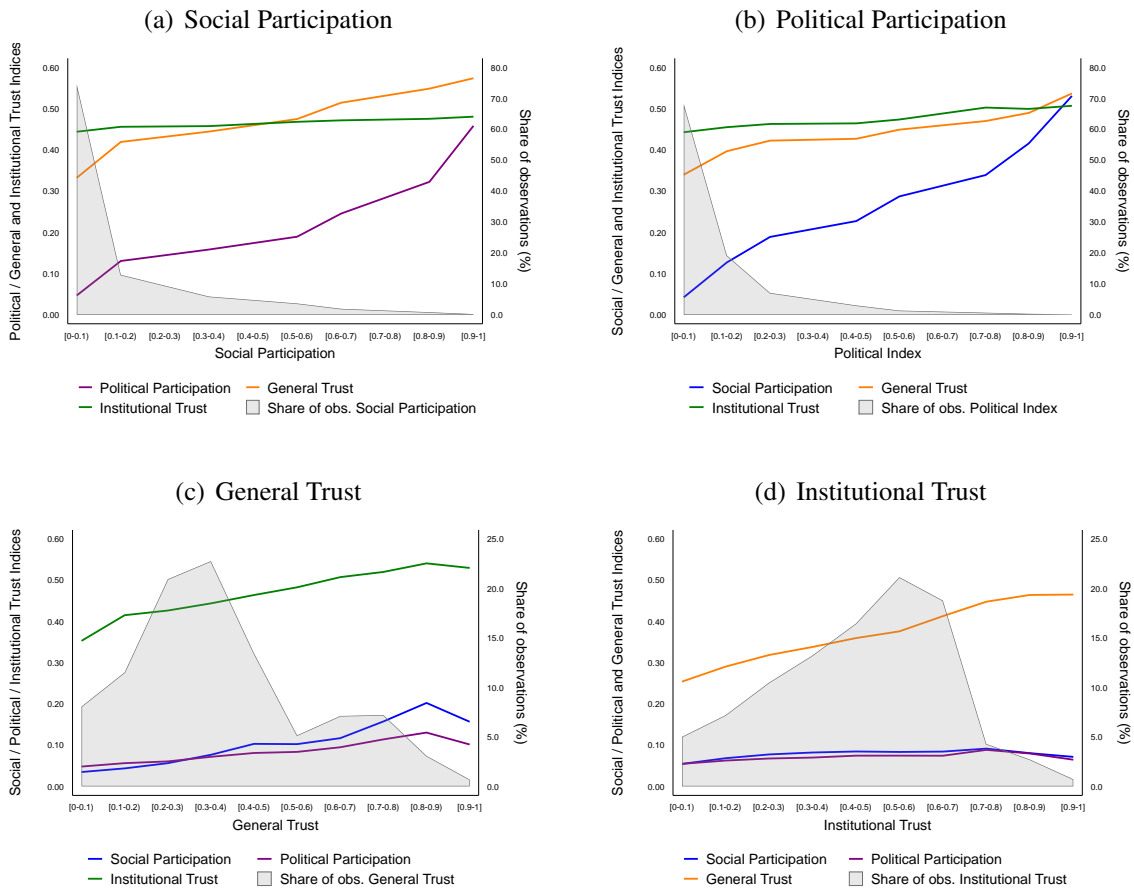
(a) Social Participation

(b) Political Participation

(c) General Trust

(d) Institutional Trust

Notes. The figure reports the distributions of the four social capital components conditional on each of the other ones. Components are re-scaled to range from 0 to 1, and conditional distributions are calculated over 10 equally spaced bins of the conditioning variable. The figure also reports the unconditional distributions (in grey shades) based on the same bins. The sample is formed by 143,913 individuals for whom it is possible to calculate a value for all four components (individuals sampled from 2012 onward).

3.3. EXTERNAL VALIDITY: EVIDENCE FROM THE WORLD VALUES SURVEY

To confirm that the patterns observed in the ADL survey apply beyond Italy, we replicate the principal component analysis using data from the World Values Survey (WVS). In particular, we focus on the 2010-12 round, which covers 60 countries, and use data on 34 survey questions on a range of social attitudes and behaviors. The results are reported in Table 3.[19]

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[19] Following the same approach used for the ADL data, we compute the four measures of social capital as the arithmetic average of the variables that display the highest loadings on the respective component after rescaling them between 0 and 1. Again, we only consider respondents who answered all the social capital questions.
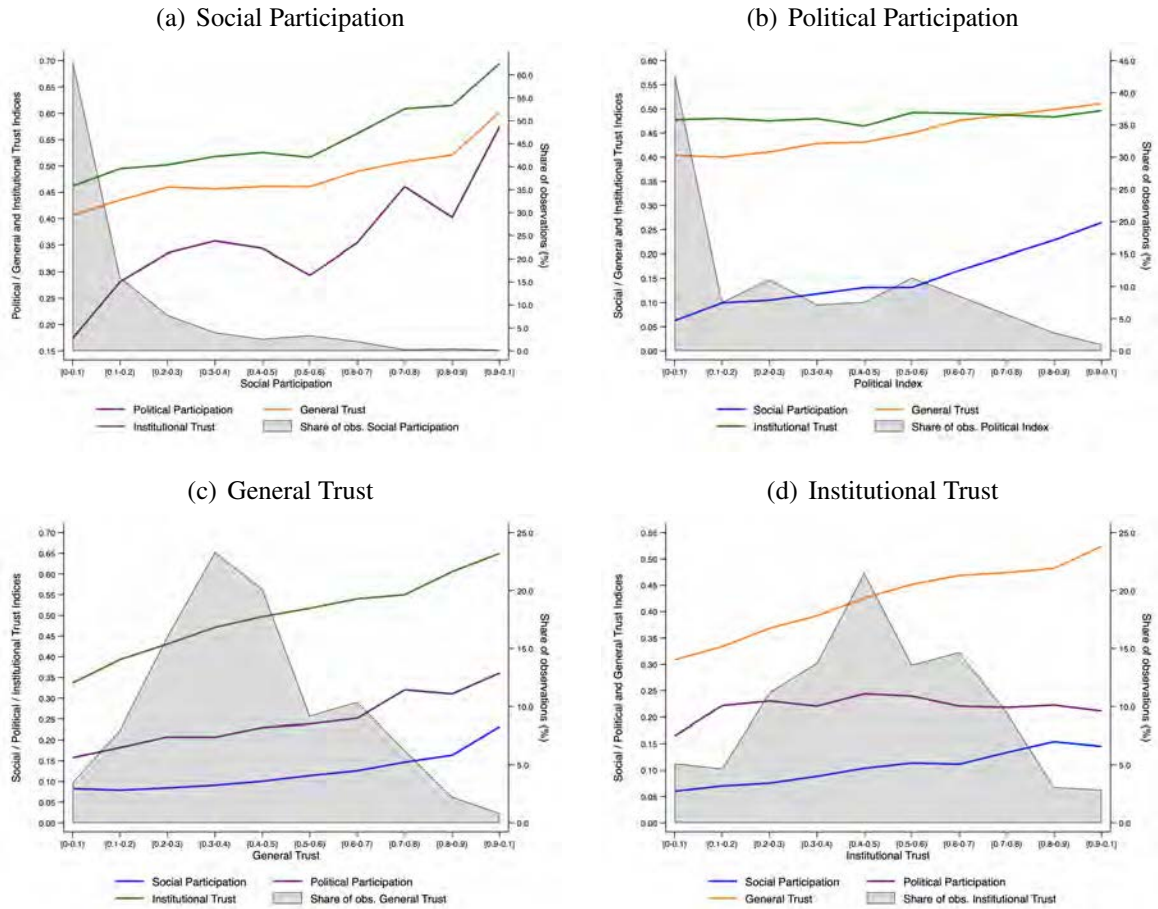
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TABLE 3: WORLD VALUES SURVEY: PCA RESULTS

ID	Social Participation	Political Participation	General Trust	Institutional Trust	Unexplained
SP1: *Active/Inactive membership of sport or recreation*	**0.266**	0.017	-0.006	0.005	0.670
SP2: *Active/Inactive membership of art, music, educational*	**0.302**	0.007	-0.008	-0.001	0.585
SP3: *Active/Inactive membership of labor unions*	**0.284**	0.009	0.008	0.004	0.625
SP4: *Active/Inactive membership of political party*	**0.259**	0.043	-0.002	0.036	0.653
SP5: *Active/Inactive membership of environmental organization*	**0.360**	-0.028	-0.005	-0.004	0.435
SP6: *Active/Inactive membership of professional organization*	**0.328**	-0.007	0.013	-0.018	0.519
SP7: *Active/Inactive membership of charitable/humanitarian organization*	**0.337**	-0.005	0.013	-0.019	0.492
SP8: *Active/Inactive membership of consumer organization*	**0.356**	-0.040	0.007	-0.003	0.451
SP9: *Active/Inactive membership of self-help group, mutual aid group*	**0.329**	-0.029	-0.022	0.010	0.529
SP10: *Active/Inactive membership of any other organization*	**0.272**	0.009	0.017	0.005	0.655
PP1: *Political action: signing a petition*	-0.012	**0.402**	0.034	-0.011	0.461
PP2: *Political action: joining in boycotts*	-0.011	**0.429**	0.029	-0.006	0.388
PP3: *Political action: attending lawful/peaceful demonstrations*	-0.005	**0.436**	-0.012	-0.002	0.380
PP4: *Political action: joining unofficial strikes*	-0.005	**0.436**	-0.024	0.005	0.384
PP5: *Political action: other*	-0.007	**0.449**	-0.003	-0.006	0.342
PP6: *Past two years: given money to ecological organization*	0.107	0.085	0.027	0.012	0.896
PP7: *Past two years: participated in demonstration for environment*	0.109	0.118	-0.030	0.017	0.875
PP8: *Interest in politics*	0.039	0.161	0.037	0.077	0.849
GG1: *Most people can be trusted*	0.001	0.021	**0.217**	-0.002	0.864
GG2: *Trust: Your neighborhood*	-0.011	-0.081	**0.381**	0.031	0.577
GG3: *Trust: People you know personally*	-0.025	-0.019	**0.405**	0.012	0.545
GG4: *Trust: People you meet for the first time*	0.026	0.010	**0.442**	-0.025	0.456
GG5: *Trust: People of another religion*	0.012	0.035	**0.432**	-0.006	0.460
GG6: *Trust: People of another nationality*	-0.003	0.037	**0.450**	-0.016	0.430
GG7: *Do you think most people try to take advantage of you?*	0.029	-0.028	0.109	0.052	0.940
GG8: *Trust: Your family*	-0.043	-0.065	0.192	0.023	0.878
IT1: *Confidence: Armed Forces*	-0.028	-0.007	0.021	**0.285**	0.669
IT2: *Confidence: The Police*	-0.014	-0.014	0.026	**0.345**	0.511
IT3: *Confidence: Justice System/Courts*	-0.008	0.012	-0.012	**0.382**	0.428
IT4: *Confidence: The Government*	0.002	-0.036	-0.022	**0.390**	0.406
IT5: *Confidence: Parliament*	0.015	-0.013	-0.017	**0.390**	0.399
IT6: *Confidence: The Civil Services*	0.004	-0.006	0.015	**0.364**	0.461
IT7: *Confidence: Regional organization (e.g., EU, NAFTA, AU, etc.)*	-0.001	0.031	-0.017	**0.324**	0.585
IT8: *Confidence: The United Nations*	0.003	0.035	-0.006	**0.313**	0.606

Notes. The table presents results from a principal component analysis of the 34 social capital-related variables in the WVS. In particular, it reports the loadings, after varimax rotation, indicating how much each variable contributes to a particular principal component (loadings with value above |0.2| are reported in bold). The last column reports the share of variance in each original variable left unexplained after the PCA. Sample size: 43,567

Interestingly, and perhaps surprisingly, four distinct components emerge that very much resemble those found in the ADL data. Looking at the loadings of the different variables, we see that, once again, most of the variables are clearly associated with one component, with the exception of five items which do not load heavily on any component (all loadings below 0.2).

(a) Social Participation (b) Political Participation

(c) General Trust (d) Institutional Trust

Notes. The figure reports the distributions of the four social capital components conditional on each of the other ones. Components are re-scaled to range from 0 to 1, and conditional distributions are calculated over 10 equally spaced bins of the conditioning variable. The figure also reports the unconditional distributions (in grey shades) based on the same bins. The sample is formed by 43,567 individuals for whom it is possible to calculate a value for all four components.

TABLE 4: WORLD VALUES SURVEY: CORRELATION AMONG SOCIAL CAPITAL
COMPONENTS

	Social Participation	Political Participation	General Trust	Institutional Trust
Social Participation	1.000			
Political Participation	0.251*	1.000		
General Trust	0.127*	0.140*	1.000	
Institutional Trust	0.129*	0.018*	0.261*	1.000

Notes. The table reports pairwise correlations at the individual level between the four components of social capital. Correlation coefficients significant at the 0.05 level or more are indicated with *. The correlations are calculated on the sample of 43,467 individuals who have answered to all underlying questions.

