

# LONG-TERM PERSISTENCE

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## Abstract

We study whether a positive historical shock can generate long-term persistence in development. We show that Italian cities that achieved self-government in the Middle Ages have a higher level of civic capital today than similar cities in the same area that did not. The size of this effect increases with the length of the period of independence and its intensity. This effect persists even after accounting for the fact that cities did not become independent randomly. We conjecture that the Middle-Age experience of self-government fostered self-efficacy beliefs—beliefs in one’s own ability to complete tasks and reach goals—and this positive attitude, transmitted across generations, enhances civic capital today. Consistently, we find that fifth-graders in former free city-states exhibit stronger self-efficacy beliefs and that these beliefs are correlated with a higher level of civic capital. (JEL: O43, P16, O10)

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There are primitive societies in which the level of biological well-being is even lower, but in which people are not chronically unhappy. What makes the difference between a low level of living and “la miseria” comes from culture. Unlike the primitive, the peasant feels himself part of a larger society which he is “in” but not altogether “of”.

**(Banfield 1958)**

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## 1. Introduction

Although history holds examples of spectacular catch-ups, relative national levels of economic development tend to be quite persistent over time. The per capita income of European countries at the end of the 20th century had a 0.56 correlation with their per capita income at the beginning of the century. Even over the 300-year span from the 18th to the 21st century the correlation is 0.23.<sup>1</sup> This correlation persists despite the massive destruction of physical and human capital in Europe's recurrent warfare. Why are these differences in economic development so persistent?

In an influential paper, Acemoglu et al. (2001) attribute the phenomenon to the long-lasting effect of formal institutions, such as protection of property rights and limitations on the power of the executive. Ingrained into a country's legal rules, these institutions tend to endure over the centuries. Consistent with this view, they find that countries inhospitable to white men still suffer of low property rights protection and excessive executive power because the European colonizers, who did not intend to stay, designed legal institutions aimed at extracting rather than creating value.

This influential explanation faces three objections. First, how can we differentiate the role of legal institutions from that of the culture and the human capital that the colonizers brought to the colonies (Glaeser et al. 2004)? Second, if persistence depends on legal institutions, why should these be so persistent themselves? After all, they are designed to be changeable. Even constitutions, the least flexible of legal institutions, are often changed: Argentina, which has had four different constitutions in the last 60 years, is a case in point. Finally, can we completely reject the hypothesis that persistence depends on geographical factors?<sup>2</sup>

An alternative interpretation, going back to Putnam et al. (1993), attributes the persistence of economic development to culture. Williamson (2000) claims that culture is the most persistent of all institutions and, unlike legal institutions, has no explicit mechanisms for amendment. Yet even Williamson (2000) is not clear about *why* and *when* culture is so persistent. Putnam (2000) himself documents an example of the rapid deterioration of social capital in America. Does culture persist only when it is optimal, or does it tend to outlive its usefulness and the environment that generated it?

To address these questions, we revisit Putnam's hypothesis. He conjectures that differences in performance among the Italian regions are due to persistent differences in civic capital originating from the free city-states (communes) experience during the late Middle Ages. To study the persistence of culture, Putnam's conjecture has several advantages. First, it traces the origin to an historical period whose formal institutions have long disappeared, facilitating the identification of the cultural effect. Second, his distinction is not just North–South. While free cities were concentrated in the

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1. These results are obtained using Maddison (2001).

2. Acemoglu et al. (2001) discuss this challenge and argue that the diseases that were once a serious problem (yellow fever and malaria) no longer represent a major source of comparative disadvantage today. Still, other geographical factors impeding economic development could be at the origin of this persistence.

Center–North (henceforth North), they did not include all cities in this area.<sup>3</sup> Thus, we can exploit regional variation within the North to test Putnam’s hypothesis. Finally, it considers a temporal span of several centuries, during which a different culture could have formed and taken hold.

We start by comparing current levels of civic capital in different cities within Northern Italy. Following Putnam et al. (1993), our first measure of civic capital is the number of nonprofit organizations per capita. We complement this with two new measures. As we observe in Guiso et al. (2011), for an outcome-based measure to qualify as a good gauge of civic capital, the relationship between the input (civic capital) and the output measure should be stable and unaffected by other factors, such as legal enforcement. One such output is donation of blood or organs. Thus, as a second measure of civic capital we use the existence of an organ donation organization. Finally, in the spirit of Fisman and Miguel (2007), we use the frequency of cheating in a national exam taken by children in each town.

Consistent with Putnam’s conjecture, we find that Northern cities that experienced a period of independence in the Middle Ages have significantly higher levels of civic capital today as measured by all three indicators. For example, the number of voluntary associations is 25% higher in cities that were once free city-states. These results are robust to area dummy variables and to other geographical controls, such as closeness to the sea or elevation. Furthermore, they are robust to excluding larger cities, province capitals, or controlling for income levels and for inequality in the distribution of land.

Not only does civic capital increase with the historical occurrence of a free city-state, but also with the length and the intensity of the experience. One standard deviation increase in the length of independence increases the number of nonprofit organizations by 2.5%, raises the probability of having an organ donation organization by 4.5%, and lowers cheating in mathematics by 2.75%. The free city-state degree of autonomy also mattered. Some cities were independent, but under the protection of the emperor; others were so independent as to fight and win against the emperor. We find that former free cities that in 1158 participated in a league to fight the emperor (the Lombard League) today exhibit more civic capital than free cities that at the time chose to remain neutral, which in turn exhibit more civic capital than cities that chose to be allied with the emperor.

Our results are consistent with the idea that a distant, important historical experience can affect individual behavior many years later. Because the institutions set up by the free cities are long gone, this persistence cannot be due to any formal institution. Yet, there could be some geographical characteristics not controlled for that are correlated both to the emergence of free city-states in the Middle Ages and to a higher level of civic capital today.

To assess this possibility, we investigate the factors that facilitated the creation of free city-states. Historians (Pirenne 1956; Tabacco 1987; Jones 1997; Reynolds 1997;

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3. In this paper we use a customary definition of Center–North: all the regions north of Lazio, including Lazio. In this definition, the South coincides with the territory ruled by the Normans at the beginning of the second millennium. This customary definition is still in usage today.

Milani 2005; among others) claim that the presence of a bishop in a town fostered the formation of a free city-state. This effect, however, can only be present in the North. At the beginning of the second millennium, the South of Italy was more developed and prosperous than the North (see De Long and Shleifer 1993), yet free city-states could not develop there because of the strong central power exerted by the Normans (Putnam 1993). Consistently, we find that the presence of a bishop is correlated with higher civic capital in the North but not in the South. We also find that this correlation does not exist among Northern cities that became bishop seats after 1400.

While these findings do not completely rule out the geography hypothesis, they provide further evidence that civic capital is correlated with a pre-existent condition that facilitated independence only when this condition actually led to the transformative experience of the free city-state.

Having identified this robust correlation, we try to explain *how* such an historically remote experience can leave a legacy after over 500 years. As the epigraph suggests, Banfield (1958) attributes the typical attitude of Southern Italians to a feeling of lack of empowerment (*la miseria*) or—as modern psychology labels it—lack of self-efficacy, the belief a person holds regarding his or her power to affect situations positively (Bandura 1977, 1997). Can a positive or negative historical experience affect an entire population's sense of empowerment? Can such an attitude be handed down for generations and generations? Is this diffuse sense of helplessness related to civic capital, as Banfield's evidence seems to suggest?

To build this connection, we extend Bandura's theory of self-efficacy from the realm of individual experiences to that of collective ones (i.e. historical shock). Psychologists (e.g. Maddux 2009) perceive the development of self-efficacy beliefs as the result of direct and vicarious *individual* experience. We extend this idea to collective historical experience.

We measure a self-efficacy attitude using the way people explain to themselves why they experience a particular event, either positive or negative (Abrahamson et al. 1978). As research in psychology shows (Dweck et al. 1978; Seligman et al. 1984), this attitude is transmitted through education and socialization. Thus, we can measure the cultural transmission of an historical event by looking at differences in self-efficacy of young children in similar geographical areas that have had different histories. Because children's self-efficacy is mostly the reflection of their parents' and teachers' influence, it is particularly useful to isolate the culturally transmitted component of self-efficacy.

We find that eighth-graders in Northern cities that did have the free city-state historical experience display a higher degree of self-efficacy than their peers living in Northern cities that were not communes.

In the logical chain between past historical shocks and today's civic capital, the remaining missing link is the relation between self-efficacy beliefs and civic capital. Team effort is intrinsically subject to a problem of attribution (Alchian and Demsetz 1972). Individuals with stronger self-efficacy beliefs expect their own effort to have higher chances of paying off (both directly and indirectly) increasing their willingness to contribute. Hence, cooperative behavior is more likely to occur among people with

a higher self-efficacy, whereas societies in which lack of self-efficacy is pervasive will tend to have lower levels of civic capital.

We use our data to test this hypothesis and we find that towns exhibiting a higher self-efficacy measure have also higher civic capital. Overall, these correlations are consistent with the free city-states experience fostering the formation of a different culture, which has persisted to these days and still affects the level of civic capital.

There is a growing literature on the persistence of cultural attitudes over long periods of time, both theoretical (Bisin and Verdier 2000, 2001; Guiso et al. 2008) and empirical.<sup>4</sup> Nunn and Wantchekon (2011), for instance, show the long-term persistence of the effects of the slave trade on Africa's level of trust today. Similarly, Voigtländer and Voth (2012) document a very strong correlation between the level of German anti-Semitism in 1350 and its level in the 1920s and 1930s. Other works demonstrate how cultures functional to a given technology may survive many centuries after that technology's disappearance. Grosjean (2011), for instance, studies a culture of violence functional to a pastoral society; Alesina et al. (2013) examine the diffusion of the plow in agriculture (which gave a comparative advantage to men over women in some geographical areas).

All these papers present evidence of a negative shock, which persisted through centuries. By contrast, we provide evidence of a *positive* lasting shock, which provides some hints on how civic capital can be enhanced. We also highlight and test a possible mechanism that may generate this persistence.

