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**POLITICAL HISTORY, FISCAL
COMPLIANCE AND COOPERATION:
MEDIÉVAL SOCIAL CONTRACTS AND
THEIR LEGACY**

Paolo Buonanno, Matteo Cervellati, Sara Lazzaroni
and Giovanni Prarolo

MACROECONOMICS AND GROWTH



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Abstract

We study the long-shadow of local political history for socio-economic outcomes and attitudes today. Following historical evidence on medieval communal and maritime republics, we conceptualize more inclusive and exploitative social contracts as resulting from the interplay between the different incentives of ruling elites and the behavior of the population at large. Tracking the emergence, territorial evolution and disappearance of each polity in pre-industrial Italy, we measure the intensity of exposure to different republics over time and the number of changes in the identity of rulers (i.e. political stability) in each municipality. Looking within territories ever ruled by the republics, we find that a longer exposure to communal polities increases fiscal compliance, while the forceful annexation to the rule of maritime republics and higher political instability reduce it. Contribution to public goods go hand-in-hand with fiscal policies and is positively associated to generalized morality (organ donations) but crowds-out private mutual help. Political history also shapes population diversity today in line with evidence on differently attractive historical legal regulations. The results are robust to extensive checks and are confirmed using local variation in distance to centers of power and to the changing network of polities in instrumental variable regressions. Findings suggest that historical political instability and selected migration are reinforcing mechanisms of historical persistence of multiple social contracts until today.

JEL Classification: N/A

Keywords: Medieval Republics, Fiscal Compliance, Social Contracts, population diversity

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Political History, Fiscal Compliance and Cooperation: Medieval Social Contracts and their Legacy*

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Abstract

We study the long-shadow of local political history for socio-economic outcomes and attitudes today. Following historical evidence on medieval communal and maritime republics, we conceptualize more inclusive and exploitative social contracts as resulting from the interplay between the different incentives of ruling elites and the behavior of the population at large. Tracking the emergence, territorial evolution and disappearance of each polity in pre-industrial Italy, we measure the intensity of exposure to different republics over time and the number of changes in the identity of rulers (i.e. political stability) in each municipality. Looking within territories ever ruled by the republics, we find that a longer exposure to communal polities increases fiscal compliance, while the forceful annexation to the rule of maritime republics and higher political instability reduce it. Contribution to public goods go hand-in-hand with fiscal policies and is positively associated to generalized morality (organ donations) but crowds-out private mutual help. Political history also shapes population diversity today in line with evidence on differently attractive historical legal regulations. The results are robust to extensive checks and are confirmed using local variation in distance to centers of power and to the changing network of polities in instrumental variable regressions. Findings suggest that historical political instability and selected migration are reinforcing mechanisms of historical persistence of multiple social contracts until today.

Keywords: Medieval Republics, Multiple Historical Social Contracts, Legal Regulation, Fiscal Compliance, Co-evolution of Economic Regulation and Culture, Population Diversity, Mechanisms of Persistence;

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1 Introduction

Historical events, geography, and their interactions, are increasingly interpreted as fundamental determinants of differences in socio-economic outcomes and individual attitudes; as discussed in the literature Section 2 (see also Nunn, 2012; Alesina and Giuliano, 2015; Ashraf and Galor, 2018; and Michalopoulos and Papaioannou, 2019 for surveys). Little research exists on the conceptualization and measurement of sub-national political history, although empirical patterns suggest that past differences in legal regulation and economic incentives affected historical development and can shape cultures of cooperation (e.g. De Long and Shleifer, 1993 and Tabellini, 2010). In this paper, we focus on the legacy of differential patterns of local public governance in pre-industrial times for individual fiscal compliance and its interactions with public policies, attitudes and population diversity at local (municipality) level in Italy today.

Social scientists have extensively discussed the case of medieval Italy to advocate on the cultural legacy of the exposure to republican versus autocratic historical political institutions (see e.g. Waley, 1968, and Putnam et al., 1994) and formal evidence on the role of exposure to free cities for civic attitudes is offered by Guiso et al. (2016). Much less attention has been devoted to the implications of the historical paths taken within the republics and to the conceptualization, measurement and empirical exploration of their legacy. Historians extensively document markedly different patterns of public governance within the self-governed polities. While “communal republics” (e.g. Bologna) implemented innovative and attractive legal regulations, favoring freedom of economic initiative and social inclusion, the “maritime republics” (e.g. Venice) engaged in more extractive policies particularly in the territories forcefully annexed to their territorial rule. Competition between different polities materialized in frequent changes in territorial control and borders and implied that even neighbouring locations have different political history and intensity of exposure to the different polities (Strayer, 1970). The different governance strategies implemented by the ruling elites of the medieval republics have been largely overlooked in the scholarly debate and in formal analysis. The north of the country offers a very interesting, but so far largely neglected, historical lab that allows to study the legacy of different economic regulation within self-government since different locations were historically exposed to the territorial rule of different republics and with different duration and stability.¹

A large literature in economic history, discussed in detail in the historical background Section 3, documents the patterns of legal regulation of economic activities and personal freedom, fiscal policies and the provision of public goods in the medieval republics (e.g. Waley, 1968, Hohengerg and Lee, 1995 and Epstein 1996 and 1999). The need to build fiscal and military capacity in the newborn republics has been

¹Scholars mostly focused on the dichotomy between self-government and feudal rule as driver of the divide between the North and the South of the Italian peninsula, as discussed also in Section 2. This perspective parallels the question on the role of democracy and autocracy in modern states. Our analysis is conceptually closer to the related, but different, question of the determinants and consequences of the different legal regulations and economic institutions within democracies. Our focus is specifically on the legacy of the different patterns of historical public governance within the medieval republican traditions.

interpreted as a main driver of “communal constitutionalism” (e.g. Levi, 1988; Downing, 1992; Stasavage, 2010 and 2011). Local elites engaged in production and trade accommodated legal institutions regulating the exercise of power and favoring the provision of valuable services to the populace (e.g. Botero, 1588, Chittolini, 1990, Finer, 1999 and Belfanti, 2001). The communal policies favored, and were sustained by, the cooperation and fiscal compliance in the population that enjoyed, in exchange, unprecedented economic and personal freedom associated to the demise of the feudal system (Van Zanden and Prak, 2006, among others). Innovative social reforms, including the abolition of serfdom and slavery, the protection of trade and the provision of public goods were explicitly devised also to attract inward migration, give impulse to manufacturing production and increase the fiscal base (e.g. Parker, 1996 and Carboni, 2008). The maritime republics, in contrast, built their military and fiscal capacity on the rents from long-distance sea trade and the ruling Elites faced lower needs to provide incentives to the population by implementing inclusive legal regulations (e.g. Epstein 1996, Finer, 1999). The increasing needs of resources and people (also required to operate the large man-powered fleets), were faced recurring to slaves and by forcefully colonizing in-land territories and exploiting their populations (e.g. Cipolla, 1994).

We interpret these historical configurations as different “social contracts” in line with theoretical research that models policies and individual behavior as mutually reinforcing and supporting multiple equilibria (see Tabellini, 2008, Bisin and Verdier, 2017 and Besley, 2018). Specifically, we conceptualize the social contracts of the medieval republics as driven by the “vertical” incentives of ruling elites facing different trade-offs between the extractive or productive regulations (e.g. Lizzeri and Persico, 2004 and Galor and Moav, 2005) and being constrained by “horizontal” behavior in the population at large (e.g. Tabellini, 2008). Different patterns of self-governance can be sustained by mutually consistent policies and population behavior, with more “inclusive” regulations being supported by larger fiscal compliance and more “extractive” ones inducing patterns of fiscal avoidance.² This perspective implies a key role of the duration of exposure to each pattern of regulation while the lack of stability of territorial control, e.g. frequent changes in the identity of the rulers in a territory, is a main threat to the persistence of productive social contracts (since perturbations of policies and/or beliefs can precipitate “non-cooperative” equilibria). Selected migration into the territories with more inclusive regulations is expected to increase their resilience. Understanding the historical roots of contemporary social configurations and the mechanisms of persistence is key also for policies. Limited research nonetheless exists on the systematic measurement and empirical exploration of the role of sub-national political history (see Section 2).

We propose a disaggregated measurement of the intensity and of the stability of exposure to the rule of communal and maritime republics in each location. To this end, we track the territorial evolution of all

²A simple theoretical framework, reported in Appendix Section 1, illustrates the basic insights. This perspective departs from the interpretation of “institutions as rule”, where behavior is driven by institutions (see North 1990), and is closer to the perspective of “institutions as equilibria”, where outcomes depend on the joint interactions between public regulation, economic incentives, beliefs and behavior, see Greif and Kingston (2011) for a detailed discussion.

sovereign polities ruling over the Italian peninsula in the period 1000-1800 at yearly frequency by geo-referencing political maps from historical atlases.³ We study the legacy of the political history of each of the, around 5,000, locations hosting the municipalities in the North of the country that were all exposed to the rule of the republics. The empirical setting discriminates between different republican “treatments”, communal and maritime, to track the “intensity” of their exposure over time, as well as to measure historical political stability in terms of changes in the identity of rulers in each location. The data also allows to discriminate between the locations giving rise to each republic at its birth, that we label the “seeds” of the republic, and the locations that have been subsequently forcefully “annexed” to their territories. The unique features of the novel database permit studying the intensive margin and stability of exposure to different polities and to study the implications of being forcefully exposed to their rule as annexed location.

As a first step the formal analysis explores the legacy of the intensity and stability of exposure to the communal and maritime republics on individual attitudes towards contributions to public goods by proposing a measure of fiscal compliance at municipality level. The baseline findings document that within the territories ruled by the republics, longer duration of the exposure to the rule of communal polities significantly and robustly increases fiscal compliance while the opposite is true for locations ruled by the maritime republics.⁴ A more unstable historical political rule, in terms of a higher number of different polities ruling over the territory of a given municipality, significantly and robustly reduces fiscal compliance.⁵ In line with historical narratives, the results document that the negative effect on fiscal compliance are mostly driven by the in-land locations that were forcefully annexed by the maritime republics.

The analysis next explores the predicted mechanisms that relate to the persistence of differential interactions between individual attitudes and policies in today’s local “social contracts”. The results document that higher intensity of exposure to the rule of communal republics significantly increases the provision of local public goods and the fight of tax evasion while exposure to maritime rule reduces public good provision. Fiscal compliance and the effectiveness of public policies appear to be (strategic) complement. Higher fiscal compliance crowds-out, however, the private provision of mutual aid while it robustly increases the measures of generalized trust and morality (as proxied by the presence of organ donation associations). Locations exposed to higher pre-industrial political instability display, in contrast, a higher presence of private mutual aid associations.

Historians argue that part of the resilience of the communal experiences can be imputed to the implementation of attractive socio-economic environment devised to attract investments and people. A side

³We retrieve information on the changing spatial distribution of the borders of all sovereign polities and on the distance to the centers of power (i.e. the capitals) and to reconstruct several variables that are informative on the specific political history in each location including the patterns of historical political stability.

⁴The data also confirm the existence of a large North-South divide in fiscal compliance. We focus most of our effort, however, to the attempt of exploring the existence of multiple social contracts within the territories exposed to the republics.

⁵Further on the role of political instability for historical persistence, robustness checks document a negative effect on tax compliance produced by more frequent changes in the number of rulers also after the end of the republican experience.

implication of this perspective is the prediction that the exposure to more inclusive polities should increase population diversity in the population by long-term process of differential in-ward migration. To explore the predictions of differential attractiveness of the historical social contracts, we use information on the distribution of surnames of the whole population in each municipality that offers a reduced form summary statistics of the process of long-term migration. The results document that locations more intensively exposed to the rule of communal republics display a higher level of social openness (measured by the entropy in the distribution of surnames) and a lower degrees of social closure (measured by the disproportionate size of the main families), while locations ruled by maritime republics have closer social structures still today. To push the investigation of the specific predictions of selected migration we also exploit information on the frequency of surnames with communal toponym origin. The results document communal republics experienced more in-migration from other communal republics. Together with the documented role of historical political stability the finding suggest that patterns of selected migration can be interpreted as reinforcing mechanisms for the persistence of heterogenous historical social configurations.

Given the nature of the data, we devote particular attention to explore the potential role of unobserved location specific drivers of fiscal compliance and to account for patterns of spatial correlation. The documented patterns prove robust to conditioning on a large set of historical and contemporaneous covariates and to extensive sensitivity checks.⁶ The findings of systematically opposite effects of the time of exposure to the communal and maritime republics, particularly in the annexed locations, suggest that unobserved characteristics are unlikely to be a prime driver of the patterns. It is not straightforward to think about the type of unobserved heterogeneity that can drive purely statistical bias with systematically opposite signs in the time of exposure depending on the type of ruler. Devising credible identification strategies is notoriously difficult in investigations of the historical determinants of modern outcomes.⁷ Historical narratives on the patterns of territorial control, discussed in Section 3, nonetheless suggest an instrumentation strategy to explore the potential role of endogeneity in driving the results. First, it is well documented that until the emergence of modern national states the level of territorial control (both military and fiscal) was limited and declining in the distance from the centers of power, i.e., from the capital cities. Second, the communal and maritime republics historically implemented different strategies of territorial control with the former competing to stabilize areas of influence and borders and the latter engaging in systematic attempts of forceful colonization of in-land territories for resource extraction. We focus on the sub-sample of territories ever annexed to the rule of any republic. By construction, excluding locations exposed to the republics exclusively as seeds limits problems of endogeneity related to the emergence and duration of exposure to each republic

⁶The analysis documents that political history affects attitudes above and beyond the role of historical free cities and the rule by feudal polities (like e.g. the Normans) and historical and contemporary development. Further analysis also explores the existence of heterogenous patterns within the communal republics and provides suggestive evidence on the role of regulation of political power by exploiting data on the turnover of local administrators in medieval times.

⁷Our analysis also involves the complication of dealing with multiple measures of political history over an extensive historical time span and a large set of locations.

in the territories giving birth to each polity. Exploiting information on distance from centers of power of communal and maritime republics and the location within the changing network of communal centers of power we build instruments that allow to predict the duration of exposure to communal and maritime rule in each of the annexed locations. The results confirm the existence of a systematically different legacy of the exposure to the different historical social contracts in annexed locations.

The paper is structured as follows. Section 2 locates the contribution in the existing economics literature. Section 3 discusses the historical background and evidence. Section 4 presents the data and offers an exploration of the historical patterns and the emerging stylized facts. Section 5 studies the legacy of the political history for fiscal compliance while Section 6 explores the predicted mechanism by looking at the social contracts and population diversity today. Section 7 concludes. Further material is relegated to the Appendix.

2 Literature.

This paper contributes to several recent streams of the literature in economics. We offer a new measurement of sub-national political history and a systematic exploration of its role for socio-economic outcomes today. The results contribute to the literature on the historical roots of individual attitudes and public policies and the interactions between these domains. Political history is a driver of attitudes towards the state, generalized trust and population diversity. The results support the perspective of multiple social contracts driven by the preferences of historical elites, geography and historical contingencies. Pre-industrial political stability and the long-term process of (selected) migration can be interpreted as relevant mechanisms of (lack of) persistence.

The literature in political economics has mostly concentrated attention to modern countries that, over the last decades, offer comparatively stable territorial units of observation and for which more data is systematically available. Existing data on medieval self-governance mostly relies on information on the experience of free cities.⁸ We propose a disaggregated measurement of pre-industrial political history that, along the lines of De Long and Shleifer (1993) and Tabellini (2010), looks at sovereign polities rather than cities. We push this perspective by using grid cells as stable units of observation and exploit the fluid patterns of territorial control to build novel measures of political history in all locations.⁹ We assemble a database that allows tracking the evolution of the borders of the medieval republics at yearly frequency (over the

⁸See Stasavage (2010, 2014), Bosker, Buringh and Van Zanden (2013), Guiso, Sapienza and Zingales (2016) and Serafinelli and Tabellini (2019), among others. Other works look at the different, but related, role of city charters, see Angelucci, Meraglia and Voigtländer (2017). Pre-industrial data are available also for selected polities and early modern states but mostly from the seventeenth century, see Dincecco and Katz (2014).

⁹The high level of political fragmentation and intense territorial competition between pre-industrial sovereign polities has been extensively described by historians and play an important role in the arguments on the peculiarity of the rise of Europe (see, Jones 1981 and 2003, Mokyr 1992 and 2016, and Fukuyama, 2011, among others). Until the emergence of modern states the patterns of territorial control were fluid and often involved changes in borders (e.g. Strayer, 1970, and Tilly, 1990).

period 1000-1800) allowing to go beyond a dichotomous interpretation of political history of the different locations (or cities) as either “treated” or “not treated”. The data offers a measurement of the intensity of the differential exposure to the rule of communal and maritime republics over time and over space and it allows to discriminate between the territories that witnessed the emergence of the republics from the territories that were forcefully annexed to their rule. Finally, by tracking the change in the identity of rulers in each location at yearly frequency, we offer measures of the degree of stability of territorial and political control.¹⁰

A large effort has been recently devoted to isolating the deep roots of cultural traits and individual attitudes and preferences (see Nunn, 2012 and Alesina and Giuliano, 2015 for surveys). Recent works document the role of historical events, geography, and their interactions in shaping inter-ethnic trust (Nunn and Wantchekon, 2011), the gender-based division of labor (Alesina, Giuliano and Nunn 2013), time preferences (Galor and Ozak, 2016), loss aversion (Galor and Savitskiy, 2018), trust and inclusive social arrangements (Buggle and Durante, 2018), individualism (Bazzi, Fiszbein and Gebresilasse, 2018), and moral systems (Enke, 2019), among others. Specifically on the role of medieval self-government in Italy, Guiso, Sapienza and Zingales (2016) document that the population exposed to the self-government of medieval free cities displays higher social capital and self-efficacy still today.¹¹ We contribute to this literature an empirical investigation of the determinants of fiscal compliance at municipality level. We document the key, but highly heterogeneous, role of political history, territorial control and stability that were, hitherto, not empirically explored. We also show that our measure of fiscal compliance specifically refers to attitudes towards contribution to a public service that relates to, but differs from, social capital, civic values and trust. Fiscal compliance is positively associated to behaviours typically associated to generalized trust (like organs donation) but is negatively associated to presence of mutual help private associations (consistently with a crowding-out effect of familistic relationships due to the presence of substitute public policies).

The question of the legacy of history is addressed following a multiple social contracts perspective that interprets different social configurations as being supported by both attitudes and policies. Based on extensive historical narratives, discussed in Section 3, we adopt a conceptual framework that merges the insights of the literature on the “vertical” incentives of historical ruling elites to offer productive public goods, like Lizzeri and Persico (2004) and Galor and Moav (2006), and the insights on the role of individual beliefs (over policies) for “horizontal” coordination in the population at large see, in particular, Tabellini

¹⁰For further exploration we have also collected data on the identity and turnover of medieval rulers (“podestà”) which is informative on the existence of term limits and on the number of families ruling each republic.

¹¹Our measures of political history conceptually differ from the measures of Guiso, Sapienza and Zingales (2016) as our baseline information refers to the territories of policies rather than the (dichotomous) existence of communes in a subset of historical cities which is particularly informative on the existence of forms of intense civicness. This allows us to track the political history in each location at the intensive margin including, crucially, the intensity and stability of exposure to the rule of different types of republics. The underlining historical information is conceptually very different and, in fact, the role of both our measures of political history and the existence of free cities can be jointly estimated in the empirical analysis and the results show that they have different, and independent, effects on modern outcomes.

(2008a, 2008b). The results document that the exposure to different republics affect today's social contracts in multiple dimensions including public policies and individual attitudes. Local public good provision and fiscal compliance go hand-in-hand and are shaped by the historical exposure to more productive or extractive patterns of governance. The findings provide systematic support for the theoretical arguments on the crucial role of (strategic) complementarity between policies and beliefs (or transmitted preferences) in supporting multiple equilibria, see in particular, Benabou and Tirole (2006), Bisin and Verdier (2017) and Besley (2018). See also Greif and Kingston (2011) for an articulated discussion.

Increasing evidence documents the role of sub-national political history and its interactions with geography above and beyond national institutions. Pre-colonial institutions in Africa still matter for growth and socio-economic outcomes, see Gennaioli and Rainer (2007), Michalopoulos and Papaioannou (2013) and Michalopoulos and Papaioannou (2019, forthcoming) for a recent survey. Our findings provide complementary evidence on the persistent role of pre-modern sub-national institutions also in Europe. Evidence on the negative effects on policies and attitudes in the inland territories forcefully annexed to the maritime republics aligns with recent evidence on the legacy of colonial interventions in Africa (see Lowes and Montero, 2018a, for cultural backfires of and Lowes and Montero, 2018b, for evidence the provision of public goods by part of local leaders). The results also suggest a key role of geography and distance to the centers of power which complement evidence of declining historical state capacity over space by Michalopoulos and Papaioannou (2013) for Africa and Johnson (2015) for France, and the role of political geography for pre-industrial economic growth in Europe by Cervellati et al. (2019).

Understanding the mechanisms of historical persistence is conceptually and empirically non straightforward (see Alesina and Giuliano, 2015). Historical persistence has been related to cultural transmission (Bisin and Verdier, 2000 and 2001; Benabou and Tirole, 2006) and the use of traditional heuristics or experimentation (Giuliano and Nunn, 2017).¹² The multiple social contract perspective also emphasizes the need to understand the stability of beliefs, social norms, and expectations (see Greif and Laitin, 2004; Benabou and Tirole, 2006). Similarly, cultural change has been interpreted as evolving heuristics of behavior (Boyd and Richerson, 1985), that are driven by relative pay-offs but are sensitive to shocks.¹³ Non cooperative equilibria (with low fiscal compliance and little provision of public goods) are, in theory, social attractors that can emerge in response to perturbations to historical social contracts in both dimensions. A main shock to the stability of productive social contracts is, accordingly, given by changes in the polity ruling a given location. In line with this view, the results document a higher number of polities historical ruling over a given territory have a negative on both public policies and individual attitudes today.

A large literature documents the implication of population diversity and distances for development (see

¹²Empirically, historical persistence has been shown to be favored by the tightness of ancestral family kinships (Enke, 2019), by the process of occupational and productive specialization (Valencia Caicedo, 2019) and by preferential ethnic sexual endogamy (Cervellati, Chiovelli and Esposito, 2018).

¹³A relevant implication of the latter perspective is that active transmission of cultural traits facilitates, but it is not necessary, for historical persistence, see Feldman, Aoki and Kumm (1996) and Henrich, Boyd and Richerson (2008).

Ashraf and Galor, 2013; Ashraf, Galor and Klemp, 2014 and 2015 and Wacziarg and Spolaore, 2009, respectively) and for public good provision and distrusts of people outside own group (see e.g. Alesina and Giuliano, 2015 and references therein). Enke (2019) documents the role of historical kinship for moral values and trust. Much less research exists on the drivers of diversity and the little existing evidence mostly focuses on the role of geography at country level or for African ethnic groups.¹⁴ Our results provide a first shred of systematic evidence that local diversity, measured exploiting information on the distribution of surnames, depends on the historical governance of the different locations. The findings offer reduced form evidence that locations historically characterized by more inclusive and attractive forms of governance feature higher social openness, lower degree of social closure (i.e. lower importance of few main families) and higher values of generalized trust. Evidence by Serafinelli and Tabellini (2018) documents that medieval free cities attracted famous people. The results on the distribution of surnames with communal toponym origin confirm this patterns for the population at large and aligns with historical narratives on policies devised to attract selected migration which, in theory, is a reinforcing mechanism of historical persistence.