The results are also remarkably similar to those found for the Italian data when looking

at the pairwise correlation between components (Table 4) and at the conditional distributions (Figure 3). Once again, each component is only weakly correlated with the others, and the highest correlation is between social participation and political participation (0.251). In this case, however, general trust displays a lower correlation with both social and political participation (0.127 and 0.140, respectively) and slightly higher with institutional trust (0.261).

4. CORRELATES OF SOCIAL CAPITAL

In this section we explore how the different dimensions of social capital identified above correlate with a range of socio-demographic characteristics. To shed light on what individual and community characteristics are associated with higher levels of social capital, we perform the analysis separately at the individual level and at the aggregate (provincial) level.

4.1. INDIVIDUAL CHARACTERISTICS AND SOCIAL CAPITAL

To gauge the relationship between social capital and individual characteristics we regress each of the four dimensions (SP, PP, GT, IT) on a number of individual-level variables. To facilitate comparisons, all measures of social capital are standardized to have a mean of 0 and a standard deviation of 1. The results are summarized graphically in Figure 4, while the corresponding estimates are reported in Table A4.[20,21]

There is a clear positive relationship between social capital and education, regardless of what dimension of social capital one looks at. In particular, holding a high school degree or higher is associated with a noticeably higher level of social and political participation (37% and 32% of a standard deviation, respectively), and with higher trust both in others and, to a lower extent, in institutions (29% and 8.5% of a standard deviation, respectively).

Being employed is also associated with significantly higher levels of political participation and somewhat higher levels of social participation and general trust, but not institutional trust. Gender also seems to matter: male respondents display higher political participation and somewhat higher social participation than female respondents.

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[20] Also, in Table A5 we replicate the analysis including an indicator to control geographically for the north-south divide.

[21] The sample size varies depending on the outcome variable since the questions on which each component is based were asked in different years. That said, the results are similar when restricting the sample to individuals who answered all relevant questions. The results are also robust to the inclusion of province and year fixed effects.

While general and institutional trust do not differ sensibly between genders. Married people also display higher scores on all four variables, though the coefficients are rather small. Other characteristics exhibit more mixed patterns. For example, age displays a positive correlation with institutional trust and (to a lesser extent) general trust, but no correlation with social or political participation.

FIGURE 4: INDIVIDUAL-LEVEL CORRELATES OF SOCIAL CAPITAL COMPONENTS
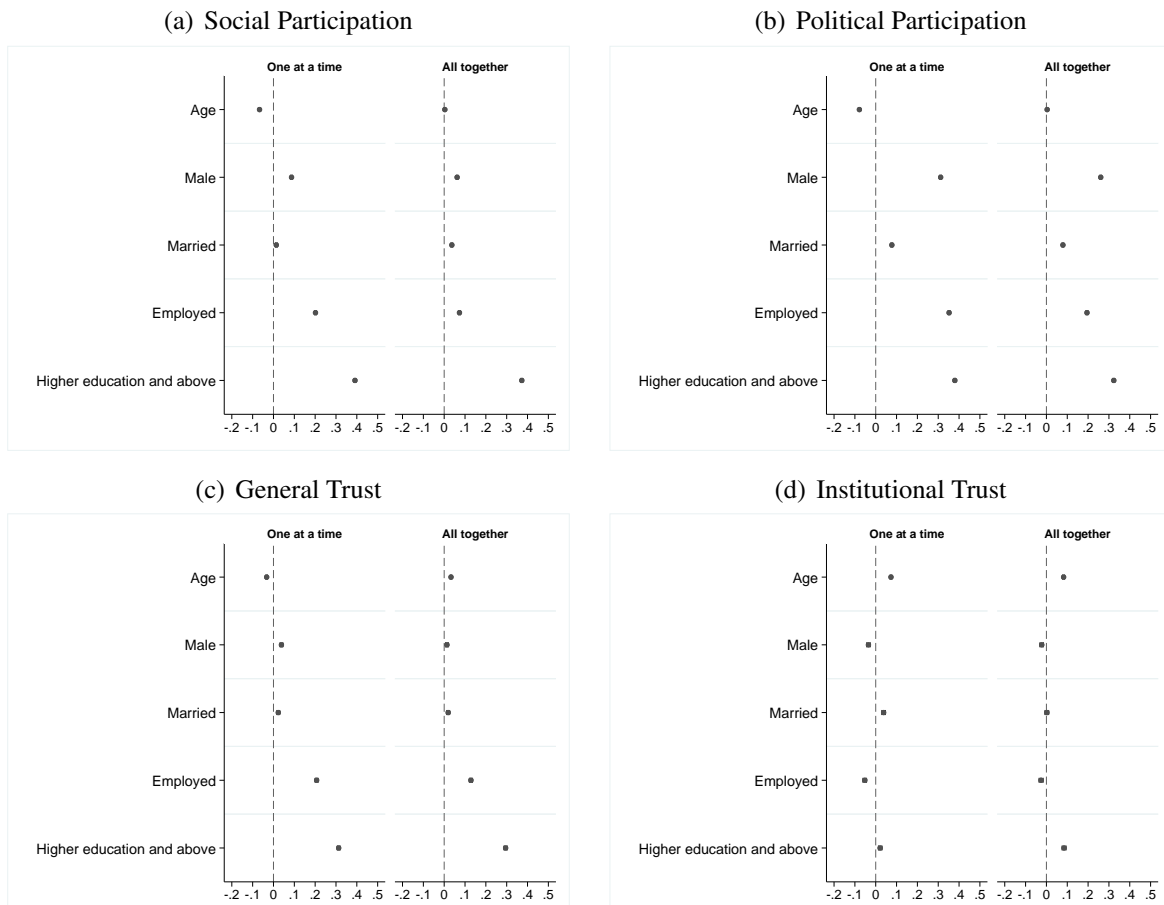
(a) Social Participation

(b) Political Participation

(c) General Trust

(d) Institutional Trust

Notes. The figure reports estimated coefficients and 95% confidence intervals from regressing each of the four social capital components on a number of individual characteristics. (Due to the large sample size, the 95% confidence intervals are too small to be visible). Each panel reports both estimates from regressions in which controls are included one at a time, and regressions in which they are included simultaneously. The 4 social capital measures are standardized to have mean 0 and SD 1. Sample size is 588,989 for Panel (a); 591,788 for Panel (b); 231,387 for Panel (c); and 151,351 for Panel (d).

Although we cannot attach any causal interpretation to these results, the fact that the correlation with individual characteristics varies sensibly for different dimensions of social capital further attests to the multifaceted nature of social capital. The patterns also suggest that researchers should carefully explore how the specific dimension of social capital they are interested in relates to personal characteristics.

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### 4.2. COMMUNITY CHARACTERISTICS AND SOCIAL CAPITAL

Because social capital is ultimately a societal phenomenon, it is also instructive to examine how its different components relate to community characteristics by aggregating the survey data at some appropriate geographical level. Indeed, the relationship between socio-demographic characteristics and social capital may well differ when looking at the individual level and the aggregate level. For example, the fact that more educated individuals are more participative and trusting might not necessarily imply that communities with a higher share of educated people display higher levels of social capital.

To examine this aspect, we collapse the ADL data by province (Italy has 110 provinces). We focus on the provincial level for three reasons. First, it is sufficiently granular to capture the type of social interactions central to the concept of social capital, but sufficiently large that the ADL data can provide an accurate picture at that level. Second, examining the provincial level facilitates the comparison of our results with those from previous studies on social capital in Italy, most of which use the province as unit of analysis. Third, when we compare the ADL data collapsed to the province level with official Census data on key demographic and socioeconomic variables, we find that the ADL samples appear to be largely representative of the population (see Figure A1).

The four panels of Figure 5 show the distribution of each of the four components of social capital across Italian provinces. The first pattern that emerges is that the level of social capital varies considerably across different areas of the country. These geographical differences have been documented in previous work (Putnam et al. (1993), Bigoni et al. (2018)) and have been traced back to important historical experiences (Guiso et al., 2016). The second and perhaps more unexpected result is that the geographical distribution differs quite considerably across different dimensions of social capital. For example, while there is a clear north-south divide in social participation and general trust (panels a and c), this geographical gradient is less visible for institutional trust and, especially, for political participation(panels b and d).

Regarding the relationship between the different components of social capital at the province level, in Table 5, we report the pairwise correlations between the four variables. Overall, the generally positive correlation between the four components is confirmed at the aggregate level, but with a few interesting differences. While at the individual level, the highest correlation was between social and political participation, at the aggregate level, the highest correlation is observed between general trust and social participation. The correlation between social participation and both general and institutional trust is higher at the provincial level than at the individual one (0.79 vs 0.22 in the case of

FIGURE 5: GEOGRAPHICAL DISTRIBUTION OF SOCIAL CAPITAL COMPONENTS

(a) Social Participation

(b) Political Participation

(c) General Trust

(d) Institutional Trust
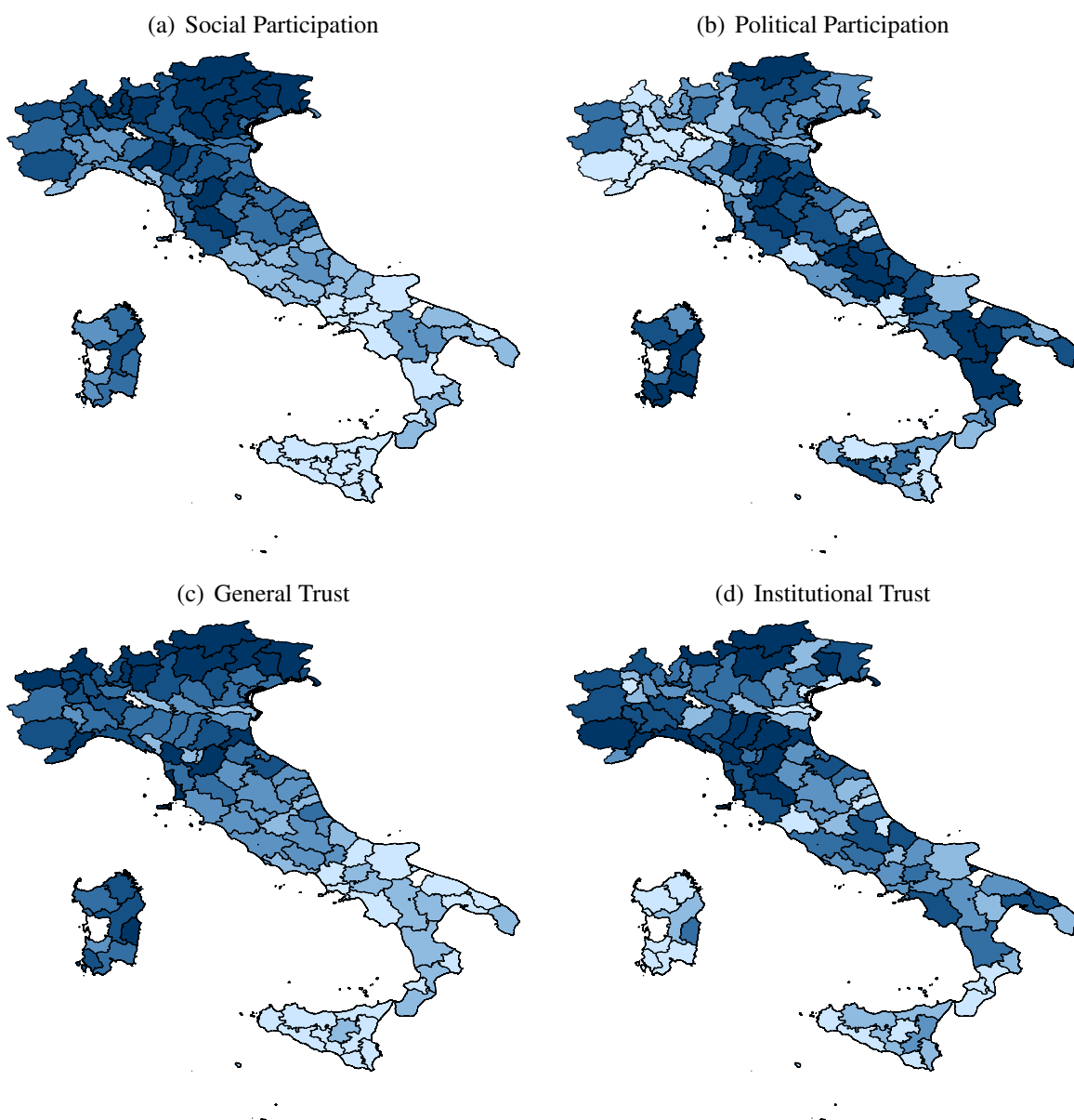
Notes. The figures show the distribution of social capital across Italy. Provinces are colored according to their level of social capital, going from the 1st (lighter) to the 6th sixtile (darker) of each social capital component.

general trust and 0.39 vs 0.05 in the case of institutional trust), while the correlation between political participation and the other measures is lower at the aggregate than at the individual level.