Our paper is also related to the parallel literature that studies which current cultural traits affect economic outcomes (see Guiso et al. 2006 for a review). Tabellini (2010) and Gorodnichenko and Roland (2014) stress the importance of individualism for promoting private innovation and growth. Our paper shows that shared beliefs of individual self-determination can promote civic engagement and cooperation.

The rest of the paper proceeds as follows. In Section 2, we provide a brief primer on Italian medieval history. In Section 3, we describe the data. In Section 4, we analyse the effect of the free city-state experience within the North, and in Section 5 we show the robustness of our results to endogenizing the emergence of free city-states. In Section 6, we extend the self-efficacy theory of Bandura (1995) to an entire society to provide the logical connection between political independence and civic capital. We conclude in Section 7.

## 2. A Primer in Italian Medieval History

### 2.1. *The Rise of Free City-States*

At the end of the first millennium, the North Italian regions were part of the Holy Roman Empire, which was on the way to disintegration. Between 1061 and 1091, the

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4. There is also a growing literature on cultural persistence over shorter periods of time; see Algan and Cahuc (2010), Giuliano (2007), Guiso et al. (2006), Fernandez et al. (2004), Fisman and Miguel (2007), and Tabellini (2008).

Normans invaded the Southern part of Italy and formed a strong state, which guaranteed order and stability. By contrast, in the North the vacuum created by the demise of the imperial authority led to the emergence of a number of independent city-states.<sup>5</sup>

The first nucleus in the emergence of these city-states was the establishment of a “sworn pact” (*patto giurato*) in which a town’s inhabitants agreed to provide mutual help and to collaborate to solve problems of common interest (Prodi 1992). In some cases these pacts were enforced by the threat of exclusion from trade (Milani 2005), a very costly punishment at a time when trade opportunities were very profitable.

The pre-eminent common interest was defense against the emperor’s claim to exert power over the city. This battle culminated in 1176 when a league of free cities (communes) in the North of Italy, the Lombard League, defeated Emperor Frederick I in the Battle of Legnano.

Unlike the Norman kingdom, located in the South of Italy, the communes made their rules, laws, and formal decisions in the name of the people, because political power was said to derive from the people, not from some religious authority or divine right. While the medieval communes should not be equated with modern democracies, they did introduce many aspects of the system that today goes under the name of “rule of law”. For example, government officials’ actions were subjected to the control of new institutions, including courts of law to which citizens could appeal (Galizia 1951).

## 2.2. *From the Commune to the Signoria: Evolution of the Italian City-States*

In the course of the 15th century, Italian communes began to confer lifelong power on a single person—the Lord or *Signore*, hence the name *Signoria*. In several cases, the Signoria retained the fundamental institutions of the commune, including the principle that power originated from the people and was to be exercised in the people’s name. In cities such as Florence and Genoa, the Signoria also preserved the political institutions and the personal liberties that had characterized the commune period. In this sense, the Signoria was a continuation and transformation of the commune—as is maintained by Prezzolini (1948) and Chittolini (1999).

## 2.3. *Civic Capital and the Free City-State Experience*

The term “social capital” has been used to indicate several often quite divergent concepts. Following Putnam et al. (1993) and Fukuyama (1995), we focus on “those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities” (Guiso et al. 2011) and label it “civic capital”.

If, as conjectured by Putnam, the regional differences in civic capital are due to the free city-state experience, then civic capital today should be higher in cities that were

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5. Within the North, the only region in which free cities did not develop is Lazio where the Papal influence prevented independence.

free cities in the Middle Ages. Furthermore, this difference should be more pronounced the longer the independence of the city lasted.

### 3. The Data

In this section we describe how we collected the data. A synthetic description of each variable is contained in Table 1, while the Online Appendix contains a more detailed description of the sources and methodologies used. In total, our sample contains 5,368 cities located in the North. For a small part of the analysis, we will compare the North and the South. Our sample of Southern cities contains 2,184 observations.

#### 3.1. Identifying the Communes

As observed already, free cities could emerge only in the parts of Italy that were under the Empire at the beginning of the second millennium (see Figure A.1 in the Online Appendix). We focus on this area, which comprises twelve of Italy's present-day regions.<sup>6</sup>

Historians appear to agree that a commune, properly so called, needs to meet four criteria: it should have consuls as part of its institutions; it should have its own institutions to administer justice; it should have some military power and military activity; and finally, it should have its own rural territory (the *contado*) to administer (Milani 2005). As far as we know, there is no comprehensive history of Italian communes. Thus, verifying these conditions in all the Italian cities existing today during three centuries is extremely difficult.

We chose instead to start from the sample of free cities identified by a prominent historical atlas (*De Agostini 2007*). To validate this source we also consulted several additional historical sources (see the Online Appendix) to verify that the towns identified as communes by the atlas met the four historical criteria. This check did not eliminate any of the city-states in the map. This methodology may underestimate the number of free cities, biasing against finding any effect. Using several historical sources we also constructed a measure of duration of independence and an indicator for whether or not a commune evolved into a Signoria (see the Online Appendix for more details).

Since the status of independence changes over time, we chose to focus on two historical moments: the first, 1176, is when the Northern communes, organized into the Lombard League, defeated Emperor Frederick I (see Figure A.1 in the Online Appendix); the second is 1300 CE, when the free city-state movement was at its height before the emergence of the Signoria (Figure A.2). Our first definition of free cities includes all the cities that were independent in 1176. Our second definition includes

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6. These are Piedmont, Valle D'Aosta, Liguria, Lombardy, Trentino, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Tuscany, Umbria, Marche, and Lazio. Because Sardinia was neither part of the Holy Roman Empire, nor under Norman domination, we have excluded it from the sample altogether. We also excluded Rome, given its truly unique history, as an exceptional case.

TABLE 1. Description of the variables.

Variable name	Description	Source
<i>Number of nonprofit organizations</i>	Total number of nonprofit organizations (sum of voluntary associations, social cooperatives, and foundations, excluding church-based organizations) in the city scaled by population in the city.	<i>ISTAT</i> (National Statistical Institute), 2001 census
<i>Presence of an organ donation organization</i>	Indicator of existence of an organ donation organization in the city.	<a href="http://www.aido.it/">http://www.aido.it/</a>
<i>Cheating in mathematics</i>	Mean index of cheating in the city standardized with its standard deviation. Based on the city-level indicator of cheating in mathematics computed by INVALSI (a government agency for the evaluation of public schools) for the 2009 INVALSI test among the population of grade 8 Italian students.	INVALSI (2014), 2009 grade 8 test
<i>Commune (free city-state)</i>	Indicator variable equal to 1 if the town was a commune based on two maps (see Online Appendix, Figures A.1 and A.2). The first reports the list of communes, around the time of the war between the communal cities and Emperor Frederick I (year 1167), the second around year 1300, at the peak of the communal experience.	De Agostini (2007)
<i>Length of independence</i>	Difference between the year independence was lost and the year it was first acquired.	Treccani (1949); when not available, we relied on the Touring Club Italiano (2000) and the historical summary on the official web page of the various cities.
<i>Signoria</i>	Identifier = 1 if a commune became a Signoria.	Treccani (1949)
<i>City belonged to the Lombard League</i>	Identifier = 1 for a commune that belonged to the Lombard League; see Figure A.1.	De Agostini (2007)
<i>City allied to the Emperor</i>	Identifier = 1 for a commune that was allied to the Emperor Frederick I; see Figure A.1.	De Agostini (2007)

(Continued)

TABLE 1. Continued.

Variable name	Description	Source
<i>Ease of coordination</i> <i>New seat of a Bishop</i> <i>after 1400 CE</i>	Indicator = 1 when the city was a seat of a Bishop before 1000 CE. This variable is equal to 1 if a city has become a bishop city after year 1400, roughly after the end of the communal experience.	Treccani (2007), Volume I, maps n. 152, 153, 154, 155 Identified from the full list of the Italian Bishop cities as listed in the following link <a href="http://it.wikipedia.org/wiki/Elenco_delle_diocesi_italiane">http://it.wikipedia.org/wiki/Elenco_delle_diocesi_italiane</a>
<i>Size of city in year</i> <i>1300 CE</i>	Indicators for city size around year 1300; <i>Large</i> is a dummy equal to 1 if the city population exceeds 10,000 people; <i>Medium</i> is a dummy variable equal to 1 if the city population is between 1,000 and 10,000 people.	Bairoch, Batou and Chevre (1988, pp. 40–49)
<i>City located at an</i> <i>intersection of</i> <i>Roman roads</i>	Indicator equal to 1 if the city is located on a relevant Roman road or at the intersection between two or more Roman roads.	Authors calculations. Roman roads are identified from the Touring Club Italiano (1994). Current location of Roman cities is obtained comparing today location of the city using Google Maps with the map of the Roman cities. Treccani (2007)
<i>City belonged to a</i> <i>marches</i> <i>Medal of honor</i>	Indicator = 1 if city was part of a marches Center–North Italy regional organization at the time of Charlemagne. Indicator = 1 if the city has been awarded a gold medal for the heroism of its population in fighting against the Nazi-Fascists in the 1943–1945 period.	ANPI, Resistenza italiana.it, <a href="http://www.storiassisecolo.it/documenti/documenti12.html">http://www.storiassisecolo.it/documenti/documenti12.html</a>
<i>City on the coast</i> <i>City elevation</i> <i>Max difference in</i> <i>elevation</i>	City on the coast of within five kilometers of the sea. Measured in meters from sea level. Difference between the altitude of highest and lowest point in the city territory, in meters.	Ancitel (2003) Ancitel (2003) Ancitel (2003)
<i>Current Population</i> <i>Gross per capita</i> <i>disposable income</i>	Number of inhabitants in the city according to the 2001 census. Disposable income per capita: euros in year 2000.	Ancitel (2003) Ancitel (2003)
<i>Gini income</i> <i>inequality index</i> <i>Gini land ownership</i> <i>inequality index</i>	Computed using data on the pre-tax income distribution in year 2000 based on information from the 2001 census. Computed using data on the size distribution of agricultural firms in year 2000 based on information from the 2001 census.	Ancitel (2003) Ancitel (2003)

Notes: This table provides a summary description of the variables. Details of the definitions and sources are available in the Online Appendix.

cities that were listed as independent at least one time according to the historical documents, either in 1176 or in 1300.

