EIEF WORKING PAPER SERIES

EINAUDI INSTITUTE FOR ECONOMICS AND FINANCE

EIEF Working Paper 10/08

November 2008

Long Term Persistence

by

Luigi Guiso

(European University Institute, EIEF and CEPR)

Paola Sapienza

(Northwestern University, NBER and CEPR)

Luigi Zingales

(University of Chicago, NBER and CEPR)

Long Term Persistence[1]

Luigi Guiso

European University Institute, EIEF & CEPR

Paola Sapienza

Northwestern University, NBER & CEPR

Luigi Zingales

University of Chicago, NBER, & CEPR

Abstract

Is social capital long lasting? Does it affect long term economic performance? To answer these questions we test Putnam's conjecture that today marked differences in social capital between the North and South of Italy are due to the culture of independence fostered by the free city states experience in the North of Italy at the turn of the first millennium. We show that the medieval experience of independence has an impact on social capital *within* the North, even when we instrument for the probability of becoming a city state with historical factors (such as the Etruscan origin of the city and the presence of a bishop in year 1,000). More importantly, we show that the difference in social capital between towns that in the Middle Ages had the characteristics to become independent and towns that did not exists only in the North (where most of these towns did become independent) and not in the South (where the power of the Norman kingdom prevented them from doing so). Our difference in difference estimates suggest that at least 50% of the North-South gap in social capital is due to the lack of a free city state experience in the South.

JEL:
Keywords: social capital, culture, persistence, institutions, economic development.

[1] We are extremely grateful to Giuliano Milani for his advice and help in obtaining data and references on Medieval history. Antonello Montesanti has very kindly given us access to his data on the Etruscan origin of Italian cities and his meticulous and scrupulous classification of Roman colonies and municipalities with a detailed and complete reconstruction of Roman cities region by region. : Luigi Guiso thanks the European University Institute, Paola Sapienza the Zell Center, and Luigi Zingales the Center for Research in Security Prices (CRSP), the Stigler Center, and the Initiative on Global Markets at the University of Chicago for financial support.

In spite of remarkable success stories like the Asian Tigers and, more recently, China, there is very large persistence in economic development. Among European countries, there is a correlation of 0.56 between per capita income at the beginning and the end of the century. Even between 1700 and 2000 (over a 300 years span and with an industrial revolution in the middle) the correlation is 0.23.[2] Why are these differences so persistent?

In an influential paper Acemoglu et al (2001) attribute this persistence to the long lasting effect of formal institutions. Protection of property rights and limits to the power of the executive, which -- they claim – are essential to the development process, are built in the formal institution of a county and tend to persist over the centuries. In countries where settlers' mortality was very high, for instance, colonizers designed institutions aimed at extracting value, rather than creating it. In their view, these extractive institutions did not foster (and still do not foster) rule of law, with negative effect on development.

An alternative view is provided by Tabellini (2007), who attributes this persistence to culture, measured by indicators of individual values and beliefs, such as trust and respect for others. He shows that regions of Europe that had more decentralized decision making in the XVII and XVIII centuries, today have both more "progressive values" and higher income per capita.

Both these important papers, however, cannot completely reject the alternative that the source of persistence is geography. Colonies with a lower settler mortality might still bear a disadvantage in developing today. Acemoglu et al (2001) are aware of this problem and argue that the diseases that were a problem then (yellow fever and malaria) no longer represent a major source of comparative disadvantage. Still other geographical factors impeding economic development could be at the origin of this persistence. Similarly, different geographical conditions may foster different institutions and a different set of values, as argued by Aristotle. The possibility that geography rather than culture explains the persistence found by Tabellini (2007), thus, remain alive, especially in light of the fact that the reasons why different institutions emerged remain unclear.

To try and distinguish between history and geography as a source of persistence in this paper we revisit Putnam (1993). In "Making Democracy Work", Putnam conjectures that regional differences in trust and social capital within Italy can be traced back to the history of independence that certain cities experienced in the first centuries of the second millennium. Besides the clear logical link, Putnam's conjecture has two other advantages. First, it traces back the origin of these differences to institutions that are long gone. Hence, it is impossible to

[2] These results are obtained using Maddison (2001).

attribute any residual difference in social capital (and difference in economic outcomes associated with it) to the survival of any formal institution. Second, while concentrated in the Center- North of the country, the free-city state experience did not involve all the major cities in the Center North. It is possible, then, to look *within* the Center-North whether cities that experienced a period of independence as free city states have today (more than 800 years later) a different level of social capital.

To test Putnam's conjecture we start by comparing the level of social capital within the Center-North of Italy. To this purpose, we select the largest 400 Italian towns in the Center-North as of 1871. For these cities we reconstruct the independence history and collect several measures of social capital today. We, then, relate today's social capital levels to whether a town had been a free city state in the 1000-1300 period. Consistent with Putnam's conjecture, we find that Center-Northern cities that experienced a period of independence as a free city have significantly higher levels of social capital today. For example, the number of voluntary associations is 25% higher in cities that were free city states.

While general geographical conditions within the Center-North are similar, this test alone cannot reject the hypothesis that some more subtle geographical characteristics, such as closeness to the sea, affect both social capital and the probability that a city would become a free-city state. In our regressions we do control for several morphological characteristics, nevertheless we address this problem directly by digging into history to find some exogenous determinants of the rise of independent municipalities.

Our reading of Medieval history books (among others, Reynolds, 1997; Milani, 2005; Jones, 1997; Tabacco, 1987; Pirenne, 1956) suggests two potential instruments. First, at the collapse of the Holy Roman Empire, in Italy religious authorities were often the nucleus around which the emerging local autonomy was formed. Hence, the fact that during the V century AD a town had been selected to have a local bishop should positively affect the formation of a city state between the XII and XII century. Second, Italy experienced another episode of free city states during the IX century B.C. During that period the Etrurian civilization, which was organized as a confederation of free city states, populated an area from Mantova in the North to Salerno in the South. When they founded their towns, the Etrurians had a very clear objective to make them easily defendable from the enemies. The example of Orvieto (the capital of the confederation) located on top of a cliff is very illustrative. This military advantage should favor the likelihood of independence in the Middle Age.

We find that both these instruments have a strong predictive power on the likelihood of being a free city state. The *F*-test of the exclusion restriction is 66, so we do not suffer from a

weak instrument problem. Even when we instrument the existence of a free city state with its historical determinants, we find that free city state towns have more social capital today.

These results are supportive of the Putnam's conjecture, but are not a definite rejection of the geography alternative. It is possible that something in the morphology of the territory (not captured by our controls) drives all our results. If there is a location advantage that has lead the Etrurians to settle there, has lead the Catholic Church to elect it as a headquarters for its bishop, has made it easier for that city to conquer independence from the Emperor, and *also* foster social capital today, then our instruments do not solve the problem.

To address this issue, we use a difference in difference approach exploiting a historical counterfactual. Regardless of their location advantage, cities in the South of Italy could not become free city states because of the strong central power exerted by the Normans (Putnam, 1993). Under the maintained hypothesis that the determinants of location advantages are the same in the Center North and South, we can predict which towns would have become free city states in the South had the Normans not been there. We then compare the level of social capital of free city states in the Center North and potential free city states in the South, using the difference in social capital between not free city states in the Center- North and unlikely free city states in the South as a control for generic differences between North and South. When we do so, we find that social capital is much less in the South regardless (an effect that could be either driven by history, as suggested by Putnam, or geography). The difference between free city states and not within each macro-region, however, is present only in the North. For example, Northern free city states have 17% more non-profit associations than similar Northern towns that were not free city states.

Interestingly, likely free city states in the South do not have any difference in social capital today and with respect to cities very unlikely to become free city states. That we do not observe this difference in the South can be regarded as a test of the validity of our instruments. Besides being correlated with the variable of interest (a hypothesis easily checked), an instrument should be orthogonal to the error. This assumption is generally not testable, because normally we do not have access to a counterfactual sample. The Italian historical experience, however, allows this counterfactual. Up to the fall of the Roman Empire, the Center North and the South of Italy experienced a similar history. The affirmation of the Norman Kingdom in the South, however, prevented the formation of free city states in the South. We can then test whether our instruments (bishop headquarters and Etrurian city) have an effect only on the probability of becoming a free city state, but not on social capital directly, by looking at their effect in the South, where free city states could not occur. That these instruments have no effect in the South suggests the exclusion restriction is valid.

Having established the validity of our instruments, we can exploit them to estimate the causal impact of social capital on economic development. When we do so, we find that one standard deviation increase in social capital increases per capita income by 70%. This estimate vindicates Arrow's (1972) statement that much of economic backwardness is due to lack of trust and social capital.

Our difference in difference estimates suggest that at least half of the gap in social capital between the North and the South of Italy can be attributed to the free city state experience. But our approach clearly underestimates the impact of political independence on social capital because it ignores local spillover effects. We cannot exclude, however, that other historical and/or geographical variables are responsible for the remaining half of the gap.

Our results raise the question of how a relatively brief historical experience can leave such a long lasting (more than 500 years) trace. We address this question in a separate work (GSZ, forthcoming), where we model the intergenerational transmission of beleifs. In that paper we show that even a brief positive experience of cooperation (2-3 generations) can have permanent effects on the beliefs (and hence of the social capital) of a community.

The rest of the paper proceeds as follows. Section 1 provides a brief primer on medieval Italian history that illustrates why the free city state experience might have changed the level of social capital of a local community. Section 2 describes our data. Section 3 presents the analysis of the effect of the free city state experience within the Center North of Italy. Section 4 presents the difference in difference regression, while Section 5 concludes.

1. A primer in Italian medieval history

1.1 Social capital and the free city state experience

As we discuss in GSZ (2007), the concept of social capital has been used in very different meanings. Here we are going to follow Putnam (1993) and identify social capital with civicness or "the collection of good behavior that tend to be simultaneously present in certain communities/countries whose inhabitants vote, obey the law, and cooperate with each other and whose leaders are honest and committed to the public good" (Putnam, 1995).

It is unclear in the literature how this social capital is formed and transmitted over time. Putnam (2000) emphasizes the role free associations play in fostering it. The story we have in mind, which is more in the spirit of Putnam (1993) is as follows. The provision of public goods

requires some degree of cooperation. Communities differ in their return to cooperation and in their ability to foster it. Once a certain degree of cooperation is established, however, people observe the benefits of this cooperation and tend to develop a culture (norms and beliefs) that sustains it (for ways to model this, see Tabellini (2007) and GSZ (forthcoming)).

As we will describe below, the Italian free city state experience is a wonderful, natural experiment, where at a certain point in history the return to cooperation rose dramatically. As we will explain, the presence of a religious authority facilitated in some towns the ability to coordinate. The success of this cooperation, in turn, created a culture aimed at sustaining it (in the Marxian sense, a superstructure). In this paper we will test whether this culture/superstructure is able to last over the centuries, past the survival of the initial institution that generated it.

1.2 The rise of the free city-states

The rise of city-states in Northern-Central Italy is part of a broader process triggered by the collapse of the Carolingian Holy Roman Empire at the end of the first millennium. The central feature is the affirmation of the political role of the city (as opposed to the countryside), which allows the city population to participate in the political decision making process. While spread over Central-Northern Western Europe (Reynolds, 1997; McKitterick, 2004) the development of municipal self-government was particularly strong in Northern-Central Italy between 1100 and 1300.

The vacuum created by the weakening of the imperial authority lead to the emergence of local power. At the beginning, in some cities, the response to the lack of government was the formation of small groups of individuals who agreed with a "*patto giurato*" (literally a swore pact) to provide mutual help and collaborate to solve problems of common interest. An example is the Genovese *compagna*, an alliance among the most prominent families of the marine aristocracy who swear to collaborate to solve common interest problems.

Enforcement of the pact was achieved by a threat of exclusion, exclusion from trade and political relations with the other members of the pact. This was a very costly punishment for people heavily engaged in trade at a time when commerce was booming. In some cities (e.g. Pisa), a third party – the city bishop – was assigned the role of guarantor of the pact. His presence added another punishment for defection: the exclusion from the sacrament and in particular from the weekly communion. In sum, the pacts were enforced by a combination of economic, political, and religious ostracism.

Slowly, more stable institutions started to emerge. The first seed of the free city is the *consulate* – a committee of a limited number of citizens, endowed with significant power that

remains in office for a specified period of time (initially one year). Reliance on the counsels for the administration of the city marks the most visible sign of the rise of the free city as an independent political body (Milani, 2005, p. 23). With time, effort and wars, the free city develops fully.

The juxtaposition of two episodes in which Faenza – a town near Bologna – faced a military threat two hundred years apart gives a sense of how powers shifted and how the new institutions consolidated during this period. In the Fall of 1079, Faenza receives a declaration of war from the neighboring city of Ravenna. The disproportion in relative powers is huge. Faenza, can at most gather 150 soldiers. In an attempt to prepare a defense, the main families that have agreed to cooperate to govern the city send a few representatives in search of help from all over the Po river plain. After an unsuccessful start, they find a French knight - the Count of Vitry – who is willing to help them with his own army in exchange for perpetual submission. When the Faentines' representatives return to town, they announce the proposed solution to the main household heads gathered in the small cloister of the cathedral. The solution offered is taken with skepticism, though it reveals to be a successful one, as the Count of Vitry is able not only to defeat the Ravenna troops but, generously, frees the Faentines from their promise of submission.

Two centuries later, in the Fall of 1275, Faenza is threatened, this time by another close and powerful free city, Bologna. Faenza is the local headquarters of Ghibellin troops in the region and is under attack from the surrounding Guelph cities. The Emperor's ambassador is expected with anxiety and when he arrives he is received by all the city knights (now in the order of thousands), and introduced to the assembly of *all* the city household heads, meeting in the large city square, built for these occasions. The ambassador reads in German the Emperor's letter to the local authorities and all is translated to the local assembly; a reading of a letter from the Pope follows. The Faenza representatives deliver their speech and propose fidelity to the Emperor in exchange for military assistance. After that, they call a general city council, whose members are elected by all citizens to have the proposal approved (see Milani, 2005 p. V).

Compared to two centuries earlier, the town now has its formal political institutions and is able to dialog a la pair with the most important political authorities of the time (the Emperor and the Pope). Most importantly, it is the way political decisions are made that is dramatically changed. The small assembly of the heads of the main families that were sharing powers two centuries earlier (the participants to the pact) has evolved into a formal "parliament" of elected members that allows for a wider participation of the population to the decision making process. The independent city-state is fully developed. It provides law and order, collects duties and tolls,

takes care of the walls that provide the basic protection to the citizens and is responsible for the maintenance and security of the roads, essential to guarantee the trades that are developing fast.

In the mid-twelfth century a new word was coming into use to describe the independent town communities and their government: "commune". As Reynolds (1997) notice "… its use in urban context may derive from *communia*, meaning common property: not only walls and streets but also cathedrals and churches were increasingly regarded as the responsibility and therefore the property of the local community. Their rights and liberties were also their common property which it was their responsibility to maintain (p. 170)". Indeed, the word *commune* is a synonym for republic (*res publica*, i.e. common property) and is used with this meaning. This sense of responsibility for the common good that citizens of independent towns developed and consolidated over two centuries of self government is the "civicness" of social capital Putnam refers to.

The amount of extraordinary independence enjoyed by the Italian free cities did not come for free: they had to defend it: from the attempt of the German Emperors to exercise his authority and impose taxes; from the pretences of local lords; from the repeated attempts of the other free cities to expand to secure food for their citizens.

The battle for independence from the Emperor reached its peak when in 1176 a league of independent cities in the North of Italy, the Lombard League, defeated Emperor Fredrick I Barbarossa who descended to Italy to reaffirm the powers and privileges of the Emperor. On that occasion he even obtained support from some of the free cities in exchange for concessions. But this too shows how powerful local governments became.

There are several striking features that characterize the free cities. First, in the Commune the political entity is not identified with a single person ruling but with the whole population. Second, the source of political power and legitimacy of authority is the population. Rules, laws, and formal decisions are always made in name of the people, though in practice elites and families are very important. Third, communal life is regulated by statutes enacted by the assembly which apply to *all* citizens rather than to a group of subjects (Galizia, 1951).

With the development of the commune, political decision making becomes a public matter, decisions are subject to discussion, often to heated debates. The authoritarian structure of Feudal lords' power is dismantled in the free cities (but not in the countryside) and people's consensus is necessary in order to make decisions. Finally, the development of the commune goes hand in hand with that of personal freedoms: before the rise of the independent cities townsmen were subservient to the local lord. With the commune, personal freedoms receive legal protection against abuses of government officials, whose actions are subject to control of ad hoc institutions, including courts of law to which citizens can appeal (Galizia, 1951).