TABLE 5: CORRELATION BETWEEN SOCIAL CAPITAL COMPONENTS AT PROVINCE LEVEL

	Social participation	Political participation	General trust	Institutional trust
Social participation	1			
Political participation	0.229*	1		
General trust	0.799*	0.098	1	
Institutional trust	0.391*	0.131	0.477*	1

Notes. The table reports pairwise correlations between the four components of social capital. The correlations are calculated on the sample of 110 provinces. Correlation coefficients significant at the 0.05 level or more are indicated with *.

Next, we examine the relationship between the four dimensions of social capital and several demographic, economic, and social characteristics at the province level available from the 2011 Italian Census: age structure, educational level, unemployment rate, the share of house ownership, immigrant share, and population density. We regress each of the four social capital measures on provincial-level characteristics and a dummy for northern provinces to account for the north-south gradient uncovered in Figure 5. The estimates are summarized graphically in Figure 6 and reported in Table A6 (including those from univariate regressions in which each explanatory variable is included one at a time).

The average level of education in the province does not seem to be a robust determinant of social capital. Although there is a positive relationship between education and social capital when we do not control for any other characteristics, the coefficients become insignificant when these are included (except for the case of political participation). This contrasts with the individual level analysis above, where education plays a major role as a predictor of social capital. These differences suggest that, within a given area, more educated individuals tend to be especially engaged and socially active, but that the presence of a larger share of such individuals does not necessarily boost the overall level of social capital.[22] Next, less favorable economic conditions, such as high unemployment rates, appear to be detrimental for social capital, except for the political participation dimension. This suggests that economic crises might erode not only physical but also social capital, amplifying their detrimental effects on the society. Interestingly, provinces

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[22] This also connects with recent work, Cabrales and Hauk (2022), examining the role of leaders for social norms.

with a higher share of immigrants display lower levels of general trust and institutional trust (when we condition on other province characteristics), a finding that speaks to the recent literature on the impact of immigration on social cohesion (Albarosa and Elsner (2023)). Finally, it is interesting to look at the relationship between population density and social capital which is a priori unclear. Indeed, while on the one hand cities provide more opportunities to socialize with other people, on the other hand small towns might facilitate personal connections and foster trust among inhabitants. We find that when controlling for other characteristics, provinces with lower population density do not have higher level of trust or social participation, but display higher levels of political participation. One possible interpretation of this finding is that opportunities for political participation – such as attending meetings of political party – might be available even in small towns, and they might be used by individuals as a substitute for other types of amenities, such as theaters or cinemas, which are less available at the local level.

The fact that different province characteristics relate in a different way to the various dimensions of social capital underlines how such dimensions are not only distinct but also have different determinants. Finally, some of the discrepancies between the results of the individual- and province-level regressions speak to the differential impact on the social capital of individual vs. community characteristics, and to the view of social capital as the product of an inherently collective process. These findings also stress the need for empirical researchers to think carefully about the most appropriate level of analysis for the specific question at stake, and suggest caution in the use of aggregate measures as controls in the individual-level regressions.

5. RELATION WITH STANDARD MEASURES OF SOCIAL CAPITAL

As mentioned above, a number of variables have been used in the literature to proxy for social capital. In this section, we explore the relationship between the four dimensions of social capital based on the ADL data and a set of variables commonly used in previous work on Italy (and other countries).

We focus on the following variables, all available at the province level: the density of non-profit organizations, turnout in national elections, turnout in local elections, turnout in national referenda, newspaper readership, blood donations, and a measure of cheating constructed from the 1991 Census and capturing the frequency of birth-date misreport-

FIGURE 6: PROVINCE LEVEL CORRELATES OF SOCIAL CAPITAL COMPONENTS (MULTIVARIATE)

(a) Social Participation

(b) Political Participation

(c) General Trust

(d) Institutional Trust
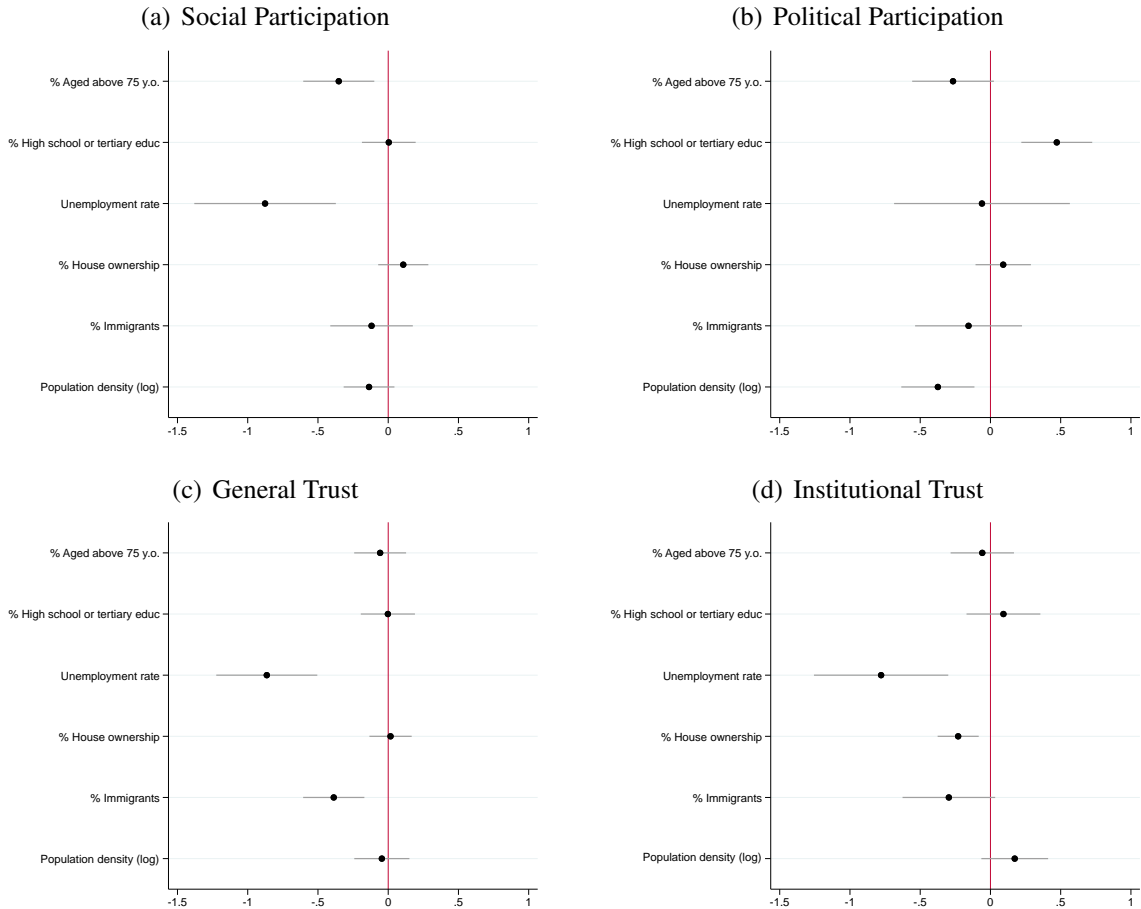
Notes. The figure reports estimated coefficients (and 95% confidence intervals). It explores the provincial-level correlates of social capital dimensions. The outcome variables are our four standardized ADL survey social capital dimensions which we describe in section 3.1. We regress them on a set of socio-demographic characteristics from the Italian Census (8000 Census database, https://ottomilacensus.istat.it). % Aged above 75 y.o. represents the share of people older than 75 years old. % High school or tertiary educ represents the share of people with at least a higher degree qualification. Unemployment rate captures the share of unemployed people. % House ownership captures the share of households owning a residential property. % Immigrants captures the share of foreign-born individuals. Population density measures the density of inhabitants in each province. All variables are standardized. The sample is composed of 110 Italian provinces. All estimates control for an indicator *north* to capture the north-south divide exemplified in Figure 5. All regressions have robust standard errors.

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ing (see Table note for more details). [23]

Figure 7 reports the pairwise correlations between these variables and each of our four survey-based measures of social capital. Further, to account for the north-south divide in social capital exemplified in Figure 5, we also report correlations between residualized versions of the above-mentioned variables, after controlling for a north vs. south indicator (Appendix Figure A2). The pattern that emerges is quite mixed. Social participation correlates positively with all variables and most of the coefficients are fairly large. Reassuringly, one of the highest correlations is with the presence of non-profit organizations, which should best reflect the type of activities the ADL questions on social participation are meant to capture. On the other hand, political participation displays a weak correlation with all variables, except for turnout in referenda, the density of non-profit organizations, and newspaper readership (when controlling for the north-south divide). The fact that the political participation component of social capital does not correlate highly with electoral turnout (either at the local or at the national level) is consistent with the hypothesis that participation in referenda is mainly driven by civic duty, while turnout in regular elections depends also on evaluations of the incumbent's performance and partisan considerations. General trust is also positively correlated with most of the commonly used proxies, but with a fair amount of heterogeneity, with correlation coefficients ranging between 0.17 (with municipal elections turnout) and 0.75 (with the inverse measure of cheating constructed by Anelli et al. (forthcoming)). Finally, institutional trust correlates mostly with newspaper readership and turnout at national referendum, but displays little or no correlation with blood donation. Taken together, these results suggest that the choice of the specific proxy to use in empirical work needs to be carefully guided by the specific dimension of social capital one is interested in, as different proxies captures different dimensions. For example, blood donation, which is one of the most common proxies of social capital, shows a positive and significant correlation only with social participation and general trust, but no relationship with political participation and institutional trust. The correlation between blood donation and general trust falls to nearly zero when controlling for the north-south divide.

We also examine the pairwise correlations among commonly used measures, which are shown in Appendix Table A7. Here too, the picture is quite heterogeneous. The correlations are often weak, and generally weaker than those using the survey-based measures

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[23] Using data from the 1991 Italian Census for cohorts born between 1921 and 1954, the authors document a significant tendency in some localities to record births occurring in December of a given year as occurred in January of the following year. This behavior – primarily aimed at delaying school entry and compulsory military service – can be seen as a proxy for the propensity to cheat and for the level of dishonesty of the relevant population.

Figure 7: Correlation of ADL-Based Social Capital Components with Other Existing Measures

(a) Social Participation

(b) Political Participation

(c) General Trust

(d) Institutional Trust
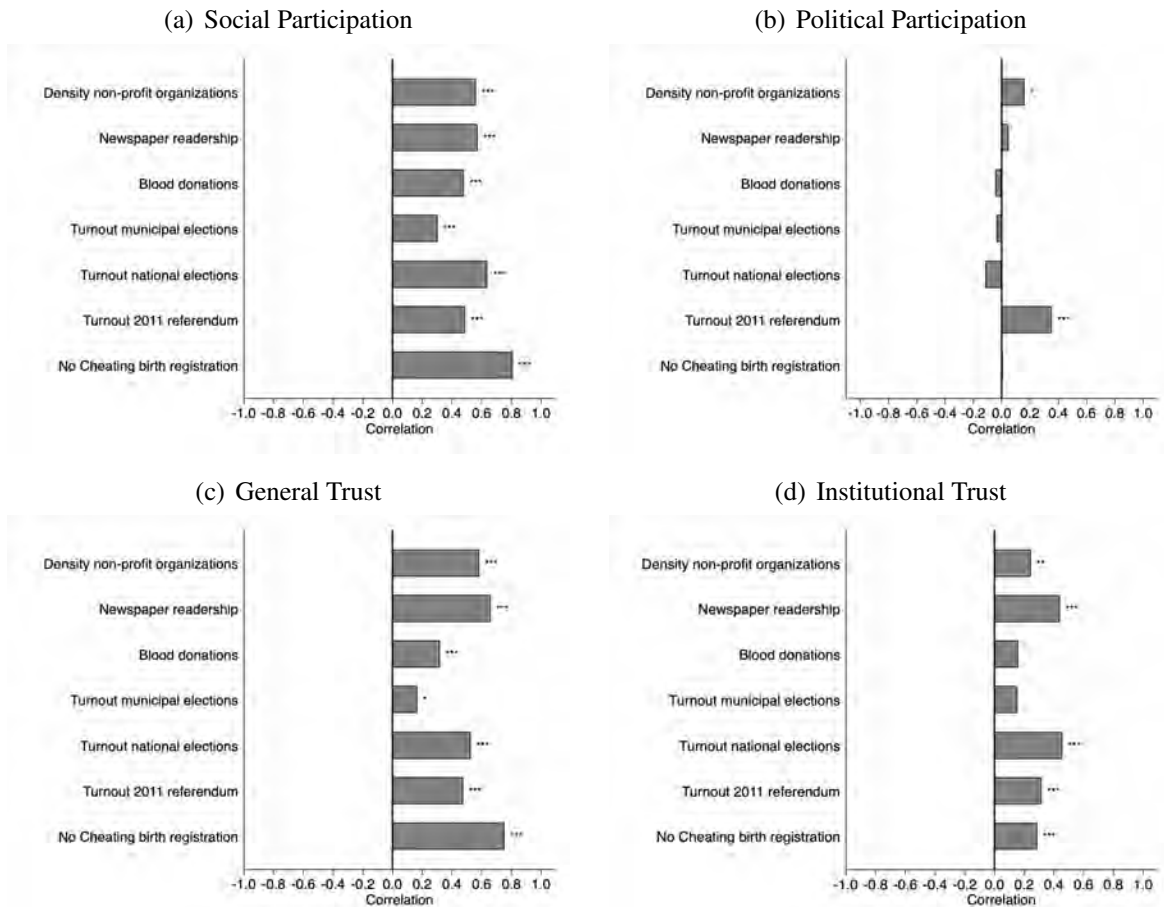
Notes. The figure reports pairwise unconditional correlations between ADL-based components of social capital and a set of existing measures that have been used in the literature. Information on the density of non-profit organization comes from the "Atlante Storico dei Comuni" and is available for 110 provinces; information on newspaper readership comes from ADS (as described in the data section) and is available for 105 provinces; blood donation refers to the number of blood bags per million inhabitants and is available for 99 provinces; information on turnout in municipal and national elections comes from the Italian Ministry of Interior (average turnout for all municipal and national elections between 1993 and 2014) and is available for 108 provinces; information on turnout in 2011 referendum also comes from the Italian Ministry of Interior and is available for 110 provinces; cheating on birthdate is a measure developed by Anelli et al. (forthcoming) based on 1991 Census and is available only for the set of 95 provinces existing in 1991. All remaining variables are available for the entire sample of 110 Italian provinces. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

of social participation and general trust. One striking example is the correlation between the number of non-profit associations per-capita and blood donation rates – two of the most commonly used measures – which is only 0.18, and only 0.01 when we condition the correlation on the north-south divide (Appendix Table A8).