As we can see, communes were spread all over the North, but the phenomenon was more intense in certain regions (Tuscany and Emilia) than in others (such as Lazio or Marche). One controversial case is Venice. While clearly independent, Venice is not classified as a commune because it was an oligarchy, with a different set of institutions. To be consistent with our criterion, we classified Venice as a “non-city-state”, but our results are robust to treating it as a commune (unreported regressions).

### 3.2. *Measures of Civic Capital*

Putnam et al. (1993) takes the presence of nonprofit organizations as the main indicator of civic capital. We follow suit and, as a first measure, we use a town’s total number of nonprofit organizations in 2000. Because this information comes from the 2001 census, it has the great advantage of counting *all* nonprofit organizations (excluding church-based voluntary organizations).<sup>7</sup> On average, there are 6.4 nonprofit organizations per thousand people in the North (Table 2, panel A) and 3.3 in the South (Table 2, panel G).

As we noted in Guiso et al. (2011), for an outcome-based measure to qualify as a reliable indicator of civic capital, the relationship between the input (civic capital) and the measured output should be stable and not affected by other factors, such as legal enforcement. These conditions are not generally found, but there are some particular situations in which they are likely to be met.

One such instance is donation of blood or organs. Because there is no economic payoff to either type of donation and no legal obligation to donate, the decision to donate can be seen as a direct measure of individuals’ internalization of the common good. Donating organs and/or blood provides insurance to others, with no direct compensation for the person providing it. Guiso et al. (2004) uses blood donation data at the provincial level. However, at town level, these data are subject to some problems. First, in some regions (e.g., Tuscany) there are several voluntary organizations of blood donors, which do not keep the same quality records as Italy’s principal donors’ organization, Associazione Volontari Italiani Sangue (AVIS). Their activity is negligible at the provincial level, but not at the municipal level, particularly in smaller towns where they compete with AVIS. Second, people may donate blood where they work and not necessarily where they live, which distorts the town-level measure. Accordingly, we have replaced this measure with an indicator for the existence in the town of an organ donation organization (AIDO, 2014). This measure has the same virtue as blood donation but is less subject to errors as in Italy there is only one organ donation organization, Associazione Italiana Donatori Organi (AIDO). The Online Appendix provides additional details on how these variables are constructed and their sources. There is an organ donor organization in 4.4% of Italian North municipalities and 4% in the South.

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7. This feature is particularly important in smaller towns where, given fixed costs of establishment, only certain types of organization might be present.

TABLE 2. Summary statistics for the variables used in the estimation.

<b>Panel A. Civic capital measures (Center–North sample; N = 5,368)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Number of nonprofit organizations (per 1,000 people)	6.39	4.82	14.15	1.30	26.60
City has an organ donation organization? (Yes = 1)	0.044	0	0.20	0	1
Cheating in mathematics	2.04	1.22	7.50	0.36	11.47
Medal of honor	0.0037	0	0.06	0	1
Self-efficacy	2.53	2.53	0.24	2	3.13
<b>Panel B. Historical variables (Center–North sample; N = 5,368)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Commune at time of war against Emperor Frederick I (1167 CE)	0.012	0	0.11	0	1
Commune: combined definition	0.014	0	0.12	0	1
City was an independent Signoria	0.011	0	0.105	0	1
Year independence was acquired (only for communes)	1,069	1,150	62	950	1,300
Year independence was lost (only for communes)	1,263	1,315	79	1,216	1,650
Length of independence (no. of years, only for communes)	194.6	175	100	47	488
Log length of independence (only for communes)	0.74	0	1.81	0	5.91
Free city was neutral (only for communes)	0.45	0	0.50	0	1
Free cities belonged to the Lombard League (only for communes)	0.33	0	0.48	0	1
Free cities allied to Emperor Frederick I (only for communes)	0.21	0	0.42	0	1
<b>Panel C. City geography (Center–North sample; N = 5,368)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Elevation (thousand meters)	0.34	0.27	0.30	0.003	1.36
Max difference in elevation within city territory (thousand meters)	0.64	0.34	0.72	0.004	2.74
Province capital (indicator)	0.012	0	0.11	0	1
City located on the coast	0.03	0	0.18	0	1
City located near to the sea (5 km)	0.02	0	0.14	0	1
Population after unification in 1871 (in millions)	0.002	0.01	0.03	0.007	0.201
Current population (2001, in millions)	0.0068	0.002	0.04	0.0001	0.061

*(Continued)*

TABLE 2. Continued.

<b>Panel D. Economic variables (Center–North sample; N = 5,368)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Disposable income per capita (in thousand euros)	13.26	13.24	2.30	8.05	18.95
Gini land ownership inequality index	0.59	0.58	0.18	0.12	0.94
Gini income inequality index	0.38	0.38	0.04	0.30	0.50
<b>Panel E. Historical variables that predict commune (Center–North sample; N = 5,368)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Ease of coordination	0.035	0	0.18	0	1
City population above 10,000 in 1300 CE? (Yes = 1)	0.006	0	0.08	0	0
City population between 1,000 and 10,000 in 1300 CE? (Yes = 1)	0.004	0	0.06	0	0
New seat of a bishop after 1400 CE (Yes = 1)	0.007	0	0.08	0	0
<b>Panel F. Summary statistics for the sample of largest Center–North cities at unifications (N = 401)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Number of nonprofit organizations (per 1,000 people)	5.58	4.29	11.86	0.95	22.3
City has an organ donation organization? (Yes = 1)	0.04	0	0.20	0	1
Cheating in mathematics	2.34	1.22	9.00	0.37	21.2
Free city	0.15	0	0.35	0	1
Elevation (thousands of meters)	0.35	0.29	0.30	0.004	2.63
Max difference in elevation within city territory (thousands of meters)	0.65	0.45	0.65	0.004	2.67
City located on the coast	0.08	0.00	0.27	0	1
City located near to the sea (5 km)	0.03	0.00	0.18	0	1
Current population 2001 (million people)	0.007	0.002	0.028	0.00014	0.068
Gini land ownership inequality index	0.60	0.60	0.17	0.15	0.94
Gini income inequality index	0.38	0.37	0.04	0.28	0.49
City located at intersection of Roman roads	0.10	0.00	0.30	0	1
City belonged to a marches	0.21	0.00	0.09	0	1
City population above 10,000 in 1300 CE? (Yes = 1)	0.006	0.00	0.076	0	0
City population between 1,000 and 10,000 people in 1300 CE? (Yes=1)	0.006	0.00	0.08	0	0

*(Continued)*

TABLE 2. Continued.

<b>Panel G. The South sample (N = 2,184)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Number of nonprofit organizations (per 1,000 people)	3.28	2.97	2.13	0	10.35
City has organ donation organization? (Yes = 1)	0.040	0.00	0.20	0.00	1.0
Cheating in mathematics	2.58	1.15	10.70	0.43	23.91
Ease of coordination	0.07	0.00	0.25	0.00	1
Elevation	0.41	0.40	0.28	0.004	1.17
Max difference in elevation within city territory	0.70	0.61	0.51	0.013	2.29
City is on the coast	0.18	0.00	0.38	0.00	1
City located near to the sea (5 km)	0.07	0.00	0.25	0	1
Current population 2001 (million people)	0.009	0.003	0.03	0.002	0.08
Gini inequality index of land ownership	0.635	0.635	0.15	0.24	0.94
Gini income inequality index	0.367	0.369	0.04	0.28	0.45
City population above 10K in 1300 CE? (Yes = 1)	0.006	0.00	0.08	0.00	0
City population between 1,000 and 10,000 in 1300 CE? (Yes = 1)	0.018	0.00	0.13	0.00	1
<b>Panel H1. Self-efficacy in the whole sample (city level, N = 3,155)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Self-efficacy	2.49	2.49	0.24	1.88	3.08
Self-efficacy (positive domain)	2.74	2.74	0.32	1.91	3.51
Self-efficacy (negative domain)	0.84	0.84	0.23	0.29	1.39
<b>Panel H2. Self-efficacy in the North sample (city level, N = 1,804)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Self-efficacy	2.53	2.53	0.24	2	3.13
Self-efficacy (positive domain)	2.78	2.78	0.29	2	3.42
Self-efficacy (negative domain)	0.86	0.86	0.21	0.35	1.39
<b>Panel H3. Self-efficacy in the South sample (city level, N = 1,351)</b>					
	Mean	Median	Standard deviation	1st percentile	99th percentile
Self-efficacy	2.42	2.4	0.24	1.8	3.02
Self-efficacy (positive domain)	2.69	2.67	0.36	1.83	3.6
Self-efficacy (negative domain)	0.81	0.8	0.24	0.25	1.38

Notes: For the definitions of these variables, see Table 1.

Another example of a legitimate outcome-based measure of civic capital is Fisman and Miguel (2007) who studied the number of parking violations by United Nations (UN) officials in Manhattan. Until 2002, diplomatic immunity protected UN diplomats from enforcement, so only cultural norms prevented them from parking illegally. Building on this idea, we use the pervasiveness of cheating on a national mathematics test. Since 2008, Italian eighth-graders have taken a national standardized test in reading and mathematics conducted by Istituto Nazionale per la Valutazione del Sistema educativo di Istruzione e formazione (INVALSI). The test is administered to more than half a million students in 6,000 schools in 3,400 cities. The data released by INVALSI include a measure of cheating: the estimated probability that an observed score is due to cheating.<sup>8</sup> We average the 2008–2009 INVALSI measure at the city level and divide it by its standard deviation to obtain a standardized measure of cheating. On average, this measure in the Northern cities is 2.<sup>9</sup>

### 3.3. *Other Historical Variables and City Controls*

We have also gathered a number of additional historical variables that we use as controls in our regressions. First, we use data from Bairoch et al. (1988) for city size. Because population data for 1000 CE are very scarce, we use those for 1300 CE—the earliest data available for a large enough number of towns.

