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The Effects of Social Capital on Government Performance and Turnover: Evidence from Italian Municipalities*

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Abstract

We study how social capital shapes the performance and turnover of Italian local governments via electoral incentives. Performance is measured by the official *Opencivitas* indices of municipal government output and efficiency, and social capital is instrumented using the social capital of neighbouring municipalities together with historical indicators. We find that higher social capital improves both output and efficiency of local governments, both in the first and second term of office, which is consistent with social capital increasing both discipline and selection. As regards turnover, we find that although incumbency confers an electoral advantage, higher levels of social capital attenuates it: a one standard deviation increase in social capital reduces the re-election probability of a contesting incumbent by three to six percentage points. Finally, we investigate the effect of social capital on candidate characteristics; we find some evidence that higher levels of social capital increases female participation.

Keywords: Social Capital, Voting, Elections, Government Efficiency

JEL Codes: H41, H72, D72

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1 Introduction

It is now widely accepted that social capital plays a central role in a wide range of economic and social outcomes. Social capital was classically defined by Robert Putnam as “connections among individuals: social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 2000), and can be understood more synthetically as the intensity of relationships between individuals that creates trusting social networks generating virtuous behaviour. For example, social capital has been shown to strongly correlate with economic growth (Helliwell and Putnam, 1995; Knack and Keefer, 1997; Zak and Knack, 2001), trade (Guiso, Sapienza and Zingales, 2016), well-functioning institutions (Putnam, 2000; Knack, 2002), public services outcomes such as educational achievement (Coleman, 1988), financial development (Guiso, Sapienza and Zingales, 2004), health (Wilkinson, 1996), longevity (Putnam, 2000), income equality (Wilkinson, 1996; Kawachi et al., 1997), child welfare (Côté and Healy, 2001), economic achievement through increased trust and lower transaction costs (Fukuyama, 1995), and corruption and crime (Halpern, 1999; Putnam, 2000; Uslaner, 2002; Buonanno, Montolio and Vanin, 2009).

The starting point for our analysis is the seminal work of Putnam, Leonardi and Nanetti (1993), who showed that the wide differences in the performance of Italian regional governments, despite their common institutional design, are explained by long-standing differences in social capital, or civic traditions, whose roots reach back to the Medieval period. In this paper, we revisit this classic question at the municipal level and focus on one mechanism that has received relatively little attention: the effect of social capital on the dual role of elections, which are to provide incentives for incumbents and to select good politicians for office. This paper contributes to understanding the link between social capital and the effects of elections, using a new dataset of all Italian municipalities, which includes detailed data on government efficiency and outputs of public services, as well as a measure of social capital at the municipal level based on administrative data.

As Italian mayors face a two-term limit, we are able to study cleanly the link between social capital and the two roles of elections: effects of social capital on first-term behaviour operate through the discipline effect, while effects on second-term behaviour operate through the selection effect. In Section 3, we survey the existing theoretical literature on the effects of different dimensions of social capital in a political agency setting. From this, the predictions we take to the data are as follows. In the first term, both increased norms of reciprocity (altruism) and increased trust improve discipline and hence performance, while the effect of voter information is ambiguous.¹ In the second term, increased trust improves selection and

¹Increased information about political leaders or policies is not part of the classical definition of social

hence performance. The effect of all three dimensions on turnover is theoretically ambiguous.

We bring these predictions to the data using original measures of both government performance and social capital for Italian municipalities. At the end of 2013, the Italian government produced performance indicators for over 6,600 municipalities by integrating information provided by official sources with new data generated by a questionnaire from the Italian Ministry of Finance, in which each local authority was asked detailed information about each service provided. This information was used to construct output and expenditure indices; we combine the two to construct an index of how efficiently each municipality uses its financial resources for the provision of essential services.²

To fully exploit the municipal-level variation in efficiency and output measures, we must have a measure of social capital that is available and reliable at the municipal level. To do this, we use administrative data on two variables, the share of households paying the TV license in each municipality, the municipal-level turnout at the 2016 constitutional referendum. We then combine these two measures with the province-level share of population donating blood, a classic measure of the reciprocity aspect of social capital taken by [Guiso, Sapienza and Zingales \(2004\)](#), and take the first principal component of these three as our social capital measure. Roughly speaking, each of the three inputs to our social capital measure relate to the two different channels identified in the theory; payment of TV licenses and blood donation for reciprocity, and voter turnout for trust in political institutions. However, none of these variables are perfect measures of the underlying beliefs and preferences of citizens, as these can only be elicited by carefully designed surveys, which are not available at the municipal level.³ So, we do not claim that our empirical results reveal anything about how specific aspects of social capital affect outcomes; we only make claims for the aggregate effect.

A further issue is that this social capital index is potentially endogenous to the quality of local institutions. Social capital may be higher in municipalities or provinces where governance is better, partly as a result of that better governance: citizens who experience good government may be more prone to trust institutions and to behave pro-socially. This concern applies not only to a citizen’s place of residence but also to the other places she directly experiences, such as her place of work or study.

To deal with this issue we instrument social capital using two sources of variation that

capital. However, according to [Durante et al. \(2024\)](#), survey evidence shows that voter information is positively related to the social and political dimensions of social capital.

²The calculation of these indices is based on the gap between standard and actual outputs and expenditures for each service, as described in more detail in Section 5.2.

³The only partial exception is the “Aspetti della Vita Quotidiana” survey, where ISTAT interviews ca. 40,000 people per year. Each survey cohort is representative at the regional level, but not at the municipal one, considering that the median municipal population is around 2,500 inhabitants.

are plausibly unrelated to a municipality’s current government performance. The first is geographic: for each municipality we construct a leave-out average of the social capital of the other municipalities in the same province, excluding first the municipality itself and then also all municipalities to which a substantial share of its residents commute for work or study. By removing the reference municipality and the localities its residents directly experience, this average captures the broader social capital of the surrounding area while purging the direct influence of local government performance.⁴ The second source of variation is historical: following [Guiso, Sapienza and Zingales \(2016\)](#), we use a dummy for Medieval free cities, which is a well-known predictor of present-day social capital, together with [municipal population growth since the earliest available censuses \(1861 and 1871\)](#). Because the historical instruments are available only for the centre-north of the country, we use them as additional instruments in an overidentification test of the geographic instrument, rather than in our baseline specifications. This geography-based instrument, combined with the overidentifying historical variation, is the centerpiece of our identification strategy and allows us to move from correlations to a credibly causal reading of the effect of social capital.

As a second robustness check, we split the election sample by municipal size, to verify that the re-election results are not driven by the smallest municipalities, where the party-level coding of re-election is inevitably noisier. As a final robustness check, we include among the regressors the (average) performance of governments in neighbouring municipalities, to control directly for the possibility that our results are driven by some form of strategic interaction, such as yardstick competition. As is standard in the yardstick competition literature, the performance of neighbouring municipalities is itself instrumented with the characteristics of those municipalities (population, share of children and elderly, grants and income).

Our main findings are as follows. First, the output and, especially, the efficiency of incumbent mayors are higher in municipalities with higher social capital, in both the first and the second term of office, in line with our theoretical predictions. The effect is of similar magnitude across the two terms, implying that the discipline and selection effects of social capital do not dominate one another; to our knowledge, ours is the first study to show that higher social capital strengthens both. Second, regarding turnover, we measure re-election at the level of the incumbent’s party and document a sizeable incumbency advantage: when the incumbent mayor contests the election, the probability that his or her party retains office rises by roughly 40 percentage points. We find that, given a one standard deviation increase

⁴The exclusion of high-commuting municipalities exploits the rich municipality-by-municipality commuting matrix published by ISTAT and based on the 2011 Census, which records how many residents of each municipality work or study in each of the other municipalities.

in social capital, the party’s incumbency advantage is 3-6 percentage points lower when the incumbent mayor stands for re-election. This asymmetry suggests that social capital operates on the personal relationship between voters and the incumbent, rather than on party loyalty per se: where social capital is low, voters tend to reconfirm the politician they know; where it is high, personal familiarity carries less weight relative to performance.

Finally, we investigate the effect of social capital on the characteristics of the candidates who win, or come second, in elections for a first term of office (“ex ante” selection). We find some evidence that higher social capital raises the probability that the elected mayor is a woman, whereas we find no effect on observable measures of candidate quality such as education or professional competence. We therefore conclude that the selection effect of social capital operates mainly through the re-election of second-term mayors rather than through the observable characteristics of the candidates who stand.

The rest of the paper is organized as follows. Section 2 discusses the related literature, Section 3 presents the theoretical framework, and Section 4 describes the institutional background. Section 5 presents our measures of social capital and municipal performance, together with the data and the descriptive statistics. Sections 6 set out the identification strategy and the regression equations for performance and re-election. Section 7 reports the empirical results. Section 8 extends the analysis to study the effect of social capital on the candidate pool and winning candidate for the position of mayor. Section 9 discusses the robustness checks, and Section 10 concludes.

2 Related Literature

Our paper builds, first and foremost, on the seminal contribution of [Putnam, Leonardi and Nanetti \(1993\)](#). He documented large and persistent differences in institutional performance of regional governments in Italy that shared an identical institutional design, and argued that these differences are explained by the surrounding stock of social capital, the networks of civic engagement, norms of reciprocity and interpersonal trust that he termed the “civic community”. He traced the roots of this civic tradition back over many centuries, pointing especially at fourteenth century institutions. At that time, polities with different degrees of republican self-government coexisted with autocratic ones; the main examples are former city-states (communes) in the centre-north, the Norman feudal monarchy in the South and the mixed regime of the Papal States. These historical differences in civic tradition map closely into present-day differences in social capital as shown for example in [Guiso, Sapienza and Zingales \(2016\)](#). Starting from [Putnam, Leonardi and Nanetti \(1993\)](#)’s findings, we move from the regional to the municipal level, using a far more granular and precise admin-

istrative measure of government performance (see Section 5.2). We also explore mechanism through which social capital operates. We argue, and provide evidence, that a central part of this mechanism runs through elections, by strengthening both their disciplining and their selection role.

Our main empirical results contribute to the literature on the correlations between social capital and the behavior of politicians while in office. For example, [Nannicini et al. \(2013\)](#) show that in parliamentary districts of Italy with higher social capital, incumbent representatives have lower absenteeism rates and are less likely to face accusations of criminal wrong-doing.⁵ We focus not on the personal conduct of incumbents, but on actual policy achievements when in office. In this respect our results are more similar to [Padró i Miquel et al. \(2015\)](#), who show that Chinese villages with higher social capital experienced larger increases in public goods after the introduction of elections.

However, our results differ from these two papers in three respects. First, we study not only the level or type of public goods provided, but also the efficiency with which they are provided. Second, given that mayors are term-limited, we are able to explain this to separately identify the effects of social capital on electoral discipline and selection.⁶ Third, Moreover, unlike these papers, we address the endogeneity of social capital to government performance via an instrumental variable strategy.

Our use of term limits relates to other works which explore how selection is affected by institutional features such as term-limits ([Boetti et al., 2024](#)) or fiscal rules ([Gamalerio and Trombetta, 2025](#)). For example, ([Boetti et al., 2024](#)), using a panel of 1203 Italian municipalities, find a significant role for competence but not for accountability in affecting municipal spending. Specifically, second-and-last-term mayors, and first-term mayors with previous experience as executive officers, spend less, on average, than inexperienced first-term mayors. ([Gamalerio and Trombetta, 2025](#)) show that municipalities that are affected by fiscal rule attract less educated mayoral candidates.

Our work also relates to a small literature on the determinants of government efficiency ([Asatryan and De Witte, 2015](#); [Coffé and Geys, 2005](#); [Geys, 2006](#); [Geys, Heinemann and Kalb, 2010](#); [Knack, 2002](#); [Quispe Lino, Rojas Apaza and Blanco Espezu, 2025](#)). The closest to our work are [Knack \(2002\)](#) and [Coffé and Geys \(2005\)](#). Both of these relate measures of social capital to measures of the quality of government, for US states and Flemish municipalities respectively. Our work arguably has advantages to both these studies. First, we use a very precise measure of local government performance based on an administrative

⁵[Nannicini et al. \(2013\)](#) also look at the impact of social capital on the types of bills sponsored by representatives, but not whether these pass into legislation. Moreover, the results here are rather weak, with only one out of three specifications showing a link.

⁶In the Second Republic, members of the Italian national legislature were not term-limited.

survey.⁷ [Coffé and Geys \(2005\)](#) simply use municipal deficits as a measure of efficiency, which is not clearly related to the usual definition of government efficiency. [Knack \(2002\)](#) use a measure based on a very large number (35) of criteria, some of which do not relate at all to expenditure and service provision, so their measure is much less precisely targeted than ours. Second, unlike these papers, we have panel data, allowing us identify separately the effects of social capital on selection and discipline effects of elections.

Finally, we contribute to the large literature on the measurement of social capital and its correlation with other related variables. Typically, social capital is measured either through the use of survey questions about trust and social norms on cooperation such as the World Value Survey ([Knack and Keefer, 1997](#); [Knack, 2002](#)) or by the use of data on behaviors associated with social capital, such as blood donation or electoral turnout ([Guiso, Sapienza and Zingales, 2004](#); [Nunn and Wantchekon, 2011](#); [Nannicini et al., 2013](#)), participation in voluntary associations ([Putnam, Leonardi and Nanetti, 1993](#)) or the payment of low-stakes, low-enforcement taxes such as the TV license ([Bracco, De Paola and Green, 2015](#)). Our work uses the second kind of data, and contributes to this literature by proposing a geography based instrument for social capital, complemented by historical instruments, as described in more detail in Section 5.1.

Our identification strategy also connects to a growing literature on the deep historical determinants and long-run persistence of social capital. [Guiso, Sapienza and Zingales \(2016\)](#) show that Italian cities that achieved self-government in the Middle Ages display a higher level of civic capital today, with an effect that increases in the length and intensity of their independence; they argue that the experience of self-government fostered self-efficacy beliefs which, transmitted across generations, enhance civic capital today. In a similar spirit, [Buonanno, Plevani and Puca \(2023\)](#) find that long-run exposure to earthquake hazard raises civic capital across Italian municipalities, consistent with the idea that cooperative social norms accumulate over very long time spans. This persistence is precisely what makes historical variables, such as the Medieval free-city status we exploit, valid predictors of present-day social capital that are plausibly orthogonal to current government performance.