Overall, these results confirm once again that social capital is an elusive concept that is extremely difficult to measure, and multiple proxies are needed to fully capture it.

6. REVISITING EXISTING STUDIES

To assess more systematically how our measures of social capital fare relative to standard proxies used in the literature, in this section we revisit two previous influential articles: Guiso et al. (2004) and Buonanno et al. (2009) on the impact of social capital on financial development and crime, respectively. Both papers study Italy and use standard measures of social capital based on administrative data or other sources of data, such as turnout in referenda, blood donations, and the number of voluntary associations. In both papers, the analysis is performed at the province level – the same level of aggregation we have used so far – making the comparison straightforward.

The main conclusion we draw from our re-analyses is that different aspects of social capital matter for different outcomes. To highlight this argument, we focus on the main specification used in each paper, setting aside the many interesting details, variations, and extensions they contain.

6.1. SOCIAL CAPITAL AND FINANCIAL DEVELOPMENT (GUISO ET AL., 2004)

In their AER 2004 article, Guiso, Sapienza and Zingales (henceforth GSZ) study the relationship between social capital and financial development. Looking at Italy, they document that in provinces with higher levels of social capital individuals are more likely to use modern financial instruments and less likely to keep their wealth in cash and ask for loans from family and friends. They interpret these findings as evidence that social capital, by favoring the emergence of a culture of mutual trust, increases people's willingness to enter into arms-length contractual agreements, including sophisticated financial instruments.

GSZ employ two measures of social capital at the province level: turnout in referenda and blood donations. Regarding the outcomes, they look at four measures of financial development at the household level: i) the probability of using checks, ii) the probability of asking for loans from family and friends, iii) the share of total wealth invested in

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stocks and funds, and iv) the share of total wealth kept in cash. Data on these outcomes are available from a survey on financial behavior conducted by the Bank of Italy every two years between 1989 and 1995.[24] For our analysis, we construct a single index of financial development by computing the average of the five original measures.[25]

Table 6 reports the results of the regressions. To facilitate the comparison across rows and columns, all variables are standardized to have a mean of 0 and a standard deviation of 1. We mimic GSZ's most complete specification and include in all regressions the same battery of individual-and province-level controls they use, as well as year fixed effects and five macro-region dummies. As in GSZ, results are robust to a variety of alternative specifications.

Columns 1 and 2, which mirror the paper's original results, show that both blood donations and turnout in referenda display a strong positive relationship with the financial development index. In columns 3-6, we regress the same dependent variable on the four survey-based components, one at a time. Three of them – social participation, political participation, and general trust – show a positive and significant coefficient, while institutional trust does not.

In the last three columns, we perform a horse-race between the different measures of social capital against each other. The results in column 7 show that the coefficients on blood donations and turnout in referenda are significant even when these variables are included simultaneously. In column 8, we include the four survey-based components at once; while the coefficients on general trust and political participation remain stable and significant, the effect of social participation shrinks in magnitude and precision. In column 9, we finally include all six measures of social capital simultaneously. When doing so, we find that only turnout in referenda, blood donations, and general trust display a significant coefficient, while political participation no longer shows a significant effect. Regarding the magnitudes, we find that a one-standard-deviation increase in blood donations is associated with a 0.04 standard-deviation increase in financial development, while for general trust this value is slightly higher, i.e. 0.064.

That general trust is significantly and robustly related to financial development very much confirms GSZ's view that trust in others – including strangers – is an important driver of financial decisions. The link between trust and financial development is, indeed, at the heart of the conceptual framework proposed by GSZ, so much so that the authors try to test this relationship empirically using data from the World Values Survey.

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[24] Hence, they refer to a period slightly before the 2000-2015 period covered by the ADL data we use.

[25] Before computing the average, we re-coded some of the variables so that all are increasing measures of financial development.

TABLE 6: SOCIAL CAPITAL AND FINANCIAL DEVELOPMENT (GSZ REPLICATION)

	Dependent variable: *Financial Development Index*								
	GSZ social capital measures		ADL-Survey social capital measures				All measures		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Turnout Referemda GSZ	0.123*** (0.027)						0.091*** (0.031)		0.081*** (0.027)
Blood donation GSZ		0.067*** (0.013)					0.040** (0.016)		0.038** (0.015)
Social Participation			0.042* (0.024)					-0.025 (0.031)	-0.033 (0.026)
Political Participation				0.039** (0.016)				0.028* (0.015)	0.013 (0.017)
General Trust					0.066*** (0.021)			0.052* (0.031)	0.059** (0.025)
Institutional Trust All						0.046*** (0.015)		0.021 (0.017)	0.022 (0.015)
Observations	32332	32332	32332	32332	32332	32332	32332	32332	32332

Notes. The table reports OLS estimates of the Financial Development Index on various measures of social capital. Financial Development Index is the (standardized) simple average among the four outcome variables used in GSZ: an indicator for the use of checks; the share of family wealth in cash; the share of family wealth in stocks, a dummy equal one if a family member got discouraged or turned down when applying for a loan or mortgage (as a measure of the availability of credit to consumers); an indicator for the household having some debts outstanding towards friends or relatives not living together (as a measure of informal credit market). The five variables above have been recoded so that all are increasing in Financial Development. Turnout Referenda and Blood Donation are the social capital measures used by GSZ. In particular, Turnout Referenda is the voter turnout for all the referenda between 1946 and 1987 (before the beginning of the household data used for measuring financial development), while Blood Donation is the number of blood bags per million inhabitants in 1995. Social Participation, Political Participation, General Trust and Institutional Trust are our usual measures of social capital components obtained from the ADL Survey as described in Section 3.1 All social capital variables are standardized to facilitate comparison of estimated coefficients. Following the original paper, all regressions include a set of province-level controls (judicial inefficiency, judicial inefficiency squared, per capita GDP, average years of education) as well as the following individual-level controls: family size, dummies for whether the household head is male, married, for his/her type of job and industry, calendar-year dummies, income, income squared, wealth, wealth squared, age, age squared, education. Furthermore, all regressions mimic the most complete specification in GSZ and include as controls four macro-regional dummies (North East, North West, Center, and South). Standard errors are clustered at the province level and reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

The WVS data, however, being sparser and only available at the regional level, provide a much coarser and noisier measure than the one we use.

Regarding the impact of political variables, it is interesting to note that the coefficient on referenda turnout remains significant even when controlling for political participation, which, instead, displays no significant effect. This suggests that financial development may be more related to the propensity to vote than to the more intense forms of political engagement captured by the survey question.

Finally, the fact that the coefficient on blood donations is robust to controlling for all alternative measures of social capital is quite striking. One interpretation of this finding is that the blood donations variable captures some other facet of social capital – beyond social and political participation, general and institutional trust – that has an independent effect on financial development.[26]

For completeness, in Appendix Table A9, we report the results separately for each of the five measures of financial development originally used by GSZ, which confirm the findings in Table 6.[27]

6.2. SOCIAL CAPITAL AND CRIME (BUONANNO ET AL., 2009)

In their JLE 2009 study, Buonanno, Montolio and Vanin investigate the link between social capital and crime. Using province-level data from Italy they find that areas characterized by higher levels of social capital recorded lower crime rates. The authors use four measures of social capital: blood donations, turnout in referenda, the number of non-profit associations (per capita), and the number of voluntary associations (per capita). Regarding outcomes, they look at three types of crimes: thefts, robberies, and car thefts. Estimating a spatial lag model, the authors document a negative and significant effect of both blood donations and the number of associations on all three types of crimes but find no effect of referendum turnout. The authors interpret these findings as evidence that social cohesion and civic mindedness can affect the incidence of dishonest behavior in a community, and that interventions aimed at fostering these community characteristics can contribute to reducing crime.

We exploit BMV's analysis to study how our dimensions correlated with a set of crime variables. For simplicity, we only focus on the OLS estimates and collapse their three

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[26] Another possibility is that the survey-based measures of social capital are more vulnerable to measurement error than behavioral outcomes such as donations and turnout. This argument, however, should also apply to general trust, which always displays a significant effect.

[27] In Appendix Table A9 all the social capital measures are standardized, hence the differences in the coefficients of turnout in referenda and blood donations with respect to those in the tables of the original paper.

main outcomes into a single crime index by taking the average. In Appendix Table A10, we also report the results for each outcome separately. We include the same set of socioeconomic, demographic, and geographic controls originally used by the authors, which are listed in the note to the table.[28] Table 7 reports the results of our exercise. For exposition clarity, we focus on three of the four measures of social capital used by BMV – blood donations, turnout in referenda, and the number of non-profit associations – and disregard the number of voluntary associations, which is a subset of the latter.[29]

In columns 1-3, we replicate BMV's original analysis and regress crime rates on each of the three measures of social capital they use. As in BMV, both blood donations and the number of associations display a strong negative relationship with crime, while this is not the case for turnout in referenda. In columns 4 through 7 we estimate the effect of our four survey-based measures, including them in the regression one at a time. The coefficients for social participation, political participation and general trust are all negative and significant, while the one for institutional trust is positive but not significant. The magnitude of the coefficient on social participation is especially sizeable.

In the last three columns, we perform a horse-race with different measures of social capital. In column 8, we compare the three variables used by BMV and find that the results largely confirm those of the univariate regressions. Column 9 shows that, when the four survey-based measures are included in the regressions together, political participation and especially social participation display a significant effect, while the coefficient on general trust becomes very small and insignificant. Finally, in column 10 we include all measures simultaneously. In this case, we find negative and highly significant effects for blood donations, social participation, and political participation. The coefficient on social participation is the largest and implies that a one-standard-deviation increase in participation is associated with a 0.2 standard-deviation decline in the crime index.

Interestingly, when the survey-based variables are included, the coefficient on the number of associations drops nearly to zero and becomes insignificant. This suggests that a measure capturing active participation in voluntary associations is an accurate proxy for the presence of an active collective life, which is key for crime deterrence. The relatively stable and large coefficient on political participation indicates that local po-

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[28] In their analysis, the authors use a set of spatial lag models. Since the interpretation of the estimates is less straightforward, for simplicity and for the sake of our exercise, we present our analysis using simple OLS. Importantly, the results are unchanged when using their spatial lag estimator. Also, in their paper, BMV also estimate a 2SLS model instrumenting voluntary associations with historical variables. As above, for conciseness, and for lack of the required data, we ignore the 2SLS analysis and only discuss the OLS results.

[29] Importantly, results do not change when including voluntary associations instead of the number of non-profit associations or both simultaneously. The correlation between these two measures is 99%.