Other important historical characteristics are whether a town was located at a Roman crossroads. Roman roads are identified from the Touring Club Historical Atlas of Italy and the *Reference Map of Ancient Italy*. We then map ancient cities into today's locations by using Google Maps. We use Treccani (2007) to identify the cities with a bishop seat. We use the same source to identify the presence of a marquis. At the time of Charlemagne, the North of Italy was divided into marches, so the survival of strong marches represents the persistence of imperial power.

Finally, all the other variables (including the average elevation, other geographic controls, population, per capita income, and per capita wealth) are from Ancitel (2003), a database assembled by the association of municipal administrations, which reports over 320 variables at municipal level for the period 2003–2004.

### 3.4. *Self-Efficacy Measures*

As part of the 2008–2009 INVALSI national test, eighth graders also filled a survey which elicited pupils' attitudes in interpreting positive and negative events. The questionnaire asks students to interpret eight different situations: five positive events (successes) and three negative (failures). All these situations relate to tasks that the

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8. This estimate is based on the concentration of similar wrong answers in a class in the presence of very low variation across answers and very high average scores. The actual method used is a fuzzy c-means clustering (Dunn 1973; Bezdek 1981). For details see INVALSI (2014).

9. We focus on the level of cheating in mathematics because on average it is higher, but the results we obtain using cheating in reading tests are similar.

students perform at school. The wording of all the questions is given in the Online Appendix. In Section 6 we show in detail how we use these answers to construct a measure of self-efficacy at the individual and city level.

Table 2 shows summary statistics for all our variables. Table A.1 in the Online Appendix presents summary statistics for commune and noncommune cities and tests of differences in means.

## 4. Empirical Analysis

### 4.1. Basic Specification

Our first measure of civic capital is the number of nonprofit organizations divided by the 2001 population (Table 3, panel A). In column I, we regress this measure on a simple indicator of whether a town was a free city in 1176 and several demographic and geographical controls. To control for mountain location, we insert the average elevation. To control for geographically driven differences in the cost of interaction, we insert the maximum elevation difference within the municipality's territory. We also control for coastal location (i.e., on the coast or within 5 km of the sea). Finally, as a measure of size, we control for the number of inhabitants (millions of people) in 2001. Because we are unsure how population affects civic capital, we insert both population and population squared. Because the measures of civic capital tend to be noisier for smaller towns, we use the weighted least-squared method, weighted by the population in 2001.

The impact of the free city-state experience is large and statistically significant at the 1% level. Towns that were communes have two more associations per thousand inhabitants (30% more than the average). Though this estimate is obtained using only variation within the North, its magnitude is half of the difference in civic capital between North and South.

Another known determinant of civic capital (Alesina and La Ferrara 2002) is income inequality. For this reason, column II adds two Gini measures of inequality: in land ownership and in pre-tax income. These additions run the risk of over-controlling, since inequality could be an effect rather than a cause of persistently low civic capital. Surprisingly, greater income inequality correlates with more civic capital, as measured by the number of nonprofit organizations per capita, but this effect is due to the lack of a control for per capita income. When we introduce this control (column V) the effect vanishes. Regardless, the impact of once having been a commune remains unchanged.

While we control for population and population squared, it is still possible that our estimated effect may only reflect some nonlinearity between city size and civic capital. For this reason, in column III we exclude from the sample the largest towns (more than 120,000 inhabitants in 2001). The effect of the free city-state experience remains unchanged.

Two-thirds of the medieval city-states are provincial capitals today. This administrative role could confer a different status on the city, possibly affecting the

TABLE 3. Effect of communal history on civic capital.

Panel A. Number of nonprofit organizations						
	I	II	III	IV	V	VI
	Whole sample	Whole sample	No large towns	No provincial capitals	Whole sample	Whole sample
Commune	2.04*** (0.34)	1.84*** (0.33)	1.77*** (0.37)	1.86*** (0.42)	1.53*** (0.28)	1.84*** (0.26)
Elevation	1.94*** (0.51)	1.97*** (0.50)	1.65*** (0.51)	1.64*** (0.55)	2.36*** (0.45)	3.21*** (0.54)
Max difference in elevation	1.43*** (0.24)	1.39*** (0.24)	1.54*** (0.21)	1.51*** (0.24)	1.35*** (0.22)	1.19*** (0.23)
City is on the coast	0.34 (0.33)	0.25 (0.31)	0.35 (0.24)	0.69*** (0.23)	0.61** (0.24)	0.60** (0.27)
City more than 5 km from the coast	0.96 (0.63)	1.08* (0.64)	1.22** (0.62)	1.34** (0.61)	1.50** (0.62)	0.97 (0.64)
Current population 2001	-3.49 (2.73)	-4.22* (2.47)	-59.86*** (9.85)	-63.42*** (8.25)	-6.93*** (1.84)	-4.10** (1.88)
Current population squared	1.43 (2.05)	1.41 (1.83)	622.40*** (110.56)	441.95*** (90.54)	3.11** (1.37)	1.73 (1.39)
Gini inequality index of land ownership		0.65 (0.55)	0.34 (0.38)	0.23 (0.33)	1.22** (0.48)	-0.01 (0.46)
Gini income inequality index		10.02*** (2.22)	9.61*** (1.75)	7.63*** (1.50)	0.56 (2.24)	9.58*** (1.91)
Income per capita					0.35*** (0.04)	
Area dummies	NO	NO	NO	NO	NO	YES
R <sup>2</sup>	0.08	0.08	0.09	0.08	0.10	0.10
Observations	5,360	5,360	5,341	5,298	5,360	5,360

(Continued)

TABLE 3. Continued.

	Existence of organ donation organization						Cheating in mathematics				
	(I)		(II)		(III)		(IV)		(V)		(VI)
	Whole sample	Whole sample	Whole sample	Whole sample	Whole sample	Whole sample	Whole sample	Whole sample	Whole sample	Whole sample	Whole sample
Commune	0.41*** (0.06)	0.37*** (0.06)	0.39*** (0.06)	0.39*** (0.06)	0.39*** (0.06)	0.39*** (0.06)	-0.23*** (0.085)	-0.19** (0.10)	-0.19** (0.10)	-0.19** (0.10)	-0.30*** (0.10)
Elevation	-0.28*** (0.07)	-0.23*** (0.07)	-0.25*** (0.08)	-0.25*** (0.08)	-0.25*** (0.08)	-0.25*** (0.08)	0.97** (0.453)	0.90** (0.45)	0.90** (0.45)	0.90** (0.45)	1.33** (0.60)
Max difference in elevation	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.03 (0.03)	0.22 (0.148)	0.23 (0.15)	0.23 (0.15)	0.23 (0.15)	0.20 (0.16)
City is on the coast	0.04 (0.06)	0.09 (0.05)	0.04 (0.06)	0.04 (0.06)	0.04 (0.06)	0.04 (0.06)	-0.09 (0.133)	-0.16 (0.15)	-0.16 (0.15)	-0.16 (0.15)	-0.05 (0.18)
City more than 5 km from the coast	0.05 (0.07)	0.10 (0.07)	0.05 (0.07)	0.05 (0.07)	0.05 (0.07)	0.05 (0.07)	-0.16 (0.217)	-0.24 (0.24)	-0.24 (0.24)	-0.24 (0.24)	-0.16 (0.23)
Current population	1.60*** (0.46)	1.26*** (0.40)	1.65*** (0.44)	1.65*** (0.44)	1.65*** (0.44)	1.65*** (0.44)	-2.66*** (0.715)	-2.24*** (0.63)	-2.24*** (0.63)	-2.24*** (0.63)	-2.38*** (0.72)
Current population squared	-1.25*** (0.34)	-1.03*** (0.30)	-1.26*** (0.33)	-1.26*** (0.33)	-1.26*** (0.33)	-1.26*** (0.33)	2.48*** (0.620)	2.20*** (0.54)	2.20*** (0.54)	2.20*** (0.54)	2.41*** (0.59)
Gini inequality index of land ownership	0.20* (0.10)	0.27*** (0.09)	0.15 (0.10)	0.15 (0.10)	0.15 (0.10)	0.15 (0.10)	-0.15 (0.451)	-0.27 (0.41)	-0.27 (0.41)	-0.27 (0.41)	-0.48 (0.47)
Gini income inequality index	2.48*** (0.42)	1.27*** (0.34)	2.51*** (0.42)	2.51*** (0.42)	2.51*** (0.42)	2.51*** (0.42)	-9.80*** (2.52)	-8.02*** (1.82)	-8.02*** (1.82)	-8.02*** (1.82)	-9.59*** (2.47)
Income per capita		0.04*** (0.01)						-0.06 (0.04)	-0.06 (0.04)	-0.06 (0.04)	
Areas dummies	NO	NO	YES	YES	YES	YES	NO	NO	NO	NO	YES
R <sup>2</sup>	0.53	0.56	0.53	0.53	0.53	0.53	0.02	0.02	0.02	0.02	0.02
Observations	5,372	5,372	5,372	5,372	5,372	5,372	1,890	1,890	1,890	1,890	1,890

Notes: The table shows ordinary least-squares (OLS) estimates of the effect of having been an independent city on measures of civic capital in the sample of all Italian cities in the Center-North. In panel A, the left-hand side variable is the number of nonprofit organizations per inhabitant in the city. In panel B, in the first three columns, it is a dummy for the existence of an organ donation organization (AIDO) in the city, and in the last three columns, it is an indicator of cheating in mathematics among the grade 8 students in the city. Regressions are weighted using city population. Regressions are run on the whole sample of cities located in the Center-North of Italy. Robust standard errors are reported in parentheses.

\*\*\*Significant at 1%; \*\* significant at 5% \* significant at 10%.

level of civic capital. For example, associations might find it convenient to be located near the local administration. For this reason, in column IV we exclude all provincial capitals from the regression. The effect of the commune experience is undiminished.