3 Historical Background

At the dawn of the second millennium domain states ruled over the majority of European lands. Power was “mediatized” from monarchs through several feudal layers of vassals and local lords which allowed indirect sovereignty over very extensive territories (see e.g. Tilly, 1990; Tilly and Blockmans, 1994; Finer, 1999). Medieval polities had limited capacity to military control territories and extract rents at a distance from the centers of power (Hoengberg and Lees, 1995; Epstein, 2000; Dincecco and Katz, 2016).¹⁵ At the beginning of the 11th century the Italian lands, that were under the rule of the Holy Roman Empire, the Byzantine Empire, the Kingdom of Longobards and the Fatimids Caliphate, (see further below), experienced increased productivity and population (favored by technological advances in agriculture and favourable climatic conditions see Lopez, 1976, Campbell, 2016 and Jones, 1981). Peculiar historical contingencies, including the investiture controversy between the Holy Roman Empire and the Church and internecine wars for the imperial succession, temporarily reduced the territorial grip of the Empire on Northern Italy. The defeat from the Lombard League and a successful strategic marriage eventually crystalized, by the thirteenth century, in the consolidation of the self-governed republics and a centralized feudal system in the North and in the South

¹⁴Ahlerup and Olsson (2012) document the role of geography, latitude and the process of state formation at country level. Cervellati, Chiovelli and Esposito (2018) document the role of geography and malaria epidemiology for the emergence and persistence of ethnic groups in Africa. Enke (2019) confirms the role of malaria and diseases in shaping historical kinship. We are not aware of any evidence linking local political history to local population mixing and diversity.

¹⁵The economies of domain states lacked any significant provision of public goods or benefits for economic activities, particularly in terms of personal security and protection of property rights, freedom of entrepreneurship, and featured extensive forms of serfdom (and slavery). Rents were directed to the exclusive benefits of court consumption and military campaigns for the pursuit of personal power and prestige of absolute monarchs and local military elites (see e.g. Hohenberg and Lees, 1995).

of the country, respectively.¹⁶ A large historical literature (see, e.g.: Waley, 1968) has documented the fundamentally different forms of governance in the two parts of Italy. Putnam et al. (1994) famously traced the long-lasting North-South divide to the difference between the republican and autocratic cultural traditions. Guiso, Sapienza and Zingales (2016) provide systematic evidence that today's population of medieval free cities (communes) displays significantly larger civicness and attitudes supporting self-determination.

Much less attention has been devoted to the implications of the historical paths taken by the different republics and to the conceptualization, measurement and empirical exploration of their legacy.¹⁷ The process of consolidation of self-governance in the north took very different paths in the communal and in the maritime republics. Let us first discuss the formers. The new polities were initially exposed to persistent threats from the Empire and, given their small size, soon engaged in competition for consolidation of territorial control. Their ruling elites faced the urge of building fiscal capacity particularly to afford fortifications and to exert territorial control over the hinterlands and, in case of need, to pay mercenaries. The need to mobilize resources, taxes and credit has been considered a key driver of, so called, medieval constitutionalism (Downing, 1992 and Stasavage, 2011). New governance strategies were devised to induce a more active participation of the local population to the provision of local public goods that was coupled, and made possible, by comparatively large monitoring of the administration of public resources which was initially favored also by the small territorial size of these polities (Levi, 1988, and Stasavage 2010 and 2011). It has been argued that the persistence of the republics rested on the active participation of the citizenry to the provision of local public goods (both in terms of contribution to the fiscal base and active labor contribution for military defense). Early observer Botero (1588) interpreted the provision of "utility" to the citizens as instrumental for independence and prosperity.

Mobilizing the population involved the provision of public goods and personal freedom. Trained administrators were hired to solve specific contingent policy problems: "public administration in the communal

¹⁶The aspirations of Frederik I to consolidate the territorial control in Italy materialized in several military campaigns. In the earlier ones the emperor managed to formally submit Italian city states in the North that, nonetheless, rapidly restored their independence and libertarian governance. Earlier attempts to control the South failed since the Normans allied with the pope against the emperor. In subsequent campaigns Italian cities joined forces in the Lombard League, and finally defeated the emperor. Territorial control over the Italian South was, in contrast, gained with the strategic marriage of Frederick's son, Henry, to Constance, heiress to the Kingdom of Sicily. His grandson, Frederik II, Holy Roman Emperor and King of Sicily, ruled based in Palermo and repressed any attempt of self-governance in the South and organized a centralized and autocratic feudal administration that essentially persisted under subsequent autocratic rulers until the unification of the country in 1861.

¹⁷Scholars have debated about the drivers of the location of medieval republics, see Tilly (1990). The literature has interpreted the emergence of a belt of city states as resulting from the advantages of trade, see e.g. Hicks (1969): "the core of the City State, regarded as trading entity, [was] a body of specialised traders engaged in external trade". Extensive descriptions can be found also in Epstein (2000) on the network of connected traders across Italy, France and Northern Europe. Cervellati, Lazzaroni, Prarolo and Vanin (2019) propose a simple spatial theory in which only locations facing a sufficiently slack territorial control by domain rulers could afford intensive forms of self-government. Some authors highlight the role of trade for the subsequent resilience of city states that insured their survival after the black death and well beyond, see Wickham (2016). Stasavage (2014) emphasizes that, after giving large impulse to economic activities, city states stopped being centers of economic development, although several cities could retain large de facto independence well into the era of territorial states thanks to capital concentration and favorable access to credit. See also Konvitz (1985).

republics was professionalised. A corp of experts in municipal government developed remarkably advanced systems of public finance (including a market in negotiable public securities), land reclamation, commercial law, accounting, zoning, public hygiene, economic development, public education, policing, and government by committee” (Putnam, Leonardi and Nanetti, 1994). Strict economic control paralleled the territorial administration extending to commercial and industrial policy and management of agricultural and land property (Chittolini, 1990) that granted access to economic activity and protection of property rights, (Finer, 1999; Belfanti, 2001). Large effort was, in particular, devoted to increase population size attracting migrants, skilled artisans and traders through fiscal competition (temporary exemption from payment of taxes) and granting personal and economic freedom. The communal republic of Bologna was, for example, the first sovereign polity to formally abolish slavery (in 1256) on its full territory (soon followed by other republics). Formally ideologically motivated, such an (expensive) inclusive policy essentially served the need to consolidate the size of the free citizenry and, accordingly, the fiscal (and military) base. A foreign expert of law (Bonaccorso da Soresina) was hired to design the legal regulation, which proclaimed the release of about 6,000 slaves (making up to more than a third of the total population of the capital city) upon payment of their freedom at market price with money raised among the population in the city. The “only” obligation of former slaves was to reside in the territory of republic and to *pay taxes*.¹⁸

An element that is key for our conceptual framework, and that also guides the empirical analysis, is the emergence of cultures of fiscal compliance and contribution to the common good. The fiscalia of the communal republics were based on “representativeness and consensus”. “Citizens were prepared to pay relatively high taxes in return for the public goods they desired [from protection of property rights to education and health services], because they were more or less able to monitor the political process” (Van Zanden and Prak, 2006) and taxation was “more accepted and tolerated by the taxpayers (...) [as] the spontaneous adhesions of citizens were higher: needs and benefits were more perceivable and verifiable by those that had to pay”, Carboni (2008). The existence of *de jure* and/or *de facto* constraints limited the arbitrary exercise of power as “Elaborate legal codes were promulgated to confine the violence of the overmighty” (Waley, 1968) so that “the structure of authority in the communal republics was fundamentally more liberal and egalitarian than in contemporary regimes elsewhere in Europe” (Putnam et al., 1994). As a result these polities, eventually labelled “communal republics”, developed fundamental innovations in public governance and social policies with their “counter-feudal and counter-monarchical theory and practice of government – Republicanism” (Finer, 1999). The medieval republics had a better balancing between state capacity and limits to the exercise of power with respect to domain states (Chittolini, 1990; Epstein, 1999; Hohenberg and Lees, 1995), which made them small scale precursors of modern democracies, see also Epstein (1999).¹⁹

¹⁸The formal act, called *Liber Paradisus*, starts as: “*In the beginning the Lord planted a paradise of delights, in which he put the man whom he had formed [...] giving him the most perfect and perpetual freedom. [...] Freedom is a priceless treasure [...]. Within its jurisdiction [Bologna] eradicated to its roots the stain of slavery. Since this is a noble and free [republic] that can host only free men*”.

¹⁹Although, “only the members of the ruling class based in the city had full political capacity (...) the commune has to

A final element that is relevant for the conceptual framework relates to the relationship between the centers of power (the capital cities) and the territories annexed to the rule of the communal republics. The constant threat of attacks by neighboring polities and the costly defense, see Parker (1996) and Carboni (2008), implied that the consolidation of territorial control was partly based on incentives. Accordingly the provision of valuable services and the legal regulation of personal freedom was extended, although with a lower intensity, also to the ruled territories.²⁰

The governance in the maritime republics (e.g.: Venice, Genoa and Pisa) also involved a system of political representation and a republican organization outside the feudal system. These polities, however, built their fiscal and military capacity on rents from sea trade and, as a result, implemented very different strategies of public governance, regulation of access to economic activities and personal freedom (e.g. Finer, 1999). Their comparative advantage in the controls of the sea rapidly materialized in important surpluses related to sea trade which allowed sizable military investments (particularly for the fleet) and the construction of effective, and extractive, fiscal capacity. As a result the elites of maritime republics faced limited needs to actively involve the populace in the governance and to implement forms of inclusive regulation and to provide “incentive compatible” public policies (e.g. Epstein 1996, Finer, 1999). For instance in the case of Venice, “longdistance trade, not manufacture, was the source of the city’s wealth; so that the artisanate—the *popolo minuto*—was weaker than in [communal republics] like Florence and Milan. Nor did the merchant-aristocracy have to court the artisanate for support against a territorial nobility” (Finer, 1999). Public finance was more regressive and devised to provide rents to the elites rather than provide utility to the population.²¹ The existence of extensive rents and the need to keep the ruled populace under control lead to a comparatively “familistic-oligarchic” and highly hierarchical administration of power (see also analysis by De Lara, Greif and Jha, 2008; Puga and Trefler, 2014). Differently from the professionalized governance of the communal republics, that often involved appointing trained administrators from other republics for limited terms, the exercise of power in the maritime republics was kept insulated from foreign

be considered a democracy in that it was clearly in contraposition to the hierarchical, autocratic and intrinsically aristocratic feudal system. With respect to the feudal system, the democratic commune was ideologically and politically opposite because sovereignty was practically in the base and not anymore in the vertex of the social pyramid, in the citizens rather than in the emperor or prince; if the root of this regime was restricted to the highest classes, it can spread further to include lower classes. Bourgeois and merchants became part of the ruling class and conquered the respect of their needs through guilds and corporations, which became part of the communal government (i.e. in Padua the *Maggior Consiglio* went from 400 to 600 and finally 1000 members in 1277 in a city with less than the estimated 5925 households [...]), Ventura (1964).

²⁰The republics “strove systematically to eliminate all intermediary and indirect forms of government and to organize their territories into lower-level districts run by officials from the city (*podestà, vicari*); the law, lower-level legislation, and the fiscal, juridical, and administrative rules of the city were extended to [the countryside headed by the city]”, (Chittolini, 1990).

²¹For instance, at the beginning of the 14th century Genoa was forced to restructure the public debt accumulated from wars with Pisa and Venice. The new system of taxation implemented was devised to maintain the wealth of the richest Genoese, those who could afford shares in the various compere, while the administrators raised taxes import/export taxes and all taxes on grain, meat, cheese, olive oil, bakers, and salt. “Some tolls, the income from the entire Riviera Ponente, and taxes on markets, taverns, and butchers augmented the monies set aside to pay interest on the debt. [...] The gabelles and head tax were regressive, and much of the taxes on trade could be pushed off on prices charged to foreigners. Genoa provides a classic case of how public debt can facilitate the transfer of wealth from ordinary people to the rich, as well as defer taxes through borrowing.” (Epstein, 1996)

interferences. “Unlike all the other [republics], which perforce drew their podest and their judges from other places [...], [Venice] not only called on its own native population, but upon that same nobility which staffed all other departments of the state” (Finer, 1999). Similarly, in Genoa “[e]xcept for shouting their approval at a parlamento the political process left little scope for ordinary people to participate. The representatives on the council of anziani were mostly former officeholders, and even when the wards selected the members of an advisory body, the familiar names usually predominated.” (Epstein, 1996).

The expansion of the control over the hinterlands was a priority also for protection of economic rents. In 1423 Venice accounted for about 3,000 merchant ships, protected by 43 major warships and 300 smaller ones, manned by a total of 19,000 seamen (Chamberlin, 1982). An increasing need of resources, particularly wood, grains and food but also abundant labor force to operate the large man-powered fleet was faced by heavily extracted from the hinterlands (Mallett and Hale, 1984).²² Controlling the in-land territories was highly strategic but not easy in the face of widespread hiding of resources, resistance to pay duties and recurrent attempts to uprising and revolts by the population of ruled cities.²³ Legal regulation of economic activity favored rent extraction and protection for the elites. Personal freedom was limited, the exercise of trade was centrally regulated and the maritime republics extensively exploited slaves and profited from slave trade. Cipolla (1994) argues that the relationship between maritime cities and the controlled territories in XIII-XIV centuries shares many similarities with the one existing between extractive European motherlands and their colonies until in the XIX century.

4 Data and Measurement

The analysis involves collecting geo-localized information on the emergence, evolution and disappearance over time and space of political entities ruling over Italian locations over the last millennium. This requires assembling and using a panel database with disaggregate data that relies on small grid cells as units of observation at a high level of temporal disaggregation. In what follows we present the main explanatory and control variables, together with our main dependent variable and we leave in Appendix 3 the details, sources, and descriptive statistics of the dataset.

²²At that time, accounting for city revenues, revenues from inland territories –the *Terraferma*– and overseas territories –the *Mar*– the republic of Venice, labelled *la Serenissima*, was wealthier than France and England (Braudel, 1979).

²³Still, inland expansion aimed at a firm but non belligerent control of the annexed territories and concessions were used to avoid open conflicts, see also Kirk (2012). For example, “Venice, as far as possible, tried to resolve [the convergence between economic and political needs] by peaceful means. War was always seen as a last resort which was not only costly but also immensely damaging to the free flow of trade.” (Mallett and Hale, 1984).

4.1 The Medieval Republics in Italy

We extract and digitize information on the changing borders of political entities ruling over the Italian territory over the period 1000-1800 AD from historical atlases. The baseline source of information is the Centennia Historical Atlas of Europe (Reed, 2014) and we restrict our attention to the territory covering nowadays Italy. Figure 1 shows how the Italian territory is represented in terms of political division at selected dates. This data source has several very convenient features. The atlas provides a homogeneous source of information that is coded in terms of maps depicting the borders of all recorded political entities at yearly frequency. We focus on the period 1000-1800 because the turn of the first millennium marked the starting point of a period of considerable changes including the consolidation, peak and decline of feudalism and the emergence and disappearance of the medieval republics. Information is available for the political entities at the maximum level of sovereignty that is by polities that are not part (or ruled) by any other, higher level, political entity.²⁴

The maps coherently identify political entities over time. In Appendix 2 we discuss the details of the procedure used to construct the dataset of political entities.²⁵ A key aspect of using a high-frequency dataset is the possibility of constructing detailed measures of rulers' turnover in each location.

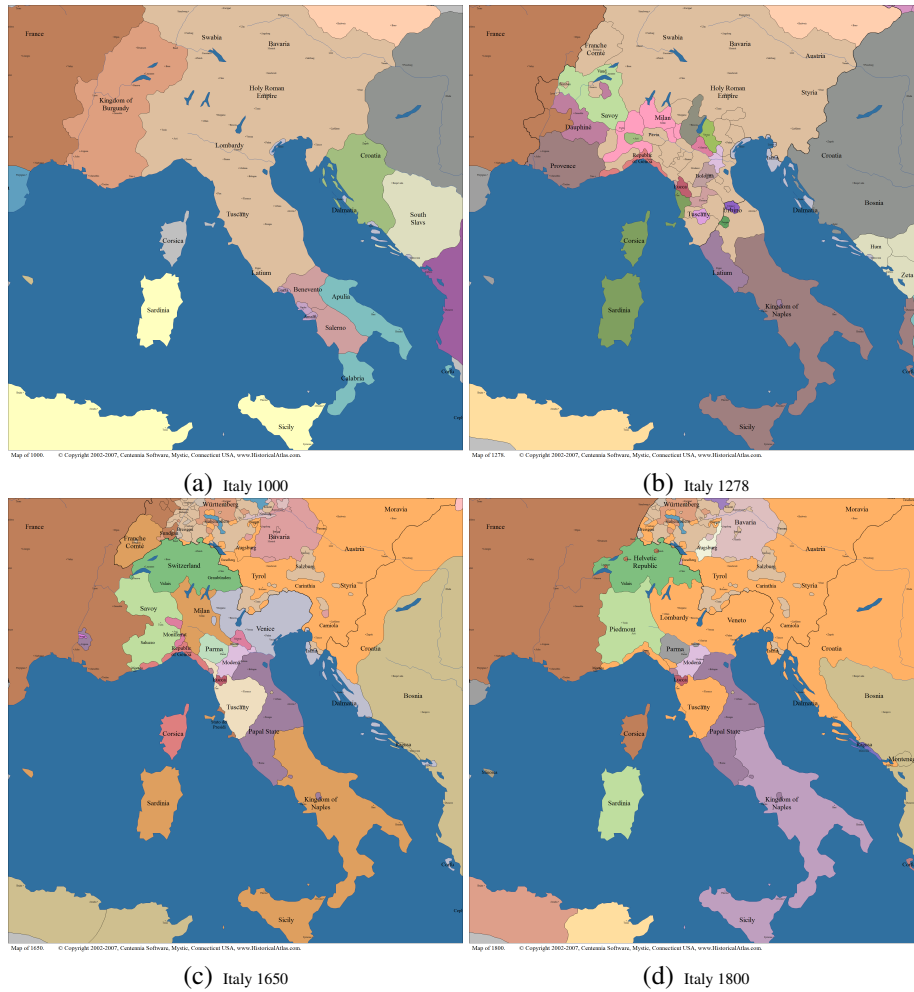
Measurement. The digitized and geo-referenced maps on the changing borders of sovereign polities are used to construct several variables that are informative on the political history of each location in Italy. We track the emergence of new political entities with respect to the big sovereignties of the time. We next focus, in particular, on polities appearing after the year 1000 and that are territorially smaller than the polity previously ruling each location. An exception is the republic of Venice that already exists in year 1000. In the year of appearance these polities are territorially small, typically covering a territory below 100 Km². Historical sources finally allow to classify sovereign entities that emerged before the year 1000 AD and consider specific cases. A polity is coded as a republic only if it is not under the rule of any other sovereign polity (de jure or de facto).²⁶ This procedure allows classifying and tracking the over time territorial evolution of all political entities which ruled over each 5×5 arcminute grid cell (areas of roughly

²⁴This definition is based on effective power, so that political entities that were part of loose confederations of states (like the Holy Roman Empire in early modern periods) are considered sovereign political entities in their own name. See the Appendix and also Cervellati, Lazzaroni, Prarolo and Vanin (2019) for details on data sources and for process of digitization of historical political maps.

²⁵For broad cross-validation we use Euratlas (Nussli, 2011) that offers a ready to use geo-referenced dataset but only reports information at 100 years intervals. At century frequency the data are comparable in terms of number of political entities and their spatial distribution, small discrepancies are largely due to the fact that Euratlas considers a window of years around the century rather than the precise year. This ready-to-use data can be used to build similar dummies for the exposure to the rule of republics but cannot be used to build the measures of political history that we are interested in.

²⁶For instance the Duchy of Naples never stopped being under the formal influence of the Byzantine Empire until the Norman conquest (Cassandro, 1969) .

Figure 1: Maps of Italy - Selected Years (*Centennia Historical Atlas*)



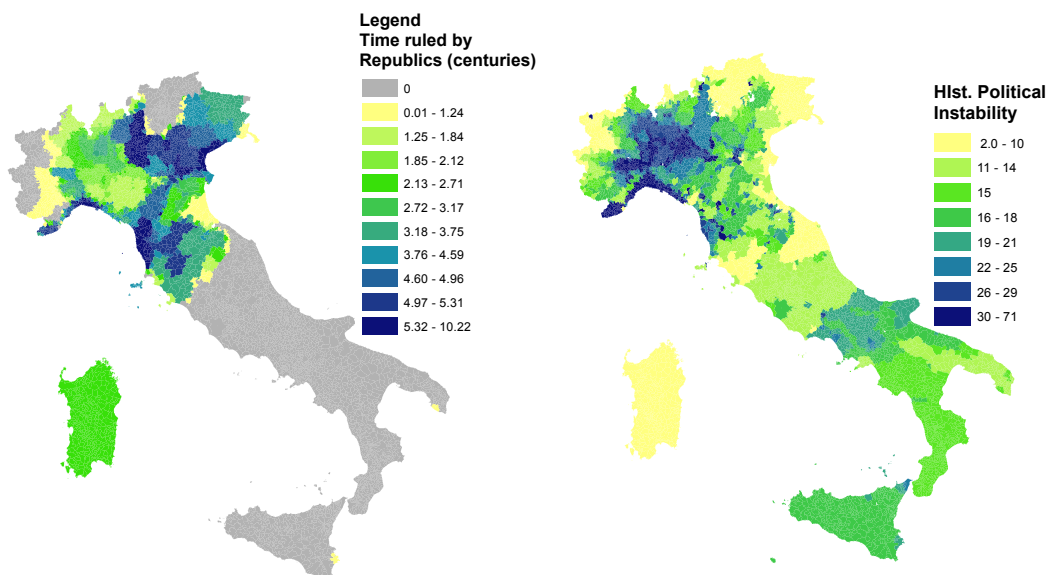
66 squared Kilometers) covering the territory of the Italian peninsula.^{27,28} We use the yearly variation in the geo-referenced borders of each polity to construct several variables that are informative on political history like, e.g. the length and type of republican experience as well as information on political geography like the distance to the capitals in each year. For the regression analysis, location-specific variables are mapped at municipality level exploiting municipality centroids. As baseline we use information on the number of

²⁷For consistency with contemporaneous municipality data we restrict attention to the territory belonging to Italy today. Polities ruling over the Italian territory between 1000 and 1800 are classified in three categories. Asti, Bologna, Brescia, Estense, Florence, Lucca, Mantua, Massa, Milan, Montferat, Padua, Pelavicino, Perugia, San Marino, Siena, Urbino, Verona and della Scala are labeled as communal republic, while Pisa, Genoa and Venezia are the maritime republics. Polities not classified as Republics are: Angevins, Aragonese, Bohemia, Byzantine Empire, Cisalpine Republic, Dauphine, Ezzelino, Fatimids, France, Great Britain, Habsburgs, Holy Roman Empire, Hungary, Kingdom of Burgundy, Kingdom of Naples, Longobards, Lesser Imperial States, Lesser Italian States, Lombard League, Luxembourgs, Naples, Norman Italy, Ottoman Empire, Papal State, Parma, Provence, Roman Republic, Savoy, Sicily, Spain, Spanish Habsburgs, Swiss League and Wittelsbachs.

²⁸The average surface of an Italian municipality is around 37 squared Km which implies that about 85% of the municipalities are smaller than a grid-cell.

times a location experiences a change in ruler over the observation period as a proxy of historical “political instability”. Figure 2 depicts data for the number of years under (any) republican rule (in centuries) for all Italian municipalities and for historical political instability.

Figure 2: Duration of Republican Rule and Historical Political Instability



Note: The figure depicts the time ruled by (any) republic and the number at ruler changes (over the period 1000-1800) at municipality level.