TABLE 7: SOCIAL CAPITAL AND CRIME (BMV REPLICATION)

	Dependent variable: *Crime Index*									
	BMV social capital measures			ADL-Survey social capital measures				All measures		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Non-Profit Association BMV	-0.151** (0.064)							-0.142** (0.064)		-0.027 (0.065)
Blood Donation BMV		-0.149*** (0.055)						-0.148** (0.057)		-0.136*** (0.052)
Turnout Referenda BMV			0.015 (0.107)					0.137 (0.106)		0.010 (0.105)
Social Participation				-0.307*** (0.064)					-0.241*** (0.086)	-0.229*** (0.084)
Political Participation					-0.162*** (0.042)				-0.104** (0.047)	-0.088* (0.047)
General Trust						-0.137* (0.072)			-0.009 (0.084)	-0.035 (0.087)
Institutional Trust							0.018 (0.049)		0.080* (0.047)	0.076 (0.046)
Observations	103	103	103	103	103	103	103	103	103	103

Notes. The table reports OLS estimates of the Crime Index on various measures of social capital. Crime Index is the (standardized) simple average among the three outcome variables used in BMV: the number of common thefts, robberies, and car thefts. The three variables are measured between 2000 and 2002 at the provincial level and reported per 1,000 inhabitants in logs). Associations, Blood Donation and Turnout at Referenda are the social capital measures used by BMV. In particular: Associations are the number of cultural, recreational, artistic, sports, environmental, and other nonprofit associations per 100,000 inhabitants in 2000; Blood Donation is the number of blood donations per 100,000 inhabitants collected in 2000; Turnout Referenda is the voter turnout for all referenda held 1974–1999. Social Participation, Political Participation, General trust and Institutional trust are our usual measures of social capital components obtained from the ADL Survey as described in Section 3.1 All social capital measures are standardized to facilitate the comparison of estimated coefficients. Following the original paper, all regressions include the same set of socioeconomic, demographic and geographic controls: the length of the entire judicial process; the (crime-specific) clear-up rate (lagged one period); the percentage of men aged 15–29; the share of the population living in cities with more than 100,000 inhabitants; GDP per capita, unemployment rate, and share of the population with a high school education; the number of charges for criminal association per 100,000 inhabitants; macroregional dummies. Robust standard errors are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

litical activism also affects the quality of law enforcement, possibly through increased accountability of local officials. Finally, as was the case for financial development, the robust effect of blood donations indicates that this variable captures some other unknown dimension of social capital which affects crime not through social and political participation nor through trust.

As shown in Appendix Table A10, we obtain consistent results using as dependent variable the individual measures of crime used by BMV separately. Again, social participation and blood donations show the strongest relationship with crime rates.

7. SOCIAL CAPITAL AND OTHER OUTCOMES

In this section we provide further empirical support for the argument that different dimensions of social capital matter for different types of outcomes.

More specifically, we investigate the relationship between our measures of social capital and a series of other outcomes related to i) health, ii) economic development, iii) political accountability and iv) tax compliance. We focus on these domains for several reasons. First, these are outcomes that have been extensively studied by previous studies on the impact of social capital. Second, for each of these outcomes data are available for Italy at the province level. Third, based on previous work and on our intuition, we expect the relationship with these outcomes to vary for different dimensions of social capital. For example, one would expect political participation to be especially related to political accountability, while trust in others may arguably matter more for economic outcomes.

For each outcome we estimate the following regression:

$$y_p = \beta \, Social \, Capital \, Component_p + \gamma X'_p + \delta_r + \varepsilon_p \tag{1}$$

where y_p is the dependent variable defined at the provincial level, $Social \, Capital \, Component_p$ indicates one of our four survey-based dimensions of social capital, and X'_p is a vector of time-invariant provincial controls which includes area, population, altitude, and the presence of airports (a proxy for geographic connectedness). Because we include in all regressions region fixed effects (δ_r), the estimates below only exploit variation within-region between provinces, something to take into account when interpreting our results. All variables are standardized to facilitate the interpretation of the results.

We first look at the relationship between social capital and health outcomes, namely the

average body mass index (BMI) and the share of smokers.[30] Figure 8 summarizes the results. The left panels report the coefficients (and respective confidence intervals) from regressions in which the social capital measures are included one at a time, while the right panels are from regressions in which they are included simultaneously. Different measures of social capital relate very differently to both BMI and smoking. In particular, social participation and general trust tend to correlate negatively with both outcomes, while the pattern for political participation and institutional trust is much less clear. The result on social participation is in line with previous evidence, namely by Mackenbach et al. (2017), who find that "high levels of neighborhood social networks were associated with lower BMI" (p. 218). The result on smoking is instead consistent with evidence from Giordano and Lindström (2011).

Next, we explore how social capital relates to two economic outcomes: per capita value added and female labor market participation.[31] The results are reported in Figure 9. We find that social participation, political participation and (to a lower extent) general trust are associated with higher value added and female labor market participation (left panel). However, when the social capital measures are included at once (right panel), only the social participation coefficient remains significant. These findings relate to previous rather mixed evidence on the link between social participation and economic performance, including work by Beugelsdijk and van Schaik (2005) and Knack and Keefer (1997b).

Next, we examine how social capital relates to two political outcomes such as the educational attainment of local elected officials, and the level of political information of local voters. [32] The results, presented in Figure 10, show that political participation is associated with better selection of politicians and a more informed electorate. Instead, for both outcomes, the coefficients on general trust are basically zero. Social participation shows no relationship with mayors' education and a positive association

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[30] Studies on the relationship between social capital and obesity include Carrillo-Alvarez et al. (2019), Holtgrave and Crosby (2006), Mackenbach et al. (2016), Child et al. (2020), Cuevas et al. (2020), Wilkinson (2005), Glonti et al. (2016), Tsuboya et al. (2016), Christian et al. (2011). Studies on social capital and smoking include Chuang and Chuang (2008), Siahpush et al. (2006) , Giordano and Lindstrom (2011). Finally, some studies have examined the link between social capital and other health outcomes, including Kawachi et al. (1997), Kawachi and Berkman (2000), Kawachi et al. (1999), Subramanian et al. (2002).

[31] Previous studies on the link between social capital and economic outcomes include Knack and Keefer (1997b), Narayan and Pritchett (1999), Beugelsdijk and van Schaik (2005), Westlund and Adam (2010), Whiteley (2000), Grootaert (1999), Grootaert and Narayan (2004) and Helliwell (1996). For a survey of cross-country evidence, see Knack (2002b).

[32] For previous studies of the link between social capital and political outcomes see e.g., Knack (2002a), Coffé and Geys (2005), Cusack (1999), Rice (2001), Rice and Sumberg (1997), Nannicini et al. (2013a), Jottier and Heyndels (2010), Claibourn and Martin (2007), Chamlee-Wright and Storr (2011), Giuliano and Wacziarg (2020), and Bjørnskov (2006).

with political information, which, however, is not significant at standard levels in the multivariate regressions. These findings relate to previous work on the link between social capital, political accountability, and government performance (Knack, 2002a, Coffé and Geys, 2005). Most notably for the case of Italy, Nannicini et al. (2013a) find that MPs elected in areas with higher social capital – proxied by blood donations – tend to be more accountable to their local constituency. Our results confirm and qualify these findings by emphasizing the role of local political activism in improving information and the selection of politicians. In this regard, our results dovetail nicely with those of Knack (2002a) who documents a significant relationship between government performance and membership in "good government" organizations (e.g., League of Women Voters).

Finally, we examine how social capital relates to tax compliance, both actual and perceived, using information on the payment of the public television fee, and on the share of survey respondents who consider tax evasion as the country's most important problem. Previous studies on social capital and tax compliance include Alm and Gomez (2008b), Slemrod (1998), Bilgin (2014), Arezzo (2014). In addition, there are many studies of social capital and corruption, e.g. Banerjee (2016), Widmalm (2008), Rothstein and Uslaner (2005). The results, shown in Figure 11, indicate that political participation is the most important driver of tax compliance and aversion to tax evasion. General trust may also play a role, though less significant, while the results for social participation and institutional trust are mixed. The results of this last section suggest that different dimensions of social capital matter for different spheres of individual and societal welfare.

Body Mass Index (BMI)
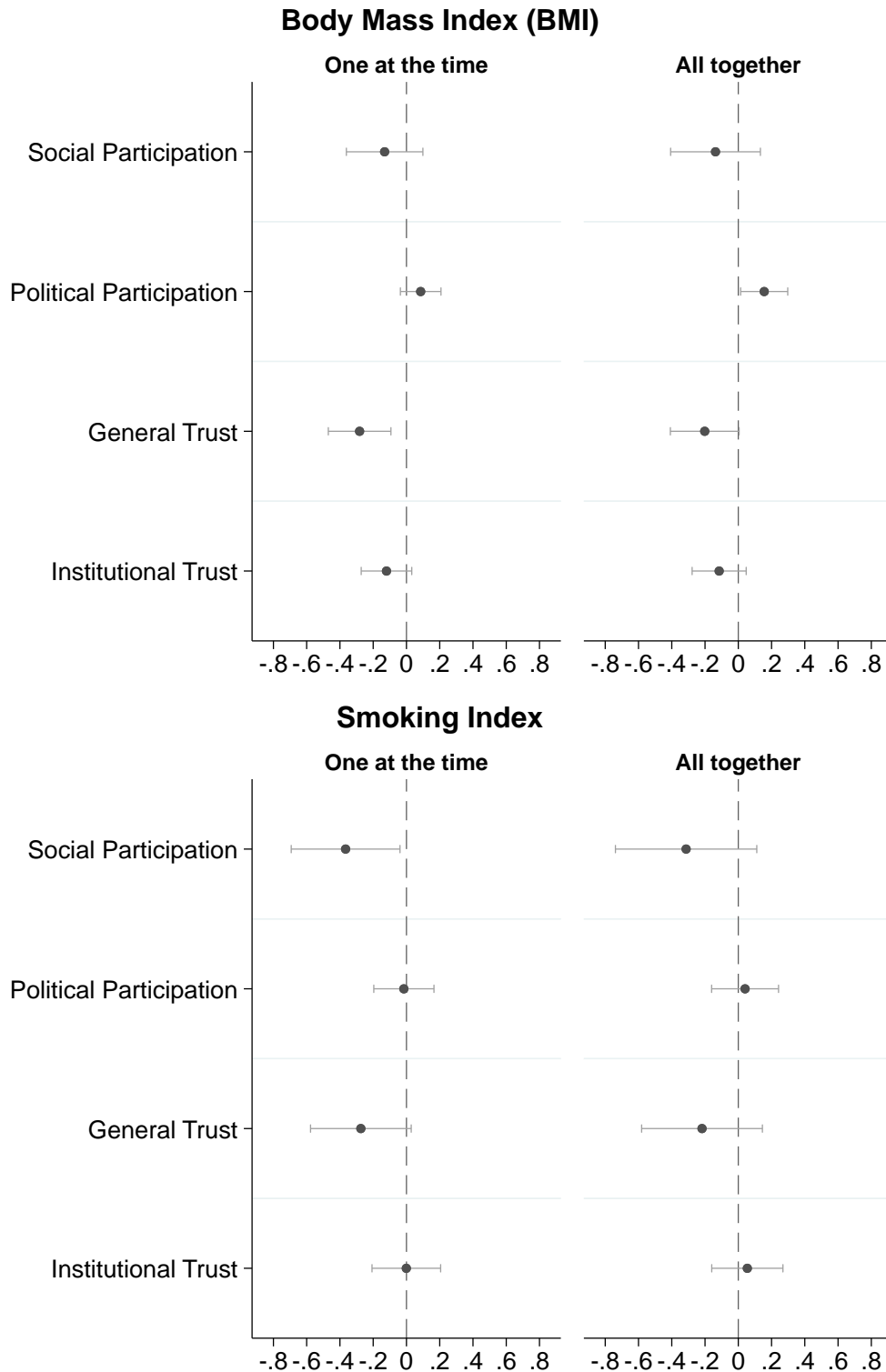
Smoking Index

Notes. The figure reports the estimated coefficient of Equation 1. The outcomes are Body mass index (BMI) and Smoking in the last 12 months. The BMI index is computed as the ration of weight and the square of the height. Smoking in the last 12 months is dummy variable equal to 1 if a respondent declares to have smoked in the last 12 months. Both variables are standardized. We regress these indicators on our social capital components in both univariate and multivariate regressions. The sample is composed of 105 Italian provinces. Each regression includes region fixed effects and a set of time invariant controls provincial level. These includes: population, altitude, presence of airports, and surface in km^2.

Value added

Female labour market partecipation

Notes. The figure reports the estimated coefficient of Equation 1. The outcomes are Value added and Female labor market participation. Both variables are standardized. We regress these indicators on our social capital components in both univariate and multivariate regressions. The sample is composed of 105 Italian provinces. Each regression includes region fixed effects and a set of time invariant controls provincial level. These includes: population, altitude, presence of airports, and surface in km^2.