Glaeser et al. (2002) show that individual investment in social interaction increases with per capita income. Because towns that became independent in the Middle Ages were likely to be richer, the free city-state experience might be a proxy for unobserved characteristics that make for prosperity.<sup>10</sup> To address this issue we would like to be able to factor in per capita income in 1100 CE. Unfortunately, no such measure is available, so we have to resort to today's per capita income. This specification will clearly underestimate the impact of the free city-state experience because, as Knack and Keefer (1997) show, civic capital itself fosters growth, so that the greater civic capital generated by the city-state experience translates into higher per capita income.

As column V shows, wealthier towns do in fact display a higher level of civic capital, so, as expected, the insertion of this variable reduces the impact of the free city-state experience on today's level of civic capital. The effect of the communal experience, however, remains positive and economically and statistically significant. In addition, in an unreported regression we control also for a city-level measure of human capital: the average mathematics score of local pupils. Because Italy has a national curriculum, this score reflects the average quality of local schools and teachers, and thus the average level of human capital in the area. This control does not have any effect on our first two measures of civic capital. It does have an effect on the third, reducing the coefficient and reducing the statistical significance just above the 10% level ( $p = 10.6$ ). Yet, this is hardly surprising, as in places where scores are naturally high it is more difficult to detect cheating.

Finally, in column VI we add four area dummies (Northeast, Northwest, Center–North, and Center) to capture possible unobserved heterogeneity in civic capital across regions. These dummies (not reported) are all statistically significant, but inserting them does not change the impact of the free city-state experience on civic capital. Results are invariant to using much finer geographical controls (eleven regional dummies out of the twelve regions in the North), instead of the three areas dummies (Online Appendix, Table A.2, panel D).

In the first three columns of panel B in Table 3, we repeat the estimation using our second measure of civic capital, the presence of an organ donation organization. Again, the effect of the city-state experience is positive and statistically significant in all the specifications. Having been an independent city-state increases the probability of having an organ donation organization by 41%.

In the last three columns of panel B in Table 3, we estimate the same specification by using our measure of cheating as left-hand side variable. Here the effect is negative

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10. Of course the fact that some very wealthy towns in the South, such as Salerno and Palermo, even richer than Northern towns, did not become free cities suggests that what was driving independence was not linked to unobserved economic prosperity.

and statistically significant in all specifications. Having been a free city-state decreases our standardized measure of cheating by 13% of the mean.

The concentration of free city-states among the larger cities suggests the possibility that our sample is too heterogeneous and that even controlling for population size and population size squared, the coefficient of our explanatory variable might be a spurious effect. Accordingly, we select the top 5% cities (around 400). To minimize possible survivorship bias, we select them according to the earliest Census data available (immediately after national unification in 1861). Table 4, panel A, shows the results using this smaller sample. The first three columns of Table 4, panel A show the results using the controls in the specification in the second column of Table 3, panel A (the other specifications are reported in the Online Appendix, Table A.2, panel A). The effect is roughly halved when the sample is restricted to these cities, but it still remains both quantitatively meaningful and statistically significant.<sup>11</sup>

The advantage of this reduced sample is the availability of more sophisticated controls for the towns' history: a dummy for having belonged to a marquis (which might have retarded the formation of a free city-state); a dummy of whether the city was located on a relevant Roman road, or at the intersection of Roman roads; and two dummies for medium and large size in 1300. When we introduce these controls, the effect of the free city-state variable on all three measures of civic capital is unchanged (columns IV, V, and VI of Table 4, panel A report the estimated coefficients of the main explanatory variables and the previously mentioned additional controls; for detailed estimation results, see columns IV, V, and VI of Table A.2, panel A in the Online Appendix).

As an additional robustness test (Table 4, panel B), we report the main specification for each measure of civic capital estimated by OLS rather than weighted least-squares. The results are substantially the same, except that the city-state experience is not statistically significant for the civic capital measure based on cheating. This difference in significance is probably due to the large amount of noise in this measure (especially for small towns). Table A.2, panel B, of the Online Appendix reports the estimated coefficients for all the control variables included in the analyses.

In Table 4, panel C, we check the robustness of the result to the definition of the set of free cities using our second definition of free city-states. The results are substantially unchanged (for the complete list of estimated results, see Table A.2, panel C, of the Online Appendix).

In Table 4, panel D, we look at the earliest measure of civic capital at the city level we could find: the level of participation to the Resistance against the Nazi-Fascists at the end of World War II. While we do not have any official statistics, the towns that distinguished themselves for heroism during this period were awarded a medal of honor (the exact name in Italian is "Medaglia d'Oro alla Resistenza" or Resistance Gold Medal). In the North, 20 towns received this award. When we regress the probability

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11. In another robustness exercise, we restrict the whole sample to cities with current population above the 90th percentile. Results are invariant (Online Appendix, Table A.2, panel E). The same is true if we further exclude cities with more than 300,000 people (Table A.2, panel F), except for the third measure of civic capital.

TABLE 4. Robustness.

<b>A. Sample of 400 largest northern cities</b>						
	(I) Nonprofit organization	(II) Organ donation organization	(III) Cheating in mathe- matics	(IV) Nonprofit organization	(V) Organ donation organization	(VI) Cheating in mathe- matics
Commune	1.10** (0.33)	0.13** (0.06)	-0.21*** (0.05)	1.17*** (0.390)	0.12** (0.060)	-0.16*** (0.050)
At intersection of Roman roads				0.68** (0.322)	-0.03 (0.05)	0.04 (0.05)
City belongs to a marquis				1.17*** (0.301)	0.09* (0.05)	0.03 (0.06)
City size in 1300: medium				0.40 (0.450)	0.16 (0.103)	-0.13** (0.06)
City size in 1300: large				0.18 (0.358)	0.02 (0.05)	-0.07* (0.04)
Standard controls	YES	YES	YES	YES	YES	YES
Observations	401	403	379	401	403	379
R <sup>2</sup>	0.27	0.25	0.21	0.37	0.26	0.22
<b>B. OLS nonweighted regressions</b>						
	(I) Nonprofit organizations	(II) Organ donation organization	(III) Cheating in mathematics			
Commune	2.91** (0.44)	0.31*** (0.07)	0.01 (0.20)			
Standard controls	YES (2.30)	YES (0.01)	YES (0.99)			
Observations	5,360	5,538	1,912			
R <sup>2</sup>	0.04	0.30	0.01			
<b>C. Alternative definition of commune (combined definition)</b>						
	(I) Nonprofit organizations	(II) Organ donation organization	(III) Cheating in mathematics			
Commune: combined definition	2.18*** (0.27)	0.45*** (0.06)	-0.31*** (0.08)			
Standard controls	YES	YES	YES			
Observations	5,360	5,372	1,890			
R <sup>2</sup>	0.09	0.55	0.02			

(Continued)

TABLE 4. Continued.

<b>D. Historical measure of civic capital: medal of honor to the city</b>			
	(I) Whole Center–North sample	(II) Whole Center–North sample, no province capitals	(III) Sample 400 largest northern cities
Commune	0.24*** (0.075)	0.16** (0.083)	0.22*** (0.075)
Standard controls	YES	YES	YES
Observations	5,372	5,310	403
$R^2$	0.724	0.167	0.724

Notes: Panel A reports regressions of the effects of free cities on civic capital on the sample of the largest cities in the Center–North of Italy (as of 1871) using standard controls (first three columns) and expanding the set of historical controls (remaining columns). Panel B shows nonweighted OLS estimates of the effect of having been an independent city on measures of civic capital today. Panel C shows the estimates on the total sample of Center–North cities for a Commune identifier obtained as the union of the free cities in 1167 CE and in 1300 CE. Panel D shows the estimates using as a historical measure of civic capital: an indicator D 1 if the city has been awarded a medal of honor during the resistance war against Fascism. “Standard controls” are those used in Table 3, Panel A, second column. Robust standard errors are reported in parentheses.

\*\*\*Significant at 1%; \*\*significant at 5%; \*significant at 10%.

of receiving the medal on the free city-state dummy, we find that this has a positive and statistically significant effect, even after controlling for our standard set of variables.

Finally, we find that results extend to a traditional measure of civic capital—participation in referenda. Because this information is only available for the largest 400 cities we do not include it in the main analysis but report it in the Online Appendix (Table A.2, panel G).

#### 4.2. More Detailed History

Thus far, we have treated all the free city-state experiences as similar. For a number of reasons, however, this approach is inadequate. First, the length of the period of independence varied considerably. Second, the towns’ history after the end of the city-state differed: some were dominated by neighboring towns; others were transformed from commune into Signoria, a political structure that retained the fundamental characteristics of the commune, including the principle that power originated from the people and was to be exercised in the people’s name. Finally, the quality and degree of autonomy of the free institutions were very different from place to place. In this section, we explore whether these variations in the quality and length of independence affect the various municipalities’ civic capital many centuries later.

Table 5 starts by analyzing the effect of the duration of independence (panel A). This measure is very noisy, insofar as the exact date of independence is often a matter of judgment. Since many of the factors that determined the formation of the city-states

TABLE 5. Digging deeper into history.