In sum, each free city should be regarded as a republic with its own laws and procedures, where the source of the power rests in the hands of the population and where citizens are actively involved in the management of the common good.

2. *Why some towns acquire independence and others do not*?

At the same time as the commune develops in the Center-North, the South of Italy becomes a feudal monarchy which perpetuates under different foreign rulers until the unification of Italy in 1861. It is first conquered by the Normans between 1061 and 1091. The Normans brought stability and economic progress. By the end of the 12th century Sicily was the richest, most advanced State in Europe. But the Norman kingdom was highly autocratic and -- according to Putnam (1993) -- its highly hierarchical form of government inhibited the formation of independent cities and with it, the accumulation of social capital (Putnam, 1993).

While the set up of independent cities is spread out over the whole Central-North, not all towns in the area – and there were many - became independent cities. Some town which gained independence initially, have been able to retain it only for a short period of time, while others, even relatively important ones such as Trieste, never obtained it. It is this heterogeneity in historical paths that we exploit to test the Putnam conjecture.

There are at least three systematic factors that can explain this heterogeneity. First, not all towns at the time when the Holy Roman Empire was losing its ability to provide law and order faced the same need to secure legal protection and thus replace the Emperor's role. Where trade opportunities were greater (such as in the marine towns or in towns located near a trade route) the demand for order and security was stronger and thus stronger were the incentives to acquire independence and with it control over the local territory. The "*patti giurati*" among the emerging traders was the first response to this need.

Second, as the structure of the Empire started to collapse, all local powers began to reorganize. In some instances, the pre-existing local lords were sufficiently strong to be able to assure governmental services and secure order. This happened, for instance, in the marches – the regions along the empire's eastern frontier (for example today the regions of Marche and Friuli) - that Charlemagne endowed with stronger military and political power to better serve their defensive role when in year 800 he reorganized the empire.

Third, in several cities, the presence of a Bishop greatly facilitated the emergence of the free city. Bishops played a critical role as their presence facilitated the coordination around an authority when the Holy Roman Empire started to collapse. However, independent cities quite

soon tended to separate and distinguish their power from that of the Church until they became totally independent from any ecclesiastic interference (Tabacco, 1987).

Finally, strategic considerations. Certain towns, that were strategically located, could defend their independence more easily. These towns are more likely to have become free city states and are more likely to have retained this status for a longer period of time.

Figure 2 shows the map of Italian local governments around the year 1300, when the development of the free cities was at a peak. The political fragmentation of the territory and multitude of independent towns, each with its own territory (called "*contado*") is striking.

1.3. *From the Commune to the Signoria: evolution and dissolution of the free city states*

This fragmentation and the never ending conflicts among the powerful families for the political control of the city is what make the system of free city states an unstable one. Indeed, the increase in social mobility associated with increased economic growth lead to the emergence of new rich and powerful merchants that claim political power and threaten the city's political equilibrium, dominated by the older powerful families.

Initially the problem was addressed by inviting a third party, possibly a foreigner, called "*Podesta' forestiero*" – a foreign city mayor – to manage the city for a specified length of time. This institution slowly evolved towards one where power was more concentrated and retained for longer periods, ultimately forever. The Seigniorial transformation of the commune is the concentration for life of the powers of the free city into the hands of a single person – the *Signore*. Interestingly, however, in several cases the Signoria retains the basic institutions of the commune including the principle that power originates from the people and is exercised in the people's name. In some cities the Signoria preserved the communal structure and personal freedoms, as in Florence and Genoa, and the Signore almost always enjoyed the consensus of the less wealthy part of the population. In so far as the Signoria is a continuation and transformation of the commune (as argued by Prezzolini, 1948) one could expect that its emergence in certain cities has allowed the communal experience to live longer and thus to show up in a stronger effect on today's social capital. The benefits of the commune were instead lost in those cities that were defeated and conquered by the Signore.

3. Data

3.1 *Sample selection*

To collect historical data at the city level we had to limit the size of the sample to a manageable number of cities for which we could have access to historical sources. For this we have decided to

focus on the largest 400 cities right after Italian unification in 1861 located in the Center-North in the area that was under the Holy Roman Empire at the beginning of the second Millennium (see Figure 1). At current borders this area comprises 12 regions: Piedmont, Valle D'Aosta, Liguria, Lombardy, Trentino, Veneto, Friuli, Emilia, Tuscany, Umbria, Marche and Latium. To identify the cities, we used the 1871 census population, the first available following unification. Information on city population is available for all above regions but Trentino and Friuli, at the time under the Austrian empire and repossessed after WWI. Hence, to select the sample we proceeded as follows: first, we sorted the cities in the 1871 census in descending order and picked up the first largest 387; the threshold was Itri in Latium with 6,619 inhabitants in 1871. Next, we used the 1921 census, the first after WWI, and focused on the cities in Trentino and Friuli. We estimated their population in 1871 by dividing their population in 1921 by the average growth in the other Italian regions in the Center-North between 1871 and 1921 and selected all cities in Trentino and Friuli with estimated population above the 6,619 threshold. This resulted in a sample of 400 cities.

To run the difference in difference estimates we also selected a sample of cities in the South of Italy in the area that was dominated by the Normans and where the communal movement was absent. At today's borders this area includes 7 regions: Campania, Abruzzi, Molise, Basilicata, Calabria, Puglia, and Sicilia. Since Sardinia was not part of the Holy Roman Empire nor was it under the Normans, we have excluded it form the sample. We also dropped Rome since its history is too peculiar and unique. Cities in the South sample have been selected so as to include all cities that as of the 1871 census met the threshold for inclusion in the North-Center sample, that is it had at least 6,619 inhabitants. This resulted in a sample of 286 towns.

3.2 *Identifying independent cities*

To identify the set of independent cities we have relied on the main historical atlas of Italy – the Atlante Storico De Agostini (2004) – that shows maps, at different points in time, of the free cities in Central-North Italy. Clearly, since the status of independence of a city is subject to change over time, the list of free cities depends on the time period one focuses on. We have decided to focus on one key period in the formation of free city states, that is around the time of the war for independence that was fought by the Lombard League against Emperor Frederick I Barbarossa. However, we check our results also using the list of independent cities in year 1300, when the communal movement was at the top of its expansion and before the emergence of the Signorie. One alternative to this would be to identify all cities – out of some extended sample like our 400 main Northen cities at time of Italy's unification - that experienced independence at least

once over, say, the three centuries ranging between year 1,000 and 1300. The problem with this approach is that the information available on the history of these cities is sparse and not always reliable. Hence measurement and classification error would contaminate our data. Furthermore, since one would have to rely on different sources of information as there is no single work that reports the Medieval history of all Italian cities, the criteria for defining an independent city would not rest on firm grounds.

Historians seem to agree that a communal town, to be properly identified as such, should fulfill at least four criteria: first, it should have the consuls as part of its institutions; second have its own institutions to administer justice; third, have some military power and military activity and fourth have its own territory (the *contado*) to administer (Milani, 2005). However, assessing the presence of these criteria in all the 400 cities in our sample would be extremely difficult and unavoidably full of mistakes. Hence, we abandoned this route. All the cities listed in the maps in the De Agostini Historical Atlas fulfill the criteria. Thus, our definition of an independent city is a conservative one; some cities in our control group may have experienced independence and we are not taking that into account. As this can only bias results against finding an effect of history on social capital, if an effect is found that is a lower bound of the true effect.

Figure 1 shows the map of communal Italy during the time of the war between the free cities and Emperor Frederick I. The red line marks the border of the Kingdom of Italy under the Holy Roman Empire. The independent cities are those marked with a black dot. The map also distinguishes which cities joined the Lombard League (named in red) in the war for independence against the Emperor and which were allied to the Emperor (named in blue). It also shows a number of relevant cities during that time that are not classified as communal city (marked with an unfilled circle). One noticeable case is Venice, which is clearly independent but is not a communal city. It also shows that the communal movement, though spread all over Central-North Italy, is more intense in certain regions such a Tuscany and Emilia, and less in others such as Latium (because of the role of the Vatican) or Marche. Table 1 lists the names of all the cities that we have included in our sample – the largest 400 towns at time of the 1871 census. It reports the identifier for the communal towns according to the map in Figure 1, whether it belonged to the Lombard League or was allied to the Emperor, and several other indicators. Overall, we have 67 communal towns. We lose five of them (Albenga, Cervia, Chiusi, Gravedona and Noli) because they did not make our cutoff for inhabitants as of 1871 and one (Bellinzona) because it is not part of Italy today. The final sample includes 61 free cities.

The second list is based on Figure 2 and defines as free cities all those with its own territory. This criteria leads to identify 58 free cities; of these, 45 are defined free cities also

according to the first definition while 13 are new entries. As a third definition we use the union of the two; this leads to 71 free cities.

For the cities that we have identified as free cities, either using the first or second definition we have constructed a measure of the length of independence by taking the difference between the year the free city was first founded and the year independence ended. This measure, obtained from various sources, is unavoidably subject to measurement error: first, there is no obvious year independence was acquired. One criteria would be to use the first time a "*patto giurato*" was signed; another when the first statute was adopted. The available sources do not allow to systematically obtain information on either one and thus we have adopted the date that conventionally is indicated in the history of the town, wherever this is reported. The same for the year independence terminated.

Finally, using the same sources we have constructed an indicator for whether the independent city evolved into a Signoria. See the data appendix for more details.

3.3. *Social capital measures*

Obtaining indicators of social capital is always hard and even harder at the level of the city. In Guiso et. al. (2004) we showed that two attractive measures at the province level are referenda turnout and blood donations. Using blood donations at the city level raises a number of issues. First, while it is relatively easy to obtain data on blood donation at the province level as the vast quantity is collected AVIS – the largest voluntary organization of blood donors – at the town level, particularly in some regions (e.g. Tuscany) there are other voluntary organizations of blood donors. Their activity is negligible at the level of the province but is not at the level of the town, particularly in smaller cities where they compete with AVIS. Tracing blood donations for the cities in our sample from all organizations has proven to be particularly difficult. For this we have abandoned the idea of obtaining data on this otherwise appealing measure of social capital. Instead, we have replaced it with an indicator of the existence in town of an organs donation association. This measure has exactly the same desirable features of the blood donations measure (that is not explained by economic motives) but has the advantage that there is only one association –AIDO – for the donation of organs. Secondly, we use referenda turnout; these data too are not immediately available at the city level, but we have been able to obtain them for three major referenda. But our main measure of social capital at the city level is the number of non-profit organizations that were operative in a city in 2000. Since this information comes from the 2001 census, it has the great advantage of counting *all* the voluntary, non profit organizations whatever their scope. This feature is particularly important if one wants to obtain a reliable

measure of social capital in smaller towns: if there is a minimum scale to set up a voluntary organization, this sets a bound on the number of them that can be created in a town, implying that the creation of an additional organization crowds out the activity of an existing one. Hence, just using the activity of one or fewer associations (as in the case of blood or organ donations) may provide a misleading indicator of social capital. The second advantage of this measure is that it is available for all the municipalities, including those in the South of Italy, which will prove useful in our difference in difference exercise in Section 5**.**

The data appendix provides additional details on the variables and their source.

3.4 *Other historical variables and city controls*

We have also gathered a number of additional historical variables that we use as instruments or as controls in our regressions. First, from the maps of the Bishop cities in Italy in the Middle Ages we determine which towns hosted a Bishop at the time of formation of the independent city states. In our Center-North sample there are 86 Bishop cities. Bishop cities were mostly formed well before the rise of the communal movement around the III and IV centuries AD, following the diffusions of the Christians over the Roman Empire. The vast majority of the independent cities in our sample (85 percent) were Bishop cities around year 1,000. Second, we obtain information on the Etruscan origin of the cities in our sample. Moving from Etruria – the region between the river Arno and the river Tiber (corresponding approximately to today regions of Tuscany, Umbria and Northern Lazio) – where they originated and inhabited in a dozens cities, Etruscans founded two additional city clusters, one north of Tuscany, in Romagna, and one in Campania, South of Lazio. Since Etruscans believed that the number 12 had a magic power, these clusters included 12 cities each. Etruscans were organized as a system of independent and self-governed cities, which tended to coordinate their policies in an annual meeting that took place in Orvieto – Etruscans capital. Since they valued independence they also built cities that were easy to defend. In so far as easy to defend cities are also cities that can acquire independence more easily, having been an Etruscan city may have facilitated the transformation into a free city at the beginning of the second millennium.[3] We also obtain information on whether a city was a Roman colony – that is was founded by the Romans before establishment of the Roman Empire; colonies administered by Rome, enjoyed little autonomy though its citizens could vote for the Roman Senate.

[3] An alternative interpretation is that the "culture of independence" sediments in peoples mind and in these cities are persisted, through cultural transmission up to the end of first millennium.

To account for differences in size as an explanation for why some cities gained independence, we have also obtained an indicator of the population of the city at the time of formation of the independent city states, from Bairoch et al. (1988). Since data on population for the year 1,000 is very scant, we use data for 1,300 - the first year data become available for a relatively large number of towns. We collect data on whether a city was located at a crossroad with a Roman road from the Touring Club Historical Atlas. Finally, a number of geographic controls are obtained from "Le Misure dei Comuni", 2003-2004 edition, a database assembled by the association of municipal administrations, which reports over 320 variables at the city level. From this dataset we also obtain data on city level per capita income and wealth. The data appendix provides more details about the definition and sources of the variables. Table 2 shows summary statistics.

4. The analysis within the Center-North

4.1 The weighted least square estimates

We start by analyzing the variation in social capital within the Center-North. Since the measures of social capital we use tend to be noisier for smaller towns, in all the following regressions we are going to weight the residuals by population in 2001.

The first measure of social capital we use is the number of non-profit organizations divided by population in 2001 (Table 3, Panel A). In column 1 we regress this measure on a simple indicator of whether a town was a free city in 1176 (at the time of the fist war against the Emperor of the Holy Roman Empire). Consistent with Putnam (1993), commune towns have 0.42 more associations per capita, which corresponds to a 8% increase in the average level of per capita association. This effect is however not statistically significant.

This result does not control for any geographical difference nor for any variation in population. Morphological characteristics might affect the cost of interaction and so the level of social capital. At the same time, they might have affected the probability to become independent, by influencing the ability to defend the city, hence generating a possible spurious correlation or hiding an existing one.

To address this concern, in column 2 we insert several controls. To control for whether a town is located in the mountains we insert the average altitude of the city, measured at the location of the Town Hall. To control for geographically-driven differences in the cost of interaction we insert the maximum height difference in the city territory. We also control for

whether a town is along the coast or within five kilometers from the sea. As a measure of the trade opportunities, we insert a dummy whether a town is located at the crossroads of two or more Roman roads. Finally, as a measure of size, we control for the number of inhabitants (thousands of people) in 2001. Since we are unsure on how population affects social capital, we insert both the level of population and its square.

Towns with steeper territories tend to have higher levels of social capital, while towns located on the coast lower levels. Towns at the center of commerce do not exhibit higher level of social capital, while bigger towns have lower level of social capital. After all these geographical controls are inserted, the impact of the free city state experience is almost three times as large and statistically significant at the 1% level.

Alesina and La Ferrara (2002) show that income inequality reduces trust, which is a measure of social capital. While today income inequality could be an historical outcome, in assessing the impact of the free city state experience it is appropriate to control for it. This is what we do in column 3 by inserting a Gini measure of inequality of land ownership and a Gini measure of inequality in pre tax income. Surprisingly, higher income inequality leads to more social capital, as measured by the number of non-profit associations per capita. This effect, however, is due to the lack of a control for income per capita, when we will introduce this control (see column 6) this effect will disappear. Nevertheless, the impact of the free city state experience remains unchanged.

While we control for population and population square, it is still possible that our estimated effect of the free city state experience is indeed the result of some non linearity between city size and social capital. For this reason, in column 4 we drop all towns with more than 120,000 inhabitants in 2001. The effect of the free city state experience remains unchanged.

Two thirds of Medieval free city states coincide with today's provincial capitals. This administrative role might confer a different status to the city, which might affect its level of social capital. For example, associations might find it convenient to locate in the provincial capital because of proximity to the local administration. For this reason, in column 5 we drop all provincial capitals from the regression. The effect of the free city state history is actually larger than before.