4.1.1 Time Series and Patterns of Territorial Control

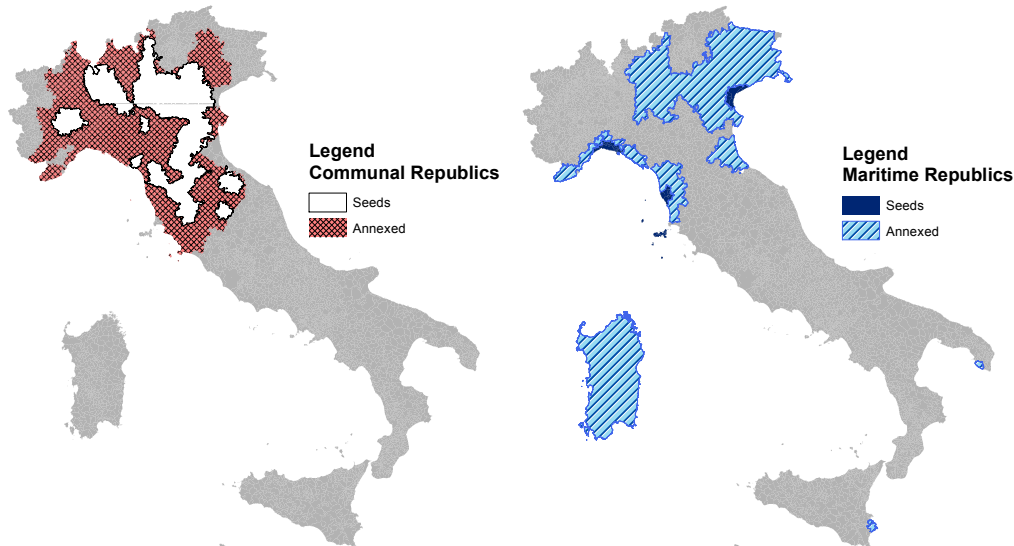
The novel database allows tracking the over time change of territorial control of all republics at yearly frequency. The time series evolution of the number of communal republics is hump-shaped, peaking in the thirteenth century and displaying a sharp reduction from the early fifteenth century, while the number of maritime republics is more stable. The total territory controlled by the communal and maritime republics follows similar patterns (see Figure A.1 in the Appendix). The different strategies of territorial control described by historians and discussed in Section 3 can be detected also in the data. The communal republics have a comparatively low average territorial size that displays an increase before year 1400. The territory controlled by the maritime republics is on average larger and it increases after 1400 in the association to their inland expansionary campaigns (see Figure A.2 in the Appendix).

To further unfold the patterns of territorial control, we discriminate between the territory ruled by each republic at its birth, which we label the *seeds* of the republic, and the locations that are subsequently *annexed* to its control. For each location (municipality) we measure the overall duration of exposure as either seed of any given republic and/or as territory annexed to the rule of another republic. This is done for both communal and maritime polities.²⁹ Figure 3 displays the summary of the territorial coverage of

²⁹Seeds of communal and maritime republics are geographically disjointed subsets. Some locations have been historically

municipalities that have ever been a seed of a communal and maritime republic and the maximum territorial extension of respective annexed territories.

Figure 3: Territorial Control: Communal and Maritime Republics

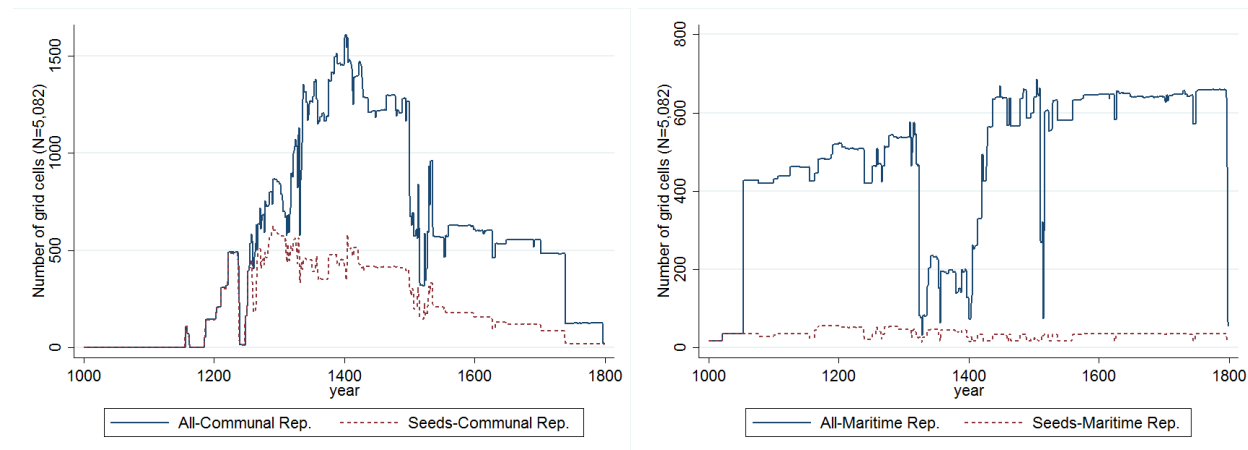


Note: The figure depicts municipalities that were *Seeds* or *Annexed* territories of communal republics (left) and maritime republics (right) in Italy over the period 1000-1800. The *Seeds* are the locations where republics firstly emerged while the *Annexed* are the locations subsequently incorporated into republican areas.

Figure 4 depicts the overtime evolution of the average size of seeds and annexed territories of the communal and maritime republics. The patterns document that the overall size of the seeds of the communal republics remains roughly stable from their birth in the thirteenth century until around the mid fifteenth century. The size of seeds of the maritime is smaller but more stable overtime. The territories annexed to the communal polities increase until 1400 and decline after that date in association to the increase in the expansionary strategy (and annexed territories) of the maritime republics. Notice that even at the peak of expansion the size of annexed territories to the communal republics is comparable to the size of the seed territories of these polities (this can be seen by looking at the difference between the line of seeds and the line of all communal republics which implicitly represent the annexed territories). The opposite is true in the maritime republics where the size of annexed territories is substantially larger than the size of seeds. The patterns are in line with the historical evidence on the fact that territorial control was mostly aimed at stabilization of areas of influence while the maritime republics engaged in colonial strategies.

annexed for some time by both communal and maritime republics. Figure A.4 in Appendix 2.2.2 display an example of the entire sequence of rulers for today's municipality of Padua.

Figure 4: Seeds and Annexed of Maritime and Communal Republics



(a) Communal Republics

(b) Maritime Republics

Note: For each year from 1000 AD to 1800, the figure depicts the number of cells being ruled by a communal republic (left) and maritime republic (right) over a total of $5,082 \times 5$ arcminute gridcells covering the Italian territory. In both panels the lower line represents grid cells where each of the communal or maritime republics firstly emerged.

4.2 Fiscal Compliance

Tracking attitudes on fiscal compliance in the population is far from a straightforward task in general and conceptualization and measurement is particularly problematic at a disaggregated level. We address this issue by collecting information on the payment of the TV fee at municipality level to build measures of local fiscal compliance. Data on the number of households paying the TV license fee at the municipality level for each year over the period 2004-2010 is obtained from the Italian national public broadcasting company (RAI - Radiotelevisione Italiana).

The data have several features that allow building an interesting measure of local attitudes towards fiscal compliance. First, the fee account for a negligible part of fiscal revenues and is due for the mere possession of a TV or radio set.³⁰ Fellner et al. (2013) and Berger et al. (2016) provide compelling evidence, for the Austrian case, that the evasion of the TV license fee is an “attractive” and reliable measure for tax evasion since almost all households in Western and European countries own a radio or a TV. Second, the amount of the annual fee is flat and comparatively small (around 9 euros per month), is levied at the level of households, independently on the number of family members, and is paid on a yearly basis.³¹ The comparatively small amount implies that the incentives to evade should be expected to be mostly related to attitudes towards fiscal compliance rather than the existence of sizable (and heterogenous across

³⁰License fees are a widespread tool to finance public broadcasting: two thirds of all European, half of all African and Asian, and a few countries in the Americas collect license fees. In 2005, a total of 20 billion euros on fees were collected in Europe (see Fellner et al., 2013). Households have an incentive to evade fees because public broadcasting programs can be received without paying fees.

³¹The fee ranged from 99.60 euros in year 2004 to 109 euros in year 2010.

households) economic incentives. Third, as in many European countries at the time (see Berger et al., 2016) also in Italy public broadcasting programs can be received by all apparatus even without paying TV license fees which essentially made the service a pure public good thereby involving little or no economic incentives to contribute. Each household received a letter once a year recalling the deadline and the amount of the payment but, given the comparatively small amount and the difficulty and costs of implementing controls, no systematic enforcement existed and the threats of controls (that required inspectors to physically enter and inspect private homes) were not credible. This implies that evading the fee was very easy.³² Households could, in practice, choose to avoid paying the fee.³³ Finally, information on the payment of this fee, or the lack of payment, is fully private which implies that compliance should be expected to be driven more by moral attitudes rather than by the fear of social sanctions or stigma.

We construct information on the share of households paying the fee in each municipality.³⁴ The resulting measure offers precise and reliable data on the attitudes towards fiscal compliance for all households in Italy measured at municipality level. We average the level of compliance over the seven years which helps dealing with issues of short term fluctuations due to e.g. (taxpayers' reactions to) changes in the executive, responsible for (marginal) changes in the amount of the tax itself, the perceived quality of the broadcasted contents, etc.³⁵ The geographic distribution of fiscal compliance is presented in Figure 5.

Compliance with the payment of the fee is, on average, around 66 percent.³⁶ The level of tax compliance displays a large variability even across neighboring locations as depicted in Figure 5 that reports the measure of tax compliance in the 8,091 Italian municipalities. The graph illustrates the existence of very different levels of tax compliance across municipalities that allows studying the link between local political history and attitudes of tax compliance at a very disaggregated level. Tax compliance ranges from around 6 percent to 100 percent with a standard deviation around 10. A large and similar variation is observed both on the full sample and in the subsamples of locations in the North, or ever ruled by a republic.³⁷

³²In view of the heterogenous compliance, the government eventually changed the legislation in 2016 introducing the presumption of ownership of a TV set wherever electricity is installed and accordingly charged the license fee directly into the household bills for electricity. This dramatically increased implicit enforcement since lack of payment of the bill involves the suspension of the supply by part of the electricity company. After the reform the share of household not paying the fee essentially dropped to zero.

³³Households could also regularize their position and avoid paying only by explicitly declaring to not possess any broadcasting equipment but such declarations were infrequent since, in case of controls, they would involve the existence of false declarations with more serious consequences compared to e.g. just avoidance of the payment.

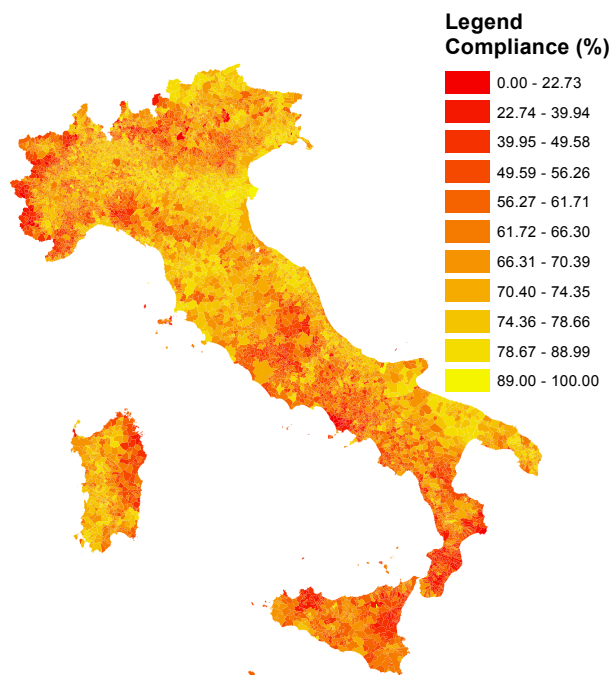
³⁴Differently from other countries, additional fees are not due for secondary residences and holiday homes with broadcasting equipment. This allows to avoid duplications in the measurement of compliance and it allows to coherently compute the share of households complying with the payment in each municipality.

³⁵Over that period two national elections took place, in 2006 and 2008, delivering two major changes in the executive.

³⁶The average compliance is lower than in the more virtuous countries that have similar TV payments in place and in which measurement is comparable. In Austria compliance is around 90 percent (Fellner et al., 2013) while in Japan is around 80 percent (see e.g. <https://www.japantimes.co.jp/news/2017/12/06/national/crime-legal/tv-owners-legally-obliged-pay-nhk-fee-top-court/#.XXejKigzZPZ>)).

³⁷The mean, standard deviation, minimum and maximum for the full sample are: mean 66.23%, sd 10.94, min 6.60, and max 100. The same figures for the sample of the North are: 67.99% , 9.74, 13.41 and 100. For the sample of locations ever ruled by a republic the figures are: 69.17%, 8.65, 13.41 and 100.

Figure 5: Geographic Distribution of Fiscal Compliance



Note: The figure depicts the share of households paying the TV tax today at municipality level.

5 Medieval Republics, Political Instability and Fiscal Compliance

5.1 Preliminaries

The data display a strong and positive correlation between the exposure to the rule of medieval republics and fiscal compliance both at the extensive margin and at the intensive margin in terms of time of exposure.³⁸ The unconditional correlation between political instability and tax compliance is weakly positive (see Figure A.6). A concern is that the unconditional correlations can be affected by unobserved location specific characteristics that drive both political instability, and the emergence and duration of the different medieval republics as these variables correlate with geographical features and historical socio-economic conditions and urbanization.³⁹ Following the literature, a first strategy to explore the potential role of these location specificities is conditioning on a large set of covariates in terms of *geography* (in terms of altitude, ruggedness of the terrain, distances from coasts and rivers and a set of indicators for being on, or close

³⁸Figure A.5 in the Appendix shows that the cumulative distribution of tax compliance in the locations exposed to the rule of medieval republics first order stochastically dominates the one of locations without any exposure. Differences in compliance are sizable. For instance only about 10 percent of locations exposed to the republics display a level of compliance below 60% while this figure is around 40% in locations that were not exposed to republics. For tax compliance below 70 percent the respective figures are around 50% and 90%, respectively. The positive correlation between exposure to the republics and fiscal compliance holds also at the intensive margin as illustrated in Figure A.7 in the Appendix.

³⁹See Appendix Section 4.1 for a more detailed discussion and results on the determinants of the emergence and duration of medieval republics.

to, the coast and caloric suitability before 1500).⁴⁰ The set of covariates labelled *Historical Population and Routes* include proxies for the level of population in year 1000, the distance of each location from the closest bishop city as of year 1000, and the distance to Roman roads.⁴¹ Data sources and the construction of each variable, summary statistics and the correlation tables for these variables, and further variables discussed below, are reported in the Appendix.

Regression results for the role of republican exposure and historical political stability are reported in Table 1. As baseline strategy to account for spatial correlation in the institutional experiences of each location (i.e.: adjacent locations may be more likely to have similar sequence of rulers and length of republican experience), standard errors are double-clustered along the two treatment dimensions, i.e. municipalities with the same sequence of rulers in the period 1000-1800 and length of republican experience, see Cameron et al. (2011). For robustness we also explore a full set of Conley-corrected standard errors that allow for spatial autocorrelation at different distances, as discussed below. Results in Columns (1) to (3) study the exposure at the extensive margin, in terms of a dummy for ever being ruled by a republic, while columns (4) to (6) look at the intensity of the republican rule.

The patterns document that exposure to the republics increases fiscal compliance while historical political instability reduces it. The results on the role of political stability align with the insights of the conceptual framework and the historical narratives that suggest that territories subject to more frequent changes in ruling polities should be expected to display lower persistence of inclusive social contracts. Results from extended specifications reported in Appendix 4.2, further suggest that locations exposed to more frequent changes of rulers also after the end of the republican treatment display a lower degree of tax compliance in line with the idea that the legacy of the republican experience decays faster the higher the political instability experienced after its end.

5.2 Communal and Maritime Republics, Seeds and Annexed Locations

Figure 6 shows that the cumulative distribution of tax compliance in locations primarily ruled by communal republics stochastically dominates those of locations mostly ruled by maritime republics (while the dis-

⁴⁰All these geo-morphological controls but ruggedness are available from the Italian Institute of Statistics (ISTAT). The municipal measure of terrain ruggedness has been constructed from the Global Land One-km Base Elevation Project (GLOBE), a global gridded digital elevation data set covering the Earth's surface at a 10-minute spatial resolution (approximately 1km). The inclusion of these variables can also help implicitly accounting for the heterogenous quality of the TV signal in the different locations, which could have an independent impact on the payment of the fee. Data on caloric suitability is from Ozak and Galor (2016).

⁴¹More populated locations in year 1000 (that is richer locations in a Malthusian perspective) could have had more incentives, or a higher capability to implement productive social contracts, see also Cervellati, Lazzaroni, Prarolo and Vanin (2019). Similarly, accounting for Bishop cities allows us to consider those locations in which the political structure of the territory had kept some continuity with the Ancient Roman Empire, counteracting the deterioration brought about by the barbarian invasions and guaranteeing an environment more conducive to population coordination following the arguments by Guiso, Sapienza and Zingales (2016) and Belloc, Drago and Galbiati (2016). See also Appendix 5.2 for further discussion and robustness checks on this issue.

Table 1: MEDIEVAL REPUBLICS AND HISTORICAL POLITICAL STABILITY

Dep. Var.	Tax Compliance - Municipality Level					
	(1)	(2)	(3)	(4)	(5)	(6)
		Dummy		Time Ruled by		
Republics	6.888*** (0.430)	4.223*** (0.617)	4.269*** (0.664)	1.444*** (0.339)	0.723** (0.304)	0.694** (0.303)
Political Instability		-0.246*** (0.050)	-0.247*** (0.048)		-0.220*** (0.047)	-0.219*** (0.046)
Geography	No	Yes	Yes	No	Yes	Yes
Historical Population and Routes	No	No	Yes	No	No	Yes
Observations	8,055	8,055	8,055	8,055	8,055	8,055
R-squared	0.097	0.210	0.212	0.065	0.198	0.201

Note: The unit of observation is the location of a municipality today. The dependent variable is the level of tax compliance measured as the share of households that pay the TV tax in a municipality. “*Republics (Dummy)*” in Columns 1 to 3 is a dummy taking value one if the location was ever exposed to the rule of a new, small and independent sovereign polity in the period 1000-1800. *Time Ruled by Republics (Centuries)* in Columns 4 to 6 is a variable counting the number of centuries a location was ruled by a new, small and independent sovereign polity in the period 1000-1800. “*Geographic*” controls include average altitude and ruggedness of the municipality, pre-Colombian Exchange caloric suitability, distance to rivers and to the sea, a dummy variable accounting for municipalities on the coast and a dummy variable accounting for municipalities within 5 Km from the coast. “*Political Instability*” is a variable accounting for the number of changes of rulers in the period 1000-1800. “*Historical Population and Routes*” include municipality population in 1000 AD and distance to a bishop seat in 1000 AD and distance to Roman Roads. Additional information on all variables can be found in the text. OLS estimates. Standard errors reported in parentheses are double-clustered along treatment dimensions (municipalities with the same sequence of rulers in the period 1000-1800 and length of republican experience). ***, **, * indicate significance at 1-, 5-, and 10-% level, respectively.

tribution in locations without any exposure to the republics is, in turn, dominated by both). The share of locations with a compliance that is lower or equal to 60% is two times larger in locations ruled by maritime republics as compared to communal ones (and about four times larger in locations with no exposure to republics).⁴²

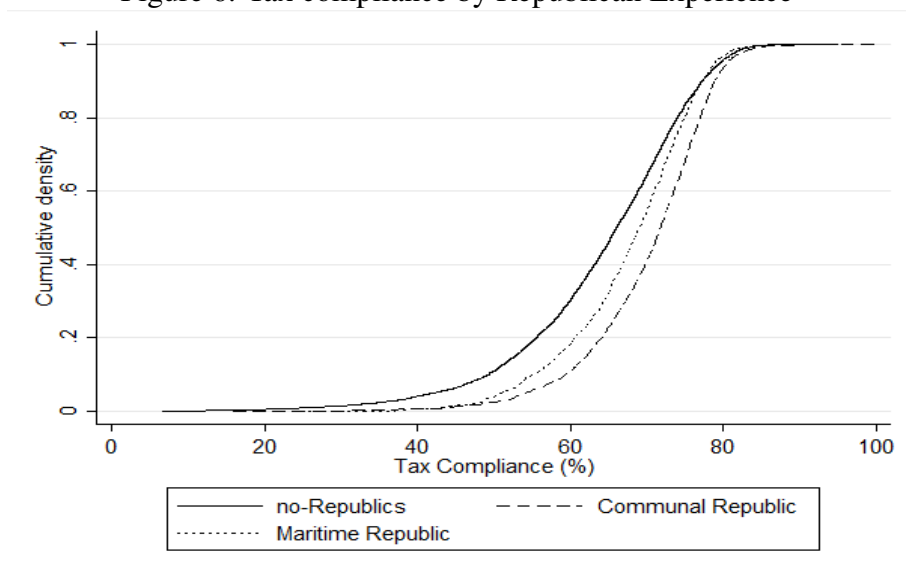
Table 2 extends the analysis of Table 1 by looking at the duration of exposure to the rule of communal and maritime republics in Columns (1-2) and (4-5) for the full sample and the sample of locations ever ruled by a republic, respectively. The analysis also extends the set of covariates to account for further potential confounders in terms of average *Income and Population*, and *Inequality* in income and in land ownership in 2001 (Gini Index). These variables come from the Italian Statistical Office (ISTAT).⁴³ To further isolate the role of the legacy of these historical experiences, in Columns (4-6) the Table restricts attention to the sub-sample of locations *within republics*, that is, on the sub-sample of locations that have ever been ruled by a republic.⁴⁴

⁴²Similarly the share of locations with compliance below 70% is twice as large in communal compared to maritime republics (which, in turn, is not significantly different from the locations not exposed to the republics).

⁴³While being potential confounders for tax compliance, the inclusion of these covariates could also create problems of bad controls. Since their inclusion does not affect the main results we have opted for reporting the full specifications. Note that all results hold also excluding such control variables.

⁴⁴Restricting the sample also nets out the many, and highly debated, drivers of the Italian North-South divide, which is not at

Figure 6: Tax compliance by Republican Experience



Note: Distribution of tax compliance today for the municipalities that never experienced the rule of a republic (solid line), and municipalities ever experiencing a republic during the period 1000-1800. We classify municipalities that ever experienced a republic further into communal (dashed line) or maritime (dotted line) based on the relative duration of exposure to the respective rule of each type of republic.

The exposure to the republics records only part of the relevant political history of the different locations. We extend the analysis by accounting for whether a municipality has ever been a medieval free city (a commune), by including a dummy variable for the 65 municipalities identified as free-cities by the *DeAgostini historical atlas* (2007) as in Guiso, Sapienza and Zingales (2016). Results of all tables are robust also if we use the slightly different coding of free-cities used by Belloc, Drago and Galbiati (2016). Free cities partially overlap but do not fully coincide with the centers of power (the capitals) of the communal republics. In fact, free cities are observed also in territories that were not ruled by communal republics as some cities that were only, or mostly, ruled by communal republics but did experience a period of independent self-government as free city.⁴⁵ We also add a dummy for the territories ruled by the Normans in view of their well documented historical implementation of a centralized and essentially exploitative feudal system that effectively limited the expression of local autonomy and self-government and that should be expected to have negative impacts on fiscal compliance, see e.g. also Finer (1999).⁴⁶

The results in columns (1-2) and (4-5) confirm the baseline patterns of Figure 6. On the full sample being exposed to the republics significantly increases tax compliance but mostly for the locations exposed the core of our analysis.