<b>Panel A. Effect of the length of independence on civic capital</b>			
	(I) Nonprofit organization	(II) Organ donation organization	(III) Cheating in mathematics
Log of length of independence	0.23** (0.09)	0.09*** (0.02)	-0.11*** (0.03)
Standard controls	YES (1.57)	YES (0.35)	YES (0.53)
Mill's ratio	-0.89*** (0.29)	0.01 (0.07)	0.12 (0.10)
<i>F</i> -test for the exclusion restriction in selection equation	99.8	100.8	95.7
Observations	5,353	5,519	5,519
<b>Panel B. The role of Signoria</b>			
	(I) Nonprofit organization	(II) Organ donation organization	(III) Cheating in mathematics
Commune	1.48*** (0.32)	0.36*** (0.07)	-0.19** (0.08)
Signoria	1.21*** (0.31)	0.14** (0.07)	0.01 (0.11)
Standard controls	YES	YES	YES
Observations	5,344	5,538	1,911
<i>R</i> <sup>2</sup>	0.09	0.54	0.02
<b>Panel C. The role of the Lombard League</b>			
	(I) Nonprofit organization	(II) Organ donation organization	(III) Cheating in mathematics
Neutral city	1.62*** (0.41)	0.39*** (0.08)	-0.41** (0.18)
Part of the Lombard League	2.48*** (0.33)	0.50*** (0.06)	-0.10 (0.16)
Allied to Emperor Frederick I	1.11** (0.49)	0.27** (0.12)	-0.09 (0.17)
Standard controls	YES	YES	YES
Observations	5,360	5,538	1,912
<i>R</i> <sup>2</sup>	0.09	0.55	0.02

Notes: Panel A shows the second-stage results of two-step Heckman estimates of the effect of the length of independence of free cities on civic capital today. The first stage uses an indicator for whether the city was the seat of a bishop to achieve identification. The Mill's ratio is obtained from the first-step probit regression. In Panel B, we insert an indicator variable for whether the city evolved into an independent Signoria as an additional regressor. In Panel C, we decompose the commune indicator variable depending on whether the commune was "neutral", "allied with the Emperor", or "belonging to the Lombard League" in the war for independence against Emperor Frederick I. Regressions are run on the sample of all cities located in the Center-North. All regressions include the standard controls of Table 3, Panel A, second column. For brevity, these are not reported. The regressions with all controls are reported in the Online Appendix, Table A.3, Panels A, B, and C, respectively. Robust standard errors are reported in parentheses.

\*\*\* Significant at 1%; \*\* significant at 5%; \* significant at 10%.

also determined the duration of independence, in order to isolate the effect of the latter we use a two-step Heckman estimator.<sup>12</sup>

The first column shows the results of the estimates when the measure of civic capital is the number of nonprofit organizations. The duration of independence has a positive and statistically significant effect on the number of nonprofit organizations. However, the effect is small: starting with 195 years of independence (the sample mean) and increasing it by one standard deviation (about additional 100 years) raises the number of nonprofit organizations by 2.3% of the average among the formerly independent cities. Given that this measure is quite noisy, it is possible that our estimates are biased downwards and are actually a lower bound of the true effect.

The second column uses organ donation as a measure of civic capital. The length of independence has a positive and statistically significant effect on the probability of having an organ donation: 100 years more of independence raises the probability by 4.5 percentage points.

The duration of independence also predicts the probability that students will cheat (third column): 100 years more of independence decreases the probability of cheating by 2.75% of the sample mean.

In panel B, we study the effect of having become a Signoria after being a free commune. The cities that did not evolve into a Signoria were more likely to lose their independence to another commune or Signoria, which entailed the demolition of the local communal institutions and the abrogation of many of the associated rights. We expect that communes that did not evolve into a Signoria show lower levels of civic capital.

Having experienced a period of Signoria adds to the level of civic capital (column I). Ex-Signoria towns have 1.2 more associations per thousand inhabitants than other former free city-states, practically doubling the effect of the latter. The same holds when civic capital is measured by organ donation (column II), but we do not find a significant impact on cheating in the mathematics test (column III).

In panel C, the variable considered is the *degree* of independence, notoriously hard to measure. As a proxy, we use the side that a city took in the struggle against Emperor Frederick I in the middle of the 12th century. In 1158, Frederick claimed direct Imperial control over Italy. In the North, 24 cities formed the Lombard League to challenge him. We take a city's active participation in the Lombard League as an indicator of the strength of that city's independence. This comparison is especially meaningful when is done with other free city-states located in the North that chose to ally with the Emperor. Finally, 25 city-states (mostly located towards the center of Italy and thus somewhat more sheltered from the Imperial threat) chose to remain neutral. Panel C decomposes the free city-states in these three groups.

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12. As we shall explain in Section 5, the local presence of a bishop helped to overcome the initial coordination problem (and thus the transformation into a free city-state). Thus, assuming that a bishop's presence affects only the probability of becoming a free city-state and its ability to remain independent, we use it as our identifying restriction.

When we measure civic capital as number of nonprofit organizations (column I), the positive effect of the free city is strongest for Lombard League towns, second for neutral towns, third for Imperial allies. When using organ donations as a left-hand side variable the pattern is similar (column II). In fact, the effect of cities that were part of the Lombard League is 28% larger than that of neutral city-states and almost twice as large as that of the emperor's allied states. However, when we measure civic capital with cheating (column III) the largest effect in absolute value is produced by the neutral cities.

## 5. Why Only Some Cities Became Free States?

### 5.1. *The Origin of Free City-States*

Our geographical controls mitigate the concern that we are capturing a spurious correlation between the free city experience and civic capital. Yet, it is still possible that the emergence of a free city-state, because it is not random, is correlated with some characteristics (other than cultural) that persist to this day and sustain a greater level of civic capital.

To address this concern, we resort to the historians' analysis of the origins of free city-states. Because the strong central power exerted by the Norman Kingdom in the South did not allow the formation of free cities, we can design a counterfactual. If the observed correlation is driven by geographical or historical characteristics that favored both the formation of free city-states and the accumulation of civic capital, then these characteristics should have the same correlation with civic capital in the South, where free city-states could not emerge. Vice versa, if it is the specific free city-state experience that drives the correlation, then these factors should not be correlated with civic capital in the South, where this experience did not occur.

As explained in Section 2.1, the first nucleus of most communes was a sworn pact among prominent citizens. When present, the city bishop was often acting as guarantor of this pact. Thus, his presence added an enforcement mechanism otherwise not available: the threat of exclusion from religious communion (Tabacco 1987). Hence, the presence of a bishop in a town should decrease coordination costs and facilitate the formation of a free city.<sup>13</sup> In the Online Appendix (Table A.4) we document that indeed towns that were a bishop seat by year 1000 were more likely to become a free city-state.

The first three columns of Table 6, panel A, present the correlation between the bishop-seat variable (ease of coordination) and civic capital in the North. Not

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13. Belloc et al. (2014) argue that earthquakes strengthen the power of bishops regarding the formation of free cities. They study the effect of exogenous changes in religiosity *within* bishop-seat cities, while we study the *between* variation of cities with a bishop seat and cities without. Thus, the two results are not in contradiction. Furthermore, it is not obvious that their effect does not transit through the fact that earthquakes can have on self-efficacy and thus on civic participation.

TABLE 6. Validating the instrument.

<b>A. Regressions of civic capital in the Center–North and in the South</b>						
	Center–North sample			South sample		
	(I) Nonprofit org.	(II) Organ donation org.	(III) Cheating in mathe- matics	(IV) Nonprofit org.	(V) Organ donation org.	(VI) Cheating in mathe- matics
Ease of coordination	1.61** (0.219)	0.47*** (0.047)	−0.66*** (0.118)	0.18 (0.137)	0.19*** (0.065)	−0.04 (0.309)
Elevation	1.93*** (0.475)	−0.25*** (0.062)	0.94** (0.441)	1.43*** (0.257)	−0.04 (0.083)	0.72 (0.541)
Max difference in elevation	1.35*** (0.219)	0.01 (0.026)	0.26* (0.143)	−0.08 (0.084)	−0.05* (0.029)	0.06 (0.145)
City is on the coast	−0.27 (0.264)	−0.08* (0.046)	0.03 (0.119)	0.23** (0.115)	−0.02 (0.044)	0.13 (0.108)
City more than 5 km from the coast	1.10* (0.634)	0.07 (0.072)	−0.21 (0.227)	0.02 (0.143)	−0.03 (0.048)	1.46 (1.098)
Current population	−3.38*** (1.886)	1.48*** (0.290)	−1.85*** (0.523)	−9.11*** (2.242)	1.10* (0.582)	−3.50 (2.849)
Current population squared	1.03 (1.423)	−1.12*** (0.218)	1.87*** (0.480)	6.23*** (1.924)	−0.86* (0.469)	4.47 (2.816)
Gini income inequality index	0.08 (0.449)	0.04 (0.076)	0.04 (0.438)	3.49** (1.505)	2.05*** (0.547)	−21.66*** (5.646)
Gini inequality index of land ownership	9.83*** (1.883)	2.17*** (0.377)	−8.61*** (2.382)	1.61*** (0.351)	0.35*** (0.098)	1.75 (1.330)
Observations	5,357	5,535	1,911	2,175	2,178	1,210
R <sup>2</sup>	0.083	0.587	0.023	0.329	0.574	0.027

  

<b>B. Regressions in the Center–North controlling for bishop cities established after 1400 CE</b>			
	(I) Nonprofit organizations: North sample	(II) Organ donation organization: North sample	(III) Cheating in mathematics: North sample
Ease of coordination	1.62*** (0.234)	0.46*** (0.050)	−0.59*** (0.091)
New seat of a bishop after 1400 CE	−1.19*** (0.391)	−0.02 (0.074)	−0.11 (0.081)
Elevation	1.68*** (0.474)	−0.29*** (0.065)	0.84** (0.396)
Max difference in elevation	1.40*** (0.221)	0.02 (0.027)	0.26* (0.143)
City is on the coast	−0.30 (0.259)	−0.07 (0.045)	0.03 (0.110)
City more than 5 km from the coast	0.66 (0.600)	−0.02 (0.082)	−0.22 (0.199)
Current population	−3.57* (1.905)	1.52*** (0.306)	−1.84*** (0.474)

(Continued)

TABLE 6. Continued.