Glaeser et al (2002) show that individual investments in social interaction increases with per capita income. Since towns that became independent in the Middle Ageswere likely to be the richer towns, the free city state experience might be a proxy for some unobserved characteristics that make a certain town more prosperous. To address this concern we would like to insert the 1100 level of income per capita. Unfortunately, we do not have any such measure and we have to

resort to today's level of income per capita. This specification will clearly underestimate the impact of the free city state experience, because, as Knack and Keefer (1996) show, social capital promotes growth. So at least in part, the higher social capital generated by the city state experience will translate into higher per capita income. As column 6 shows, richer towns do exhibit a higher level of social capital and, as expected, the insertion of this variable does reduce the impact of the free city state experience on today's level of social capital. The effect, however, is still positive and economically and statistically significant.

Finally, in column 7 we insert to the basic specification (column 3) four area dummies to capture possible unobserved heterogeneity in the social capital across these regions (North East, North West, Center North, and Center) due to other historical factors. These dummies (not reported) are all statistically significant, but inserting them does not change the impact of the free city state experience on social capital.

Since the number of non-profit organizations is available for all cities for this measure of social capital we can check our results running the regression on a sample that includes all cities in the Center-North. Since some controls – namely the location of the city at an intersection with a Roman road – is only available for the 400 largest cities this variable is omitted from the specification. When we do this we obtain much more precise estimates of the effect of having been a free city on today's social capital and the effect is approximately twice as large as that estimated using the smaller sample. This is not surprising as smaller towns have been less exposed to the communal movement, which, as we noticed, was a urban phenomenon with little effect on the countryside. Hence our focus on the largest 400 towns if anything provides a lower bound of the true effect of past history on social capital.

In Table 4 we undertake the same steps using as a measure of social capital the referenda turnout (percentage of people voting at the referenda). Interestingly, when we do not control for city size (column 1) the impact of the free city state experience on social capital is negative though not statistically significant. When we insert such a control, however, the coefficient turns positive and statistically significant (column 3). In cities that experienced a commune, electoral participation is on average one percentage point higher (corresponding to an increase equal to 20% of the standard deviation in the sample). All the other specifications confirm this result, except when we exclude the largertowns and the provincial capitals. When we do so, the effect of the free city state experience becomes smaller and not statistically significant.

Finally, in Table 5 we repeat the exercise by using our third measure of social capital: the presence of an organ donation association in the city. As in the case of electoral participation the effect of the free city state experience is positive and statistically significant in all the

specifications except when we exclude the larger towns and the provincial capitals. This result is hardly surprising. Not only when we eliminate the provincial capitals are we eliminating two thirds of the free city states, we are also eliminating one of the channels through which this effect works. Towns that became independent in the Middle Ages and have accumulated more social capital are likely to prosper more and, as a result, to be chosen as a provincial capital.

As a robustness test, in Table 6, Panel A, for each measure of social capital we report the main specification (column 3) estimated by Ordinary Least Squares, rather than Weighted Least Squares. The results are substantially the same, with the only exception that the free city state experience is not statistically significant when we measure social capital as referenda turnout. This is not surprising, since in smaller towns idiosyncratic issues might increase the noisiness of the left hand side variable, which reduces the statistical significance.

In Table 6, Panel B we check the robustness of the result to the definition of the set of free cities; the first three columns rely on the 1300 map to identify which cities are independent; in column 6-8 we define a city as independent if it is defined as such using either one of the two definitions. In either case results are similar to the ones obtained using the first definition, except that the estimated effect on referenda turnout is lower when we use the 1300 map as the basis for classification of independent cities.

4.1 Digging more into history

Thus far, we have treated all the free city state experiences the same. This is clearly wrong. First, the length of independence was very different. Second, the end of the free city state experience was different: some towns became dominated by neighboring towns, others experienced the transformation of the *Commune* into a *Signoria.* Finally, the quality of the free city state institutions and their degree of autonomy was very different. In this section we explore whether these differences in the culture each city elaborated and (through it) in today's social capital.

Table 7 starts by analyzing the effect of the length of independence (Panel A). As we discussed this measure is by necessity very noisy, since the exact date that independence started as well as when it ended is uncertain. To identify the effect of variation in the length of independence we use a Heckman two steps estimator. As we discuss below when we do instrumental variable estimates, there are variables that help predict why some cities have become independent and others have not after the collapse of the Holy Roman Empire. We use these same variables to achieve identification in the two steps estimates; that is we assume that they predict the probability that a city has become independent but not the length of independence. The first

column shows the results of the estimates for the number of non-profit organizations. The length of independence has a positive effect on this measure of social capital and the estimate is statistically significant. Economically, however, the effect is small: starting with a length of independence of 206 years (the sample mean) and increasing it by one standard deviation (about 100 years) raises the number of non-profit organizations by 2.5% of the average among the cities that have experienced independence. If one started at a lower length (50 years, around the first percentile) effects would be four times larger but still contained. Given that this measure is quite noisy, it is quite possible that our estimates are biased downwards and they are a lower bound of the true effect. The second columns show that when social capital is measured with referenda turnout we cannot reject the hypothesis that differences in the length of independence among free cities has no impact, possibly reflecting both the noise in this measure of social capital and the attenuation bias induced by the measurement error in the length on independence. The length of independence helps also predict the existence of an organ donation organization in the city. Even if the estimated coefficient is statistically significant, economically the effect is small: at sample means a 100 year increase in the length of independence raises the probability of having a organ donation organization only by 4 percentage points.

In Panel B we study the additional effect of the transformation of a *Commune* into a *Signoria.* As we described earlier, while less democratic the *Signoria* tended to keep in place the communal institutions, especially the role of the people as source of power. Free city states that did not evolve into *Signoria* generally lost their independence by another *Commune* or *Signoria*. This latter outcome coincided with the demolition of the local communal institutions and as such is less favorable to the persistence of social capital. As column 1 shows, that a town became a *Signoria* adds to the level of social capital. *Signoria* towns have 0.7 more associations per thousand inhabitants than towns that were just free city states (almost twice the effect of just been a free city state). The same is true if we measure social capital as electoral participation (column 2) or organ donation (column 3).

In Panel C we analyze the effect of the degree of independence. As a proxy for this difficult-to-measure variable we use the side different cities took in the battle against the Emperor in 1176. That year, twenty-four cities in the North stroke an alliance against the Emperor (called the Lombard League). We take that active participation to this League as an indicator of the demand for independence as well as a measure of the confidence these cities had achieved as independent entities. By contrast, the fourteen cities that chose to ally themselves with the Emperor where probably the weaker, less self-confident towns. Not all the cities took a side. Twenty five city-states (mostly in the Center of Italy and thus farther away from the threat of the

Emperor) chose to remain neutral. Panel C decomposes the free city state effect in these three categories.

When we measure social capital as number of non-profit organizations (column 1), the positive effect of the free city experience is similar for Lombard League towns and neutral towns. This effect, however, is almost two times bigger than the impact of free city states allied to the Emperor.

The pattern is similar when we measure social capital as electoral participation (column 2). In fact, the effect of free city states allied of the Emperor is statistically not different from zero, while the effect of cities part of the Lombard League is 60% larger as big as the effect of neutral free city states. The same is true when we measure social capital as the presence of an organ donation organization (column 3).

4.2 The instrumental variable estimates

While general geographical conditions within the Center-North are similar and we have controlled for idiosyncratic differences in our regressions, it is still possible that some more subtle geographical characteristics affect both social capital and the probability a city became a free-city state. To address this concern we should be able to find an instrument that affects the probability of becoming a free city state, but does not affect the level of social capital directly.

To find one instrument we dig into history. Our reading of Medieval history books (among others, Reynolds, 1997; Milani, 2005; Jones, 1997; Tabacco, 1987; Pirenne, 1956) suggests two potential determinants of the formation of free city states. First, at the collapse of the Sacred Roman Empire power in Italy religious authorities were often the nucleus around which the emerging local autonomy was formed. Hence, the fact that during the III-to-V century AD a town had been selected as a bishop location should positively affect the formation of a city state.

Second, Italy experienced another episode of free city states during the IX century B.C. During that period the Etruscan civilization, which was organized as a confederation of free city states, populated an area from Mantova in the North to Salerno in the South. When they founded their towns, the Etruscans had a very clear objective in mind of making them easily defendable from the enemies. The example of Orvieto (the capital of the confederation) located on top of a cliff is very illustrative (see Figure 3). This military advantage should favor the likelihood of independence in the Middle Ages.

In Table 8 we analyze the explanatory power of these historical instruments. When we regress a free city dummy variable on bishop location and Etruscan origin, we find that both instruments have the expected sign and are highly statistically significant. A town with a bishop is

73% more likely to become a free city state than a town without it. Similarly, a town that was founded by the Etruscans is 17% more likely to become a free city state. In column 2 we insert a number of controls for population size and geography so to make this the first stage of the regression of social capital on the free city state experience.

While some of the other correlations in this specification cannot be interpreted in a causal sense, nevertheless they are of some interest. For example, towns in the mountains are less likely to become free city states than are towns along the coast. There is a positive correlation between free city states and income concentration, but this effect is likely to be due to the correlation between income level and level of inequality. Indeed, when we insert (not reported) income per capita in the regression this partial correlation essentially vanishes. What remains constant is the negative correlation between the Gini coefficient of land ownership and being an independent city. This correlation could be interpreted in two ways. It is possible that the free city state experience lead to a more diffuse ownership of the land. But it is also possible that areas where land ownership is more efficiently held in large blocks are less conducive to local autonomy. Either way, we control for this effect in the second stage by inserting the Gini coefficient of land ownership.

Since this is the first stage of our IV regression, we can look at the explanatory power of our instruments. The F-test for the excluded instruments is 66 which reassures us these are not weak instruments. As for all the instruments, however, the crucial assumption is their lack of a direct effect on our dependent variable, i.e. today's social capital. From a logical point of view, this assumption is likely to be true for both instruments. According to Putnam (1993) the more intense presence of the Catholic Church if anything should have a negative not positive effect on social capital. Similarly, that a town has a comparative advantage in defending itself is unlikely to have a direct effect on today social capital. In any case, if we are willing to accept at least one of the two instruments as valid, the test of over-identifying restrictions will reassure us of the validity of the other one. In this instance, however, we do not have to limit ourselves to defend the exclusion restrictions only on a priori grounds. The particular nature of this historical experience (which took place only in one part of the country) allows us a direct test of these exclusion restrictions that we will perform in the next section.

Table 9 presents the IV estimates for our three measures of social capital. When we measure social capital as number of non-profit organizations (column 1), the positive effect of the free city experience is similar to the one estimated using WLS. The test of over-identifying restrictions cannot reject the exogeneity of the instruments.

When we measure social capital as electoral participation (column 2) the coefficient estimated by using IV is sixty percent larger than the WLS coefficient. In this case, however, we fail to pass the test of over-identifying restrictions.

Finally, when we measure social capital as the presence of an organ donation organization (column 3) the positive effect of the free city experience doubles with respect to the WLS one. The test of over-identifying restrictions cannot reject the exogeneity of the instruments.

As a robustness exercise, in columns (4)-(6) we report the IV estimates using the definition of independent city states based on the year 1300 classification. In spite of the different classification, results are similar to the ones obtained when the *Communes* are identified on the base on the cities independence status in 1176. We have also used a third definition that combines the other two and classifies a city as having been a Commune if either it was a commune in 1176 or in year 1300 or both. Results (unreported) confirm the findings in Table 9.

Overall, our IV estimates suggest that it was indeed the free city state experience that promoted a higher level of social capital. Nevertheless, it is still possible that some unobserved (or poorly measured) morphological characteristics drive all our results. If there is a location advantage that has lead the Etruscans to settle there, has lead the Catholic Church to elect it as a headquarters for its bishop, has made it easier for that city to conquer independence from the Emperor, and also foster social capital today, then our instruments do not solve the problem.

5. The Difference in Difference Approach

To address this issue, we use a difference in difference approach exploiting an historical counterfactual. Because of the strong central power exerted by the Norman Kingdom, cities in the South of Italy could not become free city states regardless of their location advantage (Putnam, 1993). Under the maintained hypothesis that the determinants of location advantages are the same in the Center North and South, we can predict which towns would have become free city states in the South had the Normans not been there. We can then compare the level of social capital of free city states in the Center-North and potential free city states in the South, using the difference in social capital between not free city states in the Center-North and unlikely free city states in the South as a control for generic differences between North and South.

The first step in this approach is to predict the probability of becoming an independent city. To this purpose we use a version of the first stage regression in Table 8, restricting ourselves to ex ante variables. As a substitute for today's population we use the earliest estimates (year 1300) of population size that we could get, from Bairoch et al. (1988). Since these estimates are

very imprecise, we approximate this information with two dummies: cities with at least 10,000 inhabitants (34 cities, labeled "large") and cities with between 1,000 and 10,000 inhabitants (18 cities labeled "medium"). The omitted category is cities with less than 1000 inhabitants in 1300 or for which this information was not available.

Table 10 Panel A shows these estimates. The effects are very similar to the ones obtained in the first stage regression. The pseudo R-squared of the regression is 0.61, reflecting the high explanatory power of our regression. In Panel B we show the summary statistics of the predicted probability divided between cities that experienced the *Commune* and cities that did not. For free city states the predicted probability has a median of 0.88 and an interquartile range from 0.35 to 0.99. For not free city states the predicted probability has a median of 0.012 and an interquartile range from 0.012 to 0.13. If we choose as a threshold level 0.35 we misclassify less than 8% of the observations: 17 towns out of 339 as having had a *Commune*, while they did not, while 15 towns as not having had a *Commune* while they did.

We then use the coefficient of this probit to predict the probability of becoming a free city state for town in the South.[4] Panel C reports the summary statistic of this predicted probability. When we apply the same threshold used for Center-North regions to Southern cities we obtain that had the Normans not been there, there would have been 31 free city states in the South, out of the 286 towns that made our threshold of population in 1871. The interquartile range of the predicted probability for cities that we classify as potential free city states in the South is between 0.36 to 0.87. For not potential free city states in the South the interquartile range is 0.01 to 0.028. Both are very similar to the ones observed in the Center-North for the corresponding categories. This reassures us that the actual matches are good ones.

Table 11 Panel A reports the averages of social capital in the four groups for the only measure we have available both in the North and in the South, i.e., number of non-profit organizations over population. The average for free city states in the Center-North is 6.2 versus an average of 5.11 for non free city states in the North. This difference of 1.09 is statistically significant at the 2% level. To control for other potential differences between North and South we compute the difference between the average level of social capital for potential free city states in the South (3.48) and non free city states in the South (3.20), for a total of 0.28, which is not statistically different from zero. Finally, we compute the difference in difference estimation by subtracting this latter estimate from the earlier one, which yields a difference of 0.82.

[4] We exclude from the Southern cities those located in the island of Sardinia because this island had a very different history, with some partial autonomy that did not take the form of free city states.

Table 11 Panel B reports the difference in difference estimation in a regression format. Our measure of social capital is regressed on a dummy for South, a dummy for potential free city states and an interaction dummy between potential free city states and a North dummy. As Panel B shows the South dummy is negative and highly statistically significant. A town located in the South has 35% less social capital than a similar town in the Center-North.

By contrast, the potential free city state dummy by itself is economically and statistically insignificant. It is only when interacted with the North dummy that this variable becomes significant. The actual free city state experience increases social capital by 21%. This effect is statistically significant at the 1% level. This result suggests that having the conditions to become a free city states alone is not sufficient to foster more social capital. It is only when those conditions can lead to the actual creation of free city states that social capital increases.

We regard this result as a test of the exclusion restrictions underlying our instruments in Section 4 and as the most compelling evidence that the historical experience (and not geographical variables) increase social capital.

We regard it as a test of the exclusion restrictions because under the assumption that up to that moment the North and the South of Italy were similar, it is a useful counterfactual. If it is the presence of the bishop and of the Etruscan foundation that drive social capital, they should drive it in the North as well as in the South. That they drive it only in the Center-North (where free city states actually occurred) and not in the South (where they did not) suggests it is really the free city states experience driving our result. This test allows us to reject the alternative hypothesis that the observed persistence is driven by some unobserved (or poorly measured) geographical variables.

In column 2 of Panel B we re-estimate the difference in difference controlling for difference in the size of towns and in geography. The results are substantially the same.

Our estimates suggest that only 47% of the North-South differential can be directly attributed to the free city state experience. It is possible (in fact likely) that through interaction and migration the positive effect of free city states spilled over neighboring towns, increasing the average social capital of the Center-North. Alternatively, it is possible that other historical and/or geographical variables are responsible for the remaining half of the gap. Our approach is unable to distinguish between these two hypotheses.