⁴⁵Some cities like Bologna were free-cities, then capitals of communal republics and never exposed to the rule of maritime republics. Other capitals of republics were never free-cities, and vice-versa. The experience of the communes represented specific charters of self-government that applied within the medieval cities while the rule of the republics referred, and expanded, also to the control of the territories outside city walls and over other cities.

⁴⁶The territories ruled by the Normans could be interpreted as being subject to a medieval “counter-treatment” to that of the republics that, on average, should be expected to have materialized in more self-protective attitudes towards the fiscal authorities with negative effects on tax compliance.

Table 2: TIME RULED BY COMMUNAL AND MARITIME REPUBLICS

Dep. Var.	Tax Compliance - Municipality Level					
Sample	Full			Within Republics		
	(1)	(2)	(3)	(4)	(5)	(6)
Time Ruled by:						
Communal Republics (or Seeds)	1.068*** (0.180)	0.927*** (0.240)	1.105*** (0.264)	0.590*** (0.194)	0.581*** (0.196)	0.728*** (0.209)
Annexed Communal			0.687** (0.285)			0.188 (0.231)
Maritime Republics (or Seeds)	0.193 (0.329)	0.041 (0.385)	0.882 (0.561)	-0.585*** (0.217)	-0.595*** (0.220)	0.209 (0.438)
Annexed Maritime			-0.048 (0.401)			-0.746*** (0.215)
Political Instability	-0.222*** (0.038)	-0.202*** (0.040)	-0.205*** (0.039)	-0.181*** (0.031)	-0.181*** (0.031)	-0.186*** (0.027)
Medieval History:						
Free City		1.860** (0.805)	2.072*** (0.778)		0.525 (1.087)	0.951 (1.026)
Normans		-1.861 (2.094)	-2.023 (2.184)		-5.332** (2.307)	-5.488* (2.204)
Geography	Yes	Yes	Yes	Yes	Yes	Yes
Historical Pop. and Routes	Yes	Yes	Yes	Yes	Yes	Yes
Income and Population	Yes	Yes	Yes	Yes	Yes	Yes
Inequality	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,055	8,055	8,055	4,614	4,614	4,614
R-squared	0.227	0.230	0.232	0.270	0.271	0.277

Note: Baseline analysis is extended by accounting for the heterogeneous effect of communal and maritime republics, and to account the exposure to the republican rule as territories seeds of the republican experience and territories that have been subsequently annexed (see text for details). See Table 1 and text for details on specification and covariates on Geography, Historical Population and Routes. Modern control variables are “*Income and population*” and “*Inequality*” which account for 2001 income, population and the Gini indexes for income and land. Free City and Normans are dummies indicating if municipality has even been a free city or has even been ruled by the Normans (see text for details).

to the rule of communal republics. Within the subset of locations ever ruled by republics, a longer exposure to communal polities significantly increases tax compliance while exposure to maritime republics does the opposite. The results including further political history controls align with existing evidence and historical narratives. Patterns suggest that, on top of the heterogenous role of the exposure to the territorial rule of the different republics and of the negative role of political instability, municipalities that hosted medieval free-cities display larger tax compliance (particularly on the full sample where the overlap with the capitals of communal republics is lower) while being exposed to the Norman rule decreases tax compliance (particularly within the sample of locations ever ruled by the republics). Interestingly, however, the role of these experiences appears rather orthogonal to that of exposure to the republics as suggested by the stability

of the magnitude and significance of the point estimates. These results suggest that different elements of political history have different informative content.

Columns (3) and (6) further discriminate between the intensity of exposure to the republican rule as either *seeds* or as *annexed* locations (in the full sample and within republics, respectively). From an economic perspective this allows further exploring the predicted mechanism related to the existence of different, inclusive and exploitative, historical strategies on annexed territories as well as for econometric identification (as discussed below). Within the locations ruled by the republics, the negative effect of the exposure to maritime republics is mostly driven by the annexed territories (see Column 6). In contrast, and in line with the historical narratives on the comparatively inclusive governance of communal republics also in annexed territories, the positive effect in the communal republics can be detected both for the seeds and the annexed territories (although the effect is stronger and more statistically significant in the former). Looking at the extremes, an increase in the time ruled as either seeds to communal republics or as annexed to maritime republics, is respectively associated to a 11% increase and 15% reduction in the standard deviation of tax compliance.⁴⁷ The results confirm that the negative effect of historical political instability on tax compliance is robust to, and in fact little affected by, the consideration of these heterogenous effects related to the different patterns of territorial control.

Robustness. We have performed several checks to explore the robustness of the findings. A first question relates to statistical inference in the presence of spatial autocorrelation.⁴⁸ Besides the use of double-clustering, we implement further strategies to explore the potential role of spatial autocorrelation in affecting inference. We perform a battery of tests by replicating the analysis using Conley standard errors that account for spatial autocorrelation at different distances. These checks confirm the main results both in terms of positive exposure to the seeds of communal republics and negative effects of the seeds of maritime republics and of historical political stability.⁴⁹ We explore a full set of fixed effects for different geographic areas in terms of: pre-roman civilizations, roman regions, polities in year 1000 and modern administrative regions.⁵⁰ We also create random provinces (of about the size of actual administrative provinces) and check

⁴⁷In the sample of municipalities ever ruled by a republic the standard deviation of tax compliance is 8.65 percentage points, while the standard deviations of time ruled as seed and annexed of communal republics and maritime republics are 1.30, 1.10, 0.61 and 1.70 centuries, respectively.

⁴⁸If not explicitly accounted for, the existence of spatial autocorrelation can inflate t-statistics thereby leading to high levels of statistical significance. This is a general point that applies to all empirical analysis with spatial units that always display some degree of spatial autocorrelation. See also Kelly (2019) for a discussion of this issue in the context of studies involving historical data. Notice that this issue relates in particular to the statistical inference (that is the computation of the standard errors), rather than the specification of the empirical analysis.

⁴⁹The results show that the t-statistics drop when allowing spatial correlation until 30kms and then tend to stabilize around 40 kms. The results are reported in the summary Figures A.9 and A.10 in Appendix 5.1.

⁵⁰Including fixed effects at the level of geographic areas is a typical strategy to deal with unobserved characteristics. In our application, there is no obvious way of constructing fixed effects since all administrative units have been defined in the last decades and are likely endogenous to the process of long-term evolution of polities and their borders.

robustness by mean of simulations.⁵¹ The results confirm the baseline findings of opposite effects of political history in communal and maritime republics, further suggesting that the broad patterns are unlikely to be driven by location, or area, specific unobserved characteristics.⁵² According to historians, the heterogeneity of republican experiences related, more specifically, to the rules and modes of governance and access to power which is best measured by the intensity of the presence of professional administrators, i.e. the “podesta”. To explore this issue, we have collected data on the identity of the chief administrators in each polity over time. This allows building a measure of political turnover that is given, e.g., by the number of families ruling over the republics across time. The results provide a first shred of evidence that the republics with higher rulers’ turnover faced better prospects in terms of survival and duration. We also use the data to build refined explanatory variables adjusted for the turnover (or the number of families) ruling each location. Results in Appendix 5.3 confirm the main patterns.

5.3 An instrumentation strategy

We focus on the sub-sample of territories ever annexed to the rule of any republic and, as above, we discriminate between the time of exposure to the rule of communal and maritime republics. Excluding locations exposed to the republics exclusively as seeds limits, by construction, problems of endogeneity related to the emergence and duration of exposure to each republic in the territories giving birth to each polity. We construct three instruments that, in view of the historical narratives, should predict the overall duration of rule of the different polities in each territory. First, we build the average distance to the own (or closest) capital of each respective type: communal and maritime. This gives, for each location, two variables that should be informative on the latent ability of rulers of each type to control a given territory. More specifically, the first variable is computed as the logarithm of the average distance from each location to its communal capital when the location was an annexed to a communal republic and to the closer communal capital when the location was an annexed of a maritime republic. Similarly, the second measure is computed as the logarithm of the average distances from the location-specific maritime capital when the location was an annexed of a maritime capital and the distance to the closest maritime capital when the location was an annexed of a communal republic. Distance to own (closer) centers of power is expected to be salient particularly for the maritime republics that implemented strategies of territorial control based on coercion. Second, we compute the distance of each location from the network of communal centers of power (i.e. capitals), (log) averaged over time. This variable is informative on the (average over time) centrality of a location within the changing network of capitals of communal polities. In view of the historical narratives this measure should be particularly informative on the likelihood that a location is annexed to any of the communal republics competing for territorial stabilization that existed at each point in time. Locations that are more central in

⁵¹Specifically, we replicate the analysis a thousand times and look at the resulting distribution of the point estimates.

⁵²The results are in the Appendix 5.2.

the network of communal polities should be expected to face, everything else equal, a longer exposure as ruled by communal republics and a lower exposure as ruled by maritime republics.

We exploit these instruments to predict the time spent under the rule of either communal and maritime republics.⁵³ The validity of the instruments depends on the historical role of distance and location for the effective ability to rule a territory while the exclusion restrictions require that, conditional on the covariates, the distance to the capitals of the respective rulers and the centrality within the network of communal capitals affect fiscal compliance today only through its impact on the intensity and duration of the rule. A possible threat to the exclusion restrictions relates to the fact that the historical capitals were, and are, bigger and comparatively richer cities also today, which may have an independent effect on patterns of tax compliance. Excluding the seeds locations, and their capitals, and conditioning on a large set of covariates including historical and modern economic outcomes should help accounting for this confounder. The instrumentation strategy can also help dealing for measurement errors in the estimates of the time ruled by the different republics which are possibly measured with more noise as compared to the geographic distance from capitals.

The first stage regressions is reported in Table 3. Column (1) reports the first stage estimates for the time spent under the rule of communal republics. The results document that higher average centrality in the network of communal republics, that is a lower average distance to communal capitals, and a higher distance to maritime capitals significantly increase the exposure to communal republics. First stage results for the time ruled as annexed to maritime republics in Column (3) show the opposite patterns and, notably, distance from the own maritime capital is a strong predictor of the time spent as annexed territory of a maritime republic.⁵⁴ Test statistics, including the Sanderson-Windmeijer (SW) first-stage F-statistic for multiple regressors and chi squared test for underidentification, jointly suggest that the specification does not suffer from problems of non-relevance and weak identification.

⁵³The correlation between the instruments ranges from around 0.3 to 0.7.

⁵⁴This pattern aligns well with historical evidence of strategies of forceful colonial control. In contrast, the distance from all communal capitals is the stronger predictor of the time spent as annexed to a communal republic.

Table 3: TIME RULED BY REPUBLICS (ANNEXED LOCATIONS): IV FIRST STAGE

Sample	Locations Ever Annexed	
Dependent Variable	Time Ruled by Communal	Time Ruled by Maritime
	(1)	(2)
Av. Distance (ln mean) to:		
Network of Communal Capitals	-2.567*** (0.347)	0.855* (0.504)
Communal Capital (own/closest)	0.034 (0.225)	0.612** (0.284)
Maritime Capital (own/closest)	0.433** (0.179)	-2.073*** (0.231)
Historical Pol. Instability	0.031*** (0.006)	-0.014 (0.013)
All controls:		
Geography	Yes	Yes
Historical Pop. and Routes	Yes	Yes
Medieval History	Yes	Yes
Income and Population	Yes	Yes
Inequality	Yes	Yes
Observations	4,413	4,413
R-squared	0.289	0.274
1st stage F-stat	23.31	35.39
SW F-stat	33.74	50.67
SW ChiSq p-val.	0.000	0.000

Note: The analysis restricts attention to subset of locations that have ever been annexed to either a communal or a maritime republic. The variable “*Ln Mean Distance to Network of Communal Capitals*” is the logarithm of the average distance from each locations to the centers of power of communal republics in each year in the period 1000-1800. The variable “*Ln Mean Distance Communal (Maritime) Capital*” is the logarithm of the average distance to the location-specific communal (maritime) capital or to the closest communal (maritime) capital in the case the location is an annexed of a maritime (communal) republic, respectively. See the Captions of Tables 1 and 2, and the text for details.

Table 4 reports the OLS and IV results. Column (1) replicates the OLS analysis of the role of duration by restricting attention to the sample of locations ever annexed to communal and/or maritime republics. The results confirm the baseline results and the magnitude of the coefficients is comparable to the results reported in Table 2. The second stage estimates in column (2) confirm the finding of opposite signs for the time ruled by communal and maritime republics. The Hansen J test for overidentification suggest that the instruments are valid (uncorrelated with the error term) and that are correctly excluded. Compared to the OLS results, the point estimates of the IV are slightly larger in absolute magnitude and, while more noisy, are statistically significant at conventional levels. The findings further reassure on the baseline results.

Table 4: TIME RULED BY REPUBLICS (ANNEXED LOCATIONS): OLS AND IV

Sample	Locations Ever Annexed	
Dependent Variable	Tax Compliance	
	OLS (1)	2SLS (2)
Time Ruled by Communal Rep.	0.549*** (0.199)	0.875* (0.452)
Time Annexed by Maritime Rep.	-0.637*** (0.224)	-0.946** (0.394)
Historical Political Instability	-0.177*** (0.031)	-0.196*** (0.028)
All controls:		
Geography	Yes	Yes
Historical Pop. and Routes	Yes	Yes
Medieval History	Yes	Yes
Income and Population	Yes	Yes
Inequality	Yes	Yes
Observations	4,413	4,413
R-squared	0.274	0.267
Hansen J p-val.		0.333

Note: The analysis restricts attention to subset of locations that have ever been annexed to either a communal or a maritime republic. Column (1) reports OLS results while column (2) reports 2SLS results. The first stage is reported in Table 3 above. See the Captions of Tables 1 and 2, and the text for details of specification and covariates.

6 The Social Contracts and Population Today

In Section 6.1, we extend the scope of the analysis to the consideration of public policies today and explore their interaction with fiscal compliance and study the role of exposure to the republics for measures of cooperation and civic cultures. The unconditional correlations between the duration of the republican experience (or tax compliance) and the measures of public policies and cooperation are reported in Appendix Section 7.1. In Section 6.2, we look at population diversity today using data on the distribution of surnames in each municipality. The analysis allows to isolate the role of political history for the measures of social openness (and closure) in the population today which is informative, in reduced form, also on the process of long-run migration across locations. The unconditional correlations between the duration of the republican experience (or tax compliance) and the measures of population diversity are reported in Appendix Section 7.2.

6.1 Public Policies, Cooperation and Civic Cultures

Public Policies. The best available measure of effectiveness of fiscal policies is the amount of revenues associated to the fees for provision of local public goods and services. These fees are due for accessing the

services and are therefore proportional to the intensity of their actual supply and depend on the effectiveness of the public administration.⁵⁵ This measure, labelled *fiscal policies*, provides an interesting summary information on the effectiveness of the local public social contracts. To explore the complementarity between policies and attitudes, we also control for tax compliance in the population in the regression. As alternative measure, that is informative on effectiveness of local administration, we look at the outcome of a national program that provided incentives to help *fight tax evasion* by remitting the value of the evaded national taxes (personal income, VAT, firms income) to the municipalities detecting them.⁵⁶

The results in columns (1-2) of Table 5 document a differential effect of the duration of exposure to communal and maritime republics also on fiscal policies today. Fiscal compliance is not a significant predictor of policies when accounting for the exposure to the republics. Results in column (3-4) document that communal republics increase the fight of tax evasion with higher individual fiscal compliance being complement to public action. Historical political instability consistently reduces fiscal policies and the fight of tax evasion.⁵⁷ As of magnitude of the marginal effects, an additional century of rule by communal republics is associated with a 3 percent increase in contributed fees (column 1) and a 2 percentage points increase in the probability to cooperate with the central state in fighting national tax evasion (column 2). A century of exposure to maritime republics reduces fees by 3 percent (column 1). The opposite effects can be systematically detected also in terms of duration of rule as annexed locations (columns 2 and 4).

Cooperation and Civic Attitudes. To explore patterns of complementarity or substitutability with civic attitudes and social capital, we look at services that can be supplied both publicly and privately and only privately (by non profit associations).⁵⁸ The results in Table 5 in columns (5-6) document that being ruled by communal or maritime republics tends to crowd out the presence of mutual aid association, although coefficients are not significant.⁵⁹ Fiscal compliance is robustly negatively associated to the presence of mutual aid associations while higher historical political instability robustly increases it. Together with the results of columns (1-2) these findings support the view that more effective local governments and more

⁵⁵This is an interesting measure since these fees are paid for specific services (kindergarten and child care, extra school services, public elderly houses, local public transports, sport infrastructures, etc). We use information on the (logarithm of) the average fees collected during the period 1998-2012 in each municipality.

⁵⁶Data refer to the year 2012, the first year in which the national government returned 100% of the evaded amount of the detected evasion to the municipality.

⁵⁷A similar comment applies to the role of free cities, which increase public good provision and fight against tax evasion, while as expected the historical exposure to Norman rule does the opposite.

⁵⁸In Table 5 we restrict attention to the sample of municipalities in the North also for comparability with some of the analysis of civic attitudes reported by Guiso et al. (2016). Results are overall confirmed if we restrict the sample to municipalities ever ruled by republics.

⁵⁹We use data from the “2015 Third Italian Census of Non-profit” organizations. In particular, we look at the number of mutual aid association and organizations (per 1000 inhabitants) working in the social sector including religion association providing social services, among others, to youths and elderly.

Table 5: THE SOCIAL CONTRACTS TODAY: FISCAL POLICIES AND CIVIC ATTITUDES

Dependent Variable	Fiscal Policies		Fight Tax Evasion		Mutual Help Ass.		Organ Donation	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Time ruled as:								
Communal (or Seeds)	0.030** (0.015)	0.038** (0.018)	0.020** (0.005)	0.012** (0.005)	-0.004 (0.007)	-0.010 (0.007)	0.006* (0.003)	0.001 (0.003)
Annexed Communal		0.019 (0.017)		0.032*** (0.006)		0.005 (0.010)		0.013** (0.005)
Maritime (or Seeds)	-0.029** (0.013)	-0.051*** (0.017)	0.003 (0.003)	0.003 (0.007)	-0.001 (0.007)	0.006 (0.013)	-0.002 (0.002)	0.007 (0.008)
Annexed Maritime		-0.027** (0.013)		0.003 (0.003)		-0.001 (0.007)		-0.003* (0.002)
Political Instability	-0.004* (0.002)	-0.004* (0.002)	-0.002*** (0.001)	-0.002*** (0.001)	0.002** (0.001)	0.002* (0.001)	-0.001*** (0.000)	-0.001*** (0.000)
Tax Compliance (%)	0.000 (0.002)	0.000 (0.002)	0.001*** (0.000)	0.001*** (0.000)	-0.007*** (0.001)	-0.007*** (0.001)	0.002*** (0.000)	0.002*** (0.000)
All controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,504	5,504	5,508	5,508	5,435	5,435	5,508	5,508
R-squared	0.218	0.218	0.101	0.106	0.026	0.026	0.229	0.232

Note: In columns 1-2 the dependent variable is the logarithm of the average resources for local public goods and services over the period 1998-2012; in column 3-4 the dependent variable is a dummy variable taking value 1 if the municipality successfully cooperated with the program of the central government providing incentives to municipalities for detecting evasion (the evaded national taxes); in columns 5-6 the dependent variable is the number of mutual aid and religious associations per 1,000 inhabitants in a municipality (2011 Census); in columns 7-8 the dependent variable is a dummy for the presence of an organ donation association (Aido) in a municipality. Odd columns account for heterogeneous effects of communal and maritime republics, while even columns also account for the exposure to the republican rule as seeds of annexed territories. Sample include all municipalities within the North. See Tables 1 and 2 for details.

positive attitudes of fiscal compliance tend to crowd-out forms of private mutual help.⁶⁰ Finally, columns (7-8) look at a form of cooperation that involves, by its very nature, a service that cannot be publicly provided by the local government: organ donations.⁶¹ The results document that territories longer ruled by communal republics are more likely to have an organ donation association (the level of fiscal compliance suggesting a complementarity, as the -unreported- experience of free cities). Results are driven by locations annexed to communal republics, while locations longer annexed to maritime republics display a lower probability to have an organ donation association.

⁶⁰The existence and persistence of these forms of private cooperation could be suggestively interpreted as a (evolutionary) response in the population to the lack of productive and stable historical public social contracts.

⁶¹This measure can be more directly related to the concept of generalized morality. The variable is a dummy for the presence of an organ donation association (Aido) in a municipality. Data from Guiso et al. (2016).

6.2 Population Diversity and Social Openness

We exploit information on the distribution of surnames of the entire population of each municipality today. The distribution of surnames is informative on the long-term patterns of migration across locations. Following the existing literature we build measures that are informative on the differential patterns of inwards migration and on the latent attractiveness of historical politico-economic conditions. A higher intensity of historical inward migration in a location materializes in higher levels of surnames entropy index today (everything else equal). We also look at the distribution of the most frequent surnames that is a measure more directly informative on the closeness of the population.⁶² Results in Table 6 in columns (1) and (2) document that the exposure to communal republics increases the level of entropy in the distribution of surnames in the population today while no significant effects are detected for the maritime republics. Columns (3) and (4) show that the location ruled by the maritime republics display the largest degree of social closure measured in terms of the highest concentration the family names of the largest families.⁶³ Higher degrees of historical political instability reduce social openness (entropy) and increase social closure in line with the possibility that more stable political environments are more attractive of in-ward migration.

To push the analysis and explore patterns of selected migration further, we look at surnames' communal origin. Italian (and generally European) surnames often emerged starting from the middle ages from individual nicknames of toponym origin that mean "from...". Toponym nicknames were associated to individuals that were migrants from other locations. Using a simple supervised text analysis, we track the frequency of surnames with toponym origin in each of the medieval republics by discriminating again between communal and maritime (e.g. "Bolognesi" or "Fiorentini" versus "Pisani" or "Veneziani").⁶⁴ The results, reported in columns (5-6) and (7-8), document that locations ruled by communal republics positively attracted individuals from other republics (although significantly so only from the other communal polities) while the maritime republics are not systematically more likely to attract individuals from other republics.⁶⁵ The patterns offer evidence that align with the historical narratives that communal republics

⁶²The Entropy Index in each municipality is calculated as $Entropy = -\sum_{i=1}^S p_i \log(p_i)$, where S is the total number of surnames in a municipality, and p_i is the municipality's population share with a given surname. Entropy measures are a good proxy for how open a (small) society is to the long-run inflow of others. We refer to Buonanno and Vanin (2017) for a detailed discussion of the nature of this measure, for construction of the Entropy Index, and for references of the literature on diversity that exploits information on the distribution of surnames.

⁶³In these regressions today's population is also included among the controls to avoid a mechanical inflation in the number of surnames.

⁶⁴We have collected data on the universe of surnames at municipality level. We code the set of surnames that originate from the name of the polities and/or their capitals. For instance examples of surnames originating from "Bologna" are: *Bologna*, *Bolognesi*, *Bolognani* and *Bolognari*, among others. Examples of surnames originating from "Venezia" are, for example, *Veneziani*, *Veneti* and *Venezian* among others. This procedure is replicated for all communal and maritime republics. In these specifications we control for the level of entropy and population. Entropy is included as covariate as it should be expected to increase the number of any type of surnames.