3 A Theoretical Framework

In this section, drawing on the existing theoretical literature, we generate some testable hypotheses on how dimensions of social capital might affect both the performance of politicians in office and turnover of politicians. The relevant body of work is the large literature on

⁷Our measure of efficiency and output has already been used in the literature, for example in [Cremaschi et al. \(2025\)](#).

political agency models.

In an important paper [Nannicini et al. \(2013\)](#) present a theoretical model with “civic” and “uncivic” voters. The former care about the aggregate welfare of all groups in society, whereas the latter care only about their own welfare. So, the proportion of civic voters captures the “reciprocity” aspect of social capital. Their key empirical prediction is that the higher the proportion of civic voters, the higher is public good provision, and the lower are rents.⁸

The second relevant theory are recent papers that focus on the trust aspect of social capital, in particular trust on political institutions ([Bracco et al., 2021](#); [Herrera and Trombetta, 2024](#); [Lockwood and Le Tung, 2026](#)).⁹ All these papers define trust as the subjective probability belief on the part of the voter that any politician drawn from the pool of potential politicians is “good”, relative to the objective probability. Depending on the context, a good politician could be either more competent or honest than a bad one. [Bracco et al. \(2021\)](#) studies an overlapping generations model of two-term limited politicians, who can be good or bad, and shows that an increase in trust unambiguously improves both the discipline and selection effects of elections.¹⁰ In particular, an increase in trust increases both the level of public good provision, and the efficiency with which public goods are introduced, in both periods of office. [Lockwood and Le Tung \(2026\)](#) show that the results on performance in office extend to a much more general setting where voters can be heterogeneous in beliefs, and can also learn about the quality of the candidate pool. ([Lockwood and Le Tung \(2026\)](#), Propositions 5 and 7).

The focus of [Herrera and Trombetta \(2024\)](#), by contrast, is on the dynamics of trust in a richer environment where there is also a populist politician type and where trust evolves over time due to inter-generational learning.¹¹ Their main focus is on the dynamics of trust and populist government formation, rather than the equilibrium mapping from trust to outcomes. They do show, however, that the probability of discipline (the bad traditional politician matching the state) is non-monotonic in trust (Proposition 1). This non-monotonicity arises

⁸A second empirical prediction of [Nannicini et al. \(2013\)](#) is that the vote share of the incumbent is lower, the greater the fraction of civic voters. However, this result does not have any implications for turnover, as in the equilibrium of their model, the incumbent is always re-elected. Ultimately, this is due to the fact that the model is a pure moral hazard one. That is, there is only one politician type, a rent-seeker, and that fact is known by voters.

⁹The theoretical results of [Bracco et al. \(2021\)](#) are now subsumed into [Lockwood and Le Tung \(2026\)](#). The latter extends the former in various ways e.g. most importantly by modelling learning about the quality of the candidate pool. The current paper is a revised version of the empirical part of [Bracco et al. \(2021\)](#).

¹⁰A two-term limit has the attraction that it gives a clean separation between discipline and selection effects of elections; the effect of any variable on first-term (second-term) behavior is due to its effect on electoral discipline (selection).

¹¹Each voter lives for only one period, but their prior trust is the posterior of the previous generation

from the electoral threat posed by the populist politician.

Finally, there is a third potential channel by which social capital can affect the discipline and selection effects of elections, which is voter information about politics. [Besley \(2006\)](#) and others have shown that voter information is an important determinant of the discipline and selection effects of elections. Voter information per se is not usually regarded as part of the definition of social capital. However, according to [Durante et al. \(2024\)](#), in the survey data, voter information is positively related to the social and political dimensions of social capital.

As regards specific predictions, in a canonical political agency model with both moral hazard and adverse selection, [Besley \(2006\)](#) shows that the effect of better information on electoral discipline depends crucially on whether the information is a direct observation (before the election) of the politician type or the politician’s performance in office. The former decreases discipline, and the latter increases it. As regards predictions about turnover, [Besley and Prat \(2006\)](#) show that in a pure adverse selection setting, better information for voters leads to higher turnover of incumbents. When they introduce moral hazard into their model, in the form of a decision as to how much rent to extract, the effect of information on turnover becomes ambiguous, because a bad incumbent may moderate rent extraction in response to the voter having more information.¹²

Moving from these theoretical contributions to predictions, we need to bear in mind two facts. First, as already noted, in Italy, mayors serve two terms of office, so the discipline (resp. selection) effect of any change in a social capital variable will affect the first (resp. second) term of office. Second, we have municipality-level data on both an index of output of municipal public goods, and an index of the efficiency which they are provided i.e. the level of public good provision *conditional* on expenditure. Of course, the output index can also vary due to voter preferences for public goods; to deal with this, we include a rich set of covariates that proxy for unobserved voter characteristics, as well as the political orientation of the mayor. So, in our results, we will interpret increases in both output and efficiency as evidence of either better discipline or selection as appropriate. Given these two facts, we predict the following:

1. In the first term of office, both increased altruism and increased trust will improve discipline and thus output and efficiency. Increased information will have an ambiguous effect.

¹²[Ponzetto and Troiano \(2018\)](#) study the effect of the information channel with imperfect but ex ante symmetric information about the politician type. Low social capital voters do not observe a public investment good set in a given year (education in their model) until after the election in that year, and so the greater the proportion of these voters, the less the incumbent provides the investment good

2. In the second term of office, increased trust will improve the probability that a good politician is selected and thus output efficiency.
3. All three measures (altruism, trust, and information) have ambiguous effects on turnover.

4 Institutional Setting

Italy provides an ideal setting to test these predictions for a number of reasons. First, there are important cultural differences across Italian regions and provinces due to the lasting effects of historical political fragmentation and of centuries of foreign influences on the different pre-unification polities. These differences are part of everyday life and include the use of language and dialects, food, traditions and common habits. Second, there is evidence of a large variation in the performance of sub-national governments, as explained in more detail in Section 5.2.

Third, Italian municipalities, *comuni*, enjoy a relative high level of fiscal autonomy in terms of both tax setting and spending; they are ruled by directly elected mayor (*sindaco*),¹³ who appoints the members of the executive committee (*giunta comunale*), to which he or she delegates tasks; the city council has more of a overseeing role. Municipal legislatures last for five years and mayors are subject to a two-term limit.¹⁴ Municipal governments have power over land management and environment (water, sewage, public hygiene), local transport, local police, culture and recreation, education (nursery schools, training programmes) and also have discretionary powers on how much fiscal revenue to raise.

The main source of revenues are property taxes, which account for roughly 23% of municipal revenues over the period covered in our analysis (see for example Bracco, Porcelli and Redoano, 2019). Resident home-owners are generally exempted, while owners of second (rented or holiday) homes and of premises used as businesses bear most of the burden. Municipalities may also decide to apply a surtax on the personal income tax rate between 0 and 0.8% that generates roughly 8% of total municipal revenues. Fees on rubbish collections and other services, from transport to social care, and other taxes generate more than 43% of total revenues. Finally, intergovernmental grants produce the remaining 26% of municipal revenues.

¹³Mayors are elected through a simple plurality rule in *small* municipalities (below 15,000 inhabitants) and through a runoff system in *large* municipalities (above the 15,000-inhabitants).

¹⁴From 2015 mayors of villages with fewer than 3,000 inhabitants can serve up to three consecutive terms.

5 Measuring Social Capital and Municipal Performance

5.1 Measuring Social Capital

Social capital, both generally and for the case of Italy, has been mainly measured in two distinct ways (Guiso, Sapienza and Zingales, 2016; Cartocci, 2007; Bracco, De Paola and Green, 2015; Nannicini et al., 2013). First, there are direct measures, which rely on individual-level responses to survey questions about social networks, trust, norms of reciprocity etc. Second, there are indirect measures, based on observable behaviors related to these networks and norms e.g. blood donation rates, turnout in different elections and referenda, TV license payments, membership of voluntary organizations, etc.

Our main measure of social capital is of the latter kind, as survey-based measures are not available at the municipal level.¹⁵ We calculate it as the first principal component of three different measures: (i) the share of households paying the TV license in each municipality in 2013 (taken from Bracco, De Paola and Green, 2015); (ii) municipal-level turnout at 2016 constitutional referendum; (iii) province-level share of population donating blood (taken from Nannicini et al. (2013)). All these proxies of social capital are time-invariant, and therefore so is their principal component. This is in line with the main empirical literature that stresses the strong persistence of social capital (see, among others Guiso, Sapienza and Zingales (2016)). This feature, common to most empirical work on social capital, implies some limitations in our empirical specification; for example it prevents us to include municipal fixed effects. We regard this as a deliberate trade-off: the very persistence of social capital that rules out municipal fixed effects is also what makes our geography-based and historical instruments valid predictors of present-day social capital.

Anyone owning a TV set is required by law to purchase a TV license. The cost of the license is set nationally, and is not trivial; in 2013 it amounted to €113.50 per year. The enforcement of the license payment is not rigorous, so payment can be seen as a proxy of pro-social behavior. In 2013 only two thirds of households held a TV license, while almost every household owned a TV set, with great variability of compliance across municipalities.¹⁶

The second variable on which our social capital index is based is the turnout to 2016 constitutional referendum. As referenda are votes that do not result in electing a government,

¹⁵The only partial exception is “Aspetti della Vita Quotidiana” survey, through which ISTAT interviews ca. 40,000 people per year. Each survey cohort is representative at the regional level; Durante et al. (2024) pooled different survey cohort and had access to provincial identifiers. Municipal identifiers are theoretically part of the original data, but one would still struggle to find a sufficient representativeness for smaller municipalities, considering that the median municipal population is around 2,500 inhabitants.

¹⁶In Italy, enforcement is done by a central government agency (Agenzia delle Entrate) crossing different sources of data available to the central government on individuals who have declared not to own a TV set, making efforts similar across municipalities.

voters' incentives to turn out are not distorted by patronage or individual benefit and the turnout rate can be understood as a measure of citizens' pro-social behavior.¹⁷

Finally, blood donation data have been regularly employed in the literature as a proxy for the reciprocity and altruism dimension of social capital, since there are neither legal nor economic incentives to donate blood, and the decision is driven only by social and internalised norms (see for example Guiso, Sapienza and Zingales, 2004; Nannicini et al., 2013).¹⁸

Table 1 displays provincial-level correlation measures between the main indicators of social capital that have previously been employed for Italy, and our overall measure, showing how our measure is highly correlated with the established ones. As expected, our measure is most highly correlated with the blood donation and turnout variables used by others; the very high correlation with blood donation is partly mechanical, since the provincial share of blood donors is one of the three inputs of our principal component.

5.2 Local Government Performance

Since 2011 the Italian government has been conducting a comprehensive analysis of expenditures and output of municipalities, in order to calculate municipalities' "Standard Expenditure Needs", which then inform the design of central-government grants to municipalities. Information provided by official sources (balance sheets, National Institute of Statistics, Ministry of Education, Land Registry Office, etc.) was integrated with new data from ad-hoc questionnaires to local authorities on each service provided, inquiring about outputs, inputs, management practices and organizational choices. From these data, a system of performance indices was created, providing basic information on how each municipality uses its resources for the provision of the essential services.

This measurement effort is rooted in the 2009 reform of municipal finance (Law no. 42/2009). In May 2009, the financing structure of local governments was reformed, introducing a new equalization system based on standard expenditure needs and fiscal capacity rather than on historical expenditure. Access to the resulting indicators was then opened gradually: in July 2014 the expenditure indicators (organized by municipal services in seven

¹⁷According to the Italian Constitution, referenda can be called either repeal a law or to confirm a constitutional amendment passed by the Parliament. "Repealing" referenda are valid only if at least 50% of registered voters turns out, while constitutional referenda are valid irrespectively of turnout. This implies that the decision of turning out may be tainted by strategic considerations linked with a voter's preferred outcome in "repealing" referenda, while this is not the case for constitutional ones. For this reason we chose to use the 2016 constitutional referendum in the principal component. Alternatively, we also performed the analysis using turnout for European Parliament elections (2009 and 2014) and at the ("repealing") 2011 referendum. Our results (available upon request) are hardly affected whether referenda or European Parliament elections are used within the principal component.

¹⁸Similarly other data, such as newspaper readership, are only available at regional level as well.

sub-indices) were made available to mayors, each through an individual access code, on the dedicated portal www.Opencivitas.it; in November 2014 the data were opened to the general public; and the output and performance indicators were published from early 2016 (see [Lockwood et al. \(2022\)](#) for the effect of the staggered diffusion of these indices).

More specifically, the Finance Ministry computes an output and an expenditure indices; from those two, an efficiency index is also calculated as the simple average between the two. All indices are scaled between 1 (worst) and 10 (best). We chose to disregard in our analysis the simple expenditure index as we think expenditure is a poor proxy of government performance.

The output index is based on the difference between the actual and standard level of service provided by a municipality;¹⁹ the expenditure index is an inverse measure of expenditure, with higher values associated with lower levels of expenditure relative to the expected level. Since the focus of the paper is not on the measurement of performance, we decided to use the official measures provided by the Italian government and we did not embark on additional and more sophisticated measurements of performance. Figure 1 summarises this measurement mechanism.

The first set of performance indices use 2010 data collected in 2011 and 2012. The three further waves use data from 2013, 2015 and 2016 (with data collection happening respectively in 2016, 2017 and 2018). Indices have been computed so to allow cross-wave comparisons.²⁰

As an illustration, in Figure 2 we show the average municipal-level values of the output and efficiency indices. Output and efficiency are highest in the north and in parts of the center and lowest in the south, echoing the classic pattern documented by [Putnam, Leonardi and Nanetti \(1993\)](#); at the same time, the within-region variability is substantial; our empirical analysis exploits this finer, local variation, rather than the broad north-south divide alone.

5.3 Data Description and Other Variable Definitions

Our dataset is a panel of more than 6,600 municipalities over the period 2010-2016; localities in special-autonomy regions²¹, which account for only 15% of the all municipalities, are

¹⁹The standard level of service is computed as the simple average of the level of service provided by municipalities within the same population bracket, as defined by the Finance Ministry. The level of service is a composite output indicator for a municipality’s core functions: number of users of the social care services, number of users of the auxiliary education services, number of fines and controls carried out by the local police, tons of urban waste recycled, number of authorizations and inspections by the urban planning and environmental offices. Weights correspond to the level of expenditure employed in each service at the national level.