5. The Economic Effect of Social Capital

Social capital is ultimately important insomuch as it can affect economic outcomes. Yet, to identify the causal effect of social capital on the level of income one needs to find a source of exogenous variation in social capital. Having checked the validity of our instruments as shifters of social capital we can exploit them to study the effect of social capital on economic outcomes. We measure economic performance at the city level using a measure of disposable income per capita in the city in 1999 constructed from income tax statements. To make sure that results are not affected by differential incentives to cheat on taxes, we check results with a measure of per capita wealth at the city level obtained by summing housing wealth (in 1999) and bank deposits (in 2002) in the city and dividing by city population.

Table 12, first column, shows the results of the OLS estimates obtained using the sample of cities in the Center-North. We measure social capital with the total number of non-profit organizations. We control for geography (city altitude and steepness, closeness to the sea and whether it is located at the cross of two or more Roman roads), city population (linear and square) to account for city externalities in production and for the inequality of land ownership. We find that cities that have more social capital have also a higher per capita income: a one standard deviation increase in social capital is associated with a higher per capita disposable income of about 5,487 euros – 46% of the sample mean. This effect is only slightly lower if we insert a full set of provincial dummies to control for unobservable factors that may affect differences in income as well as in social capital (column 2). This positive correlation is consistent with the one found in Knaf and Keefer (1997) using cross country variation. The additional contribution of our estimates is that they rely only on variation across cities within a rather homogeneous area and thus they exclude the possibility that the effect captures some institutional variable that drives both income and social capital.

Even so, however, the observed correlation may all be driven by reverse causality – higher income fostering social capital. To address this issue, in column 3 we run IV regressions using as an instrument whether the city has been a free city in year 1167. Our previous results suggest that historical independence has predictive power on today's social capital and can thus constitute a potentially powerful instrument if past history of independence has no direct effect on today's city ability to produce income. When we instrument today's social capital with the free city indicator, the estimated coefficient of social capital increases from 0.40 to 0.57 and is highly statistically significant (column 3). Raising social capital by one standard deviation increases per capita income by 6,685 euros, about 56% of the sample mean. This result suggests that reverse causality is unlikely to be driving the results as in this case the IV regressions should have yielded a lower estimate. It is social capital that is most likely to drive income, not the other way around.

The high value of the *F* test of the excluded instrument (29.7) implies that historical independence is a powerful instrument. However having only one instrument we cannot test the orthogonality condition. Since we have identified sources of exogenous variation in the history of independence we can exploit it to address further the causality issue. In column 4 we use the indicators of whether the city was a Bishop city in Medieval times and whether it was an Etruscan town. Our previous results imply that these two variables affected the chances that a town became a free city and that they affect social capital formation exclusively via this channel. Hence, they should also affect differences in today's income because they favored the formation of the free city which in turn prompted social capital.

The estimated effect of social capital on per capita income is now 0.70 and is very precisely estimated; the point estimate implies that raising social capital by one standard deviation increases income per capita by 8,227 euros, or 70% of sample mean. Furthermore, the *F* test of the excluded instruments is sufficiently large to reassure that the estimates are unlikely to suffer from a weak instruments problem while the over identifying restriction test cannot reject the hypothesis that the instruments are valid (p-value 0.79). The last column uses as instrument the length of independence obtaining results that are similar to those in column 3.

Table 13 repeats the estimates using the level of per capita wealth as left hand side variable. Results are qualitatively similar but economically stronger: OLS estimates imply that one standard deviation increase in social capital raises per capita wealth by 25,000 euros (80% of mean wealth); the effect is 80% larger if social capital in instrumented with the indicator for free city and more than doubles when using the Bishop city and the Etruscan city identifiers as instruments. In this case one standard deviation increase in social capital increases per capita wealth by as much 60,000 euros – almost twice the average wealth in the sample; as with the estimates of per capita income the test of the over identifying restrictions strongly suggests that the orthogonally condition is unlikely to fail.

6. Conclusions

Putnam (1993) conjectures that the difference in social capital between the North and the South of Italy is due to the fact the Center-North experienced a period of independence, in the form of free city states that the South did not experience. This conjecture, which Putnam does not formally test, is intriguing for two reasons. First, it identifies a form in which social capital can be formed, through experience of positive cooperation at the local level. It also postulates an

enormous degree of persistence of this experience. If Putnam is correct, a lot of the observed persistence in economic development might be due to the persistence in the social capital built in the development process.

In this paper we test Putnam's conjecture by using both the within difference in the Center-North and by doing a matched difference in difference estimation between the North and the South. Both methods suggest that Putnam's conjecture was right and that at least 47% of the North-South divide in Italy is due to the free city state experience. More importantly, our results suggest that positive experiences of cooperation at the local level can have extremely long lasting effects.

What our paper does not address is through what mechanism this very long term persistence occurs. Our hypothesis is that the transmission process is cultural. In GSZ (forthcoming) we model the intergenerational transmission of beliefs and show that even a brief positive experience of cooperation (2-3 generations) can have permanent effects on the beliefs (and hence of the social capital) of a community. In that paper we also shows that these different beliefs are reflected in the novels originated in the different areas. Alternatively, transmission can occur through an overlapping socialization process as in Tabellini (2007). Inhabitants of free city states might have different social norms to whom future generations will conform.

References

Acemoglu, Daron and S. Johnson (2005), "Unbundling Institutions", *Journal of Political Economy*, October, v. 113, 949-995

Acemoglu, Daron. and J. A. Robinson (2006), "Persistence of Power, Elites and Institutions", mimeo, MIT

Acemoglu, Daron, S. Johnson and J. A. Robinson (2001), "The Colonial Origins of Comparative Development: An Empirical Investigation", *American Economic Review*, 91:1369-1401.

Alesina, Alberto and Eliana La Ferrara, (2002), "*Who Trusts Others*?," Journal of Public Economics, 85(2), 207-234.

Arrow Kenneth (1974), ""

Bairoch, Paul, Jean Batou and Pierre Chevre (1988) "*The Population of European Cities from* 800 to 1850", Centre of Internatonal Economic History, Geneva University, Geneva.

Banfield, E. 1958, The Moral Basis of a Backward Society, Free Press, New York.

Galizia, Mario (1951), "*La teoria della sovranita' dal medio evo alla rivoluzione francese*", Giuffre', Milano

Glaeser, Edward, Bruce Sacerdote and David Laibson (2002), "An Economic Approach to Social Capital," (joint with D. Laibson and B. Sacerdote), *Economic Journal* 112: 437-458.

Guiso, Luigi, Paola, Sapienza, and Luigi Zingales (2004), "The Role of Social Capital in Financial Development", *American Economic Review*, 94:526-556.

Guiso, Luigi, Paola, Sapienza, and Luigi Zingales (2006), "Does culture affect economic outcomes?", *Journal of Economic Perspectives*,

Guiso, Luigi, Paola, Sapienza, and Luigi Zingales (2007a), "Social Capital as Good Culture", *Journal of the European Economic Association, forthcoming*

Guiso, Luigi, Paola, Sapienza, and Luigi Zingales (2007b), "Cultural biases in economic exchange", mimeo

Jones, Philip (1997), "*The Italian City-state. From Commune to Signoria*", Clarendon Press, Oxford University Press, Oxford.

Knak, S. and P. Keefer (1997), "Does social capital have an economic pay-off? A cross country investigation", *Quarterly Journal of Economics*, 112.4:1251-1288.

Maddison, Angus, (2001), "The world Economy: A Millenial perspective", OCED.

McKitterick, Rosamond (2004), "Atlas of the Medieval World", Oxford University Press, Oxford.

Milani, Giuliano (2005), "*I Comuni Italiani*", Editori Laterza, Bari

Pirenne, Henri (1956) "*The Medieval City"*, Princeton University Press, Princeton.

Prezzolini, Giuseppe (1948), "*The Legacy of Italy*", Vanni, New York.

Putnam, Robert, Robert Leonardi and Raffaella Nanetti (1993), "Making Democracy Work ", New York Simon&Schuster

Putnam, Robert (2000), " Bowling alone: The collapse and revival of American Community", New York Simon&Schuster

Reynolds, Susan (1997), "*Kingdoms and Communities in Western Europe* 900-1300", second edition, Clarendon Press, Oxford University Press, Oxford.

Schulz, Knut (1992), "*Denn Sie Lieben Die Freiheit so Sehr...Kommunale Aufstande und Entstehung des Europaischen Burgertums im Hochmittelalter*", Wissenschaftliche Buchgesellschaft, Darmstadt.

Tabacco, Giovanni (1987)" *La città vescovile nell'alto Medioevo"*, in "Modelli di città. Strutture e funzioni politiche", edited by Pietro Rossi, Edizioni Comunita', Torino, pp. 327-345

Tabellini, Guido (2007) "Culture and institutions: economic development in the regions of Europe", IGIER, Bocconi University, mimeo

Tabellini, Guido (2007b), "The Scope of cooperation: norms and incentives", IGIER, Bocconi University, mimeo

Ussani, Vincenzo (1952) "*Guida allo studio della civilta' romana antica*", Vol I, Istituto Editoriale del Mezzogiorno, Napoli-Roma-Mlano

Data Appendix

A. Measures of social capital

Number of non profit organizations: the measure are obtained from the National Statistical Institute (Istat) 2001 census which collected data on all types of non profit and voluntary organizations existing in Italy at time of census. It reports data on the total number of non-profit organizations, and separately on the number of voluntary associations, social cooperatives and foundations. The total number of nonprofit organizations includes all above types; voluntary organizations are the bulk of the total.

Referenda turnout: We measure voter turnout in referenda by averaging participation over three major referenda that took place after WWII and for which information at the town level was more easily accessible: these are the referenda on public order measures that restricted individuals freedoms and on political parties public funding that too place on June 11 1978, the referenda on abortion (May 17 1981) and that on wage indexation schemes (June 9 1985). While several other referenda have taken place after WWII on a wide range of issues (e.g. choice between republic and monarchy (1946), divorce (1974), hunting regulation (1987), use of nuclear power (1987)), data at the city level were only available on paper and more easily obtainable from the Ministry of Interiors for these referenda. However, referenda turnout tends to be highly correlated across different referenda. For instance, at the province level the correlation between turnout at the divorce referenda and average turnout in the other referenda is 0.95 while the correlation between the turnout at the three referenda used here is between 0.91 (funding to political parties and abortion) and 0.93 (abortion and indexation schemes). In Italy, voting at referenda is not mandatory.

Organs donation organizations: The indicator of existence of an organs donation organization in the city was obtained from the 2005 Provincial Register of Voluntary Organizations. The registry reports the name, mission and address of the voluntary organizations located in the province. Registering with the Registry is not compulsory and since not all voluntary associations register, they provide an incomplete picture of the voluntary organizations in the municipality. Furthermore, in several regions in the South, the Registry is not yet available. However, for all regions in the Center-North in our sample we have been able to obtain a copy of the Registry from the Ministry of Labor and Social Policies and identified the presence of a branch of AIDO – the only organs donation organization in Italy – in the municipality. AIDO was founded in 1973, thus much later than the blood donation association, is present in about 2060 municipalities (out of 8,000 in the country) and counts 1,129,662 donors.

B. Historical variables

Independent cities: the indicators of the cities that have been independent commune after the Middle Ages are obtained from two historical maps of Italy in "Atlante Storico De Agostini" (2007), Istituto Geografico De Agostini, Novara pp. 61-62. We use two maps. The first map shows list of free cities around the time of the war between the communal cities and the Emperor of the Holy Roman Empire Frederick I "Barbarossa" (red beard) in year 1167. This map is reported in Figure 1 (corresponding to map 28 in Atlante Storico De Agostini). The red line in the map marks the border of the Kingdom of Italy under the Holy Roman Empire. The independent cities are those marked with a black dot. It also distinguishes which cities

joined the Lombard League (names in red) in the war for independence against the Emperor and which were allied to the Emperor (names in blue). The remaining cities are neutral. This constitutes our first measure of free cities. The second measure is obtained from the map of Italy around year 1300, as shown in Figure 2 (map 29 in Atlante Storico De Agostini); free cities are those that have a own territory. A third measure is constructing as the union of the previous two measures.

Length of independence: Information on when independence was acquired and when it was lost has been obtained through a search from different sources: the main one is the "Istituto Enciclopedia italiana per le Regioni"; when the information was not available in "Istituto Enciclopedia italiana per le Regioni" we have relied on the Touring Club guide which reports a brief historical summary of the cities listed in the guide and the historical summary in the official web page of the various cities.

Bishop city: the identifier is obtained from the map "Italia altomedioevale: sedi vescovili" [Giuliani for reference] that reports the Bishop cities in the late Middle Ages. Bishop cities were mostly formed around the third century AD, as the Christian movement spread out (the following link http://it.wikipedia.org/wiki/Elenco_delle_diocesi_italiane shows a full list of the Italian Bishop cities and their history).

Etruscan city: is an identifier for whether the city was founded by the Etruscans and was part of the Etruscan "nation". Moving from Etruria – the region between the river Arno and the river Tiber (corresponding approximately to today regions of Tuscany, Umbria and northern Lazio – Etruscans founded two other city clusters, one northen of Tuscany, in Romagna, and in Campania, South of Lazio. Since Etruscans thought that number 12 had a magic power, these clusters included 12 cities each, though some uncertainty still remains on the exact list of Etruscan cities. Etruscans were organized as a system of independent and self-governed cities, which tended to coordinate their policies in an annual meeting that took place in Orvieto – the Etruscans capital. Data on Etruscan cities have been provided by Dr. Antonello Montesanti, an archeologist who has rigorously mapped and classified all the Etruscan and Roman cities and who has kindly made available to us his files. The table below lists the three clusters of 12 Etruscan cities in the three areas where they expanded. Cities in italics have no counterpart today. In the Etruscan cluster of Etruria two cities – Fiesole and Roselle – were added to replace cities that decayed progressively under the Romans.

Cluster of Etruscan cities in Etruria	Cluster of Etruscan cities in Romagna	Cluster of Etruscan cities in Campania
Veio	Bologna (capital)	Capua (capitale)
Cerveteri	Mantova	Nola
Tarquinia	Milano (?)	*Urina*
Montalto di Castro	Ravenna	*Velsu*
Arezzo	Cesena	*Irnthi*
Vetulonia	Rimini	Pontecagnano
Populonia	Modena	Sorrento
Volterra	Parma	Pompei
Orvieto (capital)	Piacenza	Ercolano
Chiusi	*Spina*	Nocera
Perugia	Marzabotto	Acerra

Cortona	Adria

Roman colony: is an identifier of a city that was a Roman colony; the classification is the one provided by the archeologist Antonello Montesanti, The main feature of Roman colonies is that these cities were administered by Rome and did not enjoy any autonomy and self-government (Ussani, 1952).

Size of cities in year 1300: we have classified two indicators for the size of cities in year 1300: *Large* is a dummy variable equal to 1 if the city population exceeds 10,000 people in year 1300; *Medium* is a dummy variable equal to 1 if the city population is between 1,000 and 10,000 people in that year. The information on city size is obtained from Bairoch, Batou and Chevre (1988, pp. 40-49) who report the population of European cities from year 800 up to year 1850 at a frequency of about every 100 years. The criteria for including a city in the list is that it must have had at least 5,000 inhabitants once between 800 and 1850. Needless to say, the more one goes back on time the more difficult it is to find information on population, which results in a missing observation. We have chosen population in year 1300 to balance the need to go as far back as possible and closer to year 1,000 while at the same time being able to have enough information on city population. Year 1300 is the first for which missing data appear to be limited.

City located at a cross with roman roads: is equal to 1 if the city is located on a relevant Roman road or at the cross between two or more Roman roads. Roman roads are identified from the Touring Club Historical Atlas of Italy and from the "Reference Map of Ancient Italy" and then comparing today location of the city using Google Maps with the map of the Roman cities.

C. City controls and measures of economic development

The main source for several city controls and variables is the database "Le Misure dei Comuni", 2003-2004 Edition. This database is assembled by Ancitel, the association of municipal administrations and reports about 320 variables measuring various items at the level of the city ranging from population to income, bank deposits and households.