FIGURE 10: SOCIAL CAPITAL AND POLITICAL OUTCOMES
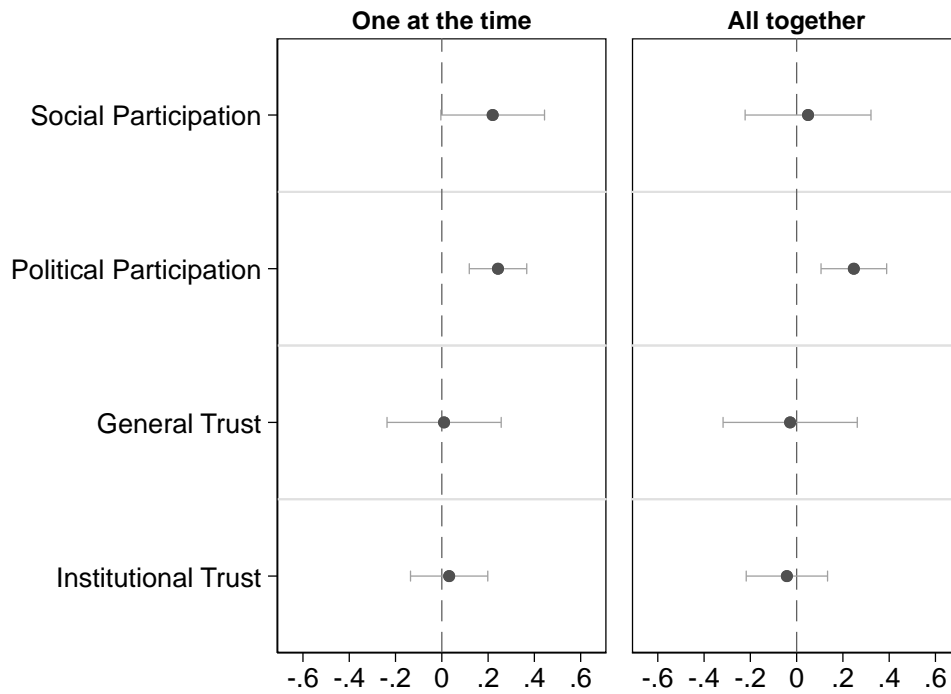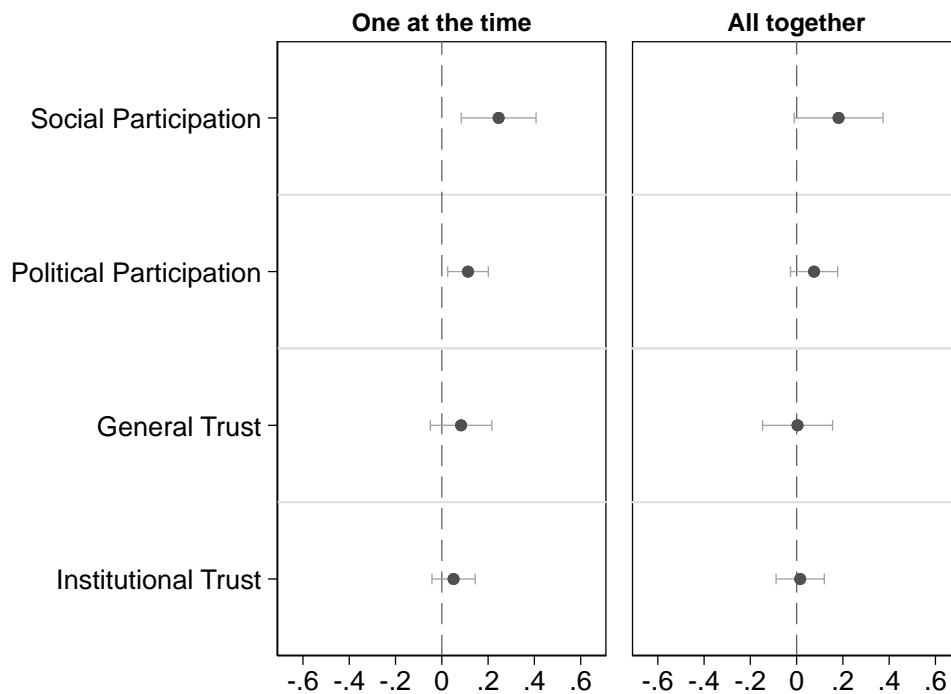
Notes. The figure reports the estimated coefficient of Equation 1. The Education of mayor is a dummy variable equal to one if the mayor has a university degree. Political information is constructed thanks to a question in the ADL Survey (*"With which frequency do you get informed about politics?"*) and represents the share of people declaring to follow politics in each of our provinces. Both variables are standardized. We regress these indicators on our social capital components in both univariate and multivariate regressions. The sample is composed of 105 Italian provinces. Each regression includes region fixed effects and a set of time invariant controls provincial level. These includes: population, altitude, presence of airports, and surface in km^2.

Tax compliance

Aversion of tax evasion

Notes. The figure reports the estimated coefficient of Equation 1. Tax compliance is the share of household in a given province that paid the TV license fee. Perceptions of tax evasion is constructed with the ADL Survey and represents the provincial share of people who reports that tax evasion is the most important problem facing the country. Both variables are standardized. We regress these indicators on our social capital components in both univariate and multivariate regressions. The sample is composed of 105 Italian provinces. Each regression includes region fixed effects and a set of time invariant controls provincial level. These includes: population, altitude, presence of airports, and surface in km^2.

8. CONCLUSION

Social capital is one of the most widely studied concepts in the social sciences. Yet, several questions remain open regarding what it captures and, crucially, how it should be measured. This paper has explored some of these questions using new survey data from Italy covering almost 600,000 individuals over 15 years. The large sample size, the wealth of questions on social attitudes and behavior, and the availability of precise geographic information, allow us to uncover several important patterns.

We first identify four components of social capital (i.e., political participation, social participation, trust in others, and trust in institutions), which, we show, are distinct from each other in their geographic distribution and relationship with socioeconomic characteristics. Furthermore, this relationship varies quite considerably between the individual and the community level. The four components also correlate very differently with alternative proxies of social capital commonly used in empirical work. These findings support the view that social capital is inherently multifaceted and should be treated as such both conceptually and empirically.

We then examine the link between social capital and various outcomes previously studied in the literature. In this regard, each outcome is significantly related to certain dimensions of social capital but not to others in ways very consistent with conceptual predictions. For example, of the four survey-based measures of social capital, only trust in others is significantly related to financial development. In contrast, only political and especially social participation are associated with lower crime incidence. Similarly, we observe that health outcomes are mostly related to general trust, economic outcomes to social participation, and political outcomes to social and political participation.

Taken together, our results provide some valuable insights for researchers doing empirical work on social capital. First, whenever possible, multiple complementary proxies of social capital should be used to clearly assess which ones are more relevant for the outcome at hand. Second, what dimension(s) of social capital each proxy would capture should be clearly explained, ideally based on a coherent conceptual framework. Relatedly, the use of measures of social capital that are conceptually too undetermined (e.g., blood donations) should be limited or, at least, properly qualified.

Finally, our findings highlight the importance of studying social capital at the appropriate geographical level – i.e., the local community – where most social interactions typically occur, something that has been lacking due to the scarcity of fine-grained data. In this regard, we expect the use of the data presented in this paper, potentially available at the municipality level, to encourage further work in this direction.

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9. ONLINE APPENDIX

Online material for *Unpacking Social Capital*

(a) Employment rate
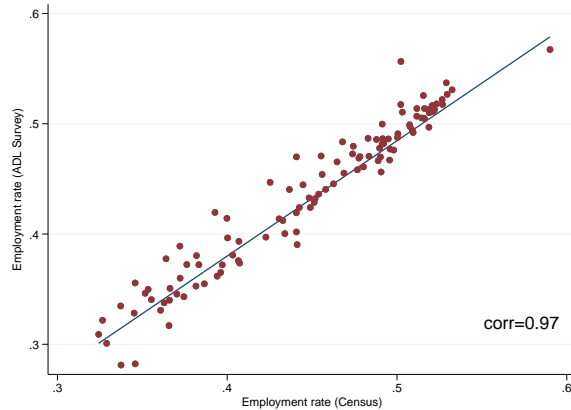
(b) Old-age dependency ratio
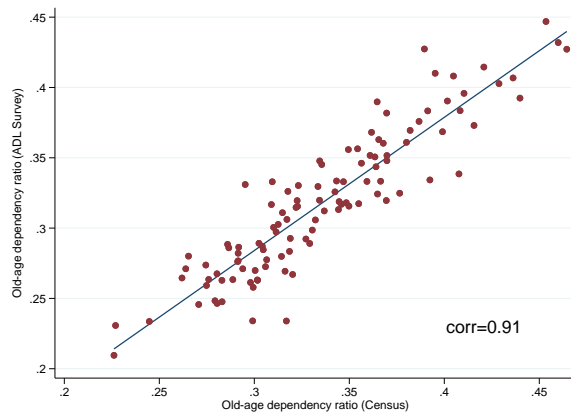
(c) Education
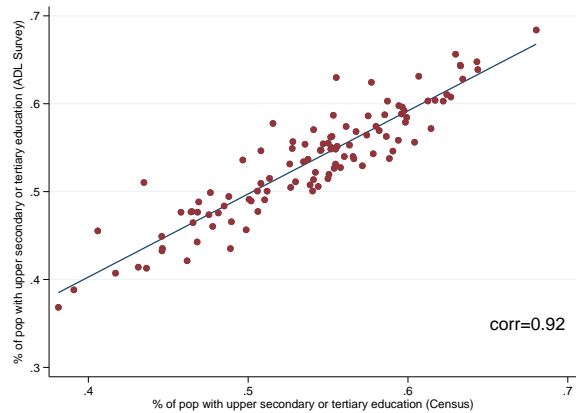
Notes. An important issue when moving from the individual to the aggregate level is whether the ISTAT survey data is representative of the underlying population at the geographical level of analysis. Despite the survey not being specifically designed to be representative at the provincial level, in this figure we use official census data on provincial characteristics to show that the survey turns out to represent the underlying population pretty faithfully. We show that for the three variables taken into account (employment rate, old-age dependency ratio, and educational level measured as an indicator for high school and above), results from the ADL survey and the Italian Census present high correlations (of 0.97, 0.91 and 0.92 respectively) and with fitted lines almost overlapping with a 45 degree one.

FIGURE A2: CORRELATION OF ADL-BASED COMPONENTS OF SOCIAL CAPITAL WITH OTHER EXISTING MEASURES: CONDITIONAL ON GEOGRAPHY
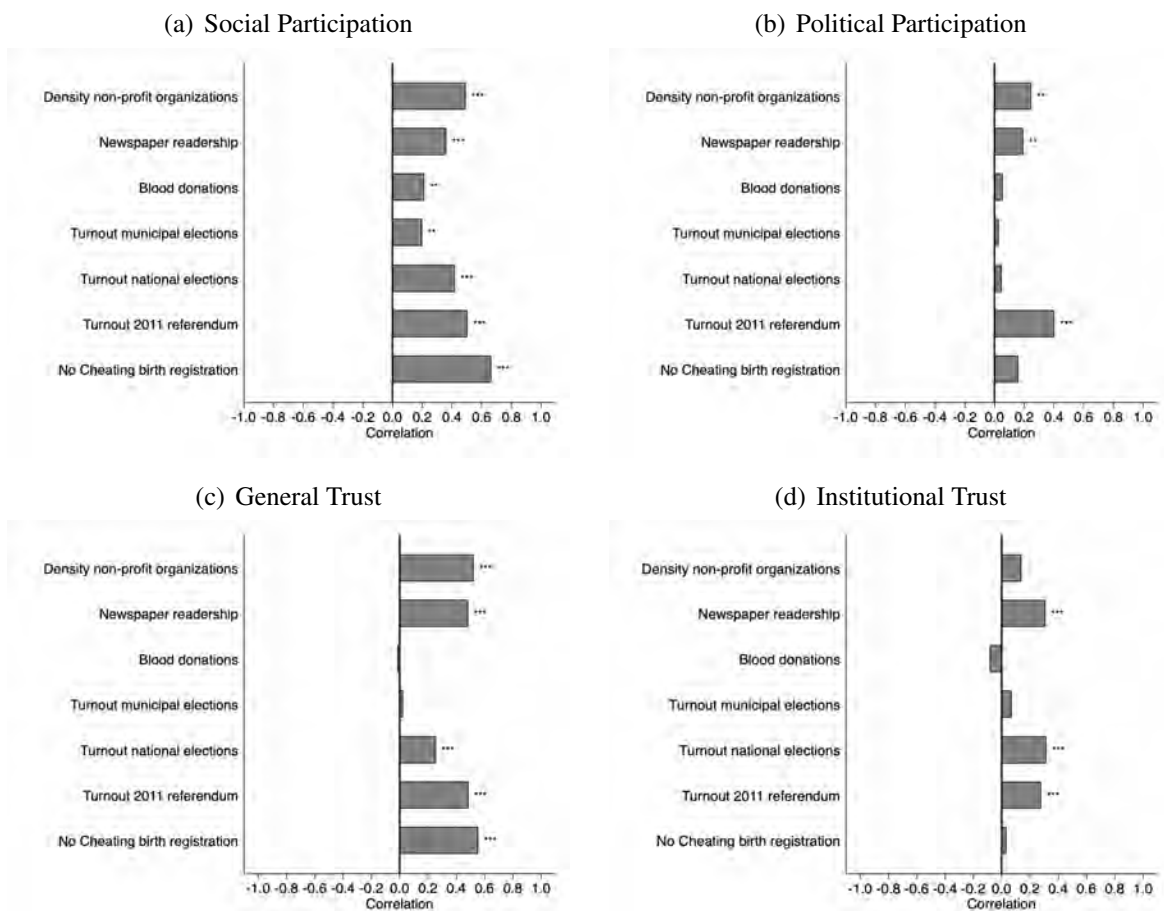
(a) Social Participation