²⁰We use the 2010 index for years between 2008 and 2011; the average between the 2010 and 2013 index for year 2012; the 2013 index for year 2013; the average between 2013 and 2015 index for year 2014; the 2015 index for year 2015; the 2016 index for all subsequent years.

²¹Valle d’Aosta, Trentino-Alto Adige, Friuli-Venezia Giulia, Sicily and Sardinia.

excluded as different public-finance regulations apply to them so much so that the output and expenditure indices are not computed for them.

The first outcome variables are municipal output and efficiency, already described in the previous Section. The second outcome variable is a re-election dummy, which takes value one if the newly elected mayor belongs to the same political area of the incumbent (or if the incumbent herself is re-elected), and zero otherwise. The election regressions rely on all municipal elections over the 2004–2018 period (comprising incumbent mayors elected from 1998 onwards) with 9,176 electoral observations at the party level, while the performance regressions are confined to 2010–2016, the window over which we employ the Opencivitas indices.

Our key explanatory variable is a measure of social capital in that municipality. In our baseline regressions we will employ the standard social capital index discussed in Section 5.1; due to endogeneity concerns, we will also instrument it with an *adjusted* social capital index. The construction and the structure of this geography-based, leave-one-out instrument, together with the historical variables that complement it, are explained in detail in Section 6.1. To ease the interpretation and the comparison of results, all social capital measures are standardized to have mean zero and a standard deviation of one.

To control for the main characteristics of municipalities we also use municipal financial, census, and election data. In particular, we have the following *municipal controls*: per capita grants from upper-tier governments, average per capita taxable income, population, share of children (below 14 years old) and elderly (over 65 years old), average years of education (share of graduates)²² and finally region and year fixed effects. These variables are from the Italian National Statistical Institute (ISTAT) and the Ministry of Economy and Finance (MoF); all monetary values are deflated using ISTAT 2001 monetary revaluation index.

We also employ *political controls*. First, to take into account a mayor’s political preferences, we construct two indicator variables, *Left* and *Right*, each taking the value of one if the mayor is supported by (resp.) a left-wing or right-wing coalition; the omitted category comprises independent mayors, which are very common especially in smaller municipalities. As performance may be affected by the electoral cycle, we include a control variable, *electoral cycle*, calculated as the number of years since the mayoral election. We also include a term limit dummy, *TL*, which takes a value of one when the mayor cannot run for re-election because of the term limit. Mayors are allowed to serve for two consecutive terms, but in smaller municipalities (below 3,000 inhabitants) there is a three-term limit. We also control

²²To control for the possibility that shares of residents from other places may have affected performance through different channels other than the imported social capital, the level of municipal education is computed using the same “leave-one-out” procedure followed for the social capital instrument.

for the electoral system: first past the post for municipalities with fewer than 15,000 inhabitants and runoff for larger municipalities. In our re-election regressions we also include the *Lagged Margin of Victory* variable which is the difference in vote share between the winner and the runner-up in the previous elections.

Our last set of controls are related to *mayor’s characteristics*: age, gender (female dummy), education (college education dummy), and previous occupations (through four dummy variables capturing low/high skills and low/high relevance of the profession to the job of running a municipality).²³ Insofar as these are observable by voters, including them in the regression controls for “ex ante” selection of candidates for office on observables. So, any selection effect that we identify via performance in the second period of office will mainly be due to voters making inferences from performance in the first period of office, consistently with the theory. In Table 2 we report the summary statistics for all our variables.

Three features of Table 2 are worth highlighting. First, the two Opencivitas indices have similar means (5.5 for output and 5.9 for efficiency, on the 1–10 scale) but rather different dispersion: the standard deviation of the output index (2.81) is almost 50% larger than that of the efficiency index (1.91), consistent with the idea that output reflects local preferences and resources as well as the quality of government. Second, the average municipality is small, with about 7,500 inhabitants, and the population distribution is heavily skewed: 56 per cent of the observations lie below the 3,000-inhabitant threshold, where mayors are subject to a three-term limit, which motivates the size-based robustness checks of Section 9. Third, turning to the political variables, incumbency matters: the incumbent’s party retains office in 70% of elections, while the incumbent him- or herself is re-elected in 49% of cases; 32% of mayors face a binding term limit; the average margin of victory is a comfortable 22 percentage points; and only 11 per cent of mayors are women. The average mayor is 49 years old and holds a university degree in 44 per cent of cases.

6 Empirical Framework

6.1 Identification Strategy

As anticipated in Section 5.1, one may argue that our social capital index is endogenous to the quality of local institutions: pro-social behavior proxied by TV-license compliance, turnout or donating blood may be the outcome of strategic interactions between citizens and local institutions, as pointed out by Ashworth and de Mesquita (2014). In other words, a person’s

²³For example, both lawyer and a doctor are high skill, but only the first person’s profession would be considered as “relevant”.

social capital may be affected by whether they experienced “good” or “bad” government in their lifetime, including their experiences related to the municipal government.

To deal with this issue, we follow an instrumental variable approach. The aim is to find a variable that is relevant (i.e. that correlates with a given municipality social capital) and that satisfies the exclusion restriction (that is not affected by that locality’s government performance). We calculate the instrument leveraging on our standard measure of social capital SC_i and applying a “leave one out” approach (*L1O*), i.e. computing the population-weighted average of our social capital index in all municipalities in the same province leaving out the reference one i.e. municipality i .

As a more restrictive strategy, we also calculate excluding not only the municipality of interest, but also all municipalities (within the same province) where at least 5% of its population commutes to.²⁴ This is to acknowledge that a person’s social capital may be affected not only by the experience of local government performance in the municipality of residence, but also in the municipality where one works or studies. We indicate these two strategies respectively as *L1O* and *COMM*.

We believe that both of these can serve as valid instruments for our conventional measure. First, they are highly correlated with our social capital index, reflecting the well documented spatial persistence of social capital: the first-stage F-statistics for the IV regressions reported below are all in excess of the conventional critical values (see results discussed in Sections 7.1 and 7.2). Second, for the exclusion restriction to hold, we need the social capital of the surrounding municipalities not to affect local government performance and turnover in the municipality of reference other than through its own social capital.

The exclusion of the reference municipality and of the municipalities linked to it by commuting patterns is designed precisely to address this requirement: it removes from the instrument the localities most likely to affect, and to be affected by, the perceptions and attitudes (and therefore the social capital) of the residents of i , as well as the localities whose government performance residents of i directly experience.

A residual concern is that social capital may be spatially correlated for reasons unrelated to the trust mechanism, for instance through the strategic interaction of neighboring governments (yardstick competition). We address this concern directly in two ways. First, in

²⁴The commuting set C_i is identified using the rich “commuting matrix” published by ISTAT and based on the 2011 census, which records, for each municipality, how many residents work or study in each of the other municipalities in the province. In Italy, commuting flows across municipal boundaries are substantial. According to the 2011 commuting matrix data, 11.3 million Italians commute every day for working or studying reasons, roughly 20% of the total population. More than 80% of commuters move to another municipality inside the same province of residence, and 17% move to a city outside the province but inside the same region. Given this definition of C_i , the social capital measure is $\widehat{SC}_i = \frac{\sum_{j \notin C_i} pop_j SC_j}{\sum_{j \notin C_i} pop_j}$, where pop_j is the population of municipality j and the summation j is across all municipalities in the province.

Section 9 we add the average performance of contiguous municipalities among the regressors, instrumenting it separately, to absorb any such spatial interaction. Second, to formally test the validity of the geographic instrument, we augment the instrument set with two historical variables. The first, taken from [Guiso, Sapienza and Zingales \(2016\)](#), is a dummy identifying municipalities that were free city-states in the Middle Ages. [Guiso, Sapienza and Zingales \(2016\)](#) document that Italian cities which achieved communal self-government in the Middle Ages exhibit a higher level of civic capital today than otherwise similar cities in the same area, with an effect that increases in the length and intensity of their period of independence; their preferred interpretation is that the experience of self-government fostered self-efficacy beliefs which, transmitted across generations, sustain civic capital to the present day. This long-run persistence makes the free-city dummy a strong historical predictor of social capital that is, by construction, unrelated to the performance of present-day local governments. The second historical variable is municipal population growth from the earliest available censuses (1861 and 1871). As the free-city dummy is defined only for the center-north of the country, we use this augmented instrument set only for an overidentification test rather than in the baseline specifications. A detailed discussion is postponed to Section 9.

Figure 3 provides a graphical illustration of the distribution of social capital at the municipal level using the standard measure of social capital on the left and the adjusted, geography based measure on the right. The two maps look similar, confirming the strong spatial persistence of social capital that underpins the instrument. Both maps display the familiar north-south gradient: social capital is highest in the centre-north, notably in Emilia-Romagna, Tuscany and the north-east, and markedly lower in the south. What matters for our identification strategy, however, is that the gradient is far from a smooth north-south trend: within provinces there is rich municipality-level variation, and the adjusted, leave-one-out measure on the right reproduces the geography of the standard measure almost exactly. It is this combination, strong spatial persistence together with fine local variation, that makes the leave-one-out average a powerful predictor of municipal social capital in the first stage. The deep historical origins of these differences are illustrated in Figure 4, which reproduces the political map of Italy in the early fourteenth century that underlies the Medieval free-city instrument. The four bands of Figure 4, the communal republics of the centre-north, the former republics that had by then fallen under signorial rule, the Papal States, and the Norman Kingdom of the south, line up remarkably well with the present-day distribution of social capital in Figure 3: the heartland of Medieval self-government coincides with the darkest areas of the social capital maps. This seven-century persistence is what makes the free-city dummy a credible and powerful historical instrument. At the same time, because the free-city experience concerns only the centre-north, the historical variables shrink the

estimation sample by roughly a quarter, which is why we use them only to overidentify the geographic instrument rather than in the baseline specifications.

6.2 Empirical Models

Following the framework of Section 3, we take two empirical models to the data: a performance equation and a re-election equation. We begin with the predictions on performance. Recall that, in the first term of office, performance is predicted to increase with the altruism and trust dimensions of social capital, while the effect of information is ambiguous; in the second term, performance is predicted to increase with trust. Because our social capital index combines proxies for all these dimensions (see Section 5.1), we expect its overall effect on performance to be positive in both terms. We estimate the following equation:

$$Perf_{it} = \alpha(SC_i \times (1 - TL_{it})) + \beta(SC_i \times TL_{it}) + \gamma TL_{it} + \delta' X_{it} + \phi' Z_{it} + u_{it} \quad (1)$$

all regressions we also include year and region dummies, their interaction, and a constant. Standard errors are clustered at the provincial level throughout, since the instrument is a provincial leave-one-out average and social capital is spatially correlated within provinces.

The dependent variable is municipal performance ($Perf$), measured separately by the Opencivitas output and efficiency scores, and the regressors of interest are the social capital indicators (SC) and the term-limit dummy (TL). The main coefficients of interest are α and β ; the framework predicts that $\alpha, \beta > 0$. Moreover, $\alpha > \beta$ would indicate that the positive effect of social capital on discipline is stronger than the effect on selection, and *vice versa*. However, the framework does not make any prediction about the relative size of α and β , only that they are both positive.

Throughout, we also use a common set of municipal controls X_{it} , as described in 5.3. Moreover, Z_{it} are a set of additional regressors relating to the political characteristics of the municipality and the personal characteristics of the mayor. Finally we also allow for regional and year fixed effects and their interaction throughout.

The second model concerns turnover: our dependent variable $RE_{i,e}$ is a dummy equal to one if, at election e in municipality i , the elected mayor belongs to the same political area as the outgoing incumbent (or the incumbent him/herself is re-elected), and zero otherwise. Defining re-election at the party level accounts for a typical feature of the Italian municipal system, where it is often the deputy mayor, or another member of the incumbent coalition, who runs for the post when the mayor steps down or is term limited. We estimate two

specifications of the following linear probability model:

$$RE_{i,e} = \alpha_1(SC_i \times (1 - TL_{i,e})) + \alpha_2(SC_i \times TL_{i,e}) + \gamma TL_{i,e} + \delta' X_{i,e} + \phi' Z_{i,e} + u_{i,e} \quad (2)$$

$$RE_{i,e} = \beta_1(SC_i \times C_{i,e}) + \beta_2(SC_i \times (1 - C_{i,e})) + \theta C_{i,e} + \delta' X_{i,e} + \phi' Z_{i,e} + u_{i,e} \quad (3)$$

where $TL_{i,e}$ indicates that the incumbent is term limited and $C_{i,e}$ (*contesting*) indicates that the incumbent is actually contesting the election. The two specifications are mirror images: equation (2) splits the effect of social capital according to the legal possibility of re-candidacy (i.e. absence of binding term limit), while equation (3) splits it according to the incumbent's actual decision to stand, which provides the sharper test of whether social capital operates on the personal relationship between voters and the incumbent. In both cases social capital is instrumented as in the performance equations, and standard errors are clustered at the provincial level.

As controls we employ the basic set of municipal controls (X) and also the set of political controls and incumbent characteristics (Z). In addition, to take into account the extent of electoral competition in each municipality, we also include the incumbent margin of victory (i.e. the difference in the vote share between the winner and the runner-up) at the previous election. Regional and year fixed effects are included in all regressions.

7 Results

7.1 Social Capital and Municipal Performance

The empirical model for performance is presented in Section 6.2; here we report the results. The results for output and efficiency are reported in Tables 3 and 4. The two tables share a common format. Column 1 reports OLS estimates; columns 2 and 4 report 2SLS estimates in which social capital is instrumented, respectively, with the simple leave-one-out average and with the commuting-adjusted leave-one-out average; columns 3 and 5 add the two historical instruments (Medieval free cities and 1861–1871 census population). All specifications include the full set of controls and estimate separate coefficients for term-limited and non-term-limited mayors.

From the inspection of Tables 3 and 4, we can clearly see that the effect of social capital on output and efficiency is always positive and strongly significant in all our specifications, both for term-limited and non-term-limited municipalities, as predicted by the theory. The two interaction coefficients are moreover very close to each other in both equations, indicating that the effects of social capital on electoral discipline and on selection are of similar

magnitude, and that neither dominates the other (the p-value of a formal F-tests of their equality is shown in each column). In the rest of the analysis we take as baseline the 2SLS leave-one-out estimates with the full set of controls (column 2 of each table); for the efficiency equation, where the exogeneity of social capital is not rejected (see below), the OLS estimates can additionally be read as a conservative baseline.