City altitude: it is measured as meters from the see level. Source: "Le Misure dei Comuni"

City steepness: it is the difference between the highest and the lowest point in the city territory, in meters. Source: "Le Misure dei Comuni"

Current Population: number of inhabitants according to the 2001 census. Source: "Le Misure dei Comuni"

Population at unification: number inhabitants in 1871 according to the 1871 census. Source: Istat, "Census Data"

Gross per capita disposable income: level of disposable income per capita: euros in year 2000; the figure is obtained from tax filings at the city level and the original source is the Ministry of Finance. Source: "Le Misure dei Comuni"

Per capita household wealth: sum of property wealth and bank deposits divided by the city population; property wealth is estimated by Ancitel and refers to 1999; bank deposits are refer to 2002. The figure is in euros. Source: "Le Misure dei Comuni"

Gini land owenership inequality index: computed using data on the size distribution of agricultural firms in year 2000 based on information from the 2001 census. Source: "Le Misure dei Comuni".

Figure 1 – Historical map of Italy at around year 1167

The figure shows the map of Italy at around year 1167; the red line marks the borders of the country that where the Holy Roman Empire of Germany and shows the main independent cities; cities in red belonged to the Lombard League, those in blue were allied to the Emperor. The green areas mark the territories of various Principati and Feudi. The Southern part of Italy not belonging to the Empire was under the Norman Kingdom of Sicily.

http://www.scuola.com/storialocale/medioevo.htlm

Figure 2 – Historical map of Italy at around year 1300

The figure shows the map of Italy at around year 1300; it shows the various independents city states and their territory (contado), as well as the various principati that were ruling in various areas.

Figure 3. Orvieto's strategic advantage

A picture of Orvieto, the capital of the Etruscan nation

Table 1

City name	Independent city: year 1167	Independent city: year 1300	Population in 1871	Year city became independent	Year independence was lost	City part of the Lombard league	City allied with emperor	Independent Signoria	Bishop city	Etruscan city
ABBIATEGRASSO	0	0	10.11	0	0	0	0	0	0	0
ACQUI TERME	1	1	10.381	1150	1313	0	1	0	1	0
ADRIA	0	1	17.732	1090	1200	0	0	0	1	1
ALATRI	0	0	13.841	0	0	0	0	0	1	0
ALBA	1	1	10.815	1050	1259	0	1	0	1	0
ALESSANDRIA	1	1	56.962	1198	1348	1	0	0	1	0
ALFONSINE	0	0	8.873	0	0	0	0	0	0	0
AMATRICE	0	0	8.226	0	0	0	0	0	0	0
AMELIA	0	0	8.11	0	0	0	0	0	1	0
ANAGNI	0	0	8.256	0	0	0	0	0	1	0
ANCONA	0	1	48.738	1177	1532	0	0	0	1	0
ANGHIARI	0	0	7.015	0	0	0	0	0	0	0
AOSTA	0	0	7.749	0	0	0	0	0	0	0
ARCEVIA	0	0	9.633	0	0	0	0	0	0	0
ARCIDOSSO	0	0	6.685	0	0	0	0	0	0	0
AREZZO	1	1	39.054	1098	1337	0	0	1	1	1
ARGENTA	0	0	16.287	0	0	0	0	0	0	0
ARPINO	0	0	11.633	0	0	0	0	1	0	0
ARSIE'	0	0	6.884	0	0	0	0	0	0	0
ARZIGNANO	0	0	8.264	0	0	0	0	0	0	0
ASCIANO	0	0	7.235	0	0	0	0	0	0	1
ASCOLI PICENO	0	0	23.295	0	0	0	0	0	1	0
ASSISI	1	0	15.083	1000	1367	0	0	0	1	0
ASTI	1	1	36.917	1150	1313	0	1	0	1	0
AVIANO	0	0	7.922	0	0	0	0	0	0	0
BADIA POLESINE	0	0	9.303	0	0	0	0	0	0	0
BAGNACAVALLO	0	0	15.101	0	0	0	0	0	0	0
BAGNI DI LUCCA	0	0	12.403	0	0	0	0	0	0	0
BAGNO DI ROMAGNA	0	0	7.583	0	0	0	0	0	0	0
BARBERINO DI MUGELLO	0	0	9.639	0	0	0	0		0	0
BARDI	0	0	9.736	0	0	0	0	0	0	0

BARGA	0	0	8.316	0	0	0	0	0	0	0
BARGE	0	0	9.917	0	0	0	0	0	0	0
BASSANO DEL GRAPPA	1	0	15.284	1175	1250	0	0	0	0	0
BEDONIA	0	0	9.051	0	0	0	0	0	0	0
BELLUNO	1	1	15.971	1050	1350	0	0	0	1	0
BERGAMO	1	1	42.662	1125	1428	1	0	0	1	0
BERTINORO	0	0	6.624	0	0	0	0	0	0	0
BIELLA	0	0	17.24	0	0	0	0	0	0	0
BOLOGNA	1	1	118.217	1116	1274	1	0	1	1	1
BOLZANO	0	0	25.238	0	0	0	0	0	0	0
BONDENO	0	0	13.424	0	0	0	0	0	0	0
BORGO A MOZZANO	0	0	9.056	0	0	0	0		0	1
BORGO SAN LORENZO	0	0	12.289	0	0	0	0	0	0	1
BORGO VAL DI TARO	0	0	8.591	0	0	0	0	0	0	0
BORGOMANERO	0	0	9.641	0	0	0	0	0	0	0
BORGONOVO VAL TIDONE	0	0	6.659	0	0	0	0	0	0	0
BOVES	0	0	9.744	0	0	0	0	0	0	0
BRA	0	0	13.658	0	0	0	0	0	0	0
BRESCIA	1	1	58.539	1125	1258	1	0	0	1	0
BRESSANONE	0	0	7.46	0	0	0	0	1	0	0
BRISIGHELLA	0	0	12.434	0	0	0	0	0	0	0
BUCINE	0	0	7.525	0	0	0	0	0	0	0
BUDRIO	0	0	16.608	0	0	0	0	0	0	0
BUSCA	0	0	9.844	0	0	0	0	1	0	0
BUSSETO	0	0	8.603	0	0	0	0	0	0	0
BUSTO ARSIZIO	0	0	16.598	0	0	0	0	0	0	0
CAGLI	0	0	10.505	0	0	0	0	0	1	0
CALCI	0	0	6.79	0	0	0	0	0	0	0
CAMAIORE	0	0	16.967	0	0	0	0	0	0	0
CAMERINO	0	0	12.157	0	0	0	0	1	1	0
CAMOGLI	0	0	9.807	0	0	0	0	0	0	0
CAMPI BISENZIO	0	0	14.375	0	0	0	0		0	1
CANTU'	0	0	7.97	0	0	0	0	0	0	0
CAPANNORI	0	0	39.3	0	0	0	0		0	0

CARAGLIO	0	0	7.074	0	0	0	0	0	0	0
CARAVAGGIO	0	0	7.888	0	0	0	0	0	0	0
CARIGNANO	0	0	7.711	0	0	0	0	0	0	0
CARMAGNOLA	0	0	13.247	0	0	0	0	0	0	0
CARMIGNANO	0	0	8.144	0	0	0	0	0	0	0
CARPI	0	0	17.913	0	0	0	0	1	0	0
CARRARA	0	0	23.326	0	0	0	0	1	0	0
CASALE MONFERRATO	0	0	27.908	0	0	0	0	1	0	0
CASALMAGGIORE	0	0	13.283	0	0	0	0	0	0	0
CASCINA	0	0	19.332	0	0	0	0	0	0	0
CASSANO D'ADDA	0	0	7.053	0	0	0	0	0	0	0
CASSINO	0	0	12.54	0	0	0	0	0	0	0
CASTEL SAN GIOVANNI	0	0	8.475	0	0	0	0	0	0	0
CASTEL SAN PIETRO TERME	0	0	12.691	0	0	0	0	0	0	0
CASTELFIORENTINO	0	0	8.727	0	0	0	0	0	0	0
CASTELFRANCO EMILIA	0	0	12.732	0	0	0	0	0	0	1
CASTELFRANCO VENETO	0	0	10.719	0	0	0	0	0	0	0
CASTELLAMONTE	0	0	8.815	0	0	0	0	0	0	0
CASTELLEONE	0	0	6.818	0	0	0	0	0	0	0
CASTELNOVO NE'MONTI	0	0	6.863	0	0	0	0	0	0	0
CASTELNUOVO BERARDENGA	0	0	7.89	0	0	0	0	0	0	0
CASTELNUOVO SCRIVIA	0	0	7.301	0	0	0	0	0	0	0
CASTIGLION FIORENTINO	0	0	13.097	0	0	0	0	0	0	0
CASTIGLIONE DEL LAGO	0	0	10.539	0	0	0	0	0	0	0
CAVARZERE	0	0	15.038	0	0	0	0	0	0	0
CAVOUR	0	0	7.449	0	0	0	0	0	0	0
CECCANO	0	0	7.044	0	0	0	0	1	0	0
CENTO	0	0	19.611	0	0	0	0	0	0	0
CEREA	0	0	6.723	0	0	0	0	0	0	0
CERTALDO	0	0	7.237	0	0	0	0	0	0	0
CESENA	1	1	38.528	1190	1350	0	1	1	1	1
CHERASCO	0	0	8.991	0	0	0	0	0	0	0
CHIARI	0	0	9.515	0	0	0	0	0	0	0

CHIAVARI	0	0	12.008	0	0	0	0	0	0	0
CHIERI	0	1	12.248	1150	1350	1	0	0	0	0
CHIOGGIA	0	0	28.051	0	0	0	0	0	1	0
CHIUSA DI PESIO	0	0	6.738	0	0	0	0	0	0	0
CHIVASSO	0	0	9.123	0	0	0	0	0	0	0
CINGOLI	0	0	12.577	0	0	0	0	1	0	0
CITTA' DELLA PIEVE	0	0	6.755	0	0	0	0	0	0	0
CITTA' DI CASTELLO	0	1	24.216	1150	1400	0	0	1	0	0
CITTADELLA	0	0	8.57	0	0	0	0	0	0	0
CIVIDALE DEL FRIULI	0	0	8.413	0	0	0	0	0	0	0
CIVITANOVA MARCHE	0	0	9.17	0	0	0	0	0	0	0
CIVITAVECCHIA	0	0	9.718	0	0	0	0	0	0	1
CODOGNO	0	0	11.462	0	0	0	0	0	0	0
CODROIPO	0	0	8.36	0	0	0	0	0	0	0
COLLE DI VAL D'ELSA	0	0	8.521	0	0	0	0	0	0	0
COLLESALVETTI	0	0	7.349	0	0	0	0	0	0	0
COLOGNA VENETA	0	0	7.435	0	0	0	0	0	0	0
COLORNO	0	0	6.829	0	0	0	0	0	0	0
COMACCHIO	0	0	9.064	0	0	0	0	0	1	1
COMO	1	1	33.369	1090	1311	1	0	0	1	0
CONCORDIA SULLA SECCHIA	0	0	9.466	0	0	0	0	0	1	0
CONEGLIANO	0	0	7.872	0	0	0	0	0	0	0
COPPARO	0	0	11.865	0	0	0	0	0	0	0
CORIO	0	0	6.99	0	0	0	0	0	0	0
CORREGGIO	0	0	12.319	0	0	0	0	1	0	0
CORRIDONIA	0	0	8.481	0	0	0	0	0	0	0
CORTONA	0	1	26.441	1200	1323	0	0	1	0	1
COSTIGLIOLE D'ASTI	0	0	6.799	0	0	0	0	0	0	0
COTIGNOLA	0	0	6.881	0	0	0	0	0	0	0
CREMA	1	1	16.175	1150	1449	0	0	0	0	0
CREMONA	1	1	43.109	1150	1350	1	0	1	1	0
CRESCENTINO	0	0	6.671	0	0	0	0	0	0	0
CREVALCORE	0	0	10.815	0	0	0	0	0	0	0
CUNEO	0	0	23.453	0	0	0	0	0	0	0

DEMONTE	0	0	7.768	0	0	0	0	0	0	0
DRONERO	0	0	8.26	0	0	0	0	0	0	0
EMPOLI	1	0	16.672			0	0		0	1
ESTE	0	0	10.037	0	0	0	0	1	0	0
FABRIANO	0	0	19.771	0	0	0	0	1	0	0
FAENZA	1	1	36.385	1120	1250	1	0	1	1	0
FANO	0	0	20.053	0	0	0	0	1	1	0
FELTRE	1	0	13.064	0	0	0	0	0	1	0
FERENTINO	0	0	10.287	0	0	0	0	0	1	0
FERMO	0	0	18.853	0	0	0	0	1	1	0
FERRARA	1	1	67.306	1100	1267	1	0	1	1	1
FERRIERE	0	0	7.411	0	0	0	0	0	0	0
FIDENZA	0	0	11.014	0	0	0	0	0	0	1
FIESOLE	0	0	7.405	0	0	0	0	0	1	1
FIGLINE VALDARNO	0	0	9.781	0	0	0	0	0	0	1
FILOTTRANO	0	0	8.453	0	0	0	0	0	0	0
FINALE EMILIA	0	0	13.176	0	0	0	0	0	0	1
FINALE LIGURE	0	1	9.397	0	0	0	0	1	0	0
FIORENZUOLA D'ARDA	0	0	6.83	0	0	0	0	0	0	0
FIRENZE	1	1	201.138	1115	1434	0	0	1	1	1
FIRENZUOLA	0	0	10.192	0	0	0	0	0	0	0
FIVIZZANO	0	0	15.451	0	0	0	0		0	0
FOIANO DELLA CHIANA	0	0	7.819	0	0	0	0	0	0	0
FOLIGNO	0	0	21.197	0	0	0	0	0	1	0
FONDI	0	0	6.727	0	0	0	0	0	1	0
FORLI'	1	1	38.639	950	1315	1	0	1	1	1
FORMIA	0	0	12.504	0	0	0	0	0	0	0
FORMIGINE	0	0	6.739	0	0	0	0	0	0	0
FOSSANO	0	0	16.684	0	0	0	0	0	0	0
FOSSOMBRONE	0	0	9.845	0	0	0	0	0	1	0
FROSINONE	0	0	10.057	0	0	0	0	0	0	0
FUCECCHIO	0	0	11.021	0	0	0	0	0	0	0
GAETA	0	0	20.327	0	0	0	0	0	1	0
GALLARATE	0	0	10.233	0	0	0	0	0	0	0

GALLIATE	0	0	7.318	0	0	0	0	0	0	0
GAMBOLO'	0	0	6.793	0	0	0	0	0	0	0
GARESSIO	0	0	7.129	0	0	0	0	0	0	0
GARLASCO	0	0	6.885	0	0	0	0	0	0	0
GEMONA DEL FRIULI	0	0	7.895	0	0	0	0	0	0	0
GENOVA	1	1	256.486	1162	1650	0	1	0	1	0
GIAVENO	0	0	9.758	0	0	0	0	0	0	0
GONZAGA	0	0	7.072	0	0	0	0	0	0	0
GORIZIA	0	1	25.239	0	0	0	0	0	0	0
GREVE IN CHIANTI	0	0	11.35	0	0	0	0	0	0	0
GUALDO TADINO	0	0	8.246	0	0	0	0	0	0	0
GUASTALLA	0	0	10.906	0	0	0	0		0	0
GUBBIO	1	0	22.754	1150	1350	0	0	0	1	0
IMOLA	1	0	29.157	1150	1325	0	1	0	1	0
IMPRUNETA	0	0	7.166	0	0	0	0		0	0
ITRI	0	0	6.619	0	0	0	0	0	0	0
IVREA	1	1	9.637	1100	1313	0	1	0	1	0
JESI	0	0	19.307	0	0	0	0	0	1	0
LA SPEZIA	0	0	26.753	0	0	0	0	0	0	0
LARI	0	0	7.163	0	0	0	0	0	0	0
LASTRA A SIGNA	0	0	10.402	0	0	0	0	0	0	0
LAVAGNA	0	0	7.476	0	0	0	0	1	0	0
LECCO	0	0	18.083	0	0	0	0	0	0	0
LEGNAGO	0	0	13.403	0	0	0	0	0	0	0
LEGNANO	0	0	6.949	0	0	0	0	0	0	0
LENDINARA	0	0	9.523	0	0	0	0	1	0	0
LEONESSA	0	0	6.806	0	0	0	0	0	0	0
LERICI	0	0	6.906	0	0	0	0	0	0	0
LIVORNO	0	0	96.631	0	0	0	0	0	0	1
LODI	1	1	25.514	1158	1402	1	0	0	1	0
LONIGO	0	0	9.299	0	0	0	0	0	0	0
LORETO	0	0	8.333	0	0	0	0	0	0	0
LUCCA	1	1	70.537	1119	1314	0	0	1	1	1
LUGO	0	0	25.246	0	0	0	0	0	0	0