(b) Political Participation

(c) General Trust

(d) Institutional Trust

Notes. The figure reports pairwise correlations between ADL-based components of social capital and a set of existing measures that have been used in the literature, conditional on an indicator *north* to capture the north-south divide exemplified in Figure 5. Information on the density of non-profit organization comes from the "Atlante Storico Comuni" and is available for 110 provinces; Information on newspaper readership comes from ADS(as described in the data section) and is available for 105 provinces; Blood donation refers to the number of blood bags per million inhabitants and is available for 99 provinces; Information on turnout at municipal and national elections comes from the Italian Ministry of Interior (average turnout for all municipal and national elections between 1993 and 2014) and is available for 108 provinces; Information on turnout at 2011 referendum also comes from the Italian Ministry of Interior and is available for 110 provinces; Cheating on birthdate registration is a measure developed by Anelli et al. (forthcoming) based on 1991 Census and is available only for the set of 95 provinces existing in 1991. All remaining variables are available for the entire sample of 110 Italian provinces. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

List of questions
1) Did you give money to voluntary associations?
2) Did you perform unpaid activities for voluntary associations?
3) Did you perform unpaid activities for non-voluntary associations?
4) Did you participate to meetings of voluntary associations?
5) Did you participate to meetings of environmental or civic rights associations?
6) Did you participate to meetings of cultural or recreational associations?
7) Did you attend a political rally?
8) Did you participate in a public demonstration?
9) Did you attend and listen a political debate?
10) Did you give money to a political party?
11) Did you perform non-paid activity for a political party?
12) Did you perform non-paid activity for a trade union?
13) Did you attend a meeting of a political party or trade union?
14) Do you think that most people can be trusted?
15) If you loose your wallet, what are the chances that it will be returned by a neighbour?
16) If you loose your wallet, what are the chances that it will be returned by a stranger?
17) How much do you trust the Italian Parliament?
18) How much do you trust the European Parliament?
19) How much do you trust the regional government?
20) How much do you trust the provincial government?
21) How much do you trust the municipal government?
22) How much do you trust the political parties?
23) How much do you trust the judiciary system?
24) How much do you trust the police?

Notes. The table reports the 24 questions from the Aspects of Daily Life (ADL) ISTAT Survey. We used these questions to explore the different dimensions of social capital. Questions 1 to 13 refer to the 12 months previous to the interview. The questions appear in the questionnaire in the following sequence: 9, 10, 11, 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24. Table A2 below reports the time period for which each of these questions is available.

TABLE A2: ADL-SURVEY SOCIAL CAPITAL QUESTIONS: DESCRIPTIVE STATISTICS

ID	Survey Item	Years	N	Mean	SD
1	Gives money to voluntary assoc (0/1)	2000–2015	599,896	0.17	0.38
2	Non-paid activity for voluntary assoc (0/1)	2000–2015	600,504	0.10	0.30
3	Non-paid activity for non-voluntary assoc (0/1)	2000–2015	599,870	0.04	0.19
4	Attend meeting of voluntary assoc (0/1)	2000–2015	597,113	0.08	0.27
5	Attend meeting of enviro or civil rights assoc (0/1)	2000–2015	596,022	0.02	0.14
6	Attend meeting of cultural or recreation assoc (0/1)	2000–2015	597,272	0.01	0.30
7	Attend political rally (0/1)	2000–2015	601,446	0.07	0.25
8	Participate in demonstration (0/1)	2000–2015	600,371	0.05	0.22
9	Listens to political debate (0/1)	2000–2015	600,408	0.24	0.43
10	Gives money to political party (0/1)	2000–2015	600,258	0.03	0.17
11	Non-paid activity for political party (0/1)	2000–2015	600,279	0.01	0.12
12	Non-paid activity for trade union (0/1)	2000–2015	600,015	0.01	0.12
13	Attend meeting of party or trade union (0/1)	2000–2015	600,172	0.14	0.34
14	Can trust most people (0/1)	2010–2015	233,590	0.22	0.41
15	Neighbor will give back wallet (1-4)	2010–2015	232,807	2.95	0.95
16	Stranger will give back wallet (1-4)	2010–2015	232,355	1.65	0.74
17	Trust in the Italian parliament (0-10)	2012–2015	152,484	3.41	2.55
18	Trust in the EU parliament (0-10)	2012–2015	152,190	3.89	2.57
19	Trust in the local government (regional) (0-10)	2012–2015	152,328	3.54	2.56
20	Trust in the local government (provincial) (0-10)	2012–2015	151,094	3.47	2.56
21	Trust in the local government (municipal) (0-10)	2012–2015	152,337	4.42	2.75
22	Trust in the political parties (0-10)	2012–2015	152,250	2.29	2.35
23	Trust in the judiciary (0-10)	2012–2015	152,186	4.24	2.67
24	Trust in the police (0-10)	2012–2015	152,486	6.38	2.37

Notes. The table reports descriptive stats for the 24 variables from the Aspects of Daily Life (ADL) Survey from ISTAT used to explore social capital. The questions are spelled out in Table A1 above. The table also reports the years for which each question is available, the sample size, together with its mean and standard deviation.

TABLE A3: PAIRWISE CORRELATIONS AMONG ADL-SURVEY QUESTIONS

ID	1: SP1	2: SP2	3: SP3	4: SP4	5: SP5	6: SP6	7: PP1	8: PP2	9: PP3	10: PP4	11: PP5	12: PP6	13: PP7	14: GT1	15: GT2	16: GT3	17: IT1	18: IT2	19: IT3	20: IT4	21: IT5	22: IT6	23: IT7	24: IT8
1: SP1	1																							
2: SP2	0.34	1																						
3: SP3	0.23	0.30	1																					
4: SP4	0.32	0.67	0.24	1																				
5: SP5	0.17	0.20	0.17	0.25	1																			
6: SP6	0.34	0.34	0.35	0.34	0.26	1																		
7: PP1	0.13	0.12	0.12	0.12	0.14	0.16	1																	
8: PP2	0.12	0.13	0.12	0.13	0.19	0.14	0.30	1																
9: PP3	0.25	0.16	0.10	0.15	0.13	0.21	0.33	0.22	1															
10: PP4	0.17	0.11	0.12	0.11	0.11	0.13	0.25	0.14	0.19	1														
11: PP5	0.12	0.13	0.14	0.12	0.13	0.13	0.27	0.17	0.17	0.42	1													
12: PP6	0.10	0.09	0.09	0.08	0.09	0.08	0.13	0.18	0.12	0.13	0.23	1												
13: PP7	0.25	0.17	0.15	0.18	0.16	0.24	0.30	0.21	0.30	0.25	0.24	0.25	1											
14: GT1	0.13	0.11	0.08	0.11	0.08	0.12	0.05	0.05	0.09	0.07	0.05	0.04	0.09	1										
15: GT2	0.14	0.10	0.07	0.09	0.04	0.11	0.03	0.03	0.08	0.04	0.02	0.02	0.07	0.23	1									
16: GT3	0.13	0.10	0.07	0.09	0.06	0.10	0.03	0.04	0.08	0.06	0.04	0.03	0.08	0.29	0.29	1								
17: IT1	0.01	0.00	-0.01	0.01	0.00	0.01	0.00	-0.01	0.01	0.03	0.02	0.01	0.01	0.14	0.09	0.12	1							
18: IT2	0.05	0.03	0.02	0.03	0.03	0.05	0.02	0.02	0.05	0.05	0.02	0.02	0.03	0.15	0.13	0.13	0.79	1						
19: IT3	0.05	0.03	0.01	0.03	0.01	0.04	0.01	-0.01	0.03	0.05	0.03	0.01	0.02	0.14	0.13	0.14	0.72	0.68	1					
20: IT4	0.05	0.04	0.02	0.04	0.00	0.04	0.00	-0.01	0.01	0.04	0.02	0.01	0.01	0.13	0.14	0.14	0.69	0.67	0.90	1				
21: IT5	0.08	0.06	0.04	0.05	0.01	0.06	0.02	-0.01	0.03	0.05	0.03	0.01	0.03	0.14	0.17	0.13	0.52	0.51	0.67	0.69	1			
22: IT6	0.01	0.01	0.02	0.01	0.02	0.02	0.06	0.03	0.03	0.10	0.08	0.03	0.04	0.14	0.08	0.12	0.68	0.59	0.65	0.65	0.50	1		
23: IT7	0.02	0.01	0.01	0.02	0.02	0.03	0.03	0.02	0.05	0.04	0.02	0.02	0.03	0.15	0.11	0.11	0.55	0.54	0.50	0.49	0.41	0.50	1	
24: IT8	0.04	0.02	-0.01	0.02	-0.02	0.01	-0.01	-0.03	0.04	0.01	0.00	0.01	0.01	0.10	0.15	0.07	0.37	0.36	0.37	0.36	0.39	0.26	0.51	1

Notes. The table reports pairwise correlations between the 20 social capital questions contained in the ADL Survey. The questions are described in Table A1.

	Univariate	Multivariate	Univariate	Multivariate
	Panel (a) Social Participation		Panel (b) Political Participation	
	(1)	(2)	(3)	(4)
Age	-0.067***	0.003**	-0.078***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Male	0.087***	0.062***	0.312***	0.261***
	(0.003)	(0.003)	(0.003)	(0.003)
Married	0.014***	0.037***	0.077***	0.079***
	(0.003)	(0.003)	(0.003)	(0.003)
Employed	0.202***	0.073***	0.352***	0.195***
	(0.003)	(0.003)	(0.003)	(0.003)
Higher education and above	0.391***	0.373***	0.380***	0.323***
	(0.003)	(0.003)	(0.003)	(0.003)
Observations	588,989	588,989	591,788	591,788
	Panel (c) General Trust		Panel (d) Institutional Trust	
	(5)	(6)	(7)	(8)
Age	-0.033***	0.033***	0.073***	0.082***
	(0.002)	(0.002)	(0.003)	(0.003)
Male	0.038***	0.013***	-0.035***	-0.023***
	(0.004)	(0.004)	(0.005)	(0.005)
Married	0.023***	0.019***	0.038***	0.002
	(0.004)	(0.004)	(0.005)	(0.005)
Employed	0.207***	0.128***	-0.052***	-0.026***
	(0.004)	(0.005)	(0.005)	(0.006)
Higher education and above	0.313***	0.295***	0.021***	0.085***
	(0.004)	(0.005)	(0.005)	(0.006)
Observations	231,387	231,387	149,601	149,601

Notes. This Table explores the individual level correlates of social capital dimensions. It provides the estimated coefficients of OLS regressions behind Figure 4. The outcomes variables are our four ADL survey social capital dimensions which we describe in section 3.1. We regress them on a set of self-reported individual characteristics from the ADL survey. Age is a continuous variable reporting the individual's age. Male, Married and Employed are indicators equal to 1 respectively if a respondent is a man, married and employed. Higher education and above is equal to 1 is an individual has at least a higher education degree. Odd columns report estimates from univariate regressions in which the individual sociodemographic characteristics are included one at the time, while even columns report estimates from regressions in which the six individual characteristics are included all together. All variables, including our outcome, are standarized. The sample is composed of individuals answering to all of the questions we use to identify our social capital dimensions. Observations varies across dimensions because of their availability as described in Table A1. All regressions have robust standard errors. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A5: INDIVIDUAL LEVEL CORRELATES OF SOCIAL CAPITAL DIMENSIONS –
CONTROLLING FOR NORTH-SOUTH DIVIDE

	Univariate	Multivariate	Univariate	Multivariate
	Panel (a) Social Participation		Panel (b) Political Participation	
	(1)	(2)	(3)	(4)
Age	-0.0670***	0.00310**	-0.0784***	0.00352***
	(0.00116)	(0.00132)	(0.00110)	(0.00124)
Male	0.0867***	0.0621***	0.312***	0.261***
	(0.00262)	(0.00265)	(0.00261)	(0.00262)
Married	0.0136***	0.0368***	0.0774***	0.0793***
	(0.00263)	(0.00259)	(0.00260)	(0.00250)
Employed	0.202***	0.0733***	0.352***	0.194***
	(0.00268)	(0.00304)	(0.00268)	(0.00300)
Higher education and above	0.391***	0.373***	0.380***	0.323***
	(0.00271)	(0.00299)	(0.00268)	(0.00289)
Observations	588,989	588,989	591,788	591,788
North-South divide	Yes	Yes	Yes	Yes
	Panel (c) General Trust		Panel (d) Institutional Trust	
	(5)	(6)	(7)	(8)
Age	-0.0328***	0.0328***	0.0734***	0.0827***
	(0.00200)	(0.00229)	(0.00258)	(0.00295)
Male	0.0383***	0.0132***	-0.0347***	-0.0225***
	(0.00417)	(0.00420)	(0.00518)	(0.00524)
Married	0.0232***	0.0192***	0.0376***	0.00160
	(0.00417)	(0.00429)	(0.00519)	(0.00542)
Employed	0.207***	0.128***	-0.0520***	-0.0249***
	(0.00423)	(0.00468)	(0.00524)	(0.00583)
Higher education and above	0.313***	0.295***	0.0216***	0.0848***
	(0.00413)	(0.00454)	(0.00517)	(0.00567)
Observations	231,387	231,387	149,601	149,601
North-South divide	Yes	Yes	Yes	Yes