We now discuss the effects for output in more detail. The estimated coefficients in Table 3 are in the range of 0.66–0.70 for the OLS specification and of 1.03–1.36 across the 2SLS specifications. Taking the baseline 2SLS estimates, a one standard deviation increase in social capital raises the output score on average by about 1.2 points, i.e. roughly 0.43 standard deviations of the index, a non-negligible effect if we consider that the output index ranges from 1 to 10 and that the overall average is 5.5. The 2SLS estimates are roughly twice the size of the OLS ones, a pattern common in this literature and consistent with attenuation bias: our behavioral proxies measure the underlying stock of social capital with error, which biases the OLS coefficients towards zero.

Across the IV columns, the first-stage Kleibergen-Paap F statistics lie between roughly 19 and 28, above conventional critical values, the Kleibergen–Paap LM test rejects underidentification at the 5 per cent level (but for the last column, which shows a p-value of 0.054) and the results are robust across the different instrument sets. The endogeneity (GMM distance) test rejects the exogeneity of social capital in the output equation ($p \approx 0.006$) but not in the efficiency equation ($p \approx 0.12$), where the OLS and IV point estimates are indeed closer; for efficiency, the instrumentation is thus best read as a conservative robustness check rather than as the correction of a large endogeneity bias. Two remarks on the interpretation of these tests are in order. The endogeneity test is a GMM distance, or C , statistic (Hansen, 1982; Baum, Schaffer and Stillman, 2007): it contrasts the criterion functions of the models that do and do not treat social capital as exogenous, is distributed as a $\chi^2(1)$ under the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments; its power, moreover, increases with the strength of the instruments, so that a non-rejection obtained with weak instruments would be uninformative.

With first-stage F statistics between 19 and 28 this concern is limited here, and the practical implication for the efficiency equation is that OLS is consistent under the null and more efficient than 2SLS: the OLS estimate of about 0.39 can therefore be taken, with due caution, as a conservative lower bound, since any residual measurement error in the behavioural proxies would, if anything, bias it further towards zero. For the output equation, by contrast, the rejection of exogeneity implies that only the instrumented estimates are consistent, and the same is true for the re-election equations of Section 7.2.

We now turn to the results for the efficiency index, which are reported in Table 4. We see

that, as for output, the level of social capital has a positive effect on performance, significant at the 1% level, albeit smaller. The estimated coefficients are in the range of 0.39–0.40 for OLS and of 0.37–0.67 across the 2SLS specifications. Taking the baseline 2SLS estimates, a one standard deviation increase in social capital raises the efficiency score on average by about 0.67 points, i.e. roughly 0.35 standard deviations of the index, a non-negligible effect if we consider that the efficiency index ranges from 1 to 10 and that the [overall average is 5.9](#).

The coefficients on the control variables are not reported in Tables [3](#) and [4](#) for reasons of space (see Tables [A.1](#), [A.2](#) in the Appendix). Turning to the effect of the other controls, the fact that a municipality has high income *per capita* and receives a high intergovernmental grant is associated with high output and low efficiency, a possible reason being that the availability of financial resources creates a perverse disincentive to spend resources efficiently. This result also indicates that social capital is capturing something else beyond availability of resources. As for the political variables, the full estimates indicate that municipalities ruled by traditional coalitions, rather than civic lists, are associated with higher output. However, for efficiency, this effect stops being significant. We do not observe any significant impact on output and efficiency from the structure of the electoral system: neither the dummy that identifies small municipalities with a population below 3,000 (the *Small* dummy), which have a three-term limit for mayors, nor the *First past the post* dummy, which identifies the change in the electoral system at the 15,000-inhabitant threshold, is significant.

Regarding mayors’ characteristics, we control for education, that is, whether or not they hold a university degree or high school diploma, gender, age (linear and quadratic), and the mayor’s previous occupation. The only personal characteristic that seems to play a significant role in performance is gender. Female mayors are associated with both greater output and greater efficiency; a female mayor’s performance is 2 to 3 percent higher than that of a male counterpart.

7.2 Social Capital and Electoral Outcomes

As discussed in Section [3](#), the effect of social capital on the probability that the incumbent retains office is theoretically ambiguous: it may increase or decrease popularity depending on the relative strength of the discipline and selection channels; the sign of this effect is an eminently empirical question.

Table [5](#) reports the distribution of elections by year, geographical area and level of social capital. Municipal elections are staggered, and the sample pools electoral cycles completed in different calendar years: the three large electoral rounds (2005, 2010 and 2015) account

for more than half of the observations and are dominated by northern, high social capital municipalities, whereas the intermediate years are disproportionately southern. This bunching is relevant for our identification strategy, since any year-specific shock to re-election rates would otherwise be confounded with social capital. All election regressions therefore include year and region fixed effects, so that the effect of social capital is identified from the variation across municipalities voting in the same year and region.

The results are reported in Tables 6 and 7, which estimate equations (2) and (3) respectively. Three findings stand out. First, incumbency confers a sizable electoral advantage: when the incumbent is term limited, the party’s re-election probability falls by about 19 percentage points (Table 6); symmetrically, when the incumbent actually contests the election, the probability that his or her party retains office is roughly 40 percentage points higher (Table 7), a very large effect when compared with the sample frequency of party re-election of about 70 per cent.

Second, higher social capital attenuates this advantage. In the IV specifications of Table 7, the coefficient on $SC \times contesting$ is negative and significant, ranging from -0.034 to -0.062 : a one standard deviation increase in social capital reduces the re-election probability of a contesting incumbent by 3 to 6 percentage points, about one tenth of the incumbency advantage itself. Consistently, in Table 6 the negative effect of social capital is concentrated among non-term-limited incumbents (point estimates between -0.036 and -0.051 across the IV columns), while the interaction with the term-limit dummy is not significantly different from zero.

Third, once instrumented, social capital has no significant effect when the incumbent does not run again. Column 6 of both tables replicates the analysis defining re-election at the level of the *person* of the incumbent (and running on the subsample of non term-limited mayors): the point estimates have the same sign but are smaller and imprecisely estimated, consistent with the party-level definition capturing the relevant margin in a system where the incumbent coalition often fields a successor when the mayor steps down.

Taken together, these results indicate that social capital does not make voters generically more anti-incumbent: it specifically weakens the electoral premium enjoyed by a personally known incumbent. This is in line with the trust-based reading of the framework: in low social capital environments voters tend to re-elect the politician they know personally, whereas in high social capital environments the personal relationship between voters and the incumbent carries less weight relative to performance. The incumbency advantage survives, but social capital acts as a counterweight to it.

As regards the diagnostics, the first-stage Kleibergen-Paap F statistics are comfortably above conventional thresholds in all specifications. The overidentification tests deserve cau-

tion: when the historical instruments are added, the Hansen J test rejects at the 10% level in the term-limit specification ($p \approx 0.06$) and strongly in the contesting-only specification ($p \approx 0.00$). We therefore regard the just-identified leave-one-out specifications as our preferred ones, and read the historically overidentified columns as supporting evidence only. Two further observations apply to those columns. First, the endogeneity test reported there is not informative, because the C statistic presupposes the validity of the full instrument set, which the J test calls into question. Second, a rejection of the J test need not imply that the geographic instrument is invalid: under heterogeneous effects, instruments that isolate different margins of variation, geography as opposed to history, estimate different local average treatment effects, and the overidentification test reads this divergence as a violation of the exclusion restrictions.

The comparison between the OLS and the IV estimates is itself informative. In both tables the OLS coefficients on the social capital interactions are small and statistically indistinguishable from zero, while the IV coefficients are negative and precisely estimated, and the endogeneity (GMM distance) test rejects the exogeneity of social capital in the just-identified specifications ($p \approx 0.03$ and $p \approx 0.06$ in Table 6, $p \approx 0.01$ in Table 7). This pattern is consistent with the reverse causality that motivates our identification strategy: communities in which incumbents perform well, and are therefore re-elected more often, may develop more trust and stronger cooperative norms over time, which biases the OLS estimate of the effect of social capital on re-election towards zero or even upwards. Once this feedback is purged, the effect of social capital on the re-election of a contesting incumbent is unambiguously negative.

Turning to the control variables, the estimates are sensible: a larger lagged margin of victory raises the party’s re-election probability, the first-past-the-post system (municipalities below 15,000 residents) is associated with lower re-election rates than the runoff system (municipalities above 15,000 residents), and left-wing incumbents are somewhat more likely to see their party confirmed. Female incumbents are significantly less likely to be re-elected, despite performing, if anything, better in office (Table 4). Graduate incumbents also appear to be at a mild electoral disadvantage, a pattern for which we do not have a compelling explanation and which we do not over-interpret.

8 Social Capital, Ex Ante Selection, and the Candidate Pool

So far, we have focused on testing predictions of the political agency literature regarding both performance in office and selection. However, it is important to note that we have been examining “ex post” selection i.e. how likely the incumbent is to win re-election, and how this is affected by social capital. However, it is also plausible that the level of social capital in the municipality can affect both (i) the quality of the pool of candidates standing for election; (ii) “ex ante” selection i.e. quality of the winner of the election (the mayor), where in both cases, quality could be measured by e.g. education, suitability for the job, gender. etc.

Unlike the case of ex post selection, there are (to our knowledge) no theoretical models that we can bring to the data here. However, it is not difficult to think of effects of social capital that might go in either direction. For example, in municipalities with high social capital, a sense of civic duty may be stronger, so that better-qualified citizens might be more likely to stand for office. On the other hand, outside opportunities for better-qualified citizens might be more attractive with higher social capital, so these citizens may be less likely to stand. To investigate these questions, we estimate the following model on our panel data:

$$CF_{itc} = \alpha(SC_i \times M_{itc}) + \beta(SC_i \times (1 - M_{itc})) + \gamma M_{itc} + \delta' X_{it} + \phi' Z_{it} + u_{itc}. \quad (4)$$

Here, the unit of observation is the municipality-election interacted with two candidates. For every election we consider the two front-runners, the elected mayor and the runner-up, so that each municipality-election cell contributes two observations.²⁵ The dependent variable CF_{itc} is, in turn, one of three characteristics: gender; education (a dummy if the candidate is college-educated); competence (a dummy for candidates whose profession is simultaneously high-skill and highly relevant to the mayoral mandate). The mayor dummy M_{itc} identifies the elected candidate, so that γ captures the average quality gap between winners and runners-up, while the coefficients of interest, α and β , measure how this gap varies with social capital respectively for the mayor and the runnerup: a positive α (β) means that, where social capital is higher, the winning candidate (the runnerup) is systematically of better quality.

²⁵The electoral law automatically awards a seat in the city council to the runner-up candidate, allowing us to retrieve her characteristics through the Interior Ministry dataset of mayors and local councillors. In case the losing mayoral candidate decides not to sit in the council and resigns just after the election this information may be missing. Moreover about 10% of mayoral elections are contested by a single candidate, typically in the smallest municipalities.

In case $\alpha > \beta$, this would be direct evidence of the “ex ante” selection channel; if they are both significant and positive this would suggest that higher social capital localities attract better-quality candidates. The specification includes the municipal controls X_{it} and the political controls Z_{it} described above, together with the local unemployment rate, region and year dummies; robust standard errors clustered at the provincial level are reported. As in the performance and re-election equations, social capital is instrumented with the geography-based leave-one-out measure (columns 2 and 4) and, in the overidentified specifications of columns 3 and 5, also with the historical instruments, so that the Hansen J test can be reported.

The results are reported in Tables 8-10. Each table follows the same structure as our performance tables: column 1 reports the OLS estimate and columns 2–5 the 2SLS estimates; columns 2–3 use the simple leave-one-out instrument, columns 4–5 the commuting-adjusted one, and columns 3 and 5 add the two history-based instruments (the Medieval free-city dummy and historical population growth).

For gender (Table 8), we see again that female candidates are less likely to become mayor; there is also some suggestive evidence that this gap is partially counteracted by higher levels of social capital. A one standard deviation increase in social capital is associated with a 2–3 percentage point higher probability that the mayor-elect is a woman, an effect significant at the 5% level in the OLS and in the just-identified IV specifications (columns 1, 2 and 4). The effect loses statistical significance in columns 3 and 5, when the two historical instruments are added. The IV diagnostics indicate that this is not a symptom of instrument failure: the point estimates are essentially unchanged (0.018 and 0.021 against 0.021 and 0.025), and the loss of precision reflects the smaller sample (19,353 against 26,231 observations), since the free-city dummy is defined only for the centre-north. The instruments are strong in all columns and, if anything, stronger in the overidentified ones (Kleibergen–Paap F statistics of 31.9 and 34.0, against 18.8 and 25.4), underidentification is rejected throughout, and the Hansen J test does not reject ($p \approx 0.95$): the geographic and the historical instruments deliver mutually consistent estimates, in contrast with the re-election equations of Section 7.2. Moreover, the GMM distance test never rejects the exogeneity of social capital ($p \geq 0.73$ in all columns), so that in this equation the OLS estimate of column 1 ($t = 2.96$) is consistent and the most efficient available. We therefore read the evidence as suggestive of a positive effect of social capital on the selection of female mayors, with the caveat that the difference between the mayor and the runner-up coefficients, which is what the “ex ante” selection reading requires, is small (0.007 in column 2, well within one standard error) and not statistically distinguishable from zero.

When it comes to education (Table 9) and competence (Table 10), we do not observe

any significant association between social capital and these candidate characteristics.

9 Robustness checks

We perform three robustness checks. The first corroborates the validity of our instruments by augmenting the instrument set with the historical variables, which permits formal overidentification tests. The second splits the election sample by municipal size, to verify that the re-election results are not an artefact of the smallest municipalities. The third controls directly for strategic interaction between neighbouring governments, in the spirit of the yardstick competition literature.