LUZZARA	0	0	7.731	0	0	0	0	0	0	0
MACERATA	0	0	19.8	0	0	0	0	1	0	0
MAGIONE	0	0	6.899	0	0	0	0	0	0	0
MANTOVA	1	1	33.783	1150	1272	1	0	1	1	1
MARLIANA	0	0	6.999	0	0	0	0	0	0	0
MAROSTICA	0	0	8.322	0	0	0	0	0	0	0
MARRADI	0	0	8.42	0	0	0	0	0	0	0
MARSCIANO	0	0	10.917	0	0	0	0	0	0	0
MASSA	1	1	17.853	1050	1442	0	0	1	1	0
MASSA MARITTIMA	0	0	8.27	0	0	0	0	0	0	1
MASSAROSA	0	0	9.172	0	0	0	0	0	0	0
MATELICA	0	0	7.521	0	0	0	0	0	0	0
MEDE	0	0	6.827	0	0	0	0	1	0	0
MEDICINA	0	0	11.58	0	0	0	0	0	0	1
MEL	0	0	7.185	0	0	0	0	0	0	0
MELDOLA	0	0	7.798	0	0	0	0	0	0	0
MERANO	0	0	15.153	0	0	0	0	1	0	0
MILANO	1	1	290.514	1050	1311	1	0	1	1	0
MINERBIO	0	0	7.454	0	0	0	0	0	0	0
MINTURNO	0	0	7.519	0	0	0	0	0	0	0
MIRA	0	0	8.603	0	0	0	0	0	0	0
MIRANDOLA	0	0	13.307	0	0	0	0	1	0	0
MIRANO	0	0	7.367	0	0	0	0	0	0	0
MODENA	1	1	56.995	1115	1288	1	0	1	1	1
MODIGLIANA	0	0	6.842	0	0	0	0	1	0	0
MOLINELLA	0	0	10.938	0	0	0	0	0	0	0
MONCALIERI	0	0	10.926	0	0	0	0	0	0	0
MONDOVI'	0	1	17.232	1198	1305	0	0	0	0	0
MONSELICE	0	0	9.802	0	0	0	0	0	0	0
MONTAGNANA	0	0	9.262	0	0	0	0	0	0	0
MONTALCINO	0	0	8.048	0	0	0	0	0	0	0
MONTE SAN SAVINO	0	0	8.173	0	0	0	0	0	0	0
MONTEBELLUNA	0	0	8.091	0	0	0	0	0	0	0
MONTEFIASCONE	0	0	7.231	0	0	0	0	0	0	0

MONTEPULCIANO	1	0	13.494	1100	1260	0	0	1	0	0
MONTESPERTOLI	0	0	9.182	0	0	0	0	1	0	0
MONTEVARCHI	0	0	9.77	0	0	0	0	0	0	0
MONTICELLI D'ONGINA	0	0	7.199	0	0	0	0	0	0	0
MONTICHIARI	0	0	7.342	0	0	0	0	0	0	0
MONZA	0	0	25.266	0	0	0	0	0	0	0
MORTARA	0	0	7.482	0	0	0	0	0	0	0
MUGGIA	0	0	8.264	0	0	0	0	0	0	0
NARNI	0	0	11.261	0	0	0	0	0	1	0
NORCIA	0	0	10.015	0	0	0	0	0	0	0
NOVARA	1	1	29.674	1050	1350	1	0	0	1	0
NOVELLARA	0	0	7.253	0	0	0	0	0	0	0
NOVI LIGURE	0	0	12.374	0	0	0	0	0	0	0
ODERZO	0	0	8.027	0	0	0	0	0	0	0
OLEGGIO	0	0	8.236	0	0	0	0	0	0	0
ORVIETO	1	0	14.431	1300	1350	0	0	0	1	1
OSIMO	0	0	17.234	0	0	0	0	0	1	0
OSTIGLIA	0	0	6.831	0	0	0	0	0	0	0
OVADA	0	0	7.045	0	0	0	0	0	0	0
PADOVA	1	1	64.862	1190	1237	1	0	1	1	0
PAESANA	0	0	7.885	0	0	0	0	0	0	0
PALAIA	0	0	7.434	0	0	0	0	0	0	0
PARMA	1	1	68.889	1140	1300	1	0	1	1	1
PAVIA	1	1	38.079	1100	1289	0	1	1	1	0
PAVULLO NEL FRIGNANO	0	0	10.237	0	0	0	0	0	0	0
PERGINE VALSUGANA	0	0	8.208	0	0	0	0		0	0
PERGOLA	0	0	9.356	0	0	0	0	0	0	0
PERUGIA	1	0	49.507	1000	1370	0	0	0	1	1
PESARO	0	0	27.573	0	0	0	0	1	1	0
PESCAGLIA	0	0	7.535	0	0	0	0	0	0	0
PESCIA	0	0	20.17	0	0	0	0	0	0	1
PEVERAGNO	0	0	7.201	0	0	0	0	0	0	0
PIACENZA	1	1	45.707	1126	1313	1	0	1	1	1
PIETRASANTA	0	0	12.085	0	0	0	0	1	0	1

PINEROLO	0	0	18.698	0	0	0	0	0	0	0
PIOVE DI SACCO	0	0	8.242	0	0	0	0	0	0	0
PISA	1	1	49.81	1050	1399	0	0	0	1	1
PISTOIA	1	1	54.825	1117	1306	0	0	1	1	1
POGGIBONSI	0	0	7.884	0	0	0	0	0	0	0
POIRINO	0	0	6.832	0	0	0	0	0	0	0
POMARANCE	0	0	7.311	0	0	0	0	0	0	1
PONTASSIEVE	0	0	11.024	0	0	0	0		0	0
PONTECORVO	0	0	10.812	0	0	0	0	0	0	0
PONTEDERA	0	0	12.02	0	0	0	0	0	0	1
PONTEVICO	0	0	6.685	0	0	0	0	0	0	0
PONTREMOLI	0	1	14.33	1250	1313	0	0	0	0	0
PORDENONE	0	0	9.561	0	0	0	0	0	0	0
PORTOGRUARO	0	0	9.182	0	0	0	0	0	0	0
PORTOMAGGIORE	0	0	9.697	0	0	0	0	0	0	0
POTENZA PICENA	0	0	6.95	0	0	0	0	0	1	0
PRATO	1	1	36.923	1150	1351	0	0	0	0	0
QUARRATA	0	0	9.485	0	0	0	0	0	0	0
RACCONIGI	0	0	9.68	0	0	0	0	0	0	0
RAPALLO	0	0	11.112	0	0	0	0	0	0	0
RAVENNA	1	1	58.544	0	0	0	1	1	1	1
RECANATI	0	0	13.982	0	0	0	0	0	0	0
REGGELLO	0	0	10.752	0	0	0	0	0	0	0
REGGIO NELL'EMILIA	1	1	50.955	1100	1335	1	0	0	1	1
RHO	0	0	7.39	0	0	0	0	0	0	0
RIETI	0	0	18.886	0	0	0	0	0	1	0
RIMINI	1	1	29.732	1150	1216	0	1	1	1	1
RIVAROLO CANAVESE	0	0	6.708	0	0	0	0	0	0	0
ROSIGNANO MARITTIMO	0	0	7.953	0	0	0	0	0	0	1
ROVATO	0	0	7.48	0	0	0	0	0	0	0
ROVERETO	0	0	14.382	0	0	0	0	0	0	0
ROVIGO	0	0	23.633	0	0	0	0	1	0	0
RUSSI	0	0	8.544	0	0	0	0	0	0	0
SABBIONETA	0	0	7.273	0	0	0	0	0	0	0

SALUZZO	0	1	16.214	0	0	0	0	1	0	0
SAN BENEDETTO DEL TRONTO	0	0	7.077	0	0	0	0	0	0	0
SAN BENEDETTO PO	0	0	10.399	0	0	0	0	0	0	0
SAN CASCIANO IN VAL DI PESA	0	0	12.605	0	0	0	0	0	0	0
SAN COLOMBANO AL LAMBRO	0	0	7.032	0	0	0	0	0	0	0
SAN DAMIANO D'ASTI	0	0	8.366	0	0	0	0	0	0	0
SAN DONA' DI PIAVE	0	0	8.01	0	0	0	0	0	0	0
SAN FELICE SUL PANARO	0	0	9.124	0	0	0	0	0	0	0
SAN GIMIGNANO	0	0	8.251	0	0	0	0	0	0	0
SAN GIOVANNI IN PERSICETO	0	0	15.444	0	0	0	0	0	0	0
SAN GIULIANO TERME	0	0	18.693	0	0	0	0	0	0	1
SAN MINIATO	1	0	16.229	1250	1369	0	0	0	0	0
SAN PIETRO IN CASALE	0	0	8.509	0	0	0	0	0	0	0
SAN REMO	0	0	12.89	0	0	0	0	0	0	0
SAN SALVATORE MONFERRATO	0	0	7.187	0	0	0	0	0	0	0
SAN SEVERINO MARCHE	0	0	14.836	0	0	0	0	1	0	0
SAN VITO AL TAGLIAMENTO	0	0	8.853	0	0	0	0	0	0	0
SANSEPOLCRO	0	0	8.2	0	0	0	0	1	0	1
SANTA MARGHERITA LIGURE	0	0	7.949	0	0	0	0	0	0	0
SANT'ANGELO LODIGIANO	0	0	8.876	0	0	0	0	0	0	0
SANTARCANGELO DI ROMAGNA	0	0	8.19	0	0	0	0	0	0	0
SANT'ELPIDIO A MARE	0	0	7.203	0	0	0	0	0	0	0
SARONNO	0	0	6.976	0	0	0	0	0	0	0
SARZANA	0	0	9.629	0	0	0	0	0	0	0
SASSO MARCONI	0	0	7.299	0	0	0	0	0	0	0
SASSOFERRATO	0	0	9.02	0	0	0	0	0	0	0
SAVIGLIANO	1	0	16.409	1184	1350	0	0	0	0	0
SAVONA	1	0	24.802	1191	1528	0	1	0	1	0
SCANDIANO	0	0	7.823	0	0	0	0	0	0	0
SCANDICCI	0	0	10.121	0	0	0	0	0	0	0

SCHIO	0	0	13.525	0	0	0	0	0	0	0
SENIGALLIA	0	0	22.695	0	0	0	0	0	1	0
SERAVEZZA	0	0	8.858	0	0	0	0	1	0	0
SEREGNO	0	0	7.003	0	0	0	0	0	0	0
SERMIDE	0	0	6.7	0	0	0	0	0	0	0
SESTO FIORENTINO	0	0	9.67	0	0	0	0	0	0	0
SESTRI LEVANTE	0	0	9.054	0	0	0	0	0	0	0
SEZZE	0	0	8.89	0	0	0	0	0	0	0
SIENA	1	1	31.844	1050	1399	0	0	0	1	1
SIGNA	0	0	7.472	0	0	0	0	1	0	0
SINALUNGA	0	0	9.072	0	0	0	0	0	0	1
SONCINO	0	0	7.343	0	0	0	0	0	0	0
SONDRIO	0	0	6.823	0	0	0	0	0	0	0
SORA	0	0	12.137	0	0	0	0	0	1	0
SORESINA	0	0	9.093	0	0	0	0	0	0	0
SOVICILLE	0	0	7.904	0	0	0	0	0	0	0
SPOLETO	0	1	21.168	1150	1354	0	0	0	1	0
STAZZEMA	0	0	7.667	0	0	0	0	0	0	0
STRADELLA	0	0	8.294	0	0	0	0	0	0	0
SUBIACO	0	0	7.525	0	0	0	0	0	0	0
SUZZARA	0	0	8.812	0	0	0	0	0	0	0
TARCENTO	0	0	8.259	0	0	0	0	0	0	0
TERNI	0	0	22.78	0	0	0	0	0	1	0
TERRANUOVA BRACCIOLINI	0	0	7.844	0	0	0	0	0	0	0
TIVOLI	0	0	7.449	0	0	0	0	0	1	0
TODI	0	0	15.049	0	0	0	0	0	1	0
TOLENTINO	0	0	11.422	0	0	0	0		0	0
TORINO	1	1	210.873	1050	1280	0	1	1	1	0
TORTONA	1	1	13.909	1150	1347	0	1	0	1	0
TRECATE	0	0	7.075	0	0	0	0	0	0	0
TREIA	0	0	9.624	0	0	0	0	0	0	0
TRENTO	0	1	36.622	0	0	0	0	0	1	0
TREVIGLIO	0	0	11.981	0	0	0	0	0	0	0
TREVISO	1	1	29.074	1150	1237	1	0	1	1	0

TRIESTE	0	0	171.436	0	0	0	0	0	1	0
TRINO	0	0	9.916	0	0	0	0	0	0	0
UDINE	0	0	29.425	0	0	0	0	1	0	0
UMBERTIDE	0	0	11.174	0	0	0	0	0	0	0
URBINO	0	0	15.786	0	0	0	0	1	1	0
VALDAGNO	0	0	8.782	0	0	0	0	0	0	0
VALDOBBIADENE	0	0	7.931	0	0	0	0	0	0	0
VALENZA	0	0	10.724	0	0	0	0	0	0	0
VARALLO	1	0	7.488	1150	1395	0	0	0	0	0
VARAZZE	0	0	9.528	0	0	0	0	0	0	0
VARESE	0	0	19.339	0	0	0	0	0	0	0
VARESE LIGURE	0	0	8.063	0	0	0	0	0	0	0
VELLETRI	0	0	13.901	0	0	0	0	0	1	0
VENEZIA	0	1	164.965	950	1797	1	0	0	0	0
VENTIMIGLIA	1	0	7.406	1150	1261	0	1	0	1	0
VERCELLI	1	1	56.962	1198	1348	1	0	0	1	0
VEROLI	0	0	11.474	0	0	0	0	0	1	0
VERONA	1	1	86.443	1150	1227	1	0	1	1	0
VIADANA	0	0	15.641	0	0	0	0	0	0	0
VIAREGGIO	0	0	12.249	0	0	0	0		0	0
VICCHIO	0	0	8.967	0	0	0	0	0	0	0
VICENZA	1	1	37.475	1110	1236	1	0	0	1	0
VICOPISANO	0	0	6.648	0	0	0	0	0	0	0
VIGEVANO	0	0	19.833	0	0	0	0	0	0	0
VIGONE	0	0	6.689	0	0	0	0	0	0	0
VILLA MINOZZO	0	0	7.411	0	0	0	0	0	0	0
VILLAFRANCA DI VERONA	0	0	8.377	0	0	0	0	0	0	0
VILLAFRANCA PIEMONTE	0	0	8.342	0	0	0	0	0	0	0
VIMERCATE	0	0	7.336	0	0	0	0	0	0	0
VINCI	0	0	6.646	0	0	0	0	0	0	0
VITERBO	1	0	27.232	1150	1251	0	0	0	1	1
VITTORIO VENETO	1	0	16.268			0	0		0	0
VOGHERA	0	0	15.454	0	0	0	0	0	0	0
VOLTERRA	1	1	13.279	1239	1340	0	0	1	1	1

Table 2: Summary Statistics

A. Social capital measures

	Mean	Median	Standard deviation	1 th percentile	99th percentile
Number of non profit organization (per 1,000 people)	5.369	4.189	11.684	0	22.117
Referenda turnout (%)	86.489	87.700	5.730	66.067	94.867
City has an organ donation association	0.426	0	0.495	0	1

B. History communal of independence

	Mean	Median	Standard deviation	1 th percentile	99th percentile
Independent city: at time of war against Frederick I (year 1167)	0.144	0	0.351	0	1
Independent city: year 1300					
Independent city: combined definition					
Year independence was acquired (conditional on independence)	1130	1150	62.484	950	1300
Year independence was lost (conditional on independence)	1326.68	1315	78.86	1216	1650
Length of independence conditional on independence (N. of years)	196.472	175	100.41	47	488
(log) Length of independence	0.726	0	1.807	0	5.908
City belonged to the Lombard League	0.061	0	0.239	0	1
City was allied to the Emperor	0.035	0	0.185	0	1

C. City geography

	Mean	Median	Standard deviation	1 th percentile	99th percentile
City altitude	357.756	291	287.756	3	1,296
City steepness	658.749	460	655.457	4	2,637
City located on the coast					
City located with 5 kilometers from the sea					
City located at a cross with roman roads	0.108	0	0..311	0	1
Population after unification (1871) (thousand people)	18.233	9.805	29.283	6.727	210.873
Population current (2001) (thousand of people)	45.441	17.876	155.344	2.719	613.307