⁶⁵Besides artisans, traders and generally the population at large, historical evidence also describes systematic patterns of migration and visitation within the communal republics also in terms of public administrators. Communal republics display a higher turnover of government administrators, as discussed above and reported in Appendix 5.3. In fact a medieval "market" for

Table 6: POPULATION DIVERSITY AND SOCIAL OPENNESS

Dependent Variable	Social Openness (Entropy of Distr.)		Social Closure (Top 5 names)		Com. Surnames Share		Mar. Surnames Share	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Time Ruled as:								
Communal (or Seeds)	0.087*** (0.028)	0.090*** (0.032)	-0.807*** (0.259)	-0.722** (0.290)	0.115*** (0.026)	0.128*** (0.032)	-0.003 (0.004)	-0.001 (0.004)
Annexed Communal		0.077*** (0.027)		-0.985*** (0.281)		0.088*** (0.025)		-0.007* (0.004)
Maritime (or Seeds)	0.003 (0.019)	0.031 (0.031)	0.509** (0.251)	0.463* (0.261)	0.020 (0.017)	-0.007 (0.016)	-0.002 (0.003)	-0.010* (0.006)
Annexed Maritime		-0.002 (0.019)		0.485* (0.263)		0.019 (0.017)		-0.002 (0.003)
Political Instability	-0.017*** (0.003)	-0.017*** (0.003)	0.179*** (0.030)	0.181*** (0.030)	-0.006* (0.003)	-0.006* (0.003)	0.003*** (0.001)	0.003*** (0.001)
Openness (Entropy)					0.030 (0.020)	0.029 (0.020)	0.016*** (0.005)	0.016*** (0.005)
All Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,609	4,609	4,609	4,609	4,609	4,609	4,609	4,609
R-squared	0.558	0.558	0.469	0.469	0.157	0.159	0.140	0.141

The unit of observation is the location of a municipality today. The dependent variable are: the entropy of the distribution of surnames in a municipality; the share of the first 5 most frequent surnames; the share of communal and the share of maritime republic sounding names. See previous Tables and text for details on the specification. The variable Communal (or Seeds) refers to the Time ruled by Communal republics (odd columns) and to the time spent as Seed of a Communal republic (even columns), respectively. The same is true for the variable Maritime (or Seeds).

implemented more attractive legal regulations and offered more permeable economic environment favoring selected migration.

Robustness: Sub-sample of Ever annexed Locations and IV Results. All the patterns documented in Tables 5 and 6 consistently emerge when restricting attention to the sub-sample of locations that ever annexed to republics. Replicating the instrumentation strategy allows exploring the potential role of endogeneity as a relevant driver of the documented patterns both in terms of the legacy on policies and civic attitudes and for the distribution of the population today. The results, summarized in Table 7, confirm the existence of a systematically different role of the historical duration of exposure to the communal and maritime republics.⁶⁶

high skilled administrators between the different communal republics to exploit the experience of local administrators in facing specific problems. For example, Pontius Amatus, from Cremona (a free city in Lombardy under communal republics for roughly 200 years) served as *podestà* in Brescia, Mantua and Siena (Menant, 2002).

⁶⁶Unreported IV statistics confirm the validity of the instrumentation strategy (as reported above in Tables 3 and 4). Unreported results also confirm that, on top of the duration of exposure to the republics, the experience of free cities significantly improves fiscal policies, the fight on tax evasion, the presence of organ donations (but not of mutual help associations) and the overall degree of entropy in the population. The results of the role of the republics also consistently emerges controlling for fiscal

Table 7: THE SOCIAL CONTRACTS AND POPULATION TODAY: IV RESULTS

Estimation	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)	OLS (7)	IV (8)
Panel A: The Social Contract Today								
Dependent Variable:	Fiscal Policies		Fight Tax Evasion		Mutual Help Ass.		Organ Donation	
Time Ruled Communal Rep.	0.040** (0.019)	0.195*** (0.048)	0.013** (0.006)	0.079*** (0.015)	-0.006 (0.008)	-0.031** (0.014)	0.008* (0.004)	0.029*** (0.008)
Time Ruled Maritime Rep.	-0.014 (0.016)	-0.009 (0.037)	-0.002 (0.004)	-0.014 (0.011)	0.001 (0.008)	0.007 (0.012)	-0.005** (0.002)	-0.003 (0.006)
Hist. Pol. Instability	-0.002 (0.002)	-0.008** (0.003)	-0.003*** (0.001)	-0.005*** (0.001)	0.003*** (0.001)	0.004*** (0.001)	-0.001*** (0.000)	-0.002*** (0.001)
All controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,406	4,406	4,413	4,413	4,341	4,341	4,413	4,413
R-squared	0.149	0.093	0.099	0.005	0.022	0.017	0.248	0.236
Panel B: Population Diversity and Social Openness								
Dependent Variable:	Social Openness (Entropy of Distr.)		Social Closure (Top 5 Names)		Com. Surnames Share		Mar. Surnames Share	
Time Ruled Communal Rep.	0.081*** (0.028)	0.239*** (0.051)	-0.728*** (0.266)	-2.416*** (0.556)	0.126*** (0.027)	0.318*** (0.055)	0.004 (0.004)	-0.043*** (0.013)
Time Ruled Maritime Rep.	0.004 (0.019)	0.018 (0.033)	0.497* (0.267)	0.845** (0.419)	0.022 (0.018)	-0.003 (0.043)	-0.005** (0.002)	-0.017** (0.008)
Hist. Pol. Instability	-0.017*** (0.003)	-0.022*** (0.003)	0.174*** (0.030)	0.241*** (0.033)	-0.006* (0.003)	-0.014*** (0.004)	-0.000 (0.000)	0.004*** (0.001)
All controls Entropy	Yes	Yes	Yes	Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
Observations	4,409	4,409	4,409	4,409	4,409	4,409	4,409	4,409
R-squared	0.562	0.540	0.476	0.441	0.161	0.093	0.278	0.128

The unit of observation is the location of a municipality today ever annexed by a republic. Panel A replicates the analysis of Table 5 while Panel B replicates the analysis of Table 6 (see text for details). The First Stage F-statistic, the Sanderson-Windmeijer first-stage F-statistic and chi squared test for underidentification and the Hansen J test for overidentification are in line with those reported in Tables 3 and 4.

7 Concluding Remarks

This paper offers a conceptualization, measurement and empirical investigation of the role of exposure to the rule of medieval republics in Northern Italy. We shift the focus from exploring the implications of being exposed to either autocratic or republic political institutions to the investigation of the emergence and persistence of different social contracts within the territories ruled by the self-governed republics.

We propose a reading of historical narratives along the lines of economic theories interpreting the emergence and persistence of multiple social configurations as related to the needs to build military and fiscal capacity by part of the local elites of the newborn independent polities, which result in different interactions between the elites and the population. Following historical narratives we conceptualize the inclusive regulations of the communal republics as designed by ruling elites instrumentally to create a fiscal base by compliance along the lines of Tables 5 and 6.

favoring economic activities and increasing population size also by attracting inward migration. In contrast, the large reliance on long-distance sea trade and the increasing needs of natural resources and labor force is interpreted as a main driver of the colonial and exploitative strategies implemented by the maritime republics particularly in the in-land territories forcefully annexed to their rule. In this setting attitudes towards the state (in terms of fiscal compliance or elusion) and public governance (in terms of exploitative policies or the implementation of productive regulation of economic activities and personal freedom) influence each other, and result in persisting heterogeneous social contracts.

The analysis contributes a novel measurement of sub-national political history at a highly disaggregated level that allows to perform the empirical analysis at municipality level. The data allows to track the intensity and stability of exposure to the rule of the different republics. The identification strategy exploits information on territories that were forcefully annexed to the rule of either types of republics and variation in the distance to the changing network of centers of power in each location. The data on political history are complemented with novel measures of fiscal compliance, fiscal policies, efficiency of local institutions and population diversity at municipal level that, together with existing measures of social capital, allow to explore local social contracts today.

The results document a systematic and robust opposite effect of the intensity of exposure to communal and maritime republics for contemporaneous social contracts. The findings offer a first systematic evidence that differences in attitudes towards fiscal compliance, fiscal policies, the efficiency of local institutions, and social capital go hand-in-hand still today. The results support the perspective that the observation of multiple local patterns can be interpreted as related to the perpetuation of different interplays between individual attitudes towards public good provision, cultural values supporting cooperation and, crucially, mutually compatible local public policies. Our empirical findings also suggest, in reduced form, the relevance of two mechanisms of historical persistence that have been largely neglected in the existing empirical literature. First, we document that historical political instability, in terms of the number of polities ruling over a given location, systematically and robustly reduce the likelihood of observing virtuous social configurations (in terms of fiscal compliance and public policies). Second, the evidence on the role of exposure to different republics for the patterns of population diversity, and in particular social openness, suggests that a potentially important mechanism of historical persistence relates to the presence of selected inward migration into the more inclusive local social contracts. Even accounting for all caveats related to the natural limits in pinning down the mechanisms of interaction and persistence with historical data, the analysis robustly suggests that understanding persistent heterogeneous local configurations today, even within in otherwise similar locations in terms of development, can benefit from further conceptualizations and empirical analysis of the interactions between attitudes, policies and patterns of self-selection across localities.

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1 Conceptual Framework

1.1 Set-up

Consider a location ruled by a sovereign polity. Each location is populated by a unit mass of individuals with a exogenous income/endowment, $y = 1$. The polity is ruled by an elite, located in the capital, which is richer than the rest of the population being endowed, on top of income $y = 1$ also enjoys a non negative amount of rents $r \geq 0$ that the elite can appropriate in the presence of limited constraints on the rulers (as discussed below).¹ Assume for simplicity that locations are ordered on a line (of length S) with the capital located at the center of the line. Denote by δ the distance of each location from capital.²

Rent Extraction. To elite can either invest in a technology that allows forceful extraction of rents (on top of the elite exogenous endowment r). Specifically, by sustaining a cost $R > 0$ the elite acquires the apparatus that allows territorial control and to forcefully extract resources from the ruled population.³ Extractive capacity is imperfect and the share of resources that can be forcefully appropriated is decreasing in the distance from the capital, δ with $r(\delta) \in [0, 1]$ with $r'(\delta) < 0$. For instance with a linear specification, $r(\delta) = \max\{0, 1 - \alpha\delta\}$, that also implies that for any $\alpha > 0$ there is a maximum distance at which the polity can forcefully extract rents.

Public Goods. Alternatively, the elite can offer to implement public policies that benefit the population (of taxpayers) at large. We assume these policies are incompatible with rent extraction. This assumption is not only for simplicity but also captures the historical evidence suggesting that the provision of public services was associated, or even required, limitations of rent extractions. Using the terminology of economists links the benefits for the population to property right protection and local public good (broadly defined). Historically a wide range of policies and regulations affected the access to property of land and other factors of production, the existence of personal freedom and the related possibility to inherit assets, the possibility of access to economic activities as well as the existence of minimal public health services and education.

The provision of a public services costs $G > 0$ and that provides a benefit $g > 0$ to all tax payers. The cost of public goods must be covered by public revenues. We restrict attention to imperfect public goods where the benefit $g > 0$ can be made conditional con tax compliance. The revenues, either collected forcefully with the extractive technology or voluntarily paid by the population, can be used for financing the cost of public services, $G > 0$ (providing a benefit $g > 0$ to both the elite and to all tax payers) or can be appropriated by the elite in terms as rents, r . in the absence of investment in rent extraction, R , the elite cannot forcefully extract resources (as discussed below).

Constraints on the Executives. The elite has to make decisions also about the organization of the policy that affects the limits on their exercise of power (as executives). Political economics have studied this choice mostly in the context of the emergence of modern mass democracies. The same concept applies in an historical medieval perspective although the implementation of constraints on the executive was not associate to democratic election in universal franchise (as in modern mass democracies) but rather to the procedures for the selection of the rulers (whether dynastic or by appointment by at least part of the population), the

¹For simplicity, since it plays no major role in the analysis, we normalize the size of population to one and we assume that the size of the elite is negligible (i.e. a king or the local lord or leader). This implies that both the territory size of the polity and its total population equal S .

²The assumption of a linear space with a capital located in the center follows Alesina and Spolaore (1997) and is only made to allow a simple closed form solution of the rents extracted by the elite as characterized next.

³For simplicity we do not discriminate between military and fiscal capacity. Our goal is to study the conditions under which an elite chooses to invest in state apparatus to sustain an extractive social contract or implements a more inclusive social contract, as modeled below.

existence of term limits, the existence of different organs that created checks and balances and the existence of procedures to remove rulers from office, among others.

The constraints on the executives are modelled as ability of the elite of committing to public policies and limits the ability of elite of extracting rents. We consider two limits cases: without constraints on the executive the elite can decide, ex-post, the allocation of public revenues. With constraints on the executives the use of public revenues announced by the elite ex-ante cannot be changed ex-post and, in particular, the elite cannot appropriate rents so that $r = 0$.

Contribution to public spending and tax compliance. The population can undertake actions to hide taxable income and limit rent extraction and tax payments. These actions involve distortions and, in particular, involves a cost $h \in (0, 1)$. The parameter h should be interpreted broadly also as the opportunity cost of lost economic opportunities (like e.g. entrepreneurial activities, education etc) that are not undertaken unless agents expect to reap the benefits from these investments. In this perspective the choice of not hiding income can be equivalently interpreted as the choice of making productive investments.

Conditional on hiding resources, the actual share of income extracted by the rulers depends on their state capacity. Recall that a ruler making the investment in extractive capacity (involving the cost R) can forcefully extract an amount $1 - \alpha\delta$ of the income even if individuals invest in hiding. In the absence of investment in extraction capacity R no hidden income can be extracted above the baseline rents \underline{r} . Individuals that do not hide their income can be fully expropriated ex-post by any ruler.

Timing. The sequence of choices has the following timing:

1. The **Elite** chooses:
 - (a) Whether to set *constraints on the executive*, which imply commitment over announced use of public revenues and no rents $r = 0$, or abstain from them;
 - (b) Decides whether to make the investment $R > 0$ in *extractive capacity* or abstain from it and announces a policy on the use of public revenues in terms of either rents, r to their exclusive benefits or for the provision of the productive public service at a cost G that benefits all tax payers with $g > 0$;
2. **Each individual** of the population chooses whether to *hide his income*, at a cost $h \in [0, 1]$, or abstain from it and make it available *complying to tax payments*;
3. **Elite** collects public revenues and decide whether to use it as rents, r or to finance the public good $G > 0$.

1.2 Multiple Social Contracts

Consider the possible equilibria of the game between individuals and rulers conditional on being endowed with either the extractive state capacity or limited state capacity. The proposed set-up captures the idea that rulers with low state capacity are forced to rely on voluntary financing for the provision of public goods. In turns individuals have incentives to avoid hiding income and comply to the provision of public goods only if they expect not to be subject of expropriation ex-post. To this end notice that individual are made non cooperatively by each individual taking as given both the choices of all other individuals and of the elite. This implies, crucially, that individual behavior depends on the political institutions (the constraints on the executive) and the choices made by the elites but also depend on the individual believes about the tax compliance by all other individuals. This feature create a strategic complementarity which gives rise to multiple equilibria (potentially out of the same fundamentals).

Optimal Individual Choices. Let us start by characterizing the conditions for the emergence of a social contract characterized by lack of investment in extractive technologies and local public good financed with local taxes. Notice that in the simple static set-up presented in Section ??, the existence of a commitment on the provision of public goods and limited rent extraction is a *necessary condition* to induce individuals to contribute to the public good. The reason is that in the absence of commitment the elite has always an incentives to ex-post expropriate all individual income (possibly net of the cost of public good provision). As a result all individuals invest in private protection ex-ante making the provision of public goods not feasible ex-post.

The existence of credible commitment to provide public goods and limit rent extraction *is not a sufficient condition* for productive social contract to emerge in equilibrium. A productive equilibrium involving the provision of the public good is not automatically insured since the optimal decisions by individual on whether to protect their income depends on the individual beliefs about the share of individuals that will contribute to sustain the cost G . Denote by $x \in [0, 1]$ the (correct or incorrect) belief about the expected share of contributors. Having normalized individual income and the size of the population to one, given this belief the total amount of tax revenues that can be used to cover the cost G is also given by x and the expected cost of provision of the public good is given by G/x .

Consider the case in which the elite credibly commits to the provision of public good and to limit rent extraction to zero. For an individual with a belief x it is optimal to contribute if, and only if,

$$1 + g - G/x > 1 - h \quad (1)$$

Hence the population complies to tax payments if there exists

$$\underline{x} = G/(g + h) \leq 1 \quad (2)$$

and $x \leq \underline{x}$.⁴ Under the most optimistic belief that everybody will contribute ($x = 1$) it is optimal to comply to tax payments only if the net returns are larger than the cost of hiding income, $g - I > h$. An important implication of is that if x is sufficiently small it is not optimal for anybody to comply to tax payments and, therefore, the public good cannot be provided ex-post even in the presence of constraints on the executives.

Optimal choices of the elite. Let us first characterize the optimal choice of extractive capacity in the absence of constraints on the executive. Investing in extractive capacity increases the elite pays-off if, and only if, the extra rents that can be extracted from a territory of size S more than compensate its cost $R > 0$. This implies,

$$r = \int_0^{S/2} (1 - \alpha\delta)d\delta - R > 0 \Leftrightarrow R < S(1 - \alpha S/4) \quad (3)$$

Condition 3 implies that the amount of gross revenues that can be extracted by a territory is a hump-shape function of the territory controlled by the polity with a maximum size of the polity delivering positive rents. The existence of the investment $R > 0$ has two further relevant implications. First, the existence of the cost R implies that the net rents are negative at these two extremes so that, if R is not too large, there exists a minimum and a maximum size of territory allowing for net positive extra rents.⁵ Second, given the timing of the game, a ruler can invest in state capacity only if they are endowed with sufficient baseline rents to start with $\underline{r} > 0$. If this condition is fulfilled then the maximum rents obtained by an elite in the absence of constraints on the executive is given by,

$$r^*(\underline{r}, \alpha, S) = \max\{\underline{r}, \underline{r} + S(1 - \alpha S/4) - R\} \quad (4)$$

⁴Let us restrict attention for simplicity to the case in which all the population share the same beliefs. This essentially implies restricting attention to bang-bang equilibria where either all individuals comply or none comply.

⁵Notice that the amount of gross rents extracted are zero as $\lim S = 0$ and $S = 4/\alpha$. The higher is the decay in the control of territory α the lower is the maximum profitable size of the polity.

Consider the alternative scenario in which the elites chooses constraints on the executive. The expected benefits from public good provision depends on the elite's belief about tax compliance in the population at large. For the elite introducing constraints on the executive has a positive pay off only if the public good is produced. This implies that if the elite expects no compliance in the population, and therefore not contribution to the public good, then there is no reason to limit their ability to extract rents. Under the expectation that the public good will be provided in equilibrium the elite prefers constraints on the executive to rent extraction only if,

$$1 + g > 1 + r^*(\underline{x}, \alpha, S) \tag{5}$$

Equilibrium Social Contracts. We summarize the previous discussion by characterizing the conditions for the emergence of the different social contracts.

Proposition 1 (PRODUCTIVE SOCIAL CONTRACTS). *A social contract characterized by **constraints on the executive, limited rent extraction**, $r = 0$ and provision of public goods, $g > 0$ emerges in equilibrium if, and only if:*

1. *Both the elite **and** the people share the **belief** that a large enough fraction of the population will comply to the financing of the public good. This implies the existence of a x as characterized in condition (2);*
2. *The expected benefits from public goods are larger than the net benefits or rent extraction (as characterized in conditions (4) and (5).)*

The emergence of productive social contracts requires several conditions that relate to both the objective benefits of alternative political institutions and policies but also, crucially, consistent beliefs in the both the the elites and in the population at large. A relevant implication is

Remark 1. *According to Proposition 1 each of the following:*

- ***Political institutions** that limit rent extraction (constraints on the executives)*
- ***Beliefs** about the contributions to the public in the population at large;*
- *A large enough profitability of **public goods relative to rent extraction**;*

*are **necessary but not sufficient conditions** for productive social contracts to emerge;*

Failure to meet any of the necessary conditions implies that a social contract social contract cannot be sustained. This results implies a strategic complementarity between the emergence of political institutions and beliefs in the population at large.

Alternatively the social contract is extractive as characterized in,

Proposition 2 (EXTRACTIVE SOCIAL CONTRACTS). *A social contract characterized by **no constraints on the executive, rent extraction**, $r = r^*(\underline{x}, \alpha, S)$ and no provision of public goods, $g = 0$ emerges in equilibrium if either one of these two conditions hold:*

1. *The expected benefits from public goods are lower than the net benefits or rent extraction (as characterized in conditions (4) and (5).)*
2. *Either the elite **or** the people have the **belief** that the population will not comply to tax compliance;*

Let us finally discuss the role of parameters that, beyond the beliefs, affect the likelihood of the emergence of the two types of social contracts. We have the following,

Corollary 1 (COMPARATIVE STATICS). *An **extractive social contract** is **more likely** to emerge if the:*

- *profitability of the public good, g and the waste associated to hiding resources, h , are low;*
- *rents controlled by the elite, \underline{r} are large;*
- *territory controlled by the polity, S is sufficiently large;*

The last two elements of the comparative statics are relevant for the interpretation of the emergence of communal and maritime republics in medieval Italy, as discussed further below. The results help interpreting the emergence of extractive social contracts characterized by the territorial control in the maritime republics due to the existence of large rents from sea trade and the territorial control insured by the fleet.

2 Historical Database

2.1 Construction of the Data

The construction of the variables tracking the sequence of rulers and the republican experience for each location in Italy during the period 1000-1800 involves several steps, as described in details in this Section. The process of data collection starts with the collection of maps of Europe from the *Centennia Historical Atlas* (Reed 2014). The Atlas comes in the form of a software showing the evolution of borders of political entities ruling over Europe in the period 1000-2003, with maps at 5 week frequency. The software allows to manually export snapshots of the maps as PNG files. The key feature of the set of available maps is that political entities are coherently represented through time. See also Cervellati, Lazzaroni, Prarolo and Vanin (2019) for a comparison of the dataset with Euratlas (Nussli, 2011).

The process of data elaboration for each year is carried out by programming a Python 2.7 code exploiting the package ArcPy, which allows us to systematically run the software ArcGIS 10.3. The steps undertaken by the code are the following:

1. Georeference the PNG file in order to apply to the each image the WGS84 coordinate system;
2. Generate a raster file for each year;
3. Transform rasters in polygon shapefiles, excluding pixels belonging to borders and water bodies such as lakes and rivers;
4. Stretch polygons in order to fill the empty spaces where previous items were present;
5. Calculate the areas covered by each political entity (eventually made of more than one polygon);
6. Superimpose a fishnet with cells 0.0833×0.0833 degrees (roughly 10×10 Km grid cells at the Equator, as stable unit of observation);
7. Export the table containing, for each cell, the unique identifier of the political entity, and latitude and longitude of the cell's centroid.

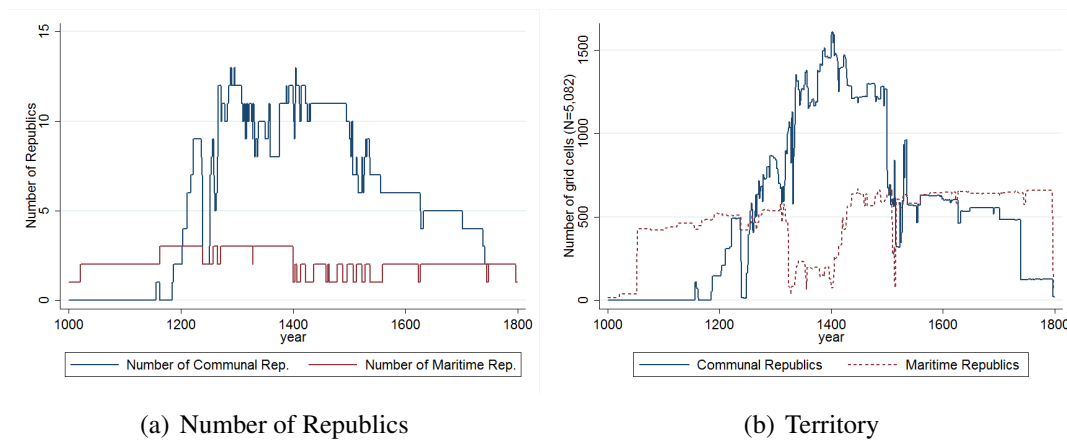
Once the procedure is repeated for all the years we assemble the yearly panel dataset in Stata and reconstruct names of political entities based on the identifier. Then we constructed the main variables of interest as described in the Data Section of the paper.