Current population squared	1.17 (1.428)	-1.15*** (0.228)	1.87*** (0.430)
Gini inequality index of land ownership	0.27 (0.451)	0.05 (0.076)	0.06 (0.440)
Gini income inequality index	9.65*** (1.883)	2.19*** (0.375)	-8.54*** (2.270)
Observations	5,382	5,560	1,935
R <sup>2</sup>	0.080	0.579	0.024

### C. Instrumental variable estimates

	(I) Nonprofit organization	(II) Organ donation organization	(III) Cheating in mathematics
Commune	4.21*** (0.666)	1.22*** (0.171)	-1.59*** (0.320)
Elevation	2.44*** (0.588)	-0.09 (0.099)	0.52 (0.463)
Max difference in elevation	1.27*** (0.284)	-0.01 (0.047)	0.30* (0.163)
City is on the coast	0.69* (0.401)	0.20** (0.097)	-0.39** (0.181)
City more than 5 km from the coast	1.26** (0.628)	0.12 (0.072)	-0.28 (0.232)
Current population	-11.43*** (3.024)	-0.87 (0.622)	1.35 (0.954)
Current population squared	6.16*** (2.094)	0.38 (0.431)	-0.22 (0.654)
Gini inequality index of land ownership	0.91 (0.632)	0.27** (0.129)	-0.31 (0.451)
Gini income inequality index	5.81*** (1.958)	0.99* (0.598)	-6.31*** (2.352)
Observations	5,357	5,535	1,911

Notes: Panel A shows regressions of civic capital in the Center–North (first three columns) and in the South (last four columns) controlling for a proxy for ease of coordination (cities with a bishop seat at the time of the communes). Panel B reports estimates of civic capital in the Center–North sample controlling for cities that became seat of a bishop after 1400 CE. A post-medieval bishop city is equal to 1 if a bishop city was created after 1400 CE, and zero otherwise. Panel C shows IV estimates when the instrument for civic capital is ease of coordination. Robust standard errors in parentheses.

\*\*\*Significant at 1%; \*\*significant at 5%; \*significant at 10%.

surprisingly, the presence of a bishop has a positive and significant correlation with the level of civic capital, measured by our three proxies.

To verify that this effect is not spurious, we replicate the same regression specification with the sample of Southern cities (last three columns of Table 6, panel A). If bishop seats were chosen in the same way in the North and in the South and the correlation between civic capital and bishop seat were spurious, then we should find

the same correlation with civic capital also in the Southern sample. By contrast, we find that being a bishop seat has an insignificant correlation with the presence of nonprofit organizations and with frequency of children's cheating on a national mathematics test, while it has a positive correlation, albeit smaller than in the North sample, with the presence of an organ donor organization.

In other words, when historical conditions prevent the formation of free city-states, being a bishop seat is not associated with higher levels of civic capital, as measured by two of the three proxies. This result suggests that the correlations observed in Tables 3–5 are not driven by the presence of the bishop itself, but by the role played by bishops in reducing coordination costs in the formation of free city-states.

This test is valid only if bishop-seat cities have the same characteristics in the North and the South. To address this concern and provide one further, less objectionable, validity check against the presence of spurious correlation, we study the correlation between Northern dioceses created after the period in which the free city-state experience took place (i.e., towns that were assigned a bishop seat after 1400) and civic capital. In the North, 63 cities became dioceses after 1400. As Table 6, panel B shows, the assignment of a bishop seat after 1400 has a negative and significant correlation with civic capital, measured by the presence of nonprofit organizations. This result rules out that the presence of a bishop, in itself, is conducive to greater civic capital. Columns II and III of Table 6, panel B, show that there is no correlation with dioceses formed after 1400 and the presence of organ donor organizations and the frequency of cheating in mathematics tests.

All this evidence suggests that, while the free city-state is not a random occurrence, the initial characteristics that facilitated independence are linked to higher civic capital only through the transformative city-state experience. In other regions in Italy, where the same initial conditions existed but could not deliver free city-states, or in subsequent periods where the initial conditions could not spur independence, we do not find a positive correlation with civic capital.

Having singled out an important historical determinant of the emergence of a free city-state we can use it as an instrument. Table 6, panel C, reports the IV estimates (first-stage estimates are in the Online Appendix, Table A.4). They confirm previous conclusions and strengthen the economic effect of having been a commune on today's measures of civic capital.

As usual, there is a concern about the validity of the instrument's exclusion restriction—namely, that the presence of a bishop has an impact on civic capital only through its effect on the probability a city will become independent, and not directly. Our analysis on the effect of bishop seats in the South and of bishop seats created after 1400 suggests this is not a valid concern.

Another possible objection is that the presence of a bishop is simply a proxy for being an important city in 1100 and the variable bishop seat is capturing this effect and not ease of coordination in forming a commune. Again, the evidence in the South seems to suggest that this is not the case, since in the South cities that were important in 1100 (and thus had a bishop seat) do not exhibit higher civic capital today.

## 6. Transmission Mechanism

Besides all the econometric analysis, it is difficult to interpret a correlation without a theory. How can an historical experience permanently affect a community's civic capital? Putnam's conjecture was that the formation of free city-states fostered civic engagement. Yet, how did this pattern of civic engagement survive all those years, centuries after the free city-states' legal institutions disappear? One hypothesis is that informal institutions created during the free city-state experience—like artisans' guilds and associations—survived the disappearance of free city-states and kept the civic engagement spirit alive. Indeed, some of these associations are still present in several cities, albeit they are only historical fictions, emptied of any economic and political significance.

Another hypothesis, more in line with Banfield (1958), is that an historical experience affected the attitude of the local population and this attitude survived to this day. Yet, to explain the observed correlation we have to identify which is this attitude, how it survived over centuries, and how it is related to today's civic capital.

### 6.1. *Self-Efficacy as a Cultural Trait*

In describing the attitudes prevailing in the Italian South (*la miseria*), Banfield (1958) talks about the helpless feeling of the typical peasant (see the initial quote).<sup>14</sup> Banfield refers to what modern psychologists label self-efficacy, which Bandura (1995) defines as “the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations”.

The relation between individual experience and self-efficacy is well understood in psychology. Starting with infancy and continuing throughout life, self-efficacy beliefs develop as a result of direct and vicarious experience and verbal persuasion (Maddux 2009). Some psychologists have also recognized that there may be a relationship between collective experiences (such as an oppressive dictatorship) and individual attitudes (Oettingen and Seligman 1990). We extend this idea to a positive experience that can affect self-efficacy. In addition, we raise the possibility that this effect is

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14. Banfield gives the Montegratesi (the inhabitants of the small town in Southern Italy he analyzes) a Thematic Appreciation Test (TAT). The TAT shows subjects a series of 20 pictures and asks them to make up stories about these pictures on the spur of the moment. 64% of the stories told by the Montegratesi end in calamity or misfortunes versus only 24% of respondents from Northern Italy and 16% of respondents from rural Kansas. Banfield attributes both the economic backwardness and the lack of civic engagement of Montegratesi (and the Italian South) to the fatalistic and pessimistic attitudes of its inhabitants: “in such a fearful world a parent cannot count on achieving anything by his own effort and enterprise . . . The idea that one's welfare depends crucially upon conditions beyond one's control—upon luck or the caprice of a saint—and that one can at best only improve upon good fortune, not create it—this idea must certainly be a check on the initiative. Its influence on economic life is obvious: one who lives in so capricious a world is not likely to save and invest in the expectation of ultimate gain. In politics too, it must have an effect. Where everything depends upon luck or Divine intervention, there is no point in community action. The community, like the individual, may hope or pray, but it is not likely to take its destiny into its own hands.” (Banfield 1958, p. 112 and p. 114).

made persistent by the combination of intergenerational transmission and socialization, strengthened by the self-fulfilling nature of these beliefs.

Educational transmissions of these beliefs has been shown by Dweck et al. (1978), who document that that young students' attributions about their classroom performance are correlated with their teachers' attributions about performance. Similarly, Seligman et al. (1984) compared the attributional styles of mothers with those of their children and found that attribution for negative events was correlated at 0.39.

Intergenerational transmission and education can be strengthened and amplified by social transmission. If an entire town is affected by the same shock, all its inhabitants will transmit the same beliefs to their children. Not only will children be raised with a different attributional style, they will be socialized into it as well.

Finally, self-efficacy also has a self-fulfilling dimension. Weak self-efficacy beliefs prevent people from trying, making failure all but certain. Thus, weak self-efficacy beliefs will lead to less cooperation and worse institutions, which will further exacerbate the sense of impotence in the face of negative events. This vicious circle from weak self-efficacy beliefs to backwardness to even weaker self-efficacy beliefs is precisely what Banfield (1958) calls "la miseria".

Not only these beliefs are taught (voluntarily or involuntarily) from parents to children and they are learned through socialization, they also become embedded into the local traditions and culture. The memory of a victorious battle, repeated in the oral and written tradition, cultivates a sense of self-efficacy among the inhabitants of those cities who participated. This tradition is so strong that today in Italy there is a political party that derives its name and symbol from the Lombard League that defeated the emperor in 1176.

Trace of these different beliefs between the North and the South can be found also in Italian literature. Compare the two major Italian novels of the 19th century: *The Betrothed*, written by a Northerner (Alessandro Manzoni), and *I Malavoglia*, written by a Southerner (Giovanni Verga). While both novels center on the role of Divine Providence in coping with the struggle of life, the view they transmit is completely different. In *The Betrothed*, the main characters feel empowered and thus persist in their effort and are eventually able, albeit with the help of God, to overcome their adversities. In *I Malavoglia*, the main characters not only fail miserably but they are also blamed for trying to improve their human condition. The two novels differ in their degree of optimism about the human condition as well as in the level of self-reliance. In the Northern *The Betrothed*, there is a sense of self-efficacy, in the Southern *I Malavoglia* a sense of self-defeat.

## 6.2. Measuring Self-efficacy

A way to formalize these ideas in economic terms is by mapping self-efficacy onto the perceived connection between effort and success. Assume an individual can choose how much costly effort to exert in an activity. With low effort, the probability of success is  $p(L) \leq 1/2$  with higher level of effort the probability is  $p(H) > 1/2$ . In this framework, we can define self-efficacy as the difference  $p(H) - p(L)$ , namely

the difference between the subjective beliefs of success if effort is high versus when it is low.