D. Economic development and endowments

	Mean	Median	Standard deviation	1 th percentile	99th percentile
Disposable per capita income (*K* of euros)	14.8200	14.7265	2.098	9.5240	19.354
Gross per capita household wealth (*K* of euros)	33.2173	31.7190	12.4114	14.0140	90.1930
Gini land ownership inequality index	0.629	0.628	0.134	0.321	0.913
Gini income inequality index	0.399	0.397	0.0282	0.337	0.477

E. Instruments and predictors of independent city

	Mean	Median	Standard deviation	1 th percentile	99th percentile
Bishop city	0.227	0	0.420	0	1
City was founded by the Etruscans	0.116	0	0.321	0	1
City was a Roman colony	0.0529	0	0.224	0	1
City was large in year 1,300 (above 10K people)	0.086	0	0.281	0	1
City was medium in year 1,300 (between 1K and 10K people)	0.0455	0	0.209	0	1

F. Indicators for cities in the South: social capital (N. of cities in the South sample 273)

	Mean	Median	Standard deviation	1 th percentile	99th percentile
Number of non profit organization (per 1K people)	3.186	2.984	1.310	0.780	6.534
Referenda turnout (%)					

G. Indicators for cities in the South: Predictors of city independence

	Mean	Median	Standard deviation	1 th percentile	99th percentile
City altitude	307.044	232	263.928	3	1,011
City steepness	725.483	600	577.892	27	3,150
Bishop city	0.216	0	0.412	0	1
City was founded by the Etruscans	0.022	0	0.147	0	1
City was a Roman colony	0.044	0	0.205	0	1
City was large in year 1300 (above 10K people)	0.048	0	0.213	0	1
City was medium in year 1300 (1K to 10K people)	0.135	0	0.343	0	1

Table 3. Effect of communal history on the number of non profit organizations

The table shows OLS estimates of the effect of having been an independent city on the number of non profit organization per inhabitant in the city. Regressions are weighted using city population. Panel A is run on the sample of the (as of 1871) 400 largest towns located in the Center-North; panel B on the whole sample of cities in the same area. Robust standard errors are reported in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10%

A: Sample of 400 largest towns in the Center-North

	Only History	History and geography	History, geography and endowment	No large towns	No province capitals	History, geog., endow. and income	History, geo,endow and area dummies
Free city	0.4227	1.1218***	1.0464***	0.9293**	1.6961***	1.0246***	1.1685***
	(0.3633)	(0.3278)	(0.3284)	(0.3670)	(0.3836)	(0.2743)	(0.2777)
City altitude		0.0011	0.0009	0.0007	0	0.0016**	0.0027***
		(0.0008)	(0.0008)	(0.0008)	(0.0006)	(0.0007)	(0.0008)
Steepness		0.0006*	0.0005*	0.0009***	0.0008***	0.0007***	0.0005*
		(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0003)
At a cross with roman roads		0.9743***	0.8919***	1.0268***	0.2298	0.5939**	0.8179***
		(0.3345)	(0.3225)	(0.3807)	(0.6387)	(0.2624)	(0.3056)
City is on the coast		-0.1526	-0.1634	-0.3537	-0.029	0.3388	0.2802
		(0.4320)	(0.3686)	(0.3292)	(0.3387)	(0.2931)	(0.3131)
City is 5km from the coast		-0.7719**	-0.6715**	-0.3106	-0.0222	-0.0319	-1.0165***
		(0.3376)	(0.2880)	(0.2655)	(0.2259)	(0.2632)	(0.3906)
Population		-0.0041**	-0.0054***	-0.0333*	-0.0483***	-0.0080***	-0.0054***
		(0.0019)	(0.0018)	(0.0184)	(0.0125)	(0.0014)	(0.0015)
Population squared		0	0	0.0004**	0.0002***	0.0000***	0.0000**
		-		(0.0002)	(0.0001)	-	-
Gini inequality index of Land ownership			-2.1175**	0.3836	0.0287	2.7508***	1.3474
			(1.0266)	(0.8509)	(0.7982)	(0.8207)	(1.0087)
Gini income inequality index			14.6328***	12.9824**	13.6261***	-4.2699	12.5731***
			(4.9145)	(5.1880)	(5.0922)	(5.0120)	(4.4623)
Income per capita						0.5127***	
						(0.0612)	
Observations	400	400	400	381	337	400	400
R-squared	0.02	0.25	0.3	0.33	0.26	0.48	0.38

B . Total sample of cities in the Center-North

	Only History	History and geography	History, geography and endowment	No large towns	No province capitals	History, geogr. endow. and income	History, geogr. Endow. and area dummies
Free city	0.8983***	2.0653***	1.8628***	1.7663***	1.9357***	1.5530***	1.9409***
	(0.3290)	(0.3365)	(0.3221)	(0.3690)	(0.4082)	(0.2790)	(0.2624)
City altitude		0.0020***	0.0020***	0.0016***	0.0017***	0.0024***	0.0024***
		(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Steepness		0.0014***	0.0014***	0.0015***	0.0015***	0.0013***	0.0013***
		(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
At a cross with roman roads		-	-	-	-	-	-
City is on the coast		0.3909	0.3076	0.3666	0.8128***	0.6527***	0.4882*
		(0.3418)	(0.3227)	(0.2433)	(0.2282)	(0.2472)	(0.2839)
City is 5km from the coast		1.0241	1.1564*	1.2954**	1.4235**	1.5674**	0.9649
		(0.6597)	(0.6687)	(0.6542)	(0.6468)	(0.6554)	(0.6861)
Population		-0.0036	-0.0043*	-0.0599***	-0.0660***	-0.0070***	-0.0051**
		(0.0027)	(0.0025)	(0.0098)	(0.0077)	(0.0018)	(0.0021)
Population squared		0	0	0.0006***	0.0005***	0.0000**	0
		-	-	(0.0001)	(0.0001)	-	-
Gini inequality of land ownership index			0.6467	0.3353	0.2372	1.2357***	0.4785
			(0.5530)	(0.3839)	(0.3299)	(0.4795)	(0.4822)
Gini income inequality index			10.0429***	9.6754***	7.5981***	0.6296	8.2309***
			(2.2192)	(1.7505)	(1.5041)	(2.2254)	(1.9641)
Income per capita						0.3488***	
						(0.0375)	
Observations	5,360	5,360	5,360	5,341	5,298	5,360	5,360
R-squared	0.01	0.08	0.08	0.09	0.08	0.1	0.09

Table 4: Effect of communal history on referenda turnout

The table shows OLS estimates of the effect of having been an independent city on average referenda turnout computed as the fraction of individuals that participated on average in three referenda held after WWII; estimates are run on the sample of the largest 400 towns located in the Center-North. Regressions are weighted using city population. Robust standard errors are reported in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10% .

	Only History	History and geography	History, geography and endowment	No large towns	No province capitals	History, geography, endowment and income	History, geography, endowments and area dummies
Free city	-1.2534	0.8745	1.1133**	0.1971	0.1283	1.1133**	0.8905*
	(1.0799)	(0.5486)	(0.5584)	(0.6118)	(0.7013)	(0.5642)	(0.4402)
City altitude		-0.0076***	-0.0077***	-0.0074***	-0.0088***	-0.0074***	-0.0029*
		(0.0016)	(0.0016)	(0.0016)	(0.0020)	(0.0016)	(0.0017)
Steepness		-0.0025***	-0.0028***	-0.0029***	-0.0030***	-0.0027***	-0.0008
		(0.0004)	(0.0004)	(0.0005)	(0.0007)	(0.0004)	(0.0005)
At a cross with roman roads		-0.2761	0.0869	-0.0962	-0.5194	-0.06	-0.6424
		(0.4721)	(0.5176)	(0.5572)	(1.0615)	(0.5060)	(0.4444)
City is on the coast		-3.1122***	-3.1894***	-3.6457***	-5.7393***	-2.9779***	-1.8059***
		(0.7198)	(0.7115)	(0.8290)	(1.0510)	(0.6727)	(0.6730)
City is 5km from the coast		0.3056	-0.1631	-0.3456	-0.7662	0.1166	0.0198
		(0.7975)	(0.7778)	(0.7352)	(0.7330)	(0.7691)	(0.9399)
Population		-0.0079**	-0.0096***	-0.0161	0.0088	-0.0109***	-0.0005
		(0.0032)	(0.0036)	(0.0254)	(0.0240)	(0.0034)	(0.0024)
Population squared		0	0	0.0001	-0.0002	0	-0.0000**
		-	-	(0.0002)	(0.0002)	-	-
Gini inequality index of land ownership			3.0595**	5.3184***	5.7546***	3.3904**	1.9384
			(1.5046)	(1.8926)	(2.1485)	(1.5397)	(1.8697)
Gini income inequality index			-9.9544	-16.7025**	-14.7021*	-18.2783**	-2.5693
			(6.8047)	(8.0416)	(8.7343)	(8.7066)	(7.3785)
Income per capita						0.2292	
						(0.1479)	
Observations	400	400	400	380	337	400	400
R-squared	0.02	0.54	0.55	0.35	0.41	0.56	0.64

Table 5: Effect of communal history on the existence of a organs donation organization

The table shows OLS estimates of a linear probability model for the effect of having been an independent city on the existence of a organs donation organization (AIDO) in the city. Estimates are run on the sample of the largest 400 towns located in the Center-North. Regressions are weighted using city population. Robust standard errors are reported in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10% .

	Only History	History and geography	History, geography and endowment	No large towns	No province capitals	History, geography, endowment and income	History, geography, endowments and area dummies
Free city	0.3517***	0.2354***	0.1735**	0.1036	0.0108	0.1596**	0.1534**
	(0.0888)	(0.0794)	(0.0779)	(0.0777)	(0.1053)	(0.0744)	(0.0773)
City altitude		-0.0003	-0.0003	-0.0004*	-0.0002	-0.0002	-0.0003
		(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)
Steepness		-0.0002*	-0.0002*	0	-0.0002**	-0.0001	-0.0002
		(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
At a cross with roman roads		-0.0703	-0.1321	-0.1241	-0.2325**	-0.1870**	-0.1439
		(0.0891)	(0.0920)	(0.0840)	(0.1011)	(0.0862)	(0.0934)
City is on the coast		-0.1937	-0.1712	-0.1592*	-0.2350**	-0.0906	-0.1769
		(0.1447)	(0.1193)	(0.0867)	(0.1103)	(0.1130)	(0.1163)
City is 5km from the coast		-0.4196**	-0.3427**	-0.2231	-0.2159	-0.2505	-0.2923*
		(0.1673)	(0.1622)	(0.1620)	(0.1723)	(0.1563)	(0.1576)
Population		0.0006	0.0005	0.0054	0.0100**	0.0003	0.0006
		(0.0006)	(0.0006)	(0.0039)	(0.0046)	(0.0006)	(0.0005)
Population squared		0.0000	-0.0000*	0.0000	(0.0001)	0.0000	-0.0000*
		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Gini inequality index of land ownership			0.4068	(0.2413)	-0.4586*	0.5974*	0.2470
			(0.3564)	(0.2191)	(0.2569)	(0.3314)	(0.3283)
Gini income inequality index			5.4518***	1.6993	1.5951	2.6950*	6.0497***
			(1.4447)	(1.1842)	(1.3373)	(1.4072)	(1.5442)
Income per capita						0.0756***	
						-0.0175	
Observations	400	400	400	380	336	400	400
R-squared	0.14	0.25	0.32	0.33	0.22	0.36	0.32

Table 6: Robustness

Panel A shows non-weighted OLS estimates of the effect of having been an independent city on measures of social capital today. Panel B reports regressions of the effects of free cities on social capital for a free city identifier obtained using the free cities in year 1300 (first three columns) and for an identifier obtained as the union of the free cities in year 1167 and in year 1300 (columns 4-6). Estimates are run on the sample of the largest 400 towns located in the Center-North. Robust standard errors are reported in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10% .

A. OLS, non weighed regressions

	Non profit organizations	Referenda turnout	Organs donation organizations
Free city	1.1636**	0.2927	0.1299*
	(0.3195)	(0.5666)	(0.0738)
Cit altitude	0.0017*	-0.0088***	-0.0005***
	-0.0007	-0.0019	-0.0001
Steepness	0.0008**	-0.0043***	-0.0001
	(0.0002)	(0.0006)	-
At a cross with roman roads	0.8175*	(0.3822)	(0.1051)
	(0.3605)	(0.6737)	(0.0800)
City is on the coast	0.0938	-4.7993***	-0.1765**
	(0.3816)	(0.9093)	(0.0812)
City is 5km from the coast	-0.3613	-0.836	-0.1124
	(0.2300)	(0.8342)	(0.1541)
Population	-0.0045	-0.0016	0.0030***
	(0.0030)	(0.0052)	(0.0008)
Population squared	0	0	-0.0000***
	-	-	-
Gini inequality index of land ownership	0.0017	9.9819***	-0.0662
	(0.7701)	(2.2777)	(0.1907)
Gini income inequality index	11.3630**	-4.5127	2.6974***
	(4.3748)	(8.3250)	(0.9394)
Observations	400	400	400
R-squared	0.22	0.44	0.23

B: alternative definition of free city

	Non profit organizations	Referenda turnout	Organs donation organizations	Non profit organizations	Referenda turnout	Organs donation organizations
Free city: 1300 definition	1.5022***	0.6787	0.2083**			
	(0.3188)	(0.5697)	(0.0888)			
Free city: combined definition				1.4730***	1.0769**	0.2040***
				(0.2901)	(0.5072)	(0.0788)
City altitude	0.0013	-0.0078***	-0.0004*	0.0009	-0.0079***	-0.0004**
	(0.0009)	(0.0017)	(0.0002)	(0.0008)	(0.0016)	(0.0002)
Steepness	0.0006**	-0.0027***	-0.0002**	0.0006**	-0.0028***	-0.0002**
	(0.0003)	(0.0004)	(0.0001)	(0.0003)	(0.0004)	(0.0001)
City is on the coast	(0.1745)	-3.4089***	(0.1541)	(0.1976)	-3.3300***	(0.1581)
	(0.2960)	(0.6850)	(0.1111)	(0.3005)	(0.6666)	(0.1138)
City is 5km from the coast	-0.5679**	(0.2571)	-0.3204**	-0.5145*	(0.1247)	-0.3134*
	(0.2762)	(0.7853)	(0.1621)	(0.2798)	(0.7822)	(0.1630)
At a cross with roman roads	0.7931**	0.0857	(0.1273)	0.8473***	0.0790	(0.1203)
	(0.3074)	(0.5254)	(0.0881)	(0.3067)	(0.5048)	(0.0875)
Population	-0.0066***	-0.0086**	0.0004	-0.0064***	-0.0095***	0.0004
	(0.0015)	(0.0037)	(0.0006)	(0.0014)	(0.0035)	(0.0006)
Population squared	0.0000**	-	-	0.0000**	-	-
	-	-	-	-	-	-
Gini inequality index of	2.2712**		0.5710	2.0478**		0.5417
Land ownership		2.8708*			2.8672*	
	(0.9737)	(1.5137)	(0.3878)	(0.9985)	(1.4939)	(0.3863)
Gini income inequality index	13.9019***	-8.4766	4.8493***	13.6961***	-9.6654	4.8280***
	(4.6083)	(6.9703)	(1.1917)	(4.5658)	(6.7269)	(1.2087)
Observations	400	400	400	400	400	400
R-squared	0.34	0.55	0.31	0.35	0.55	0.31

Table 7: Digging deeper into history

Panel A shows the second stage results of a two-step Heckman estimates of the effect of the length of independence of free cities on social capital today. The first stage uses an indicator for whether the city was a Bishop city and whether it was founded by the Etruscan to achieve identification. The Mill's ratio is obtained from the first-step probit regression. Panel B shows regressions when an identifier for whether the city has evolved into an independent Signoria is added as an explanatory variable. Panel C shows results when the free cities are classified as "neutral", "allied with the Emperor" or "belonging to the Lombard League" in the war for independence against Emperor Frederick I "Barbarossa". Regressions are run on the sample of the largest 400 towns located in the Center-North. Robust tandard errors are reported in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10% .