2.2 Visual Representation

2.2.1 Evolution of the Number, Size and Territorial Control of the Republics

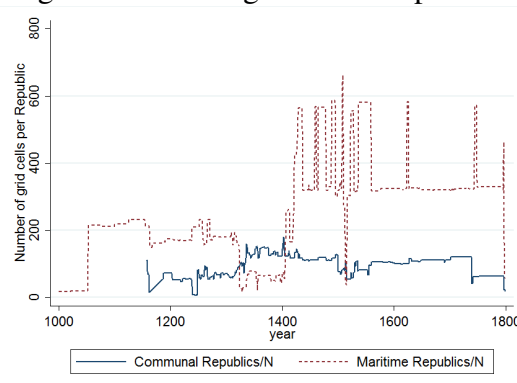
The data allows tracking the over time change of territorial control of all republics. Panel (a) of Figure A.1 shows that the time series of the evolution of the number of communal republics is hump-shaped, peaking in the thirteenth century and displaying a rapid reduction from the early fifteenth century, while the number of maritime republics is more stable. Panel (b) of Figure A.1 shows that the total territory controlled by the communal and maritime republics follow similar patterns. The different strategies of territorial control described by historians, gradual inland consolidation for communal republics and colonialist expansion for maritime republics, are clearly visible in Figure A.2. The communal republics have a comparatively low territorial size displaying a small increase before year 1400, while the territory controlled by the maritime republics is, on average, larger, and it increases after 1400 due to their inland expansion.

Figure A.1: Number of Republic and Size of Ruled Territory



Note: The figure depicts the overtime evolution of the number of republics (communal and maritime) (Panel a) and the evolution of the territory of the Italian peninsula ruled by republics in each year (Panel b).

Figure A.2: Average Size of Republics



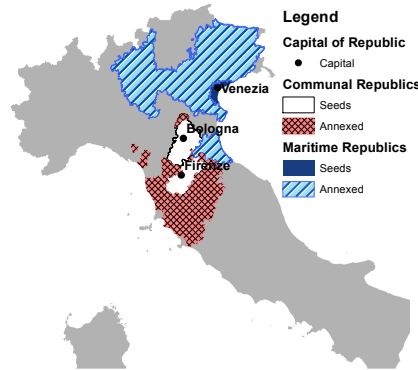
Note: The figure depicts the evolution of the average territory controlled by communal and maritime republics.

To further unfold these patterns, we discriminate between the territory of each republic at its birth, which we label the *seeds* of the republic, and the locations that were subsequently *annexed* to its rule as described by Figure 4 in the main text. The next section presents some examples of the classification between seeds and annexed territories.

2.2.2 Seed and Annexed Territories

Figure A.3 shows the location of the seeds and annexed territories of Venice, a maritime republic, and the communal republics of Bologna and Florence when the territorial extension of the three republics considered was maximum in Italy (for Venice, Bologna and Florence this means the years 1505, 1310 and 1573, respectively).

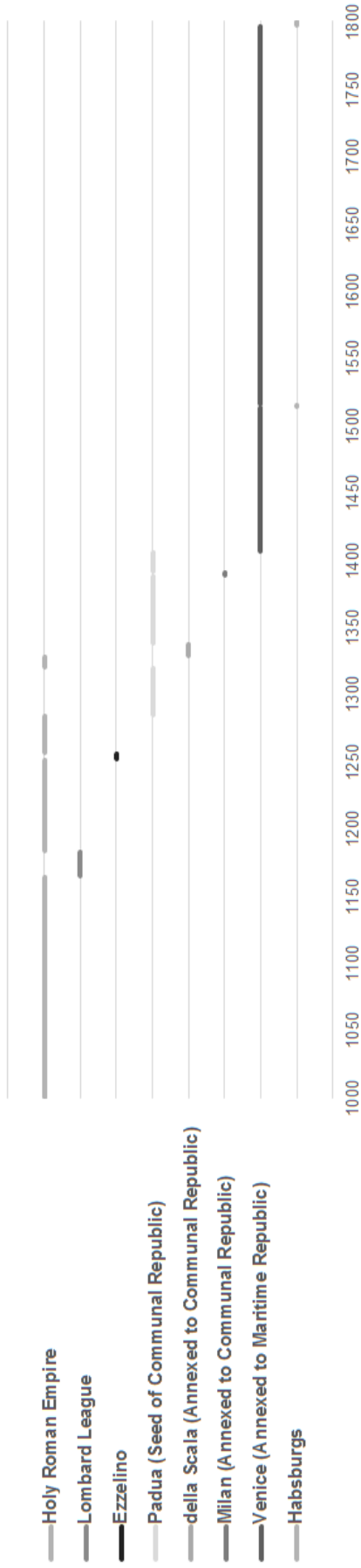
Figure A.3: Examples of Seeds and Annexed Territories: Venice, Bologna and Florence



Note: The figure depicts the municipalities that were *Seeds* and *Annexed* locations of Venice, as an example of maritime republic, and Bologna and Florence, as examples of communal republics in Italy over the period 1000-1800. The *Seeds* are the locations where republics firstly emerged while the *Annexed* are the locations subsequently incorporated into republican areas. This picture particularly focuses, for each republic considered, the year in which its territorial expansion was maximum in Italy (for Venice, Bologna and Florence this means the years 1505, 1310 and 1573, respectively).

The way republican variables are constructed is presented visually also using as example the territory of present day Padua, a municipality in the North-East of Italy at roughly 50 Km from Venice. It was ruled by the Holy Roman Empire until 1165, then joined the Lombard League for about 20 years against the Emperor, but was after conquered again by Holy Roman Empire for 68 years. After a short autocratic experience under the Ezzelino family, the Holy Roman Empire took over since 1257 until the communal republic of Padua was born in 1285. The Holy Roman Empire strike back since 1320, followed by the annexation by the Della Scala (a communal republic ruling over the territory around Verona) in between 1329 and 1337, and a renewed independence until 1405 (with a 2-year experience as an annexed territory of the Milan communal republic). Since then (except for two experiences of few years of Habsburg rule) it has been annexed by the maritime republic of Venice. It turns out that, for the city of Padua, the four main variables used in our key results reported in Table 2 take the values 1.01 (Seed Communal), 0.11 (Annexed Communal), 0 (Seed Maritime) and 3.88 (Annexed Maritime).

Figure A.4: Example for today's municipality of Padua



Note: The figure depicts the sequence of rulers for the location of today's municipality of Padua. Next to the name of the ruler we report in parenthesis if it was a comunal or maritime republic according to our classification and if the location started off the republican experience considered (therefore it is named as a "Seed") or was subsequently annexed to a republic (and named as an "Annexed").

3 Data and Summary Statistics

3.1 Data Sources

Table A.1: Data Sources and Description of Main Variables of Interest

Variable Description and Data Sources
Rulers Experience:
<i>Same sequence of rulers.</i> Variable that identifies the clusters of municipalities that have experienced exactly the same sequence of rulers throughout the period 1000-1800. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Political Instability.</i> Number of times the location of a municipality changed ruler from the year 1000 AD to 1800. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
Republican Experience:
<i>Ruled by Republics (Dummy).</i> Dummy variable taking value one in municipalities ruled at least for one year by a medieval republic. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Time Ruled by Republics (centuries).</i> Variable measuring the number of centuries a municipality has been ruled by medieval republics. If a municipality was ruled by more than one medieval republic, we sum the years of both experiences. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Time Ruled by Communal Republics (centuries).</i> Variable measuring the number of centuries a municipality has been ruled by medieval republics with mainly continental power. If a municipality was ruled by more than one communal republic, we sum the years of all these experiences. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Time Ruled by Maritime Republics (centuries).</i> Variable measuring the number of centuries a municipality has been ruled by medieval republics with mainly power on the sea. If a municipality was ruled by more than one maritime republic, we sum the years of all these experiences. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Time Ruled as Seeds of (Communal or Maritime) Republics (centuries).</i> Variable measuring the number of centuries a municipality has been ruled by (communal or maritime) republics while being a location where the (communal or maritime) republic firstly emerged. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Time Ruled as Annexed of (Communal or Maritime) Republics (centuries).</i> Variable measuring the number of centuries a municipality has been ruled by (communal or maritime) republics while being a location subsequently incorporated into initial (communal or maritime) republican areas. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Av. Distance (In mean) to Network of Communal Capitals.</i> Based on the geographic coordinates of capitals of each communal republic in each year, we calculate the average geodesic distance from the municipality centroid to all communal centers of power (in Km) in each year, average the panel measure to have a cross-sectional measure, and calculate its logarithm. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Av. Distance (In mean) to Communal Capital (own/closest).</i> Based on the geographic coordinates of capitals of each communal republic in each year, we calculate the geodesic distance from the municipality centroid to its own communal capital or to the closest communal capital (in Km) in each year, average the panel measure to have a cross-sectional measure, and calculate its logarithm. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Av. Distance (In mean) to Maritime Capital (own/closest).</i> Based on the geographic coordinates of capitals of each maritime republic in each year, we calculate the geodesic distance from the municipality centroid to its own maritime capital or to the closest maritime capital (in Km) in each year, average the panel measure to have a cross-sectional measure, and calculate its logarithm. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
<i>Administrators' Turnover (weight).</i> Polity-specific weight computed as the ratio between the number of years a location has been ruled by the polity considered and the number of different administrators recorded in that period, normalized between the values of 0 and 1. In communal republics the index approaches the value of 0 if the administrators' turnover is low and the value of 1 if the administrators' turnover is high. In maritime republics the index approaches the value of 1 if the administrators' turnover is low and the value of 0 if the administrators' turnover is high. This variable is used as a proxy of early constraints on the executive to weight the <i>Time Ruled</i> by variables described above. Data source: Own elaborations.
Attitudes towards the state:
<i>TV tax compliance.</i> Average share of households that pay the TV tax in a municipality during the period 2004-2010. Data source: Italian national public broadcasting company (RAI - Radiotelevisione Italiana).
<i>Ln Fees.</i> Natural logarithm of the average total revenues for fees collected by the municipality during the period 1998-2012. Data source: Italian Ministry of Interior website.
<i>Cooperate on Fight Tax Evasion.</i> Dummy variable taking value one if a municipality's administration involved into activities to detect the evasion of national taxes (personal income, VAT, firms income) at the local level in 2012, zero otherwise. Data source: Ministry of Interior's website.

Table A.2: Data Sources and Description of Variables of Interest (ctd)

Variable Description and Data Sources
Cooperation and civic cultures:
<i>Mutual Help Associations (per 1000 inhabitants).</i> Variables accounting for the number of mutual aid or religious associations. Data source: 2015 Italian Census of Non-profit associations and organizations.
<i>Presence of Organ Donation Association.</i> Dummy variable taking value one if a municipality has an organ donation association (AIDO) in 2001, zero otherwise. Data source: Guiso, Sapienza and Zingales (2016).
Historical migration, population diversity, and social openness:
<i>Social openness (Entropy).</i> Entropy Index of the diversity of surnames. Data source: Buonanno and Vanin (2017).
<i>Social closure (Top 5 names).</i> Variable accounting for the municipality-specific population share of the 5 most frequent surnames in the full distribution of surnames. Data source: Buonanno and Vanin (2017).
<i>Communal (Maritime) surnames share.</i> Variable accounting for the frequency of surnames with toponym origin in the communal (maritime) republics. Data source: own elaborations.
Geography:
<i>Altitude.</i> Average altitude of the municipality. Data source: Italian Institute of Statistics (ISTAT).
<i>Ruggedness.</i> Average ruggedness of the municipality. Data source: Global Land One-km Base Elevation Project (GLOBE) and own elaborations.
<i>City is on the coast.</i> Dummy variable taking value one if the municipality has direct access to the sea, zero otherwise. Data source: Italian Institute of Statistics (ISTAT).
<i>City is within 5 kms from coast.</i> Dummy variable taking value one if the municipality is within 5 Km from the coast, zero otherwise. Data source: Italian Institute of Statistics (ISTAT).
<i>Distance from sea (Km).</i> Distance in Km between the municipality hall to the coast. Data source: Italian Institute of Statistics (ISTAT).
<i>Distance from rivers (Km).</i> Distance in Km between the municipality centroid and the closest (minor/medium/major) river. Data source: CIA World Data Bank (Pape 2004) and own elaborations.
<i>Caloric suitability of terrain (pre-1500).</i> Average potential agricultural output (measured in calories) based on crops that were available for cultivation in the pre-1500CE eras in the locations of current-day municipalities. Data source: Galor and Ozak (2016) and own elaborations.
Historical Population and Routes:
<i>Population in 1000 AD.</i> Estimated total population in 1000 AD within the boundaries of current-day municipalities. Data source: HYDE-History Database of the Global Environment (Goldewijk et al. (2010) and own elaborations).
<i>Distance to bishop see city in 1000 AD.</i> Distance in Km from the municipality centroid to the closest episcopal see city in 1000 AD. Data source: Guiso, Sapienza and Zingales (2016).
<i>Distance to Roman Road (Km).</i> Distance in Km from the municipality centroid to the closest (minor/major) Roman road. Data source: McCormick et al. (2013) and own elaborations.
Historical Polities:
<i>Free-City in Medieval Times.</i> Dummy variable taking value one if the municipality has been a <i>free-city</i> in the Middle Ages, zero otherwise. Data source: Guiso, Sapienza and Zingales (2016).
<i>Ruled by Normans (Dummy).</i> Dummy variable taking value one if the municipality has ever been ruled by the Normans, zero otherwise. Data source: Centennia Historical Atlas of Europe (Reed 2014) and own elaborations.
Modern Controls:
<i>Average Population.</i> Average population in the municipality over the period 2004-2010. Data source: Italian Institute of Statistics (ISTAT).
<i>Average Income.</i> Average municipality income over the period 2008-2010. Data source: Italian Ministry of Economy and Finance.
<i>Gini Inequality: Income.</i> Gini index for income inequality computed using data on the distribution of income in the year 2000 based on information from the 2001 Census. Data source: Guiso, Sapienza and Zingales (2016).
<i>Gini Inequality: Land Ownership.</i> Gini index for land inequality computed using data on the size distribution of agricultural firms in the year 2000 based on information from the 2001 Census. Data source: Guiso, Sapienza and Zingales (2016).

3.2 Summary Statistics

3.2.1 Sample: Full

Variable	N	Mean	Std. Dev.	Min.	Max.
Political Instability	8055	17.58	7.84	2	71
Ruled by Republics (Dummy)	8055	0.57	0.49	0	1
Time Ruled by Republics (centuries)	8055	1.79	1.93	0	10.22
Time Ruled by Communal Republics (centuries)	8055	1.03	1.37	0	5.66
Time Ruled by Maritime Republics (centuries)	8055	0.76	1.49	0	10.22
Time Ruled as Seed of Communal Republics (centuries)	8055	0.48	1.07	0	5.56
Time Ruled as Annexed of Communal Republics (centuries)	8055	0.56	0.96	0	5.32
Time Ruled as Seed of Maritime Republics (centuries)	8055	0.04	0.46	0	10.22
Time Ruled as Annexed of Maritime Republics (centuries)	8055	0.72	1.43	0	6.92
Time Ruled as Seed of Republics (centuries)	8055	0.51	1.15	0	10.22
Time Ruled as Annexed of Republics (centuries)	8055	1.28	1.69	0	6.98
Av. Distance (ln mean) to Network of Communal Capitals	4413	5.37	0.38	4.65	6.79
Av. Distance (ln mean) to Communal Capital (own/closest)	4413	4.54	0.69	1.78	6.65
Av. Distance (ln mean) to Maritime Capital (own/closest)	4413	4.93	0.62	0.79	6.88
Administrators' Turnover Time Ruled by Communal R. (cent.)	8055	0.97	1.29	0	5.53
Administrators' Turnover Time Ruled by Maritime R. (cent.)	8055	0.07	1.33	0	1.15
Administrators' Turnover Time Ruled as Seed of Communal R. (cent.)	8055	0.45	1.02	0	5.43
Administrators' Turnover Time Ruled as Annexed of Communal R. (cent.)	8055	0.52	0.90	0	5.19
Administrators' Turnover Time Ruled as Seed of Maritime R. (cent.)	8055	0.00	0.04	0	1.13
Administrators' Turnover Time Ruled as Annexed of Maritime R. (cent.)	8055	0.06	0.13	0	0.74
Altitude	8055	357.23	297.47	0	2035
Ruggedness	8055	223.67	215.16	0.89	1151.45
City is on the coast	8055	0.08	0.27	0	1
City is within 5 km from coast	8055	0.03	0.18	0	1
Distance from sea (Km)	8055	70.06	55.69	0	230.34
Distance from rivers (Km)	8055	58.94	79.87	0.01	310.49
Caloric Suitability pre 1500 AD	8055	2229.58	548.7	0	2969.04
Population in 1000 AD	8055	0.58	3	0	223.28
Distance to Bishop in 1000 AD (Km)	8055	16.8	11.27	0	218.46
Distance to Roman roads (Km)	8055	6.76	6.8	0	50.66
Free City	8055	0.01	0.09	0	1
Normans	8055	0.25	0.43	0	1
Average Population	8055	7384.94	40846.4	33.71	2.68E+06
Average Income	8055	16939.72	3806.51	6766	48220
Gini ineq: income	8055	0.38	0.04	0.22	1
Gini ineq: land ownership	8055	0.61	0.17	0	1
TV tax compliance (%)	8055	66.23	10.94	6.60	100
Ln fees	8045	5.04	0.78	2.84	11.89
Cooperate on fight tax evasion	8055	0.05	0.23	0	1
Mutual help associations (per 1000 inh.)	7929	0.19	0.59	0	17.86
Presence of organ donation association	8055	0.04	0.20	0	1
Social openness (entropy)	8046	5.32	1.12	1.66	10.19
Social closure (top 5 names)	8046	16.69	11.69	1.03	87.5
Communal surnames share	8046	0.52	0.81	0	11.92
Maritime surnames share	8046	0.13	0.43	0	9.22

3.2.2 Sample: Within the North

Table A.3: Summary Statistics for the North Sample

Variable	N	Mean	Std. Dev.	Min.	Max.
Political Instability	5508	18.60	9.07	2	71
Ruled by Republics (Dummy)	5508	0.77	0.42	0	1
Time Ruled by Republics (centuries)	5508	2.43	1.93	0	10.22
Time Ruled by Communal Republics (centuries)	5508	1.51	1.42	0	5.66
Time Ruled by Maritime Republics (centuries)	5508	0.92	1.65	0	10.22
Time Ruled as Seed of Communal Republics (centuries)	5508	0.70	1.23	0	5.56
Time Ruled as Annexed of Communal Republics (centuries)	5508	0.81	1.07	0	5.32
Time Ruled as Seed of Maritime Republics (centuries)	5508	0.05	0.56	0	10.22
Time Ruled as Annexed of Maritime Republics (centuries)	5508	0.87	1.58	0	6.92
Time Ruled as Seed of Republics (centuries)	5508	0.75	1.32	0	10.22
Time Ruled as Annexed of Republics (centuries)	5508	1.68	1.80	0	6.98
Av. Distance (ln mean) to Network of Communal Capitals	4413	5.37	0.38	4.65	6.79
Av. Distance (ln mean) to Communal Capital (own/closest)	4413	4.54	0.69	1.78	6.65
Av. Distance (ln mean) to Maritime Capital (own/closest)	4413	4.93	0.62	0.79	6.88
Administrators' Turnover Time Ruled by Communal R. (cent.)	5508	1.42	1.34	0	5.53
Administrators' Turnover Time Ruled by Maritime R. (cent.)	5508	0.08	0.14	0	1.15
Administrators' Turnover Time Ruled as Seed of Communal R. (cent.)	5508	0.66	1.17	0	5.43
Administrators' Turnover Time Ruled as Annexed of Communal R. (cent.)	5508	0.76	1.00	0	5.19
Administrators' Turnover Time Ruled as Seed of Maritime R. (cent.)	5508	0.00	0.05	0	1.13
Administrators' Turnover Time Ruled as Annexed of Maritime R. (cent.)	5508	0.07	0.14	0	0.74
Altitude	5508	342.47	304.70	0	2035
Ruggedness	5508	231.08	244.30	0.89	1151.45
City is on the coast	5508	0.03	0.18	0	1
City is within 5 km from coast	5508	0.02	0.14	0	1
Distance from sea (Km)	5508	91.32	54.08	0	230.34
Distance from rivers (Km)	5508	19.52	17.13	0.01	108.32
Caloric Suitability pre 1500 AD	5508	2313.40	613.50	0	2969.00
Population in 1000 AD	5508	0.56	3.41	0	223.28
Distance to Bishop in 1000 AD (Km)	5508	18.01	11.78	0	90.98
Distance to Roman roads (Km)	5508	7.72	7.49	0	42.11
Free City	5508	0.01	0.11	0	1
Normans	5508	0.01	0.11	0	1
Average Population	5508	7026.50	45335.83	33.71	2.68E+06
Average Income	5508	18622.85	3806.51	6766.00	48220
Gini ineq: income	5508	0.38	0.04	0.22	1
Gini ineq: land ownership	5508	0.59	0.18	0	1
TV tax compliance (%)	5508	67.99	9.74	13.41	100
Ln fees	5504	5.20	0.74	3.16	11.89
Cooperate on fight tax evasion	5508	0.07	0.25	0	1
Mutual help associations (per 1000 inh.)	5435	0.23	0.69	0	17.86
Presence of organ donation association	5508	0.04	0.20	0	1
Social openness (entropy)	5500	5.46	1.16	1.66	10.19
Social closure (top 5 names)	5500	15.50	12.04	1.03	87.5
Communal surnames share	5500	0.65	0.86	0	11.92
Maritime surnames share	5500	0.06	0.21	0	5.69