As a first robustness check, we augment the instrument set with the two historical variables, the Medieval free-city dummy of [Guiso, Sapienza and Zingales \(2016\)](#) and [municipal population growth since the 1861–1871 censuses](#), so that the equations are overidentified and the validity of the instruments can be assessed formally; the results are reported in columns 3 and 5 of Tables [3](#), [4](#), [6](#) and [7](#). For performance, the estimated effects remain positive and significant but smaller in magnitude: the output coefficients (Table [3](#)) fall from 1.24–1.36 to 1.03–1.21, and the efficiency coefficients (Table [4](#) from 0.66–0.67 to 0.37–0.45. This attenuation is consistent with the historical instruments isolating a different margin of variation: because the free-city dummy is defined only for the centre-north, these estimates recover a local average treatment effect for that part of the country, where social capital is both higher and less dispersed, so that a marginal increase translates into a smaller performance gain. The Hansen J test does not reject the overidentifying restrictions neither in the efficiency equation ($p \approx 0.16$) nor in the output equation ($p \approx 0.13$). For the election equations the picture is more mixed, as discussed in Section [7.2](#): the test sits just above the 5% level in the term-limit specification (Table [6](#)) and strongly rejects in the contesting-only specification (Table [7](#)), which is why we treat the just-identified leave-one-out specifications as our baseline throughout .

A second robustness check addresses the concern, raised when re-examining the re-election results, that the party-level coding of re-election is noisier in very small municipalities, where civic lists dominate and the same pool of candidates often rotates across elections. Tables [11](#) and [12](#) split the election sample at 3,000 inhabitants. The attenuation result is present in both subsamples, although with reduced statistical power. Below 3,000 inhabitants (4,323 observations), the coefficient on $SC \times (1 - TL)$ in the simple IV specifications is close to the baseline (-0.050 to -0.053 , significant at the 10% level), and the overidentifying restrictions are comfortably not rejected. Above 3,000 inhabitants (4,853 observations), the simple IV estimates are negative but imprecise, while the historically overidentified specifi-

cations deliver a larger and strongly significant effect (-0.073 to -0.079), although in that case the Hansen J test rejects ($p \approx 0.02$), so we do not put much weight on the point estimates. The incumbency effect itself is remarkably stable across the two subsamples (the term-limited penalty is -0.24 below and -0.17 above the threshold). We conclude that the baseline result is not an artefact of the very small municipalities, but rather loses precision, as expected, when the sample is split.

Table 13 reports the results of our third robustness check, where we add to the set of control variables the (average) performance of governments in neighboring municipalities²⁶ both in terms of output and efficiency. This allows us to control directly for possible strategic interaction between municipalities. We consider this a robustness check as the study of strategic interaction between municipalities goes beyond the scope of this paper; as this additional control also suffers from endogeneity, we instrument the performance of neighboring municipalities using some characteristics of neighboring municipalities themselves (population, grants, income, share of children and elderly). Results of this robustness check are reported in Table 13. The first three columns report the results on the output equation using OLS, basic 2SLS and 2SLS augmented with historical instruments; similarly columns 4-6 show the results on the efficiency equation. The effect of social capital on performance survives, with the same sign and significance in the efficiency equation, although with a smaller magnitude (0.30 – 0.31 against 0.67 in the baseline). This attenuation is expected: the leave-one-out instrument is itself a province-level average of social capital, and the performance of contiguous municipalities absorbs much of the same spatial variation, so that the two compete for the identifying variance. For the same reason the first stage weakens considerably: the Kleibergen–Paap F statistics fall to about 4–5 in the efficiency equation, and in the output equation the underidentification test cannot be rejected, so that the 2SLS estimates in columns 2–3 are not reliably identified and we do not interpret them. We also refrain from reading the coefficients on neighbours’ performance as evidence of strategic interaction: with weak instruments the 2SLS estimates are biased towards the OLS ones, and they indeed almost coincide in the efficiency equation. The purpose of this check is narrower, namely to verify that the social capital coefficient is not an artefact of spatial correlation in performance, and the efficiency results, which are our preferred outcome, confirm that it is not.

²⁶Two municipalities are neighbors in our data set if they share at least a portion of their border, the average is weighted by the percentage of the shared border.

10 Conclusions

This paper has revisited Putnam’s classic question at the municipal level, asking how social capital shapes the two roles of elections: disciplining incumbents and selecting good politicians. Exploiting Italy’s two-term limit, the novel administrative performance measures produced by Opencivitas, and a geography-based leave-one-out instrument complemented by historical (Medieval free-city) variation, we are able to move from correlation to a credibly causal reading of the effect of social capital.

Three findings stand out. First, higher social capital raises both the output and, more cleanly, the efficiency of municipal government, and does so in both the first and the second term of office. Because term limits separate the discipline margin from the selection margin, this implies that social capital strengthens both roles of elections, with effects of similar magnitude so that neither dominates; to our knowledge this is the first evidence that a single force operates on both channels, and one of the first links between social capital and the technical efficiency of government. Second, although the theory leaves turnover ambiguous, the data point to a sharp mechanism. Measured at the level of the incumbent’s party, incumbency confers a large electoral advantage, and social capital erodes precisely this advantage: a one standard deviation increase lowers the re-election probability of a contesting incumbent by three to six percentage points, while open races are left unaffected. Social capital thus acts as a counterweight to personalistic, relationship-based voting. Third, the evidence on observable candidate characteristics is weak, so we read the selection channel as operating chiefly through the performance of second-term mayors rather than through who is put forward.

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Tables

Table 1: Measures of Social Capital: Correlations

Variables	SC	News	Blood	Turnout '74	Gen. trust
Social capital PCA	1.00				
Newspaper readership (NSTT)	0.46	1.00			
Blood donation (GSZ)	0.88	0.23	1.00		
Turnout 1974 divorce referendum (GSZ)	0.81	0.49	0.57	1.00	
Generalized trust (reg., GSZ)	0.58	0.19	0.48	0.50	1.00

Notes: correlations are computed at the provincial level. A part from our own measure of social capital (first row) only 1974 referendum turnout is available at the municipal level; blood donations is available at the provincial level, newspaper readership and the two trust measures are available at the regional level. *Newspaper readership* is from [Nannicini et al. \(2013\)](#); *blood donations*, *turnout at 1974 referendum*, *generalized trust* are from [Guiso, Sapienza and Zingales \(2004\)](#).

Table 2: Summary Statistics: Performance Indices, Social Capital, Municipal Characteristics, Political Variables and Mayor Characteristics

Variables	Mean	Std. Dev.	N
Dependent variables and main variables of interest			
Social Capital (standardized)	0.00	1	49618
Opencivitas Efficiency Index	5.921	1.905	71049
Opencivitas Output Index	5.476	2.805	71049
Social capital (PCA)	0	1	94423
Social capital - L1O	-0.047	0.823	94810
Social capital - Commuting-adjusted	-0.047	0.816	94810
Medieval free city dummy	0.016	0.125	81708
Munic. pop growth, 1861/1871-1971	1.049	2.898	89476
Term limit	0.321	0.467	111189
Municipal Characteristics			
Population	7.536	43.278	112167
Share children	0.13	0.028	112165
Share elderly	0.224	0.061	112165
Education	15.169	0.637	111382
Income (th. Euros pc, deflated)	14.088	3.146	111785
Grants, pp (deflated)	196.614	258.482	102458
Municipal Political Variables			
Reelection dummy (party-based)	0.696	0.46	11853
Reelection dummy (person-based)	0.491	0.5	14442
Incumbent's margin of victory	21.578	15.797	19894
Left-wing mayor	0.157	0.363	111189
Right-wing mayor	0.101	0.301	111189
Three-term limit (< 3k inhab.)	0.556	0.497	112169
Runoff electoral system (>15k inhab.)	0.092	0.289	112169
El. cycle	2.036	1.417	111189
Female mayor	0.107	0.309	105564
Mayor's age	49.432	10.034	98848
Mayor's age ²	2544.222	1004.29	98848
Mayor: Uni graduate	0.438	0.496	95528
Mayor: High-school graduate	0.458	0.498	95528
Mayor's profession: low skill, high relevance	0.029	0.167	95015
Mayor's profession: high skill, low relevance	0.319	0.466	95015
Mayor's profession: high skill, high relevance	0.337	0.473	95015
Candidate characteristics variables			
Female (mayor)	0.114	0.318	22565
Female (runnerup)	0.149	0.356	19810
College (mayor)	0.425	0.494	22565
College (runnerup)	0.444	0.497	19810
Competence (mayor)	0.264	0.441	17756
Competence (runnerup)	0.250	0.433	16164

Notes: Performance index and output index are collected from the website Opencivitas.it; Social capital measures are collected from multiple sources (Ministry of Interior, RAI TV, and [Guiso, Sapienza and Zingales \(2004\)](#)); Municipal Characteristics are provided by the Italian National Institute of Statistics and the Ministry of Economy and Finance; Municipal Political variables and Mayors Characteristics are collected from the official electoral archives of the Ministry of the Interior. The margin of Victory is computed considering the last round of the election. The electoral cycle counts the number of years from the ballot. High job skill identifies mayors whose occupation requires a university degree; instead, high relevance identifies mayors whose profession is related to public administration independently on the specialization. Base year for deflated figures: 2001.

Table 3: Social Capital and the Output of Municipal Services

	(1)	(2)	(3)	(4)	(5)
	OLS	2SLS	2SLS	2SLS	2SLS
SC $\times$ Term Limit	0.697*** (5.33)	1.236*** (3.77)	1.133*** (3.53)	1.341*** (4.08)	1.207*** (3.89)
SC $\times$ (1 – Term Limit)	0.655*** (5.07)	1.264*** (3.92)	1.033*** (3.15)	1.363*** (4.19)	1.100*** (3.39)
Term limit	0.013 (0.27)	0.014 (0.28)	-0.060 (-0.86)	0.013 (0.26)	-0.062 (-0.86)
Observations	37770	37770	28931	37770	28931
F-test SC $\times$ TL=SC $\times$ (1-TL) (p-value)	0.346	0.491	0.216	0.569	0.212
<i>IV Diagnostic tests:</i>					
Instrument		L1O	L1O+Hist	Comm	Comm+Hist
Kleibergen-Paap rk LM stat		9.461	11.580	9.213	10.858
<i>p</i> -value		0.002	0.041	0.002	0.054
First-stage F statistic (KP)		19.723	28.361	23.540	19.081
Hansen J stat			7.183		7.128
<i>p</i> -value			0.127		0.129
Endgty test (GMM distance)		10.309	2.563	10.550	2.806
<i>p</i> -value		0.006	0.278	0.005	0.246

Notes: The table reports estimates of Equation (1). The dependent variable is the Opencivitas output index, which ranges from 1 (worst) to 10 (best); the sample is a panel of municipalities of ordinary-statute regions over 2010–2016. Social capital (SC) is the standardized first principal component of the share of households paying the TV licence, turnout at 2016 Constitutional referendum, and blood donations. SC is interacted with the term-limit status of the mayor: the coefficient on SC $\times$ (1 – Term limit) captures the effect for mayors who can run for re-election (the discipline margin), the coefficient on SC $\times$ Term limit the effect for term-limited mayors (the selection margin). Column (1) reports OLS estimates. In columns (2)–(5) social capital (and its interactions) is instrumented: column (2) uses the leave-one-out, population-weighted average of SC in the other municipalities of the same province; column (4) additionally excludes from the average the municipalities that receive at least 5 per cent of the residents’ commuting flows; columns (3) and (5) add two historical instruments, the Medieval free-city dummy and [municipal population growth since the 1861–1871 censuses](#), so that the specifications are overidentified. All specifications include the full set of municipal, political and mayor controls, together with region, year and region $\times$ year fixed effects. The Kleibergen–Paap LM and *F* statistics test underidentification and instrument strength, respectively; the Hansen *J* statistic tests the overidentifying restrictions and is defined only in the overidentified columns; the endogeneity test is a GMM distance (*C*) statistic for the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments. *t*-statistics in parentheses, based on standard errors clustered at the province level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Social Capital and the Efficiency of Municipal Governments

	(1)	(2)	(3)	(4)	(5)
	OLS	2SLS	2SLS	2SLS	2SLS
SC $\times$ Term limit	0.399*** (5.01)	0.665*** (3.35)	0.388** (2.17)	0.664*** (3.25)	0.368** (2.02)
SC $\times$ (1 – Term limit)	0.389*** (5.61)	0.671*** (3.64)	0.453** (2.48)	0.670*** (3.49)	0.420** (2.20)
Term limit	-0.005 (-0.15)	-0.006 (-0.18)	0.031 (0.60)	-0.006 (-0.18)	0.025 (0.48)
Observations	37770	37770	28931	37770	28931
F-test SC $\times$ TL=SC $\times$ (1-TL) (p-value)	0.705	0.842	0.193	0.832	0.347
Kleibergen-Paap rk LM stat		9.461	11.580	9.213	10.858
<i>p</i> -value		0.002	0.041	0.002	0.054
First-stage F statistic (KP)		19.723	28.361	23.540	19.081
Hansen J stat			6.642		6.542
<i>p</i> -value			0.156		0.162
Endgty test (GMM distance)		4.268	2.276	4.068	0.628
<i>p</i> -value		0.118	0.320	0.131	0.731

Notes: The table reports estimates of equation (1). The dependent variable is the Opencivitas efficiency index (the average of the output index and of an inverse expenditure index), which ranges from 1 (worst) to 10 (best); the sample is a panel of municipalities of ordinary-statute regions over 2010–2016. Social capital (SC) is the standardized first principal component of the share of households paying the TV licence, turnout at 2016 constitutional referendum, and blood donations. SC is interacted with the term-limit status of the mayor, as in Table 3. Column (1) reports OLS estimates. In columns (2)–(5) social capital (and its interactions) is instrumented: column (2) uses the leave-one-out, population-weighted average of SC in the other municipalities of the same province; column (4) additionally excludes from the average the municipalities that receive at least 5 per cent of the residents’ commuting flows; columns (3) and (5) add two historical instruments, the Medieval free-city dummy and [municipal population growth since the 1861–1871 censuses](#), so that the specifications are overidentified. All specifications include the full set of municipal, political and mayor controls, together with region, year and region $\times$ year fixed effects. The Kleibergen–Paap LM and *F* statistics test underidentification and instrument strength, respectively; the Hansen *J* statistic tests the overidentifying restrictions and is defined only in the overidentified columns; the endogeneity test is a GMM distance (*C*) statistic for the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments. *t*-statistics in parentheses, based on standard errors clustered at the province level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Distribution of Elections by Year, Social Capital, and Geographical Location

Year	N.Elections	Share High SC	North	Center	South
2004	141	0.38	0.39	0.21	0.40
2005	1,573	0.59	0.60	0.22	0.18
2006	189	0.27	0.35	0.13	0.52
2007	625	0.39	0.41	0.19	0.40
2008	395	0.42	0.46	0.14	0.41
2009	195	0.39	0.38	0.22	0.40
2010	1,947	0.62	0.68	0.18	0.14
2011	185	0.33	0.42	0.11	0.46
2012	510	0.45	0.45	0.19	0.36
2013	348	0.38	0.43	0.16	0.41
2014	215	0.39	0.42	0.17	0.41
2015	1,721	0.58	0.68	0.17	0.15
2016	224	0.29	0.39	0.10	0.51
2017	555	0.46	0.50	0.17	0.33
2018	353	0.38	0.47	0.16	0.37
Total	9,176	0.51	0.56	0.18	0.26

Note: a municipality is defined as HSC if its level of standard social capital is above the median level.