Notes. This Table explores the individual level correlates of social capital dimensions. It provides the estimated coefficients of OLS regressions behind Figure 4. The outcomes variables are our four ADL survey social capital dimensions which we describe in section 3.1. We regress them on a set of self-reported individual characteristics from the ADL survey. Age is a continuous variable reporting the individual's age. Male, Married and Employed are indicators equal to 1 respectively if a respondent is a man, married and employed. Higher education and above is equal to 1 is an individual has at least a higher education degree. Odd columns report estimates from univariate regressions in which the individual socio-demographic characteristics are included one at the time, while even columns report estimates from regressions in which the six individual characteristics are included all together. All variables, including our outcome, are standarised. The sample is composed of individuals answering to all of the questions we use to identify our social capital dimensions. Observations varies across dimensions because of their availability as described in Table A1. All regressions control for North-South dummy and robust standard errors. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

	Univariate	Multivariate	Univariate	Multivariate
	Panel (a) Social Participation		Panel (b) Political Participation	
	(1)	(2)	(3)	(4)
% Aged above 75 y.o.	-0.015	-0.352***	0.006	-0.266*
	(0.100)	(0.128)	(0.107)	(0.147)
% High school or tertiary educ	0.154*	0.004	0.222**	0.472***
	(0.078)	(0.096)	(0.096)	(0.127)
Unemployment rate	-0.587***	-0.876***	-0.192	-0.060
	(0.075)	(0.254)	(0.133)	(0.315)
% House ownership	0.310***	0.107	0.186**	0.091
	(0.054)	(0.090)	(0.079)	(0.099)
% Immigrants	0.318***	-0.119	0.011	-0.156
	(0.076)	(0.148)	(0.103)	(0.192)
Population density (logs)	-0.146*	-0.136	-0.225**	-0.374***
	(0.082)	(0.091)	(0.104)	(0.131)
Observations	110	110	110	110
North-South divide	Yes	Yes	Yes	Yes
	Panel (c) General Trust		Panel (d) Institutional Trust	
	(5)	(6)	(7)	(8)
% Aged above 75 y.o.	0.189**	-0.057	0.053	-0.058
	(0.073)	(0.093)	(0.109)	(0.114)
% High school or tertiary educ	0.197**	-0.002	0.178	0.093
	(0.088)	(0.097)	(0.115)	(0.132)
Unemployment rate	-0.512***	-0.864***	0.135	-0.778***
	(0.090)	(0.181)	(0.128)	(0.241)
% House ownership	0.206***	0.017	-0.334***	-0.230***
	(0.058)	(0.076)	(0.083)	(0.074)
% Immigrants	0.139	-0.388***	-0.121	-0.296*
	(0.096)	(0.110)	(0.119)	(0.166)
Population density (logs)	-0.122	-0.045	0.328***	0.173
	(0.092)	(0.099)	(0.100)	(0.120)
Observations	110	110	110	110
North-South divide	Yes	Yes	Yes	Yes

Notes. This Table explores the provincial level correlates of social capital dimensions. It provides the estimated coefficients of OLS regressions behind Figure 6. The outcome variables are our four standardized ADL survey social capital dimensions which we describe in section 3.1. We regress them on a set of socio-demographic characteristics from the Italian Census (8000 Census). % Aged above 75 y.o represents the share of people older than 75 years old. % High school or tertiary educ represents the share of people with at least a higher degree qualification. The unemployment rate captures the share of unemployed people. % House ownership captures the share of household owning a residential property. % Immigrants capture the share of foreign-born individuals. Population density measures the density of inhabitants in each province. Odd columns report estimates from univariate regressions in which the provincial socio-demographic characteristics are included one at a time, while even columns report estimates from regressions in which the six provincial characteristics are included altogether. All variables are standardized. The sample is composed of 110 Italian provinces. All estimates, univariate and multivariate, control for an indicator *north* to capture the north-south divide exemplified in Figure 5. All regressions have robust standard errors. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A7: CORRELATION OF ADL-BASED MEASURES OF SOCIAL CAPITAL WITH EXISTING MEASURES

	SP	PP	GT	IT	NP	NR	BD	TM	TN	TR	NC
SP	1.00										
PP	**0.23**	1.00									
GT	**0.80**	0.10	1.00								
IT	**0.39**	0.13	**0.48**	1.00							
NP	**0.56**	0.16	**0.58**	0.24	1.00						
NR	**0.57**	0.05	**0.66**	0.44	**0.50**	1.00					
BD	**0.48**	-0.05	**0.32**	0.16	0.18	**0.32**	1.00				
TM	**0.30**	-0.04	0.17	0.15	0.16	0.10	**0.43**	1.00			
TN	**0.64**	-0.12	**0.53**	**0.46**	0.31	**0.50**	**0.62**	**0.67**	1.00		
TR	**0.49**	0.35	**0.47**	0.32	**0.52**	**0.43**	**0.32**	0.27	**0.52**	1.00	
NC	**0.81**	0.01	**0.75**	**0.29**	**0.50**	**0.60**	**0.58**	**0.36**	**0.76**	**0.51**	1.00

Notes. The table reports pairwise correlations between ADL-based measures of social capital and other measures commonly used in the literature. SP=Social Participation; PP=Political Participation; GT=General Trust; IT=Institutional Trust; NP=density of non-profit organizations. NR=newspaper readership; BD=blood donations; TM=turnout municipal elections; TN=turnout national elections; TR=turnout 2011 referendum; NC=inverse measure of cheating on birthdate registration. Unit of observation: provinces. Correlations with significance level of 0.05 or more are reported in bold.

TABLE A8: CORRELATION OF ADL-BASED MEASURES OF SOCIAL CAPITAL WITH EXISTING MEASURES: CONDITIONAL ON GEOGRAPHY

	SP	PP	GT	IT	NP	NR	BD	TM	TN	TR	NC
SP	1.00										
PP	**0.48**	1.00									
GT	**0.67**	**0.30**	1.00								
IT	**0.21**	**0.24**	**0.33**	1.00							
NP	**0.49**	**0.25**	**0.52**	0.14	1.00						
NR	**0.36**	**0.19**	**0.48**	**0.31**	**0.42**	1.00					
BD	**0.21**	0.06	-0.02	-0.08	0.01	0.02	1.00				
TM	**0.20**	0.03	0.02	0.07	0.10	-0.03	**0.38**	1.00			
TN	**0.42**	0.05	**0.26**	**0.32**	0.19	**0.28**	**0.44**	**0.68**	1.00		
TR	**0.50**	**0.40**	**0.49**	**0.28**	**0.50**	**0.41**	**0.30**	0.24	**0.55**	1.00	
NC	**0.66**	0.16	**0.56**	0.03	**0.39**	**0.38**	**0.35**	0.28	**0.60**	**0.52**	1.00

Notes. The table reports pairwise correlations between ADL-based measures of social capital and other measures commonly used in the literature. All measures are residualised conditional on an indicator *north* to capture the north-south divide. SP=Social Participation; PP=Political Participation; GT=General Trust; IT=Institutional Trust; NP=density of non-profit organizations. NR=newspaper readership; BD=blood donations; TM=turnout municipal elections; TN=turnout national elections; TR=turnout 2011 referendum; NC=inverse measure of cheating on birthdate. Unit of observation: provinces. Correlations with significance level of 0.05 or more are reported in bold.

	Use of checks		Percent wealth in cash		Percent wealth in stocks		Discouraged or turned down		Loans from friends and family	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Turnout Referenda GSZ	0.044**	0.022	-0.039***	-0.032***	0.004*	-0.001	-0.008***	-0.004	-0.009***	-0.009***
	(0.018)	(0.021)	(0.012)	(0.010)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.004)
Blood Donation GSZ	0.041***	0.033***	-0.010*	0.001	0.006***	0.006***	-0.005***	-0.003**	-0.002	0.001
	(0.007)	(0.010)	(0.006)	(0.006)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)
Social Participation	-0.004	-0.015	-0.024**	0.012	0.003**	0.003	-0.004*	0.002	-0.004**	0.003
	(0.011)	(0.017)	(0.011)	(0.011)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Political Participation	0.009	0.004	-0.016**	-0.006	0.002**	-0.001	-0.003*	-0.000	-0.002	-0.000
	(0.009)	(0.009)	(0.008)	(0.007)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
General Trust	-0.006	-0.015	-0.039***	-0.042***	0.002	-0.003	-0.005***	-0.005	-0.007***	-0.010***
	(0.011)	(0.017)	(0.009)	(0.010)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Institutional Trust	0.020*	0.026**	-0.014**	0.002	0.004***	0.004***	-0.003*	-0.001	-0.000	0.003
	(0.011)	(0.011)	(0.006)	(0.006)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	32332	32332	32332	32332	32332	32332	32332	32332	32332	32332
Measures inlcuded one at a time	Yes		Yes		Yes		Yes		Yes	
Measures inlcuded all together		Yes		Yes		Yes		Yes		Yes

Notes. The table explores the relationship between various measures of social capital and each of the financial development measures used to construct the Financial Development Index in Table 6. "Use of checks" is an indicator for the family having used checks during the past year; "Percent wealth in cash" is the share of family wealth in cash; "Percent of wealth in stocks" is the share of family wealth in stocks; "Discouraged or turned down" is a dummy equal one if a family member got discouraged or turned down when applying for a loan or mortgage (as a measure of the availability of credit to consumers); "Loans from friends and family" is an indicator for the household having some debts outstanding towards friends or relatives not living together (as a measure of informal credit market). Regressions in columns 1-2 and 7-10 are estimated with probit, while regressions in columns 3-6 are estimated with a tobit model. Odd columns report estimates from univariate regressions in which social capital measures are included one at the time, while even columns reports estimates from regressions in which the six measures are included all together. Turnout Referenda and Blood Donation are the social capital measures used by GSZ as explained in Table 6. Social Participation, Political Participation, General Trust and Institutional Trust are our usual measures of social capital components obtained from the ADL Survey as described in Section 3.1 All social capital measures are standardized to have a mean 0 and variance of 1 to facilitate comparisons. All regressions include the same set of province and individual-level controls as in Table 6. Standard errors are clustered at the province level and reported parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

	Common Theft		Robberies		Car Theft	
	(1)	(2)	(3)	(4)	(5)	(6)
Non-Profit Associations BMV	-0.044	0.007	-0.182*	-0.014	-0.228***	-0.073
	(0.054)	(0.060)	(0.093)	(0.093)	(0.077)	(0.083)
Blood Donation BMV	-0.116**	-0.108**	-0.171**	-0.173**	-0.160**	-0.127*
	(0.046)	(0.048)	(0.080)	(0.074)	(0.068)	(0.065)
Turnout Referenda BMV	-0.018	0.016	0.166	0.128	-0.104	-0.113
	(0.089)	(0.096)	(0.152)	(0.150)	(0.131)	(0.133)
Social Participation	-0.150***	-0.200**	-0.425***	-0.235*	-0.345***	-0.252**
	(0.057)	(0.078)	(0.092)	(0.120)	(0.080)	(0.107)
Political Participation	-0.057	-0.007	-0.244***	-0.173**	-0.183***	-0.085
	(0.037)	(0.043)	(0.059)	(0.067)	(0.052)	(0.060)
General Trust	0.004	0.087	-0.243**	-0.134	-0.173*	-0.057
	(0.061)	(0.081)	(0.102)	(0.125)	(0.088)	(0.111)
Institutional Trust	0.027	0.026	0.043	0.148**	-0.015	0.055
	(0.040)	(0.043)	(0.069)	(0.066)	(0.059)	(0.059)
Observations	103	103	103	103	103	103
Measures inlcuded one at a time	Yes		Yes		Yes	
Measures inlcuded all together		Yes		Yes		Yes

Notes. The table reports OLS estimates of the three different measures of crime originally used by BMV on social capital: common thefts, robberies and car theft. The three variables are measured between 2000 and 2002 at the provincial level and reported per 1,000 inhabitants in logs). Associations, Blood Donation and Turnout at Referenda are the social capital measures used by BMV. In particular: Associations are the number of cultural, recreational, artistic, sports, environmental, and other nonprofit associations per 100,000 inhabitants in 2000; Blood Donation is the number of blood donations per 100,000 inhabitants collected in 2000; Turnout Referenda is the voter turnout at the for all referenda held 1974–1999. Social Participation, Political Participation, General Trust and Institutional Trust are our usual measures of social capital components obtained from the ADL Survey as described in Section 3.1 All social capital measures are standardized to facilitate the comparison of estimated coefficients. Following the original paper, all regressions include the same set of socioeconomic, demographic and geographic controls: the length of the entire judicial process; the (crime-specific) clear-up rate (lagged one period); the percentage of men aged 15–29; the share of the population living in cities with more than 100,000 inhabitants; GDP per capita, unemployment rate, and share of the population with a high school education; the number of charges for criminal association per 100,000 inhabitants; macro-regional dummies. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.