3.2.3 Sample: Within Republics

Table A.4: Summary Statistics for municipalities ever ruled by Republics

Variable	N	Mean	Std. Dev.	Min.	Max.
Political Instability	4614	20.17	8.82	3	71
Ruled by Republics (Dummy)	4614	1	0	1	1
Time Ruled by Republics (centuries)	4614	3.12	1.53	0.01	10.22
Time Ruled by Communal Republics (centuries)	4614	1.80	1.37	0	5.66
Time Ruled by Maritime Republics (centuries)	4614	1.32	1.76	0	10.22
Time Ruled as Seed of Communal Republics (centuries)	4614	0.83	1.30	0	5.56
Time Ruled as Annexed of Communal Republics (centuries)	4614	0.97	1.10	0	5.32
Time Ruled as Seed of Maritime Republics (centuries)	4614	0.06	0.61	0	10.22
Time Ruled as Annexed of Maritime Republics (centuries)	4614	1.26	1.70	0	6.92
Time Ruled as Seed of Republics (centuries)	4614	0.89	1.40	0	10.22
Time Ruled as Annexed of Republics (centuries)	4614	2.23	1.69	0	6.98
Av. Distance (ln mean) to Network of Communal Capitals	4396	5.37	0.37	4.65	6.79
Av. Distance (ln mean) to Communal Capital (own/closest)	4396	4.53	0.69	1.78	6.65
Av. Distance (ln mean) to Maritime Capital (own/closest)	4396	4.94	0.61	0.79	6.88
Administrators' Turnover Time Ruled by Communal R. (cent.)	4614	1.70	1.29	0	5.53
Administrators' Turnover Time Ruled by Maritime R. (cent.)	4614	0.12	0.16	0	1.15
Administrators' Turnover Time Ruled as Seed of Communal R. (cent.)	4614	0.80	1.24	0	5.43
Administrators' Turnover Time Ruled as Annexed of Communal R. (cent.)	4614	0.91	1.03	0	5.19
Administrators' Turnover Time Ruled as Seed of Maritime R. (cent.)	4614	0.01	0.06	0	1.13
Administrators' Turnover Time Ruled as Annexed of Maritime R. (cent.)	4614	0.11	0.15	0	0.74
Altitude	4614	281.35	260.78	0	1699
Ruggedness	4614	193.45	226.68	0.89	1151.45
City is on the coast	4614	0.04	0.20	0	1
City is within 5 km from coast	4614	0.02	0.15	0	1
Distance from sea (Km)	4614	87.70	55.40	0	225.03
Distance from rivers (Km)	4614	36.99	67.04	0.02	302.06
Caloric Suitability pre 1500 AD	4614	2359.87	502.16	0	2956.80
Population in 1000 AD	4614	0.54	1.74	0	80.30
Distance to Bishop in 1000 AD (Km)	4614	18.87	11.98	0	85.36
Distance to Roman roads (Km)	4614	7.70	7.52	0	42.11
Free City	4614	0.01	0.11	0	1
Normans	4614	0.00	0.04	0	1
Average Population	4614	6796.77	29762.99	33.71	1.31E+06
Average Income	4614	18537.48	3400.27	6766.00	48220
Gini ineq: income	4614	0.38	0.04	0.22	0.72
Gini ineq: land ownership	4614	0.57	0.18	0	1
TV tax compliance (%)	4614	69.17	8.65	13.41	100
Ln fees	4607	5.10	0.70	3.16	11.89
Cooperate on fight tax evasion	4614	0.08	0.27	0	1
Mutual help associations (per 1000 inh.)	4542	0.20	0.51	0	10
Presence of organ donation association	4614	0.04	0.20	0	1
Social openness (entropy)	4609	5.48	1.13	1.66	10.19
Social closure (top 5 names)	4609	15.14	11.39	1.03	87.29
Communal surnames share	4609	0.68	0.87	0	11.92
Maritime surnames share	4609	0.11	0.38	0	8.61

3.3 Correlation Tables

Table A.5: Pairwise correlations

Variable Name	1	2	3	4	5	6	7	8	9	10	11	12	13
Political Instability	1												
Time Ruled by (centuries):													
Ruled by Rep. (Dummy)	0.3821	1											
Republics (centuries)	0.3184	0.8018	1										
Communal Rep.	0.4816	0.6517	0.6425	1									
Maritime Rep.	-0.0304	0.441	0.7072	0.7149	1								
Seed of Communal Rep.	0.3368	0.3872	0.4448	0.6277	-0.0338	1							
Annexed of Communal Rep.	0.3106	0.4967	0.4195	0.6164	0.2692	-0.0341	1						
Seed of Maritime Rep.	0.1046	0.0699	0.1954	-0.0164	0.09529	-0.0738	0.0146	1					
Annexed of Maritime Rep.	-0.0645	0.4356	0.6723	-0.0856	0.9529	-0.0397	-0.0397	-0.0357	1				
Admin. Turnover Communal Rep.	0.4988	0.6524	0.6392	0.997	-0.089	0.7202	0.6174	-0.0159	-0.0873	1			
Admin. Turnover Maritime Rep.	-0.1181	0.4308	0.6897	-0.0743	0.9652	-0.0702	-0.0277	0.2626	0.9188	-0.0753	1		
Admin. Turnover Seed of Communal Rep.	0.3467	0.3863	0.4429	0.7117	-0.0809	0.997	-0.0968	-0.034	-0.0732	0.7217	-0.0694	1	
Admin. Turnover Annexed of Communal Rep.	0.323	0.4988	0.4153	0.6241	-0.0359	-0.0981	0.9977	0.0158	-0.0423	0.6171	-0.0294	-0.0993	1
Admin. Turnover Seed of Maritime Rep.	0.0427	0.061	0.1892	0.0001	0.2458	-0.0294	0.0328	0.9023	-0.0292	0.0009	0.3013	-0.0292	0.0345
Admin. Turnover Annexed of Maritime Rep.	-0.1383	0.4309	0.6588	-0.0779	0.9283	-0.0636	-0.0402	-0.0317	0.9732	-0.0792	0.9459	-0.0628	-0.0426
Altitude	-0.2522	-0.295	-0.3024	-0.2507	-0.1618	-0.2238	-0.1078	-0.0668	-0.1468	-0.254	-0.1576	-0.2234	-0.1112
Ruggedness	-0.2523	-0.1618	-0.1257	-0.2236	0.0429	-0.2321	-0.0599	0.0021	0.0438	-0.2254	0.0149	-0.2325	-0.0598
Distance to the sea (Km)	0.1248	0.3655	0.2402	0.3865	-0.0443	0.2935	0.2234	-0.0925	-0.0168	0.4008	-0.034	0.3042	0.2305
Distance to rivers (Km)	-0.2131	-0.3206	-0.29	-0.4134	0.0044	-0.2687	-0.2895	-0.0166	0.0098	-0.4158	0.0388	-0.2687	-0.2922
Caloric suitability	0.3163	0.2802	0.2272	0.349	-0.0267	0.2796	0.1855	0.0227	-0.0348	0.3497	-0.0391	0.2787	0.1859
City is on the coast	-0.0339	-0.155	-0.1103	-0.178	0.0209	-0.1242	-0.1151	0.0996	-0.0097	-0.1806	0.0066	-0.1254	-0.1171
City is within 5Km from coast	0.003	-0.0735	-0.0267	-0.1121	0.0687	-0.0749	-0.0763	0.0979	0.0404	-0.1133	0.035	-0.0758	-0.0767
Population in 1000 AD	0.0032	-0.0159	-0.0012	0.0085	-0.0093	0.0278	-0.0189	0.0435	-0.0234	0.0092	-0.0058	0.0285	-0.0192
Distance to Bishop seat (Km)	-0.1011	0.2125	0.1806	0.0822	0.1589	-0.0108	0.1291	-0.0159	0.1699	0.0868	0.1808	-0.0074	0.1332
Distance to Roman Roads (Km)	-0.0712	0.1623	0.1567	0.1441	0.0707	-0.0186	0.2259	-0.0164	0.0786	0.1344	0.0722	-0.0259	0.2226
Population	0.0029	-0.0166	-0.0017	0.0029	-0.0049	0.0218	-0.0202	0.0454	-0.0194	0.0038	-0.0027	0.0227	-0.0203
Average Income	0.2488	0.4885	0.4073	0.4619	0.1034	0.3849	0.2291	0.0681	0.0858	0.4737	0.0866	0.3933	0.234
Income Inequality	0.0832	0.1018	0.0719	0.1247	-0.0216	0.1099	0.0552	0.0324	-0.0326	0.1307	-0.0337	0.1144	0.0578
Land Inequality	-0.3214	-0.2261	-0.1242	-0.2326	0.0532	-0.2043	-0.1038	-0.0225	0.0623	-0.238	0.0812	-0.2058	-0.1081
Free-City	0.027	0.0673	0.0489	0.0612	0.0072	0.0274	0.0566	0.0076	0.005	0.0604	0.0015	0.0278	0.0553
Ever ruled by Normans	-0.0619	-0.6601	-0.5325	-0.4329	-0.2928	-0.2572	-0.3299	-0.0464	-0.2892	-0.4333	-0.2861	-0.2566	-0.3313
Tax Compliance (%)	0.0438	0.3143	0.2547	0.2883	0.0651	0.2423	0.1407	0.0296	0.0582	0.2888	0.0768	0.241	0.1412
Ln Fees	-0.0635	0.0865	0.0697	0.0999	-0.0015	0.0436	0.0936	-0.0102	0.0016	0.1	-0.0144	0.0456	0.0919
Cooperate Fight Tax Evasion (Dummy)	0.0164	0.1234	0.1146	0.1354	0.024	0.0584	0.1278	0.0285	0.0159	0.1336	0.0193	0.0594	0.1246
Mutual Help Associations	0.006	0.0139	0.0124	0.0044	0.012	-0.0314	0.0413	0.0107	0.0091	0.0041	-0.0014	-0.0314	0.0416
Organ Donation Association	0.0056	0.0105	0.0201	0.0533	-0.0231	0.0177	0.0562	0.0376	-0.0358	0.051	-0.0206	0.0152	0.056
Entropy	0.1148	0.1738	0.1845	0.2388	0.0195	0.2244	0.09	0.0772	-0.0041	0.2413	0.0117	0.2269	0.0889
Top 5 names	-0.1157	-0.156	-0.1421	-0.2402	0.0368	-0.2031	-0.1157	-0.0268	0.0466	-0.2404	0.033	-0.2026	-0.1153
Communal surnames share	0.1368	0.2301	0.2378	0.3065	0.0264	0.2522	0.1555	-0.0048	0.0289	0.3042	0.028	0.2479	0.1554
Maritime surnames share	-0.0314	-0.0516	-0.0564	-0.1065	0.0249	-0.0638	-0.0806	-0.0034	0.0269	-0.1059	0.0336	-0.0634	-0.0801

Table A.6: Pairwise correlations

Variable	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
15	-0.0244	1															
16	-0.064	-0.1434	1														
17	-0.0214	0.0229	0.6239	1													
18	-0.0806	-0.0082	0.2594	0.334	1												
19	-0.0186	0.047	0.0095	-0.0387	-0.5152	1											
20	0.0129	-0.0454	-0.482	-0.5538	-0.0655	-0.2928	1										
21	0.0895	-0.0236	-0.2344	-0.0493	-0.371	0.3258	-0.1071	1									
22	0.0813	0.009	-0.0958	-0.0223	-0.2091	0.1463	-0.0359	-0.0548	1								
23	0.0432	-0.0208	-0.1025	-0.088	-0.0586	-0.0053	0.0188	0.1089	0.0159	1							
24	-0.0081	0.1923	0.3054	0.4336	0.412	-0.0443	-0.3684	-0.0737	-0.0893	-0.111	1						
25	-0.0025	0.0766	0.2809	0.3254	0.2416	-0.1137	-0.1907	-0.0911	-0.079	-0.0552	0.4666	1					
26	0.0444	-0.0179	-0.1079	-0.083	-0.0605	0.0017	0.0156	0.1362	0.0041	0.9686	-0.1177	-0.0529	1				
27	0.0483	0.0744	-0.268	-0.1535	0.47	-0.5222	0.2532	-0.0861	-0.0773	0.1129	-0.0345	-0.0105	0.1271	1			
28	0.0214	-0.0426	-0.1955	-0.1203	0.1264	-0.1819	0.0424	0.1504	-0.0367	0.1207	-0.0769	-0.0738	0.1391	0.4979	1		
29	0.0076	0.0826	0.2641	0.3402	-0.0488	0.1715	-0.3176	0.0278	-0.0023	0.0132	0.158	0.0964	0.0226	-0.1766	-0.0924	1	
30	0.0007	0.0014	-0.064	-0.0472	-0.0088	-0.0471	0.0437	0.0301	-0.0169	0.3066	-0.1253	-0.0117	0.3491	0.1267	0.1023	0.0201	1
31	-0.0405	-0.2862	0.0591	-0.0295	-0.4864	0.5161	-0.2065	0.2408	0.1145	0.0255	-0.2006	-0.1889	0.026	-0.5709	-0.1258	0.08	-0.0522
32	0.0291	0.0707	-0.2921	-0.2444	0.1504	-0.229	0.2366	-0.0848	-0.0377	0.0248	-0.0368	-0.0003	0.0237	0.3263	0.0894	-0.0418	0.054
33	0.0002	-0.0152	0.3015	0.3414	0.3068	-0.2242	-0.1603	-0.0305	-0.0925	-0.0059	0.219	0.2053	0.0033	0.1514	0.0294	0.1096	0.0549
34	0.0293	0.0103	-0.1135	-0.0882	0.0192	-0.0627	0.0886	0.0489	-0.0144	0.1467	-0.0571	0.0225	0.172	0.1686	0.0965	0.0014	0.192
35	0.0014	-0.002	0.091	0.0842	0.0555	-0.0559	-0.0493	-0.0327	-0.0131	-0.0159	0.0289	0.0545	-0.0171	0.0211	0.0176	0.0036	0.0022
36	0.0475	-0.0377	-0.1279	-0.1142	-0.0596	-0.0322	0.0486	0.1049	0.0071	0.2575	-0.1424	-0.0239	0.3037	0.1454	0.1659	0.0143	0.3533
37	0.0746	-0.0131	-0.4628	-0.3948	-0.0465	-0.1363	0.2087	0.2358	0.0266	0.256	-0.2304	-0.1289	0.2877	0.5321	0.4608	-0.0844	0.2259
38	-0.0381	0.0475	0.4778	0.4648	0.0901	0.082	-0.2435	-0.1569	-0.028	-0.1319	0.2335	0.1346	-0.1413	-0.4082	-0.3813	0.1435	-0.103
39	0.0033	0.0282	-0.2077	-0.1872	0.1101	-0.2389	0.2023	-0.0546	-0.0465	0.0083	-0.0122	-0.024	0.005	0.204	0.0508	-0.1169	0.0223
40	-0.002	0.0359	-0.0181	-0.0445	-0.1521	0.2323	-0.0595	0.0831	0.0194	0.0036	-0.0164	-0.0506	0.0057	-0.1446	-0.0295	0.0348	-0.0099

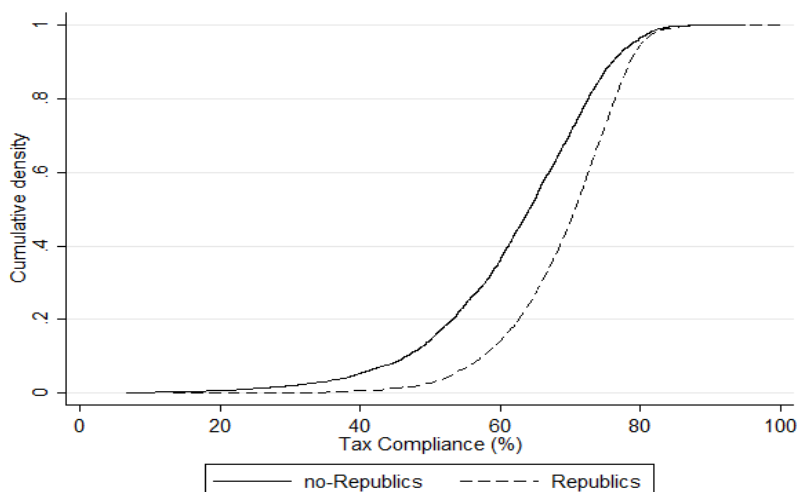
Table A.7: Pairwise correlations

31	1																			
32	-0.2905	1																		
33	0.0549	-0.2866	1																	
34	-0.0917	0.1208	0.0694	1																
35	-0.0728	-0.0626	0.0748	-0.014	1															
36	0.0011	0.1244	0.0078	0.1989	-0.0132	1														
37	-0.1222	0.2953	-0.059	0.2549	-0.0576	0.3513	1													
38	0.1049	-0.2705	0.1236	-0.1588	0.0294	-0.201	-0.8602	1												
39	-0.2004	0.1801	0.0388	0.044	0.0483	0.0423	0.1497	-0.1831	1											
40	0.1415	-0.0552	-0.0823	-0.0206	-0.0222	-0.0093	-0.0245	0.0053	-0.0549	1										

3.4 Graphs of Distribution and Scatters

3.4.1 Distribution of Fiscal Compliance: Republics

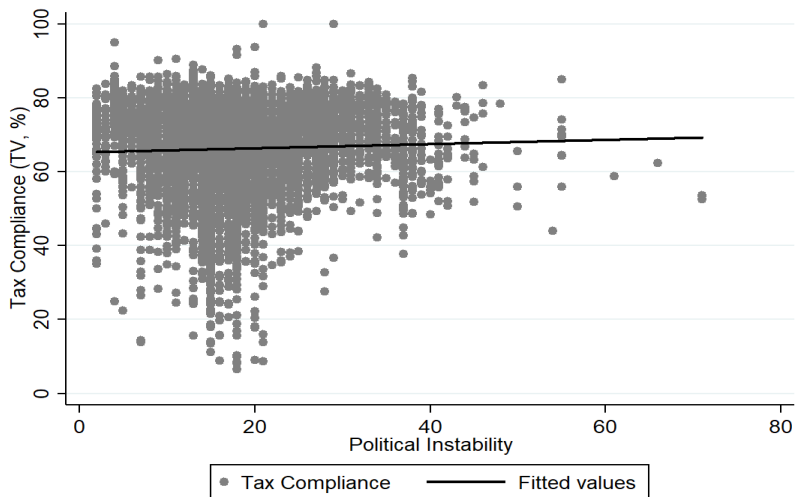
Figure A.5: Fiscal Compliance by Republican Experience (Dummy)



Note: The figure depicts the distribution of tax compliance today for the municipalities that never experienced the rule of a Republic (solid line) and municipalities ever experiencing a Republic (dashed line) during the period 1000-1800.

3.4.2 Fiscal Compliance and Political Instability

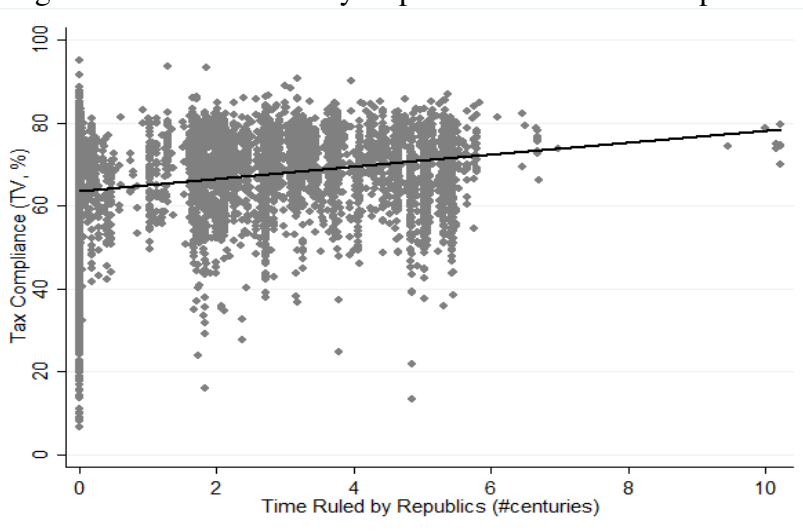
Figure A.6: Fiscal Compliance and Political Instability



Note: The figure depicts the unconditional relationship between Tax Compliance and Political Instability (the number of times a municipality changed ruler) during the period 1000-1800.

3.4.3 Fiscal Compliance and Time Ruled by Republics

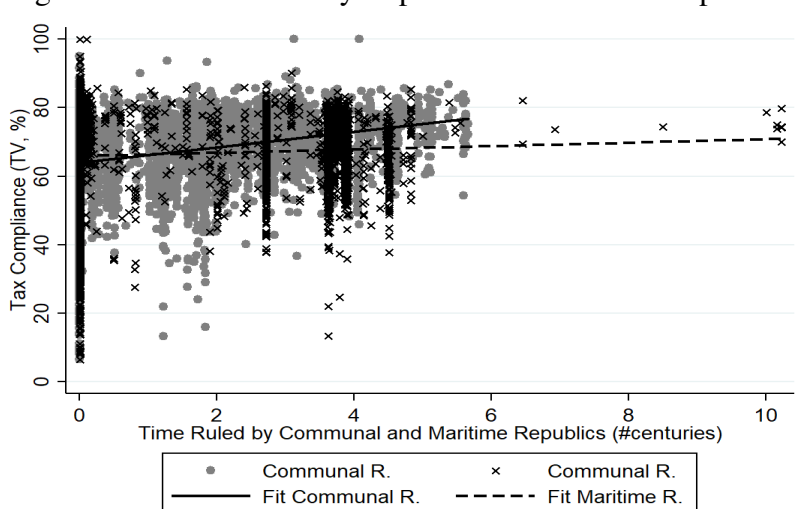
Figure A.7: Time Ruled by Republics and Fiscal Compliance



Note: The figure depicts for each municipality the number of centuries it has been ruled by a Republic during the period 1000-1800 and the share of households paying the TV tax today. The line depicts the unconditional linear fit of a regression using as dependent variable the share of households paying the TV tax today and as explanatory variable the time ruled by a Republic (in centuries).

3.4.4 Fiscal Compliance and Time Ruled by Republics: Communal vs. Maritime

Figure A.8: Time Ruled by Republics and Fiscal Compliance



Note: The figure depicts for each municipality the number of centuries it has been ruled by a communal (gray dot) and/or maritime (black X) republic during the period 1000-1800 and the share of households paying the TV tax today. The solid (dashed) line depicts the unconditional linear fit of a regression using as dependent variable the share of households paying the TV tax today and as explanatory variable the time ruled by a communal (maritime) republic (in centuries).

4 Further Results on Preliminaries

4.1 Correlates of Republican Experience

We explore the correlates of the emergence of medieval republics (the dummy tracking municipalities where republics firstly emerged –the *Seeds*) for the full sample of municipalities and the correlates of the duration of republican experience in the sample of municipalities ever ruled by a republic. By looking at these correlations we are informed of explanatory variables which should be added in our main regressions.

Results reported in Table A.8. In columns (1) and (4) we first study geography (altitude, ruggedness, caloric suitability pre-1500 AD) are correlated with the emergence and duration of medieval republics. In columns (2) and (5) we additionally control for population in the year 1000 AD and distance to bishoprics and Roman roads. Columns (3) and (6) control for other important institutional experiences such as the free-city experience and the conquest by the Normans.

Altitude is correlated to both measures of republican experience, suggesting that coordination costs for the emergence and efficient retention of power are too large when altitude increases. By contrast, ruggedness is negatively associated with the emergence of republics but a rugged territory significantly help republics to last longer. Territories that can feed more population (have higher caloric suitability) seem to favor the emergence but not the duration of republics. Distance to the sea significantly increases the emergence of republics, plausibly because the threat of and cost of defense from attacks by the sea was too high in medieval times. However, this variable is negatively associated with the length of republican experience as the sign and significance of the dummy for coastal municipalities.

Distance to bishop seats in 1000 AD and Roman roads are positively correlated with the emergence of republics, suggesting that being farer from the location of strong theocratic institutions and routes through which the Emperor's army could be displaced allowed locations to get independence from either the two major institutions at that time. In line with this argument, distance to Roman roads positively and significantly influences the duration of republics.

Interestingly, being a free-city is not significantly associated with the emergence of a republican political entity and is negatively and significantly associated with the duration of the republican experience but this may be related to the small number of free-cities, namely 65 municipalities. Locations that experienced the rule of the Normans are less likely to become seeds of republics and are associated with shorter republican experiences, however note that the overlap between location with republican experience and Norman past is very small.