Table 6: Social Capital and the Re-Election of the Incumbent's Party: Term-Limit Interactions

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	2SLS	2SLS	2SLS	2SLS	2SLS-person
SC X Termlim	0.031 (1.43)	-0.027 (-0.89)	-0.029 (-0.93)	-0.022 (-0.74)	-0.021 (-0.64)	
SC X (1-Termlim)	0.005 (0.45)	-0.036** (-2.16)	-0.051** (-2.32)	-0.037** (-1.97)	-0.050** (-2.12)	-0.032 (-1.20)
Term Limit	-0.185*** (-10.74)	-0.184*** (-10.78)	-0.176*** (-6.68)	-0.184*** (-10.81)	-0.179*** (-6.73)	
% vote margin, lag	0.003*** (10.58)	0.003*** (10.56)	0.003*** (9.22)	0.003*** (10.56)	0.003*** (9.27)	0.000 (0.30)
Property Tax, pp	-0.000** (-2.46)	-0.000*** (-2.77)	-0.000** (-2.28)	-0.000*** (-2.77)	-0.000** (-2.24)	-0.000 (-1.28)
Expenditure, pp	0.000 (0.21)	-0.000 (-0.51)	-0.000 (-1.31)	-0.000 (-0.51)	-0.000 (-1.29)	-0.000 (-0.64)
First-past-the-post	-0.047*** (-2.83)	-0.049*** (-3.00)	-0.053** (-2.34)	-0.049*** (-2.99)	-0.053** (-2.33)	-0.131*** (-4.61)
3-term lim	0.056*** (3.85)	0.044*** (3.24)	0.037** (2.20)	0.044*** (3.25)	0.038** (2.26)	0.026 (1.17)
Incumbent: Righ-wing	-0.023 (-1.10)	-0.020 (-0.91)	-0.015 (-0.54)	-0.020 (-0.92)	-0.015 (-0.56)	0.011 (0.39)
Incumbent: Left-wing	0.029* (1.81)	0.038** (2.30)	0.035 (1.56)	0.038** (2.27)	0.034 (1.53)	0.026 (1.43)
Incumbent: Female	-0.083*** (-4.94)	-0.081*** (-4.93)	-0.082*** (-4.48)	-0.081*** (-4.94)	-0.082*** (-4.49)	-0.102*** (-4.36)
Incumbent: age	0.005 (1.00)	0.005 (0.99)	0.009* (1.66)	0.005 (0.99)	0.009* (1.65)	0.014*** (2.95)
Incumbent: age ²	-0.000** (-2.49)	-0.000** (-2.52)	-0.000*** (-2.93)	-0.000** (-2.52)	-0.000*** (-2.93)	-0.000*** (-4.76)
Incumbent education: college	-0.048** (-2.32)	-0.047** (-2.31)	-0.053*** (-2.70)	-0.047** (-2.31)	-0.053*** (-2.69)	-0.040** (-2.01)
Incumbent education: diploma	-0.007 (-0.34)	-0.006 (-0.29)	-0.008 (-0.39)	-0.006 (-0.29)	-0.008 (-0.38)	-0.000 (-0.02)
Constant	0.932*** (7.13)					
Observations	9176	9176	6429	9176	6429	5308
<i>IV Diagnostic tests:</i>						
Instrument		L1O	L1O+Hist	Comm	Comm+Hist	L1O+Hist
Kleibergen-Paap rk LM stat		14.879	11.974	14.662	12.026	11.716
<i>p</i> -value		0.000	0.035	0.000	0.034	0.008
First-stage F statistic (KP)		16.803	29.580	22.862	42.175	49.166
Hansen J stat			9.194		9.260	0.783
<i>p</i> -value			0.056		0.055	0.676
Endgty test (GMM distance)		6.818	1.899	5.630	1.161	2.317
<i>p</i> -value		0.033	0.387	0.060	0.560	0.128

Notes: The table reports estimates of equation (2) on the sample of municipal elections held between 2004 and 2018. In columns (1)–(5) the dependent variable is a dummy equal to one if the elected mayor belongs to the same political area as the outgoing incumbent (party re-election); in column (6) it is a dummy for the personal re-election of the incumbent. Social capital (SC) is the standardized first principal component of the share of households paying the TV licence, turnout at 2016 constitutional referendum, and blood donations. SC is interacted with the term-limit status of the incumbent, so that the coefficient on $SC \times (1 - \text{Term limit})$ captures the effect of social capital when the incumbent can run again. Column (1) reports OLS estimates. In columns (2)–(5) social capital (and its interactions) is instrumented: column (2) uses the leave-one-out, population-weighted average of SC in the other municipalities of the same province; column (4) additionally excludes from the average the municipalities that receive at least 5 per cent of the residents' commuting flows; columns (3) and (5) add two historical instruments, the Medieval free-city dummy and [municipal population growth since the 1861–1871 censuses](#), so that the specifications are overidentified. [Column \(6\) uses the leave-one-out and the historical instruments on the person-level sample \(non-term-limited incumbents only\)](#). All specifications include region and year fixed effects; the incumbent and municipal controls are displayed. The Kleibergen–Paap LM and *F* statistics test underidentification and instrument strength, respectively; the Hansen *J* statistic tests the overidentifying restrictions and is defined only in the overidentified columns; the endogeneity test is a GMM distance (*C*) statistic for the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments. *t*-statistics in parentheses, based on standard errors clustered at the province level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Social Capital and Party Re-Election: The Electoral Advantage of Contesting Incumbents

	(1) OLS	(2) 2SLS	(3) 2SLS	(4) 2SLS	(5) 2SLS	(6) 2SLS-person
SC X inc. contesting	0.000 (0.04)	-0.034** (-2.10)	-0.060*** (-2.81)	-0.037** (-2.04)	-0.062*** (-2.71)	-0.002 (-0.17)
SC X (inc. noncont.)	0.049* (1.97)	-0.017 (-0.56)	0.016 (0.47)	-0.013 (-0.44)	0.022 (0.58)	
Incumbent: contesting	0.398*** (19.95)	0.396*** (20.47)	0.422*** (13.25)	0.397*** (20.56)	0.426*** (12.85)	0.860*** (75.05)
% vote margin, lag	0.003*** (9.94)	0.003*** (9.85)	0.003*** (8.13)	0.003*** (9.86)	0.003*** (8.21)	0.001*** (3.88)
Property Tax, pp	-0.000** (-2.46)	-0.000*** (-2.75)	-0.000** (-2.22)	-0.000*** (-2.75)	-0.000** (-2.21)	-0.000** (-2.27)
Expenditure, pp	-0.000 (-0.16)	-0.000 (-0.83)	-0.000 (-1.48)	-0.000 (-0.85)	-0.000 (-1.48)	-0.000 (-0.47)
First-past-the-post	0.031 (1.64)	0.027 (1.43)	0.008 (0.33)	0.027 (1.43)	0.008 (0.33)	-0.087*** (-4.06)
3-term lim	0.021* (1.68)	0.010 (0.87)	0.005 (0.34)	0.010 (0.83)	0.005 (0.32)	0.026** (2.20)
Incumbent: Righ-wing	0.032 (1.47)	0.036 (1.61)	0.046 (1.58)	0.036 (1.60)	0.046 (1.57)	-0.012 (-0.64)
Incumbent: Left-wing	0.076*** (4.95)	0.085*** (5.36)	0.087*** (4.12)	0.085*** (5.30)	0.087*** (4.12)	0.002 (0.13)
Incumbent: Female	-0.071*** (-4.73)	-0.070*** (-4.73)	-0.070*** (-4.38)	-0.070*** (-4.73)	-0.070*** (-4.39)	-0.048*** (-4.47)
Incumbent: age	0.001 (0.13)	0.001 (0.13)	0.005 (1.04)	0.001 (0.12)	0.005 (1.03)	-0.003 (-0.87)
Incumbent: age ²	-0.000 (-1.28)	-0.000 (-1.31)	-0.000** (-2.10)	-0.000 (-1.31)	-0.000** (-2.10)	0.000 (0.17)
Incumbent education: college	-0.048** (-2.57)	-0.047** (-2.57)	-0.053*** (-2.92)	-0.047** (-2.57)	-0.053*** (-2.92)	-0.007 (-0.61)
Incumbent education: diploma	-0.010 (-0.59)	-0.009 (-0.52)	-0.010 (-0.55)	-0.009 (-0.52)	-0.010 (-0.55)	0.017* (1.70)
Constant	0.622*** (5.19)					
Observations	9176	9176	6429	9176	6429	5585
<i>IV Diagnostic tests:</i>						
Instrument		L1O	L1O+Hist	Comm	Comm+Hist	L1O+Hist
Kleibergen-Paap rk LM stat		14.870	16.403	14.607	16.218	12.265
<i>p</i> -value		0.000	0.006	0.000	0.006	0.002
First-stage F statistic (KP)		16.631	30.738	22.461	40.826	183.339
Hansen J stat			17.908		18.494	3.804
<i>p</i> -value			0.001		0.001	0.051
Endgty test (GMM distance)		9.049	2.774	9.015	1.604	4.608
<i>p</i> -value		0.011	0.250	0.011	0.448	0.032

Notes: The table reports estimates of equation (3) on the sample of municipal elections held between 2004 and 2018. The dependent variable is defined as in Table 6: party re-election in columns (1)–(5), personal re-election in column (6). Social capital (SC) is the standardized first principal component of the share of households paying the TV licence, turnout at 2016 constitutional referendum, and blood donations. SC is interacted with a dummy equal to one if the incumbent mayor actually contests the election: the coefficient on Incumbent contesting measures the incumbency advantage, and the coefficient on SC × Incumbent contesting measures how social capital attenuates it. Column (1) reports OLS estimates. In columns (2)–(5) social capital (and its interactions) is instrumented: column (2) uses the leave-one-out, population-weighted average of SC in the other municipalities of the same province; column (4) additionally excludes from the average the municipalities that receive at least 5 per cent of the residents' commuting flows; columns (3) and (5) add two historical instruments, the Medieval free-city dummy and [municipal population growth since the 1861–1871 censuses](#), so that the specifications are overidentified. The full set of controls of Table 6 is included in all specifications; their coefficients are omitted for brevity. The Kleibergen–Paap LM and *F* statistics test underidentification and instrument strength, respectively; the Hansen *J* statistic tests the overidentifying restrictions and is defined only in the overidentified columns; the endogeneity test is a GMM distance (*C*) statistic for the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments. *t*-statistics in parentheses, based on standard errors clustered at the province level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Candidates' Selection: Gender

	(1)	(2)	(3)	(4)	(5)
	OLS	2SLS	2SLS	2SLS	2SLS
	b/t	b/t	b/t	b/t	b/t
SC x mayor	0.020*** (2.96)	0.021** (1.98)	0.018 (1.27)	0.025** (2.18)	0.021 (1.48)
SC x runnerup	0.011* (1.77)	0.014 (1.35)	0.015 (1.33)	0.017 (1.55)	0.016 (1.35)
Mayor dummy	-0.033*** (-7.78)	-0.033*** (-7.83)	-0.028*** (-4.86)	-0.033*** (-7.86)	-0.029*** (-5.13)
Observations	26231	26231	19353	26231	19353
<i>IV Diagnostic tests:</i>					
Instrument		L1O	L1O+Hist	Comm	Comm+Hist
Kleibergen-Paap rk LM stat		15.064	12.013	14.357	11.909
<i>p</i> -value		0.000	0.035	0.000	0.036
First-stage F statistic (KP)		18.787	31.870	25.440	34.002
Hansen J stat			0.737		0.745
<i>p</i> -value			0.947		0.946
Endgty test (GMM distance)		0.633	0.475	0.479	0.033
<i>p</i> -value		0.729	0.788	0.787	0.983

Notes: t statistics in parenthesis, * = $p < 0.1$, ** = $p < 0.05$, *** = $p < 0.01$. Errors clustered at the provincial level. Dependent variable: female candidate dummy. Endogenous variable: social capital (SC) interacted with mayor/runnerup dummies. Instrumental variables: the leave-one-out, population-weighted provincial average of SC (columns 2-3) or its commuting-adjusted version (columns 4-5), each interacted with the mayor and runner-up dummies; columns 3 and 5 add the Medieval free-city dummy (Guiso, Sapienza and Zingales, 2016) and historical population growth, both interacted with the mayor and runner-up dummies. Controls: dummies indicating the mayor, single-candidate contests, left-wing and right-wing mayor, term limit, 3-term limit, runoff electoral system; unemployment rate, ICI revenue and total expenditure per capita, population, share of children and elderly, average taxable income, year and region fixed effects.