A. Effect of the length of independence on social capital

	Non profit organizations	Referenda turnout	Organs donation organizations
Log of length of independence	0.3342**	0. 1621	0.0843*
	(0.1600)	(0. 2849)	(0.0484)
City altitude	0.0037***	-0.0025	-0.0002
	(0.0015)	(0.0025)	(0.0004)
Steepness	-0.0002	-0.0019*	-0.0002
	(0.0005)	(0.0009)	(0.0002)
At a cross with roman roads	7689	-0.5083	0.076
	(0.7408)	(1.1974)	(0.2108)
City is on the coast			
City is 5km from the coast	0.447	-0.6901	-0.0872
	(0.4180)	(0.6442)	(0.1177)
Population	-0.0075	0.0038	0.0005
	(0.0031)	(0.0048)	(0.0009)
Population squared	0.0000	(0.0000)	(0.0000)
	-	-	-
Mills Ratio	-1.104	0.5363	-0.2247
	(0.2412)	(0.4413)	(0.0749)
Observations	400	400	400
Uncensored observations	57	57	57

B: The role of Signoria

	Non profit organizations	Referenda turnout	Organs donation organizations
Free city	0.9426***	0.9136	0.1310*
	(0.3098)	(0.5841)	(0.0780)
Signoria	0.7100**	0.7217	0.1799**
	(0.2960)	(0.4894)	(0.0846)
City altitude	0.0016*	-0.0075***	-0.0003
	(0.0009)	(0.0017)	(0.0002)
Steepness	0.0004	-0.0027***	-0.0002*
	(0.0003)	(0.0004)	(0.0001)
At a cross with roman roads	0.8541***	-0.0089	-0.1493
	(0.3090)	(0.5387)	(0.0942)
City is on the coast	-0.2449	-3.0164***	-0.1272
	(0.3159)	(0.7030)	(0.1037)
City is 5km from the coast	-0.6511*	-0.023	-0.3066**
	(0.3893)	(0.7604)	(0.1544)
Population	-0.0069***	-0.0099***	0.0004
	(0.0019)	(0.0037)	(0.0005)
Population squared	0	0	0
Gini inequality index of land ownership	0.6789	-2.8370*	0.3594
	(0.9586)	(1.5012)	(0.3321)
Gini income inequality index	16.1963***	-9.8927	5.2998***
	(4.2062)	(6.9524)	(1.2944)
Observations	400	400	400
R-squared	0.36	0.56	0.33

C: The role of the Lombard League

	Non profit organizations	Referenda turnout	Organs donation organizations
Neutral city	1.2302***	1.0875	0.1904**
	(0.3511)	(0.7194)	(0.0859)
Part of the Lombard League	1.4474***	1.6466**	0.2764***
	(0.3486)	(0.6820)	(0.0842)
Allied to the Emperor	0.7874*	-0.5039	-0.1028
	(0.4117)	(1.0734)	(0.1678)
City altitude	0.001	-0.0073***	-0.0004*
	(0.0008)	(0.0015)	(0.0002)
Steepness	0.0006**	-0.0026***	-0.0002**
	(0.0003)	(0.0005)	(0.0001)
At a cross with roman roads	0.8354***	-0.1971	-0.1674*
	(0.3131)	(0.4686)	(0.0868)
City is on the coast	-0.1648	-3.0909***	-0.1208
	(0.3041)	(0.6803)	(0.1083)
City is 5km from the coast	-0.5900**	-0.0536	-0.3063*
	(0.2894)	(0.7217)	(0.1576)
Population	-0.0050***	-0.0057	0.0011*
	(0.0016)	(0.0037)	(0.0006)
Population squared	0	0	-0.0000***
	-	-	-
Gini inequality index of land ownership	2.1783**	2.9973**	0.5495
	(1.0161)	(1.4880)	(0.3609)
Gini income inequality index	11.8044**	-16.7747**	3.6386***
	(4.7529)	(6.5945)	(1.1127)
Observations	400	400	400
R-squared	0.33	0.57	0.34

Table 8: First stages

The table shows estimates of a linear probability model for whether the city was a free city and the first stage estimates of the IV regressions reported in Table 9. Estimates are run on the sample of the largest 400 towns located in the Center-North.. Robust standard errors are reported in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10% .

	Only instruments	Instruments and geography	First stage estimates
Bishop city	0.7379***	0.7501***	0.5393***
	(0.0706)	(0.0651)	(0.0649)
Etruscan city	0.1664***	0.1355**	0.2134***
	(0.0631)	(0.0569)	(0.0537)
City altitude		-0.0005**	-0.0004**
		(0.0002)	(0.0002)
Steepness		0	0.0001
		(0.0001)	(0.0001)
At a cross with roman roads		-0.2523**	-0.2566***
		(0.1099)	(0.0755)
City is on the coast		-0.1365***	0.0317
		(0.0466)	(0.0535)
City is 5km from the coast		-0.0559	-0.1545**
		(0.0796)	(0.0628)
Population			0.0016***
			(0.0003)
Population squared			-0.0000***
			-
Gini inequality index of land ownership			-0.5405***
			-0.2086
Gini income inequality index			2.7567***
			-0.7827
Observations	400	400	400
R-squared	0.6	0.64	0.75
F-test of excluded instruments			65.77
Partial R-squared of excluded instruments			0.4746

Table 9: Instrumental variable estimates

The table shows IV estimates of the effect of having been an independent city on measures of social capital today. Instruments used for the estimates are an indicator of whether the city was a Bishop city in year 1,000 and an indicator of whether the city was founded by the Etruscans. The bottom of the table shows the *F* test for the excluded instruments in the first stage regression, the partial R2 of the excluded instruments in the first stage regression and the p-value of the Sargan test for the validity of the excluded instruments. Estimates are run on the sample of the largest 400 towns located in the Center-North. Robust standard errors are reported in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10% .

	Non profit organizations	Referenda turnout	Organs donation organizations	Non profit organizations	Referenda turnout	Organs donation organizations
Free city: basic definition	1.0285**	1.9785***	0.4168***			
	(0.4732)	(0.7452)	(0.1257)			
Free city: 1300 definition				1.3444**	2.4311**	0.5726***
				(0.5991)	(1.1143)	(0.1794)
City altitude	0.0009	-0.0073***	-0.0003	0.0012	-0.0068***	-0.0002
	(0.0008)	(0.0015)	(0.0002)	(0.0009)	(0.0020)	(0.0003)
Steepness	0.0005*	-0.0029***	-0.0002**	0.0006**	-0.0028***	-0.0002**
	(0.0003)	(0.0004)	(0.0001)	(0.0003)	(0.0004)	(0.0001)
At a cross with roman roads	-0.1692	0.0336	-0.0611	-0.209	-0.0946	-0.0677
	(0.3506)	(0.5031)	(0.1130)	(0.3172)	(0.5149)	(0.1106)
City is on the coast	-0.6754**	-2.8938***	-0.2748*	-0.6025**	-2.9930***	-0.2378
	(0.2861)	(0.7076)	(0.1581)	(0.2928)	(0.7045)	(0.1562)
City is 5km from the coast	0.8933***	0.0295	-0.1315	0.8120***	0.1404	-0.1647*
	(0.3161)	(0.7526)	(0.0943)	(0.3064)	(0.7567)	(0.0972)
Population	-0.0053**	-0.0118***	-0.0001	-0.0062***	-0.0132***	-0.0006
	(0.0021)	(0.0036)	(0.0008)	(0.0021)	(0.0041)	(0.0008)
Population squared	0	0	0	0.0000*	0	0
	-	-	-	-	-	-
Gini inequality index of land ownership	2.1099**	3.3950**	0.6579	2.2085**	3.4984**	0.7015*
	(1.0223)	(1.4776)	(0.4232)	(0.9644)	(1.5758)	(0.4177)
Gini income inequality index	14.6818***	-12.4526*	4.1786***	14.2787***	-12.9621*	3.9170***
	(4.9915)	(6.5642)	(1.2084)	(4.8997)	(6.6803)	(1.2198)
Observations	400	400	400	400	400	400
F-test of excluded instruments	65.77	65.77	65.77	18.99	18.99	18.99
Sargan test: p-value	0.1507	0.0083	0.9928	0.11198	0.0072	0.7621

Table 10: Predicting probability that a city is independent

Panel A shows probit estimates of the probability that a city in the Center-North has become an independent city using as explanatory variables characteristics of the city at the time the Communes were formed. Regressions are run on the sample of the largest 400 towns located in the Center-North.. Robust standard errors are reported in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10% . Panel B shows the distribution of the predicted probabilities obtained using the estimates in table 1 for the sample of towns in the Center North. Panel C does the same but for the sample of cities located in the South using the parameter estimates in panel A.

A. Probability city is independent in the North

Bishop city	1.8768***
	(0.2567)
Founded by the Etruscans	0.6759*
	(0.3542)
City altitude	-0.0001
	(0.0009)
City steepness	0.00001
	(0.0002)
City on the coast	-0.7808*
	(0.4187)
City large in year 1300	2.2993***
	(0.4783)
City medium size in year 1300	1.1225***
	(0.3630)
Observations	400
Pseudo R2	0.6147

B. Distribution of predicted probabilities in the Center-North

Percentile	Total sample	Among cities that actually became independent	Among cities that did not become independent
1%	0.0012	0.0104	0.0012
5%	0.0052	0.012	0.0013
10%	0.0111	0.1289	0.01067
25%	0.0116	0.3503	0.0125
50%	0.0121	0.8803	0.01251
75%	0.1145	0.9948	0.1254
90%	0.6149	0.9953	0.1281
95%	0.9727	0.9954	0.3529
99%	0.9954	0.9959	0.6122
Mean	0.1480	0.6887	0.054
sd	0.2841	0.3465	0.1199
N. of cities	400	61	339

C. Distribution of predicted probabilities in the South

Percentile	Total sample	Potentially independent city	Potentially non independent city
1%	0.0011	0.352	0.0011
5%	0.0012	0.3523	0.0012
10%	0.0012	0.3539	0.0012
25%	0.011	0.3612	0.0103
50%	0.012	0.5	0.012
75%	0.1218	0.874	0.028
90%	0.3534	0.8796	0.1251
95%	0.5098	0.8804	0.3266
99%	0.8797	0.9725	0.3471
Mean	0.1055	0.5866	0.0471
sd	0.1981	0.2136	0.0836
N of cities	286	31	255

Table 11: Difference in difference estimates

Panel A shows mean values of the level of social capital (number of non-profit organizations) for independent and non independent cities in the Center-North and for predicted independent and predicted non-independent cities in the South and the differences in means. Panel B shows estimates of the effects of independence on social capital in the two areas. Robust standard errors are shown in brackets: *** significant at less than 1%; ** significant at 5%; * significant at 10% .

A. Differences in social capital between North and South and between independent and non independent cities

	North	South	Diff
Independent city	6.206***	3.479**	2.727***
	(1.761)	(1.439)	(0.356)
Non independent city	5.1105***	3.201***	1.9095***
	(1.979)	(1.358)	(0.135)
Diff	1.0955***	0.278	0.8175
	(0.254)	(0.269)	

B. Effect of free cities and on social capital in the North and in the South

	Non profit organizations	Non profit organizations
Potential free city	0.2256	0.2219
	(0.2317)	(0.2355)
(Potential free city)×North	0.9339***	1.0391***
	(0.3020)	(0.3148)
South dummy	-1.9500***	-2.0526***
	(0.1331)	(0.1482)
City altitude		0.0007***
		(0.0001)
City is on the coast		-0.0781
		(0.1870)
City is 5km from the coast		-0.4005
		(0.2897)
Population		-0.0022
		(0.0020)
Populations squared		0
		-
Gini income inequality index		4.6974
		(3.0365)
Gini inequality index of land ownership		0.6406
		(0.5560)
Observations	686	686
R-squared	0.28	0.34

Table 12: Effect of social capital on income per capita

The table shows estimates of the effect of social capital on per capita income in the city. Social capital is measured with the number of non profit organizations per 1000 inhabitants. The first two columns show OLS estimates with and without controls for province dummies; the remaining columns show IV regressions. In column (3) the instrument is the indicator for free city; in column (4) the instruments are: an indicator of whether the city was a Bishop city in year 1,000 and an indicator of whether the city was founded by the Etruscans. In column (5) the instrument is the log of the length on independence (the variable is zero if the city was not an independent city). The bottom of the table shows the F test for the excluded instruments in the first stage regression, and the *p*-value of the Sargan test for the validity of the excluded instruments. Robust standard errors are reported in parenthesis; *** significant at less than 1%; ** significant at 5%; * significant at 10%

	OLS	OLS	IV: free city	IV: Bishop city, Etruscan city	IV: length of independence
Social capital	0.4698***	0.4035***	0.5721***	0.7041***	0.5848***
	(0.0440)	(0.0412)	(0.1324)	(0.1637)	(0.1348)
City altitude	-0.0021***	-0.0007	-0.0010*	-0.0012*	-0.0011*
	(0.0006)	(0.0006)	(0.0006)	(0.0007)	(0.0006)
Steepness	-0.0009***	-0.0005**	-0.0005**	-0.0004**	-0.0005**
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
At a cross with roman roads	-0.6946**	-0.1144	-0.0068	0.0774	-0.0021
	(0.2875)	(0.3199)	(0.3067)	(0.3271)	(0.3111)
City is on the coast	-0.7192	-0.0346	0.0633	0.14	0.1164
	(0.5152)	(0.4734)	(0.4440)	(0.4695)	(0.4621)
City is 5km from the coast	0.069	0.0371	-0.1485	-0.2937	-0.1173
	(0.2918)	(0.2441)	(0.2654)	(0.2947)	(0.2624)
Population	0.0134***	0.0136***	0.0132***	0.0128***	0.0128***
	(0.0023)	(0.0019)	(0.0017)	(0.0019)	(0.0017)
Population squared	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***
	-	-	-	-	-
Gini inequality index of land ownership	-2.6757***	-0.259	-0.1287	-0.0266	-0.3027
	(0.6968)	(0.7050)	(0.6593)	(0.6965)	(0.6608)
Province dummies	NO	YES	YES	YES	YES
Observations	400	400	400	400	383
R-squared	0.46	0.74			
Sargan test (p-value)				0.7859	
F-test for excluded instruments			29.68	10.44	26.69

Table 13. Effect of social capital (number of non profit organizations per capita) on total wealth per capita

The table shows estimates of the effect of social capital on total per capita gross household's wealth; per capita wealth is measured as the sum of the value of housing wealth and bank deposits in the city. Social capital is measured with the number of non profit organizations per 1000 inhabitants. The first two columns show OLS estimates with and without controls for province dummies; the reaming columns show IV regressions. In column (3) the instrument is the indicator for free city; in column (4) the instruments are: an indicator of whether the city was a Bishop city in year 1,000 and an indicator of whether the city was founded by the Etruscans. In column (5) the instrument is the log of the length on independence (the variable is zero if the city was not an independent city). The bottom of the table shows the F test for the excluded instruments in the first stage regression, and the *p*-value of the Sargan test for the validity of the excluded instruments. Robust standard errors are reported in parenthesis; *** significant at less than 1%; ** significant at 5%; * significant at 10%

	OLS	OLS	IV: free city	IV: Bishop city, Etruscan city	IV: length of independence
Social capital	2.4742***	2.1378***	3.9181***	5.1360***	3.5420***
	(0.3206)	(0.3157)	(1.0357)	(1.3125)	(1.0415)
City altitude	-0.0131***	-0.0014	-0.0045	-0.0067	-0.0041
	(0.0045)	(0.0048)	(0.0048)	(0.0053)	(0.0048)
Steepness	-0.0065***	-0.0038**	-0.0035**	-0.0033*	-0.0036**
	(0.0018)	(0.0017)	(0.0016)	(0.0017)	(0.0016)
At a cross with roman roads	9.4934***	12.6219***	13.7581***	14.5354***	13.0544***
	(2.0929)	(2.4489)	(2.3989)	(2.6234)	(2.4031)
City is on the coast	-5.75	0.0034	1.04	1.74	2.54
	(3.7508)	(3.6245)	(3.4728)	(3.7653)	(3.5692)
City is 5km from the coast	3.2445	3.9208**	1.96	0.62	2.62
	(2.1243)	(1.8691)	(2.0761)	(2.3636)	(2.0272)
Population	0.0696***	0.0582***	0.0533***	0.0500***	0.0519***
	(0.0170)	(0.0142)	(0.0137)	(0.0149)	(0.0134)
Population squared	0	0.00	0.00	0.00	0
	-	-	-	-	-
Gini inequality index of land ownership	-9.8912*	0.1707	1.5472	2.4889	-0.7866
	(5.0727)	(5.3973)	(5.1571)	(5.5853)	(5.1040)
Observations	400	400	400	400	383
R-squared	0.46	0.74			
Sargan test (p-value)				0.51949	
F-test for excluded instrument			29.68	10.44	26.69