If effort costs are randomly distributed in the population, *ceteris paribus* people with high self-efficacy (a high  $p(H) - p(L)$ ) are more likely to exert effort. As a consequence, *ex post*, people with high self-efficacy are more likely to attribute success to effort and failure to bad luck (as  $p(H) > 1/2$ ). By contrast, people with low self-efficacy exert little effort and will attribute success to luck and failure to lack of effort. Therefore, a person's self-efficacy can be inferred from how they rationalize success and failure.

Luckily, the INVALSI questionnaire provides a convenient source of data to measure the way children rationalize success and failure. A typical question in the domain of failures is: "Your teacher asks to do a project for Christmas. Your performance is so bad that you have to do the assignment over. How do you explain this?" The possible explanations from which the student has to choose are: (a) No one helped me; (b) I was unlucky; (c) It was difficult; (d) I lack ability; (e) I did not put effort on it. A corresponding question in the success domain is: "Your teacher has asked to make a drawing. You do it very well. How did you do? The possible answers are: (a) I received help; (b) I was lucky; (c) it was easy; (d) I am clever; (e) I put in effort.

We can interpret answers (a), (b), and (c) as attributing success and failure to luck (and answer (e) to effort). Hence, our measure of self-efficacy in the domain of successes ( $SE_{\text{success}}$ ) is given by the number of answers of type (e) for questions in the success domain and self-efficacy in the domain of failures ( $SE_{\text{failure}}$ ) by the number of answers of type (a), (b), or (c) for questions in the failure domain. Because there are five questions in the domain of success and three in the domain of failures, to compute the overall self-efficacy score we weight the two measures appropriately. Thus, our overall measure of self-efficacy is  $S = 0.6 \times SE_{\text{success}} + 0.4 \times SE_{\text{failure}}$ .

We first compute the self-efficacy score for each of the 275,186 students in our sample and then collapse the score at the city level, obtaining an average self-efficacy measure for each of the cities covered by the INVALSI test.<sup>15</sup> Table 2, panel H1, shows summary statistics of the overall score for the Northern and Southern cities. Table A.5 and Figure A.3 in the Online Appendix report the distribution of the scores for the individuals in the sample and for the collapsed data.

### 6.3. *The Free City-State Experience and Today's Self-Efficacy*

Now that we have a city-level measure of self-efficacy, we can test whether former free city-states exhibit a higher level of self-efficacy than similar towns that did not face this experience. The first column of Table 7 presents the results of this test in the

15. We also compute an alternative measure by first running a regression of the individual measure of self-efficacy on a set of family controls and individual student characteristics and then averaging out across cities.

TABLE 7. City-level averages of self-efficacy.

	(I) North sample	(II) Whole sample
Commune	0.0303** (0.0149)	
South dummy		-0.108*** (0.00804)
Elevation	-0.0758* (0.0441)	-0.0022 (0.0250)
Max difference in elevation	0.0334*** (0.00839)	0.0155*** (0.007)
City is on the coast	-0.0241 (0.0149)	0.025 (0.010)
City more than 5 km from the coast	-0.0110 (0.0191)	-0.010 (0.0135)
Current population	-0.0998 (0.0683)	0.0370 (0.061)
Current population squared	0.0257 (0.0490)	-0.070 (0.047)
Gini inequality index of land ownership	-0.0244 (0.0372)	0.009 (0.027)
Gini income inequality index	0.00833 (0.143)	0.035 (0.096)
Constant	2.545*** (0.0614)	2.507*** (0.0395)
Observations	1,800	3,147
$R^2$	0.021	0.106

Notes: The table shows OLS estimates of the effect of having been an independent city on measures of self-efficacy in the sample of all Italian cities. Both columns show self-efficacy score as the left-hand side. Regressions are weighted using city population. In the first column the regression is run on the sample of cities located in the Center-North of Italy; in the second column the sample includes all cities. Robust standard errors are reported in parentheses.

\*\*\*Significant at 1%; \*\*significant at 5%; \*significant at 10%.

Northern Italy sample, by employing the same specifications used in Table 3 for civic capital.

We find that in former free cities eighth-grade students exhibit stronger self-efficacy; that is, they are more likely to ascribe success to their own effort and to attribute failures to causes that are external to them and over which they have no control. This result is unchanged if we control (unreported) for several demographic characteristics of pupils' parents. In magnitude, the difference is large. The free city dummy increases self-efficacy by 13% of its standard deviation.

The second column of Table 7 presents the regression for the whole sample including cities in the South. Because the free-city variable is meaningless in the South, we replace it with a South dummy as a way of validating our measure of self-efficacy. Consistent with the idea that a past long history of self-determination in the North has endowed individuals with stronger self-efficacy beliefs, we find that

on average Northern pupils exhibit higher levels of self-efficacy than Southern pupils. The difference is as much as 45% of the cross-sectional standard deviation.

#### *6.4. Self-Efficacy and Civic Capital*

To establish the plausibility of our mechanism, we need to explain why self-efficacy beliefs could lead to higher civic capital and to show empirically that indeed cities with a more self-empowering attitude have higher levels of civic capital today.

If self-efficacy is a measure of an individual's perception of the impact of his effort, then people with stronger self-efficacy beliefs should contribute more to the public good because they think that their impact is greater. Psychology research seems to support this prediction. For example, De Cremer and Van Vugt (1998) find that stronger perceptions of self-efficacy are related with higher levels of contributions to a public good game. Therefore, in communities with above-average self-efficacy, the level of civic behavior should be higher.

While we cannot test causality, we can at least test whether there is a correlation between self-efficacy beliefs and today's civic capital. This is what we do in Table 8. The first two columns use the number of nonprofit organizations as a measure of civic capital. Our measure of self-efficacy is positively and significantly correlated with the level of civic capital. This result holds whether self-efficacy is the only explanatory variable or it is inserted with the controls used in Table 3. A one standard deviation increase in self-efficacy is associated to an increase in the number of nonprofit associations per inhabitant by 0.3, or 5%, of the sample mean.

The same is true for the second measure of civic capital: the presence of an organ donation organization. A one standard deviation increase in self-efficacy increases the probability of having an organ donation organization by 10 percentage points, more than double the sample mean. Finally, self-efficacy has a negative effect on cheating in mathematics. A one standard deviation increase in self-efficacy decreases the measure of cheating by half of the percentage points of its sample mean.

In sum, our conjecture seems to hold. The positive historical experience of cooperation represented by the free city-state period is associated with higher levels of self-efficacy today, which in turn are associated with higher levels of civic capital.

### **7. Conclusion**

Acemoglu and Robinson (2012) claim that shocks to institutions can affect outcomes over prolonged periods of time. Yet, they do not distinguish whether this impact is the direct effect of formal institutions' persistence or the indirect effect produced by institutional shocks on people's psyche and culture. In other terms, is culture or are formal institutions the source of long-term persistence? In this paper we try to disentangle the two by looking at an institutional change whose formal institutions are long gone. We find that Italian towns that during the Middle Ages were free city-states

TABLE 8. Self-efficacy and civic capital.

	(I) Number of associations p.c.	(II) Number of associations p.c.	(III) Organ donation	(IV) Organ donation	(V) Cheating in mathematics	(VI) Cheating in mathematics
Self-efficacy	1.511*** (0.326)	1.203*** (0.310)	0.167 (0.285)	0.226*** (0.067)	-0.0345*** (0.00862)	-0.0348*** (0.00837)
Elevation		-0.269 (0.700)		-0.441*** (0.139)		0.0271** (0.0122)
Max difference in elevation		1.182*** (0.260)		0.069 (0.045)		0.00180 (0.00351)
City is on the coast		-0.206 (0.351)		0.061 (0.066)		0.0103* (0.006)
City more than 5 km from the coast		0.571 (0.832)		0.120 (0.103)		0.0101 (0.010)
Current Population		2.250 (2.249)		2.697*** (0.462)		-0.007 (0.033)
Current Population squared		-2.647 (1.670)		-1.927*** (0.339)		-0.0006 (0.026)
Gini inequality index of land ownership		0.488 (0.849)		0.114 (0.155)		0.022** (0.011)
Gini income inequality index		10.57** (5.056)		2.786*** (1.071)		0.019 (0.035)
Constant	0.753 (0.825)	-3.581* (2.170)	0.041 (0.285)	-1.463*** (0.466)	0.125*** (0.0222)	0.098*** (0.027)
Observations	1,803	1,803	1803	1803	1,715	1,715
R <sup>2</sup>	0.011	0.115	0.003	0.302	0.014	0.035

Notes: The table shows OLS regressions of measures of civic capital in the cities in the Center-North as left-hand side on self-efficacy in the city and controls as right-hand side. The left-hand side variable in the first two columns is the number of voluntary association per capita, in column III and IV a dummy for the presence of an organ donation organization, and in the last two columns the average cheating. Estimates are run on the whole sample of cities located in the Center-North of Italy. Robust standard errors are reported in parentheses.

\*\*\*Significant at 1%; \*\*significant at 5%; \*significant at 10%.

exhibit higher levels of civic capital today. The duration and degree of independence of the historical free city-states also affect today's civic capital positively.

Having identified a long-term persistence that cannot be attributed to institutional survival, we try to uncover the mechanism that generates this persistence. Based on Banfield (1958), we conjecture that the sense of self-efficacy is the cultural trait fostered by the free city-state experience. After all, Putnam (2000) and Ostrom (1990) claim that direct participation to public life (as in the commune) empowers individuals by boosting their sense of self-efficacy. This attitude is then transmitted through informal education inside the family, formal education, and socialization.

Consistent with this conjecture, we find that pupils of free city-states exhibit a higher self-efficacy score than pupils of similar towns within the North of Italy who did not share the same historical experience. Similarly, pupils in Northern cities exhibit a higher self-efficacy score than pupils in the Southern cities.

While far from definitive, this evidence opens an interesting area of research: linking a nation's psyche to important historical events. An event affects the attitudes of its contemporaries and these attitudes shape a culture, which is transmitted throughout the centuries via education and socialization. Future research will have to determine the extent and the importance of this new channel in explaining the success of nations around the world. At the moment, we can only say that it seems to have played a role in Italy.

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Additional Supporting Information may be found in the online version of this article at the publisher's web site:

Online Appendix