Table 9: Candidates' Selection: Education

	(1)	(2)	(3)	(4)	(5)
	OLS	2SLS	2SLS	2SLS	2SLS
	b/t	b/t	b/t	b/t	b/t
SC x mayor	0.013 (1.23)	-0.009 (-0.43)	-0.019 (-0.75)	-0.001 (-0.06)	-0.012 (-0.44)
SC x runnerup	0.006 (0.57)	-0.015 (-0.71)	-0.035 (-1.50)	-0.009 (-0.37)	-0.028 (-1.16)
Mayor dummy	-0.013* (-1.90)	-0.013* (-1.90)	-0.016* (-1.84)	-0.013* (-1.91)	-0.016* (-1.88)
Observations	26231	26231	19353	26231	19353
<i>IV Diagnostic tests:</i>					
Instrument		L1O	L1O+Hist	Comm	Comm+Hist
Kleibergen-Paap rk LM stat		15.064	12.013	14.357	11.909
<i>p</i> -value		0.000	0.035	0.000	0.036
First-stage F statistic (KP)		18.787	31.870	25.440	34.002
Hansen J stat			5.065		5.109
<i>p</i> -value			0.281		0.276
Endgty test (GMM distance)		1.865	5.934	0.605	5.464
<i>p</i> -value		0.394	0.051	0.739	0.065

Notes: t statistics in parenthesis, * = $p < 0.1$, ** = $p < 0.05$, *** = $p < 0.01$. Errors clustered at the provincial level. Dependent variable: college-education candidate dummy. Endogenous variable: social capital (SC) interacted with mayor/runnerup dummies. Instrumental variables: the leave-one-out, population-weighted provincial average of SC (columns 2–3) or its commuting-adjusted version (columns 4–5), each interacted with the mayor and runner-up dummies; columns 3 and 5 add the Medieval free-city dummy (Guiso, Sapienza and Zingales, 2016) and historical population growth, both interacted with the mayor and runner-up dummies. Controls: dummies indicating the mayor, single-candidate contests, left-wing and right-wing mayor, term limit, 3-term limit, runoff electoral system; unemployment rate, ICI revenue and total expenditure per capita, population, share of children and elderly, average taxable income, year and region fixed effects.

Table 10: Candidates' Selection: Competence

	(1)	(2)	(3)	(4)	(5)
	OLS	IV-L1O	IV-L1O+Hist	IV-Comm	IV-Comm+Hist
	b/t	b/t	b/t	b/t	b/t
SC x mayor	0.012 (1.14)	0.029 (1.14)	0.015 (0.54)	0.033 (1.26)	0.017 (0.62)
SC x runnerup	0.012 (1.20)	0.026 (1.14)	-0.003 (-0.13)	0.030 (1.25)	0.001 (0.03)
Mayor dummy	0.023*** (3.23)	0.023*** (3.23)	0.011 (1.02)	0.023*** (3.23)	0.011 (1.08)
Observations	21020	21020	15595	21020	15595
<i>IV Diagnostic tests:</i>					
Instrument		L1O	L1O+Hist	Comm	Comm+Hist
Kleibergen-Paap rk LM stat		14.732	12.328	14.064	12.143
<i>p</i> -value		0.000	0.031	0.000	0.033
First-stage F statistic (KP)		16.945	30.955	22.592	33.914
Hansen J stat			5.694		5.664
<i>p</i> -value			0.223		0.226
Endgty test (GMM distance)		0.681	0.479	0.962	0.275
<i>p</i> -value		0.712	0.787	0.618	0.872

Notes: t statistics in parenthesis, * = $p < 0.1$, ** = $p < 0.05$, *** = $p < 0.01$. Errors clustered at the provincial level. Dependent variable: competence candidate dummy. Endogenous variable: social capital (SC) interacted with mayor/runnerup dummies. Instrumental variables: the leave-one-out, population-weighted provincial average of SC (columns 2–3) or its commuting-adjusted version (columns 4–5), each interacted with the mayor and runner-up dummies; columns 3 and 5 add the Medieval free-city dummy (Guiso, Sapienza and Zingales, 2016) and historical population growth, both interacted with the mayor and runner-up dummies. Controls: dummies indicating the mayor, single-candidate contests, left-wing and right-wing mayor, term limit, 3-term limit, runoff electoral system; unemployment rate, ICI revenue and total expenditure per capita, population, share of children and elderly, average taxable income, year and region fixed effects.

Table 11: Robustness: Party Re-Election in Municipalities below 3,000 Inhabitants

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	2SLS	2SLS	2SLS	2SLS	2SLS-person
SC X termlim	0.005 (0.30)	-0.043 (-1.33)	-0.057* (-1.74)	-0.045 (-1.30)	-0.060* (-1.74)	
SC X (1-termlim)	-0.003 (-0.23)	-0.050* (-1.72)	-0.020 (-0.81)	-0.053* (-1.70)	-0.024 (-0.87)	0.014 (0.41)
Incumbent: termlimited	-0.240*** (-12.36)	-0.239*** (-12.58)	-0.222*** (-9.27)	-0.239*** (-12.66)	-0.222*** (-9.15)	
Observations	4323	4323	3060	4323	3060	2804
<i>IV Diagnostic tests:</i>						
Instrument		L1O	L1O+Hist	Comm	Comm+Hist	L1O+Hist
Kleibergen-Paap rk LM stat		9.472	17.844	8.961	17.283	9.412
<i>p</i> -value		0.002	0.003	0.003	0.004	0.009
First-stage F statistic (KP)		20.515	29.489	20.948	28.309	63.366
Hansen J stat			3.782		3.821	0.889
<i>p</i> -value			0.436		0.431	0.346
Endgty test (GMM distance)		3.975	2.425	3.631	2.986	0.059
<i>p</i> -value		0.137	0.297	0.163	0.225	0.808

Notes: The table replicates the specifications of Table 6, restricting the sample to municipalities with fewer than 3,000 inhabitants, the threshold below which mayors face a three-term rather than a two-term limit and where the coding of party re-election is noisier because of the prevalence of civic lists. Columns and instruments are as in Table 6; the full set of controls is included and omitted for brevity. The Kleibergen–Paap LM and F statistics test underidentification and instrument strength, respectively; the Hansen J statistic tests the overidentifying restrictions and is defined only in the overidentified columns; the endogeneity test is a GMM distance (C) statistic for the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments. t -statistics in parentheses, based on standard errors clustered at the province level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Robustness: Party Re-Election in Municipalities above 3,000 Inhabitants

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	2SLS	2SLS	2SLS	2SLS	2SLS-person
SC X Term Limit	0.034 (0.97)	-0.024 (-0.46)	-0.039 (-0.80)	-0.017 (-0.33)	-0.026 (-0.53)	
SC X (1-Term Limit)	0.011 (0.51)	-0.027 (-0.72)	-0.079*** (-2.98)	-0.027 (-0.70)	-0.073*** (-2.60)	-0.069* (-1.81)
Term Limit	-0.173*** (-6.58)	-0.168*** (-6.43)	-0.178*** (-4.23)	-0.169*** (-6.53)	-0.183*** (-4.52)	
Observations	4853	4853	3369	4853	3369	2781
<i>IV diagnostic tests:</i>						
Instrument		L1O	L1O+Hist	Comm	Comm+Hist	L1O+Hist
Kleibergen-Paap rk LM stat		13.135	11.641	13.703	12.105	12.050
<i>p</i> -value		0.000	0.040	0.000	0.033	0.002
First-stage F statistic (KP)		21.004	44.832	26.170	171.484	132.309
Hansen J stat			11.205		11.341	1.990
<i>p</i> -value			0.024		0.023	0.158
Endgty test (GMM distance)		3.478	1.957	2.889	1.610	3.425
<i>p</i> -value		0.176	0.376	0.236	0.447	0.064

Notes: The table replicates the specifications of Table 6, restricting the sample to municipalities with more than 3,000 inhabitants, where the two-term limit binds and party affiliations are more clearly defined. Columns and instruments are as in Table 6; the full set of controls is included and omitted for brevity. The Kleibergen–Paap LM and F statistics test underidentification and instrument strength, respectively; the Hansen J statistic tests the overidentifying restrictions and is defined only in the overidentified columns; the endogeneity test is a GMM distance (C) statistic for the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments. t -statistics in parentheses, based on standard errors clustered at the province level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 13: Output and Efficiency of Contiguous Municipalities

	(1)	(2)	(3)	(4)	(5)	(6)
	Y = Output			Y = Efficiency		
	b/t	b/t	b/t	b/t	b/t	b/t
SC * Term Limit	0.283*** (3.95)	2.394 (1.29)	0.477* (1.65)	0.186*** (3.75)	0.300** (2.11)	0.081 (1.06)
SC * (1- Term Limit)	0.263*** (3.79)	2.384 (1.32)	0.471* (1.93)	0.182*** (4.39)	0.314** (2.37)	0.170** (2.06)
Term limit	0.024 (0.58)	-0.017 (-0.22)	-0.001 (-0.01)	-0.014 (-0.48)	-0.014 (-0.49)	0.031 (0.66)
Output (contiguous munic.)	0.621*** (25.63)	-0.927 (-0.64)	0.655** (2.04)			
Efficiency (contiguous munic.)				0.562*** (23.45)	0.565*** (4.02)	0.716*** (7.47)
Observations	37708	37704	27607	37708	37704	27607
F-test SC x TL=SC x (1-TL) (p-value)	0.620	0.897	0.940	0.878	0.611	0.075
<i>IV diagnostic tests:</i>						
Instruments		L1O +Contig	L1O+Hist +Contig		L1O +Contig	L1O+Hist +Contig
Kleibergen-Paap rk LM stat		1.998	5.822		14.585	21.207
p-value		0.573	0.561		0.002	0.003
First-stage F statistic (KP)		0.547	0.932		5.049	3.964
Hansen J stat		0.981	16.280		3.555	7.857
p-value		0.612	0.012		0.169	0.249
Endgty test (GMM distance)		10.328	2.309		4.726	2.879
p-value		0.016	0.511		0.193	0.411

Notes: The table reports estimates of equation (1). The dependent variable is the Opencivitas output index (Cols. 1-3) and efficiency index (Cols. 4-6). Social capital (SC) is the standardized first principal component of the share of households paying the TV licence, turnout at 2016 constitutional referendum, and blood donations. SC is interacted with the term-limit status of the mayor. Performance indicator of neighbouring municipalities interacted is added as control. Columns (1) and (4) reports OLS estimates. In other columns (interacted) social capital and neighboring municipalities' performance are instrumented: columns (2) and (5) use the leave-one-out population-weighted average of SC in the other municipalities of the same province and (for the neighboring municipality element) neighboring municipalities' characteristics (population, share of children and elderly, grants and income per capita); column (3) and (6) add two historical instruments, the Medieval free-city dummy and municipal population growth since the 1861-1871 censuses. All specifications include the full set of municipal, political and mayor controls, together with region, year and region $\times$ year fixed effects. The Kleibergen-Paap LM and F statistics test underidentification and instrument strength, respectively; the Hansen J statistic tests the overidentifying restrictions and is defined only in the overidentified columns; the endogeneity test is a GMM distance (C) statistic for the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments. t -statistics in parentheses, based on standard errors clustered at the province level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figures

Figure 1: The OpenCivitas performance measurement mechanism



For each municipality

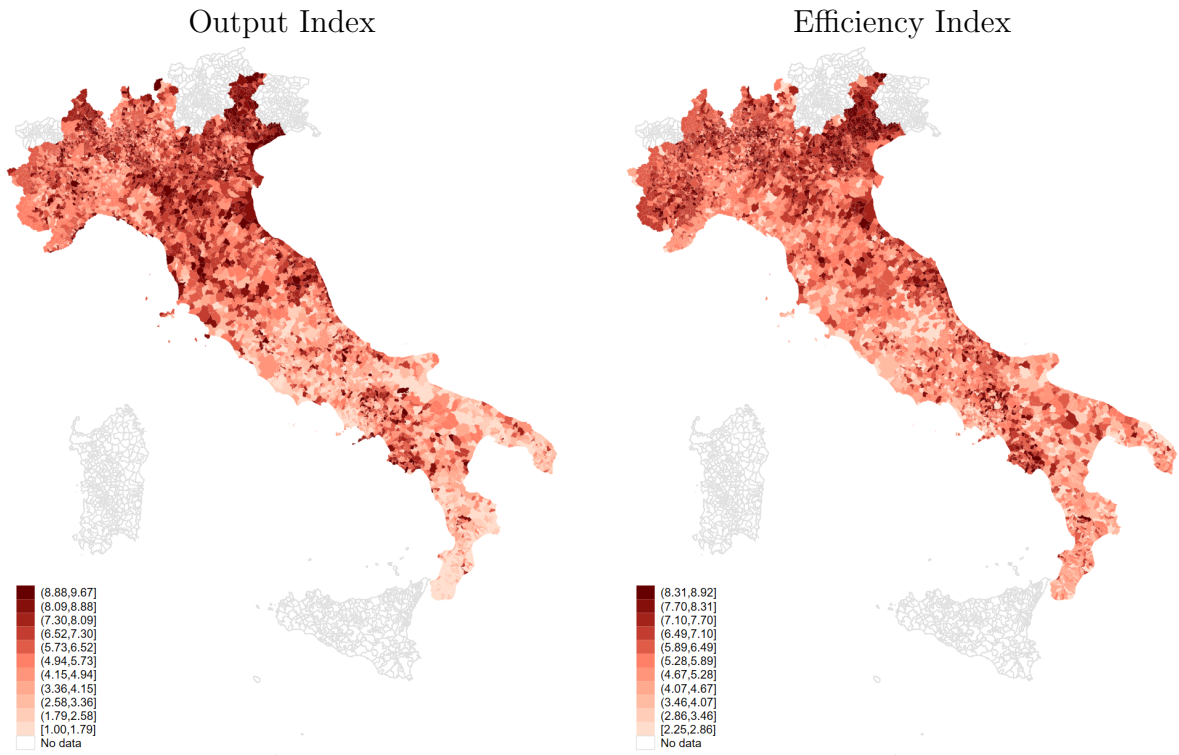
	Historic (a)	Standard (b)	Difference (a-b)
Expenditure	y	$\hat{y}$	Δy
Level of Service	g	$\hat{g}$	Δg

Performance evaluation

- *Expenditure score* = Δy
- *Output score* = Δg
- *Performance score* = $f(\Delta y, \Delta g, c)$
where: c = average standard cost of overall output

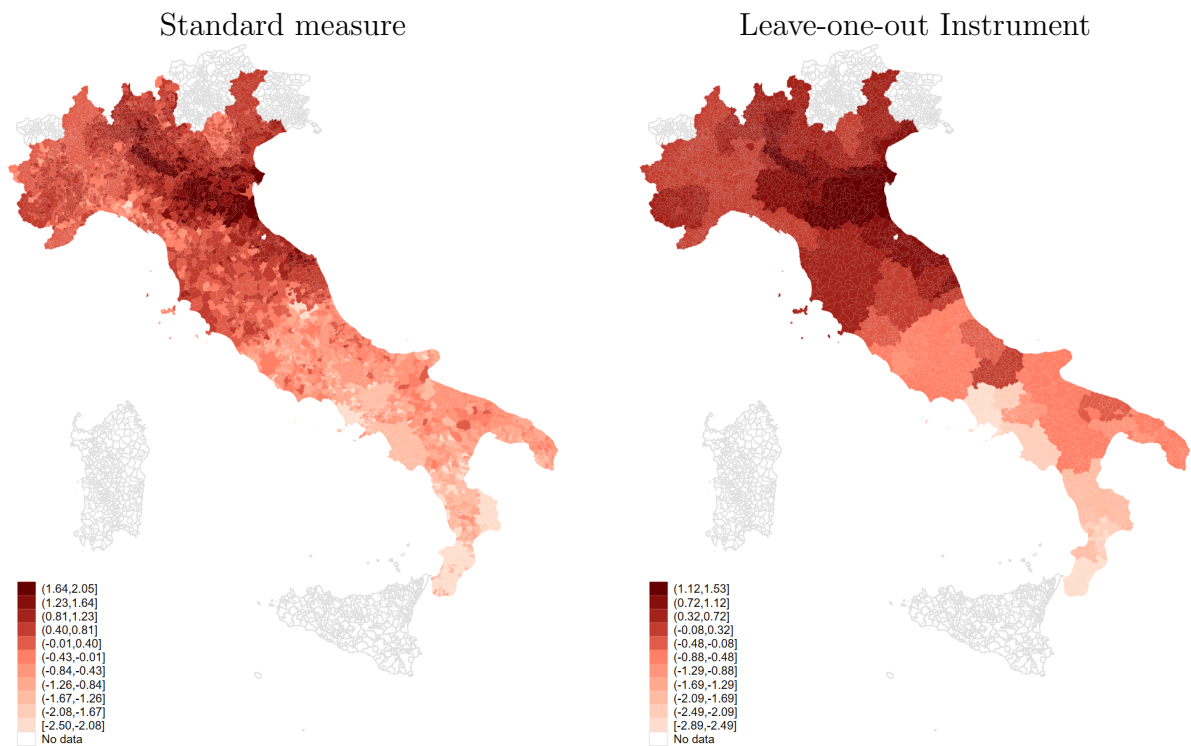
Notes: for each municipality and each essential function, the historical level of expenditure (y) and of service output (g) are compared with the corresponding standard levels ($\hat{y}$, $\hat{g}$) estimated from a model of demand and supply. The gaps (Δy , Δg) define the expenditure score and the output score, while the performance score combines them with the average standard cost of overall output (c). The output index used in this paper is based on Δg , and the efficiency index combines output with the (inverse) expenditure gap.

Figure 2: Municipal Output and Efficiency Indices



Notes: Municipalities are colored according to their level of the output and performance indices, expressed in term of deciles averaged over the 2010-2016 period. Darker colors indicate a higher level of the index. Data for Special autonomy regions (Valle d'Aosta, Trentino-Alto Adige, Friuli-Venezia Giulia, Sicily and Sardinia) are not available since standard expenditure needs are computed only for municipalities in normal regions.

Figure 3: Social Capital Measures



Notes: Municipalities are colored according to the variable level, expressed in term of deciles. Darker colors indicate higher level of social capital. Special autonomy regions (Valle d'Aosta, Trentino-Alto Adige, Friuli-Venezia Giulia, Sicily and Sardinia) have been excluded in the computation of social capital.

Figure 4: Historical roots of social capital: the political map of Italy in the early fourteenth century



Notes: the map distinguishes four bands across the peninsula at the beginning of the fourteenth century, corresponding to differing degrees of republicanism and autocracy: the communes that retained republican institutions into the fourteenth century (the heartland of republicanism); the former republican areas further north that had by then fallen under signorial rule (ex-communal republics); the Papal States, with their mixture of feudalism, tyranny and republicanism; and the feudal monarchy founded by the Normans in the Mezzogiorno (Kingdom of Sicily). These historical bands map closely into present-day differences in social capital and motivate the use of the Medieval free-city status as a historical instrument. Source: authors' elaboration based on the historical classification discussed in [Putnam, Leonardi and Nanetti \(1993\)](#) and [Guiso, Sapienza and Zingales \(2016\)](#).

Appendix

Table A.1: Social Capital and the Output of Municipal Services: Full set of controls

	(1)	(2)	(3)	(4)	(5)
	OLS	2SLS	2SLS	2SLS	2SLS
SC $\times$ Term Limit	0.697*** (5.33)	1.236*** (3.77)	1.133*** (3.53)	1.341*** (4.08)	1.207*** (3.89)
SC $\times$ (1-Term Limit)	0.655*** (5.07)	1.264*** (3.92)	1.033*** (3.15)	1.363*** (4.19)	1.100*** (3.39)
Term Limit	0.013 (0.27)	0.014 (0.28)	-0.060 (-0.86)	0.013 (0.26)	-0.062 (-0.86)
Education (municipality)	-0.046 (-0.26)	-0.003 (-0.02)	0.021 (0.11)	0.004 (0.02)	0.023 (0.12)
population	-0.009*** (-2.75)	-0.008** (-2.38)	-0.002 (-0.49)	-0.008** (-2.33)	-0.002 (-0.48)
% children	-5.853** (-2.13)	-6.005** (-2.17)	-3.797 (-1.35)	-6.026** (-2.15)	-3.956 (-1.41)
% elderly	1.796 (1.47)	2.745** (2.06)	2.152* (1.80)	2.917** (2.14)	2.260* (1.88)
Income, pp	0.079*** (2.86)	0.052 (1.45)	0.083*** (2.60)	0.047 (1.34)	0.082*** (2.59)
Grants, pp	0.000* (1.67)	0.001* (1.96)	0.001*** (4.18)	0.001** (2.02)	0.001*** (4.24)
Left-wing mayor	0.468*** (5.99)	0.408*** (4.92)	0.310*** (2.62)	0.399*** (4.79)	0.302*** (2.58)
Left-wing mayor	0.260** (2.49)	0.255*** (2.61)	0.261** (2.25)	0.254*** (2.61)	0.262** (2.27)
3-term limit	-0.027 (-0.27)	0.070 (0.63)	-0.001 (-0.01)	0.087 (0.81)	0.013 (0.12)
First-past-the-post	-0.086 (-0.67)	-0.013 (-0.10)	0.048 (0.35)	-0.001 (-0.01)	0.052 (0.37)
El. cycle	0.002 (0.24)	0.004 (0.39)	0.006 (0.70)	0.004 (0.41)	0.007 (0.72)
Female mayor (lag)	0.158** (2.19)	0.149** (2.05)	0.113 (1.39)	0.148** (2.02)	0.112 (1.38)
Age mayor (lag)	-0.004 (-0.28)	-0.008 (-0.47)	-0.000 (-0.01)	-0.009 (-0.51)	-0.000 (-0.01)
Age mayor (squared, lag)	0.000 (0.28)	0.000 (0.56)	0.000 (0.16)	0.000 (0.62)	0.000 (0.18)
Mayor's edu: college (lag)	0.107 (1.36)	0.069 (0.78)	0.085 (0.97)	0.062 (0.69)	0.080 (0.89)
Mayor's edu: diploma (lag)	0.015 (0.18)	-0.013 (-0.15)	-0.048 (-0.54)	-0.017 (-0.20)	-0.052 (-0.58)
Mayor: High skill + Relevant prof. (lag)	-0.005 (-0.05)	0.006 (0.07)	-0.042 (-0.42)	0.008 (0.09)	-0.041 (-0.41)
Observations	37770	37770	27642	37770	27642
F-test SC $\times$ TL=SC $\times$ (1-TL) (p-value)	0.346	0.491	0.216	0.569	0.212
<i>IV Diagnostic tests:</i>					
Instrument		L1O	L1O+Hist	Comm	Comm+Hist
Kleibergen-Paap rk LM stat		9.461	11.580	9.213	10.858
p-value		0.002	0.041	0.002	0.054
First-stage F statistic (KP)		19.723	28.361	23.540	19.081
Hansen J stat		0.000	7.183	0.000	7.128
p-value			0.127		0.129
Endgty test (GMM distance)		10.309	2.563	10.550	2.806
p-value		0.006	0.278	0.005	0.246

Notes: The table reports estimates of equation (1). The dependent variable is the Opencivitas output index, which ranges from 1 (worst) to 10 (best); the sample is a panel of municipalities of ordinary-statute regions over 2010–2016. Social capital (SC) is the standardized first principal component of the share of households paying the TV licence, turnout at 2016 constitutional referendum, and blood donations. SC is interacted with the term-limit status of the mayor, as in Table 3. Column (1) reports OLS estimates. In columns (2)–(5) social capital (and its interactions) is instrumented: column (2) uses the leave-one-out, population-weighted average of SC in the other municipalities of the same province; column (4) additionally excludes from the average the municipalities that receive at least 5 per cent of the residents' commuting flows; columns (3) and (5) add two historical instruments, the Medieval free-city dummy and municipal population at the 1861–1871 censuses, so that the specifications are overidentified. All specifications include the full set of municipal, political and mayor controls, together with region, year and region $\times$ year fixed effects. The Kleibergen–Paap LM and F statistics test underidentification and instrument strength, respectively; the Hansen J statistic tests the overidentifying restrictions and is defined only in the overidentified columns; the endogeneity test is a GMM distance (C) statistic for the null that social capital can be treated as exogenous, and is valid conditional on the validity of the instruments. t -statistics in parentheses, based on standard errors clustered at the province level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.2: Social Capital and the Efficiency of Municipal Services: Full set of controls

	(1)	(2)	(3)	(4)	(5)
	OLS	2SLS	2SLS	2SLS	2SLS
SC $\times$ Term Limit	0.399*** (5.01)	0.665*** (3.35)	0.388** (2.17)	0.664*** (3.25)	0.368** (2.02)
Sc * (1-Term Limit)	0.389*** (5.61)	0.671*** (3.64)	0.453** (2.48)	0.670*** (3.49)	0.420** (2.20)
Term limit	-0.005 (-0.15)	-0.006 (-0.18)	0.031 (0.60)	-0.006 (-0.18)	0.025 (0.48)
Education (municipality)	-0.045 (-0.42)	-0.025 (-0.24)	0.039 (0.33)	-0.025 (-0.24)	0.039 (0.33)
population	-0.002 (-0.88)	-0.002 (-0.72)	0.004 (1.31)	-0.002 (-0.72)	0.004 (1.31)
% children	6.993*** (3.50)	6.927*** (3.49)	9.095*** (3.80)	6.927*** (3.48)	9.171*** (3.82)
% elderly	1.300 (1.36)	1.756* (1.84)	1.911* (1.78)	1.754* (1.85)	1.874* (1.78)
Income, pp	-0.074*** (-5.56)	-0.087*** (-4.95)	-0.062*** (-4.50)	-0.087*** (-4.89)	-0.061*** (-4.45)
Grants, pp	-0.001*** (-3.48)	-0.001*** (-3.27)	-0.000** (-2.17)	-0.001*** (-3.32)	-0.000** (-2.28)
Left-wing mayor	0.124* (1.90)	0.097 (1.48)	0.044 (0.49)	0.097 (1.49)	0.046 (0.52)
Left-wing mayor	0.062 (0.92)	0.060 (0.90)	0.100 (1.36)	0.060 (0.90)	0.099 (1.35)
3-term limit	-0.084 (-1.26)	-0.038 (-0.54)	-0.028 (-0.37)	-0.038 (-0.55)	-0.033 (-0.46)
First-past-the-post	-0.067 (-0.69)	-0.033 (-0.36)	-0.026 (-0.26)	-0.033 (-0.35)	-0.027 (-0.27)
El. cycle	-0.001 (-0.28)	-0.001 (-0.16)	-0.009 (-1.59)	-0.001 (-0.16)	-0.009 (-1.61)
Female mayor (lag)	0.113** (2.50)	0.109** (2.39)	0.118** (2.54)	0.109** (2.39)	0.118** (2.54)
Age mayor (lag)	0.017 (1.25)	0.015 (1.09)	0.019 (1.13)	0.015 (1.09)	0.019 (1.13)
Age mayor (squared, lag)	-0.000 (-1.48)	-0.000 (-1.27)	-0.000 (-1.27)	-0.000 (-1.27)	-0.000 (-1.27)
Mayor's edu: college (lag)	0.062 (1.09)	0.044 (0.74)	0.026 (0.37)	0.044 (0.74)	0.028 (0.40)
Mayor's edu: diploma (lag)	-0.037 (-0.72)	-0.049 (-0.95)	-0.046 (-0.79)	-0.049 (-0.94)	-0.044 (-0.75)
Mayor: High skill + Relevant prof. (lag)	-0.011 (-0.18)	-0.005 (-0.09)	-0.041 (-0.68)	-0.005 (-0.09)	-0.042 (-0.69)
Observations	37770	37770	27642	37770	27642
F-test SC $\times$ TL=SC $\times$ (1-TL) (p-value)	0.705	0.842	0.193	0.832	0.347

Notes: The table reports estimates of equation (1). The dependent variable is the Opencivitas efficiency index (the average of the output index and of an inverse expenditure index), which ranges from 1 (worst) to 10 (best); the sample is a panel of municipalities of ordinary-statute regions over 2010–2016. Social capital (SC) is the standardized first principal component of the share of households paying the TV licence, turnout at 2016 constitutional referendum, and blood donations. SC is interacted with the term-limit status of the mayor, as in Table 4. Column (1) reports OLS estimates. In columns (2)–(5) social capital (and its interactions) is instrumented: column (2) uses the leave-one-out, population-weighted average of SC in the other municipalities of the same province; column (4) additionally excludes from the average the municipalities that receive at least 5 per cent of the residents' commuting flows; columns (3) and (5) add two historical instruments, the Medieval free-city dummy and municipal population at the 1861–1871 censuses, so that the specifications are overidentified. All specifications include the full set of municipal, political and mayor controls, together with region, year and region $\times$ year fixed effects. For the tests on the 2SLS specifications please see Table 4. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.