Table A.8: Correlates of Republican Experience

Sample Dep. Variable	Full			Within Republics		
	Republic (Dummy - Seeds)			Time Ruled by Republics		
	(1)	(2)	(3)	(4)	(5)	(6)
Altitude	-0.0003*** (0.0000)	-0.0003*** (0.0000)	-0.0003*** (0.0000)	-0.0017*** (0.0001)	-0.0019*** (0.0001)	-0.0019*** (0.0001)
Ruggedness	-0.0003*** (0.0000)	-0.0003*** (0.0000)	-0.0003*** (0.0000)	0.0014*** (0.0002)	0.0011*** (0.0002)	0.0011*** (0.0002)
Caloric Suitability	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0001*** (0.0000)	-0.0003*** (0.0001)	-0.0002*** (0.0001)	-0.0002*** (0.0001)
Distance from sea (Km)	0.0027*** (0.0001)	0.0025*** (0.0001)	0.0023*** (0.0001)	-0.0047*** (0.0005)	-0.0053*** (0.0005)	-0.0052*** (0.0005)
Distance from rivers (Km)	-0.0005*** (0.0000)	-0.0006*** (0.0000)	-0.0004*** (0.0000)	-0.0038*** (0.0003)	-0.0036*** (0.0003)	-0.0035*** (0.0003)
City is on the coast	-0.0166 (0.0122)	-0.0207* (0.0123)	-0.0159 (0.0122)	-0.2459* (0.1313)	-0.2658** (0.1306)	-0.1734 (0.1266)
City within 5 km from the coast	-0.0043 (0.0168)	0.0002 (0.0169)	0.0011 (0.0169)	0.3104 (0.1897)	0.3900** (0.1914)	0.3722* (0.1912)
Population in 1000 AD		0.0018 (0.0020)	0.0016 (0.0021)		0.0298 (0.0200)	0.0490* (0.0270)
Distance to bishop in 1000 AD (Km)		0.0026*** (0.0005)	0.0023*** (0.0005)		0.0089*** (0.0024)	0.0069*** (0.0024)
Distance from Roman roads (Km)		0.0001 (0.0008)	-0.0004 (0.0008)		0.0195*** (0.0035)	0.0208*** (0.0035)
Free City			0.0240 (0.0596)			-0.6080** (0.2659)
Normans			-0.0810*** (0.0064)			-3.1573*** (0.1295)
Observations	8,055	8,055	8,055	4,614	4,614	4,614
R-squared	0.2476	0.2511	0.2555	0.0866	0.0998	0.1074

The unit of observation is the location of a municipality today. The dependent variable in Columns 1 to 3 is a dummy taking value one if the location was ever exposed to the rule of a new, small and independent sovereign polity in the period 1000-1800, the “*Republics (Dummy)*”. The dependent variable in Columns 4 to 6 is a variable counting the number of centuries a location was ruled by a new, small and independent sovereign polity in the period 1000-1800, the *Time Ruled by Republics (Centuries)*. Controls include average altitude and ruggedness of the municipality, pre-Colombian Exchange caloric suitability, distance to rivers and to the sea, a dummy variable accounting for municipalities on the coast and a dummy variable accounting for municipalities within 5 Km from the coast. Columns 2, 3, 5 and 6 include municipality population in 1000 AD, distance to a bishop seat in 1000 AD and distance to Roman Roads. Columns 3 and 6 include a dummy for the experience of free-city according to Guiso et al. (2016) and a dummy for a past Norman experience. Additional information on all variables can be found in the text. OLS estimates. Robust standard errors are reported in parentheses. ***, **, * indicate significance at 1-, 5-, and 10-% level, respectively.

4.2 Decay after the end of Republican Experience

We explore whether the changes of rulers occurred over the period after the end of the republican experience (if any) have an extra effect of tax compliance, once the length of the republican experience is taken into account. Essentially, we augment the initial specification in Table 1 with the variable "Decay", constructed as the ratio between the number of changes in ruling polity after the republican experience over the number of years elapsed from the end of the republican experience until 1800. Results about the length of the republican experience in the full sample, Northern Italian municipalities and the sample of municipalities ever ruled by a republic hold. Focusing the attention on the *Persistence* term, we find a negative and significant correlation with tax compliance suggesting that the republican experience is subject to a sort of decay based on the prematurity of the end of republican experience and the number of subsequent political instability.

Table A.9: tax compliance and Time Ruled by Republics (centuries)

Dependent Variable	Tax Compliance - Municipality Level					
	(1)	(2)	(3)	(4)	(5)	(6)
	Full	Full	North	North	W/in Republics	W/in Republics
Time Ruled by Republics (Centuries)	1.555*** (0.289)	1.183*** (0.393)	1.038*** (0.329)	0.895*** (0.306)	0.604*** (0.205)	0.434** (0.199)
Political Instability	-0.275*** (0.036)	-0.231*** (0.042)	-0.231*** (0.031)	-0.207*** (0.031)	-0.222*** (0.028)	-0.197*** (0.028)
Decay	-0.165*** (0.027)	-0.145*** (0.030)	-0.128*** (0.027)	-0.121*** (0.024)	-0.117*** (0.021)	-0.109*** (0.020)
Free City		1.598** (0.755)		1.110 (0.802)		0.561 (1.039)
Normans		-0.626 (1.702)		-2.589*** (0.771)		-2.368 (1.917)
Geography	Yes	Yes	Yes	Yes	Yes	Yes
Historical Population and Routes	Yes	Yes	Yes	Yes	Yes	Yes
Income and Population	No	No	No	Yes	Yes	Yes
Inequality	No	No	No	Yes	Yes	Yes
Observations	8,055	8,055	5,508	5,508	4,614	4,614
R-squared	0.219	0.239	0.272	0.292	0.242	0.269

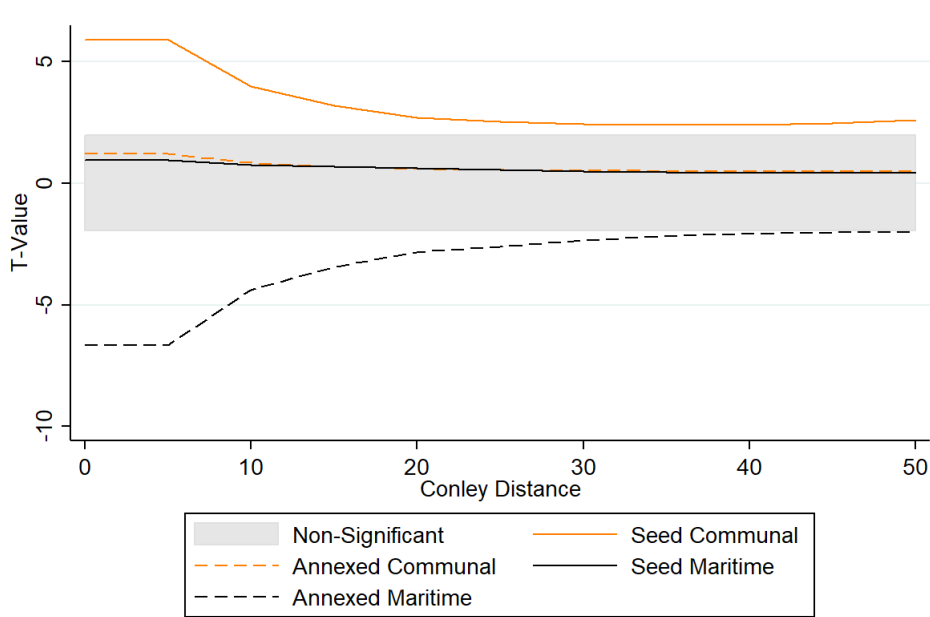
The unit of observation is the location of a municipality today. The dependent variable is the level of Tax Compliance measured as the share of households that pay the TV tax in a municipality. *Time Ruled by Republics (Centuries)* is a variable counting the number of centuries a location was ruled by a new, small and independent sovereign polity in the period 1000-1800. *Political Instability* is a variable accounting for the number of changes of rulers in the period 1000-1800. *Decay* is the ratio between the number of changes in ruling polity after the republican experience over the number of years elapsed from the end of the republican experience until 1800. *Geographic* controls include average altitude and ruggedness of the municipality, pre-Colombian Exchange caloric suitability, distance to rivers and to the sea, a dummy variable accounting for municipalities on the coast and a dummy variable accounting for municipalities within 5 Km from the coast. *Historical Population and Routes* include municipality population in 1000 AD and distance to a bishop seat in 1000 AD and distance to Roman Roads. Modern control variables are *Income and population* and *Inequality* which account for 2001 income, population and the Gini indexes for income and land. Additional information on all variables can be found in the text. OLS estimates. Standard errors reported in parentheses are double-clustered along treatment dimensions (municipalities with the same sequence of rulers in the period 1000-1800 and length of Republican experience). ***, **, * indicate significance at 1-, 5-, and 10-% level, respectively.

5 Robustness

5.1 Inference and Spatial Autocorrelation

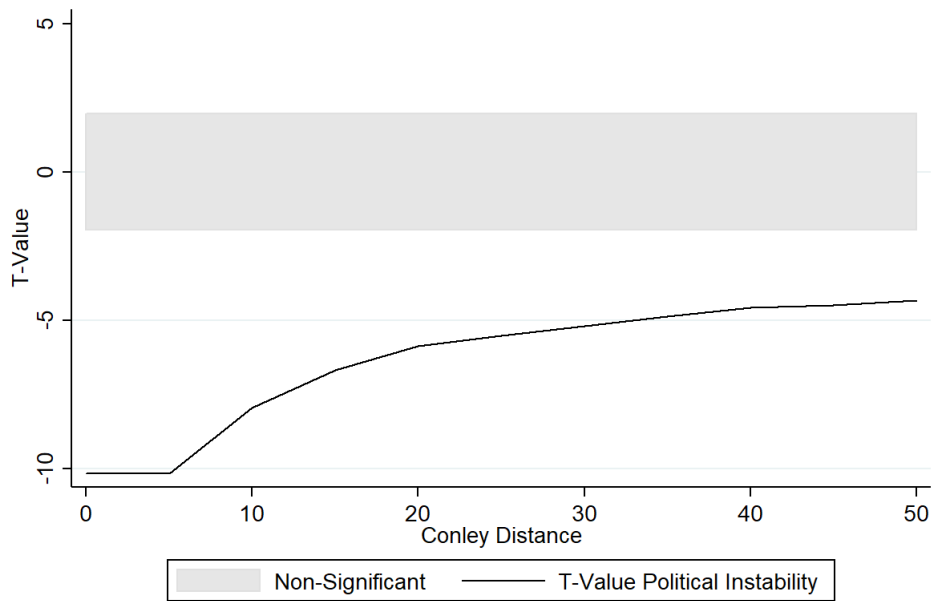
In this section we discuss the robustness of our results to the consideration of different levels of spatial-autocorrelation. In particular, to rule out the possibility that a high t statistic in our main variables of interest arises because it happened to simply fit some spatial autocorrelation we adjust standard errors along the lines suggested by Conley (1999) exploiting cutoff radiuses progressively increasing every 5 Km from 0 Km to 50 Km. Figures A.9 and A.10 show that even accounting for spatial autocorrelation the significance of the coefficients of the variables *Time Ruled as Seeds of Communal Republics*, *Time Ruled as Annexed of Maritime Republics*, and *Political Instability* does not fall into the insignificance region. Note that if we were to extend the length of the radius up to 100 Km, nothing will change in terms of significance.

Figure A.9: Exposure to Republics: Conley Standard Errors



Note: The figure depicts the evolution of the t-value of the variables *Time Ruled as Seeds of Communal Republics* (light-solid), *Time Ruled as Annexed of Communal Republics* (light-dashed), *Time Ruled as Seeds of Maritime Republics* (dark-solid), *Time Ruled as Annexed of Maritime Republics* (dark-dashed), as estimated by replicating Column (6) of Table 2 with Conley standard errors accounting for increasing distances (every 5 Km from 0 to 50 Km).

Figure A.10: Political Instability: Conley Standard Errors



Note: The figure depicts the evolution of the t-value of the variable *Political Instability*, as estimated by replicating Column (6) of Table 2 with Conley standard errors accounting for increasing distances (every 5 Km from 0 to 50 Km).

5.2 Fixed Effects Estimates

We explore the robustness of the main results (Table 2 in the paper, in which we consider the time ruled by communal and maritime republics, and we fully dissect the concept of republican experience between Seeds and Annexed of maritime and communal republics) to the inclusion of several sets of fixed effects. There are no *a priori* dimensions along which we should construct fixed effects, as over the course of the 800 years considered, groups of municipalities sharing some specific characteristics may have changed.

In Table A.10 we report results exploiting four important sets of fixed effects to account for notable historical and modern ways of aggregating Italian municipalities, exploiting the full sample (columns 1-4) and focusing on Northern Italy (columns 5-8). In particular, we consider Pre-Roman civilizations in 600 BC taken from a map of ancient Italic populations in the *Encyclopaedia Britannica*, the Roman regions at the time of Augustus (end of I century BC) from a map extracted from the Atlas Editions Italian Institute (www.edatlas.it), the polities existing in the year 1000 AD from the *Centennia Historical Atlas* and today's Italian regions.

In Panel A, for all specifications and for both samples the results show a positive and significant coefficient for the time ruled by communal republics, while a negative and significant coefficient is reported in most cases for the time ruled by maritime republics. In Panel B, for all specifications and for both samples the results show a negative, significant and larger coefficient for the Seeds of communal republics. Moreover, in all specifications except when we consider polities in 1000 AD, being ruled as Annexed to maritime republics displays a negative and but not significant coefficient.

Table A.10: Fixed Effects Estimates

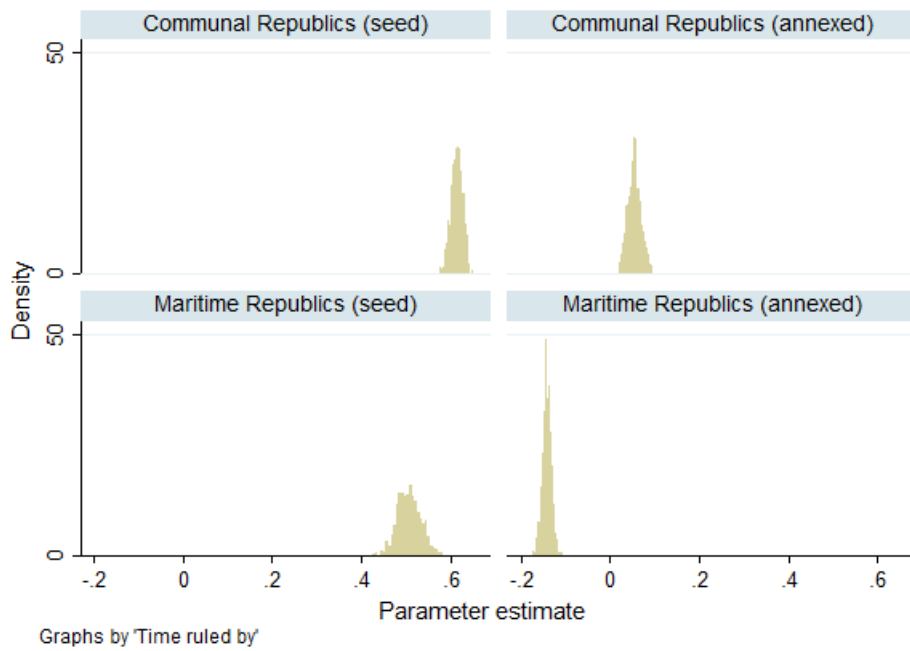
Panel A								
Dependent Variable	TV Tax Compliance - Municipality Level							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	Full				North			
Fixed Effects	Pre-Roman civilizations	Roman regions	Polities in 1000 AD	Modern regions	Pre-Roman civilizations	Roman regions	Polities in 1000 AD	Modern regions
Time Ruled by:								
Communal Republics	0.582* (0.327)	0.606* (0.333)	0.919*** (0.240)	0.661* (0.377)	0.669** (0.303)	0.620** (0.267)	1.089*** (0.277)	0.608** (0.308)
Maritime Republics	-0.908*** (0.217)	-0.802*** (0.192)	-0.194 (0.281)	-0.576** (0.275)	-1.174*** (0.207)	-1.006*** (0.188)	-0.336 (0.262)	-0.709*** (0.217)
Political Instability	-0.008 (0.042)	-0.061* (0.036)	-0.205*** (0.040)	-0.042 (0.030)	-0.035 (0.036)	-0.067* (0.038)	-0.202*** (0.031)	-0.030 (0.037)
Free City	2.078** (0.943)	0.739 (0.787)	1.047 (0.748)	1.809* (1.001)	1.317 (0.952)	0.362 (0.855)	1.089 (0.857)	1.326 (0.990)
Normans	-0.415 (0.879)	1.995*** (0.441)	-7.975*** (0.922)	5.873*** (0.627)	-1.745* (1.025)	2.115 (1.481)	-2.377*** (0.466)	3.890* (2.009)
All controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,055	8,055	8,054	8,055	5,508	5,508	5,507	5,508
R-squared	0.299	0.333	0.285	0.366	0.367	0.393	0.303	0.416

Panel B								
Dependent Variable	TV Tax Compliance - Municipality Level							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	Full				North			
Fixed Effects	Pre-Roman civilizations	Roman regions	Polities in 1000 AD	Modern regions	Pre-Roman civilizations	Roman regions	Polities in 1000 AD	Modern regions
Time Ruled by Republics:								
Seeds Communal	0.653** (0.305)	0.661** (0.303)	1.053*** (0.261)	0.571* (0.326)	0.695** (0.292)	0.667** (0.264)	1.213*** (0.283)	0.534* (0.290)
Annexed Communal	0.537 (0.417)	0.537 (0.479)	0.738** (0.288)	0.801 (0.518)	0.656* (0.371)	0.530 (0.361)	0.902*** (0.339)	0.701* (0.390)
Seed Maritime	0.336 (0.489)	0.363 (0.420)	0.854 (0.526)	0.425 (0.354)	-0.175 (0.445)	-0.068 (0.397)	0.399 (0.452)	0.054 (0.338)
Annexed Maritime	-1.093*** (0.208)	-0.986*** (0.189)	-0.281 (0.287)	-0.802*** (0.243)	-1.309*** (0.211)	-1.140*** (0.194)	-0.400 (0.270)	-0.871*** (0.208)
Political Instability	-0.011 (0.042)	-0.064* (0.035)	-0.211*** (0.038)	-0.045 (0.029)	-0.037 (0.036)	-0.069* (0.037)	-0.204*** (0.030)	-0.032 (0.036)
Free City	2.257** (0.896)	0.907 (0.782)	1.212 (0.746)	1.910* (0.977)	1.490 (0.917)	0.552 (0.853)	1.281 (0.841)	1.404 (0.960)
Normans	-0.402 (0.892)	1.978*** (0.454)	-8.117*** (0.933)	5.935*** (0.643)	-1.581 (1.004)	2.121 (1.445)	-2.396*** (0.488)	4.089** (1.997)
All controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,055	8,055	8,054	8,055	5,508	5,508	5,507	5,508
R-squared	0.302	0.336	0.287	0.369	0.371	0.396	0.305	0.418

The unit of observation is the location of a municipality today. The dependent variable is the level of Tax Compliance measured as the share of households that pay the TV tax in a municipality. “Time Ruled by Communal (Maritime) Republics” in Columns 1 to 8 is a variable counting the number of centuries a municipality has been ruled by a new, small and independent sovereign polity with mainly continental power (power on the sea) in the period 1000-1800. Within Communal and Maritime Republics, the “Seeds” are the locations where Republics firstly emerged while the “Annexed” are the locations subsequently incorporated into Republican areas. All the controls included in specifications in columns 2 and 4 of Table 2 are included. Included fixed effects are at the level of Pre-Roman civilizations (columns 1 and 5), Roman regions (columns 2 and 6), polities existing in year 1000 AD (columns 3 and 7) and today’s Italian regions (columns 4 and 8). Additional information on all variables can be found in the text. OLS estimates. Standard errors reported in parentheses are clustered at the level of the fixed effects. ***, **, * indicate significance at 1-, 5-, and 10-% level, respectively.

Finally, the last specification is replicated estimating 1000 regressions in which each location is randomly assigned to one out of one hundred groups of locations and plot the distribution of the point estimate in Figure A.11, showing robustness of the results.

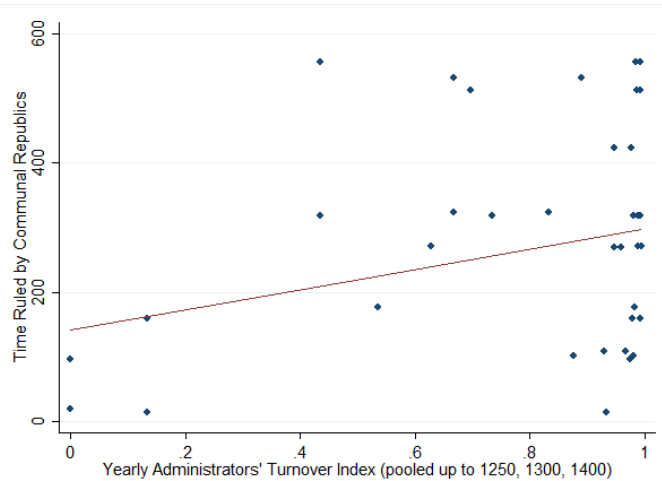
Figure A.11: Randomly-assigned fixed effects, 1000 replications



5.3 The Role of Early Constraints on the Executives.

This section aims at addressing further differences in the institutional setting implemented by the republics. A prerequisite for this exercise is a more specific characterization of the political institutions experienced. As such a measure does not exist, we collect novel data on government administrators (professionalized public officials, *podestà*) in charge of major decisions in the republics concerning the management of public finances, land reclamation, commercial law, public education, etc. These administrative figures were particularly employed in the communal republics, whereas in the maritime republics centralization of the decision process was higher. In particular, the hallmark of (the majority of) communal republics was that public administrator had to be hired on the market in order to ensure the most efficient and accountable management of the polity. Our working hypothesis is that a higher turnover of public administrators should characterize a more inclusive social contract. For each location-republic we measure administrators' turnover as the ratio between the number of years the location has been ruled by the polity considered and the number of different administrators recorded in that period and normalize this measure between the values of 0 and 1. In line with the conceptual framework emphasizing the higher inclusiveness of communal republics and lower inclusiveness of maritime republics, we compute the index in opposite ways for the two types of republics. In communal republics the index approaches the value of 0 if the administrators' turnover is low and the value of 1 if the administrators' turnover is high. In maritime republics the index approaches the value of 1 if the administrators' turnover is low and the value of 0 if the administrators' turnover is high. Finally, for each location we weight the length of each Republican experience for its index and sum them.

Figure A.12: Rulers's Turnover (1000-1400) and Duration of Communal Republics



Note: The figure depicts the relationship between the Normalized Average Administrators' Turnover Index in the periods 1000-1250, 1000-1300 and 1000-1400, and the total time ruled by communal republics.

Table A.11 below reports in Columns (1) and (3) standardized coefficients for the baseline explanatory variables used throughout the paper, while in columns (2) and (4) we report standardized coefficients for the same regressions exploiting the measure of time ruled by republics weighted for the administrators' turnover. By comparing column (1) with column (2) we show that for communal republics the measure of Republican experience considering administrators turnover is qualitatively similar to the baseline measure, while for maritime republics the beta coefficient is much larger. In columns (3) we replicate the analysis in column (6) of Table 2 reporting standardized coefficients for the baseline measures of time ruled as Seed and Annexed of communal and maritime republics to compare them with their counterparts in Column (4) computed accounting for administrators' turnover. Again the qualitative pattern for both Seeds and Annexed of communal republics is confirmed, while the new measure of Time Ruled as Annexed of maritime republics does a better job in explaining tax compliance.

Table A.11: tax compliance and Republican Experience, Administrators' Turnover

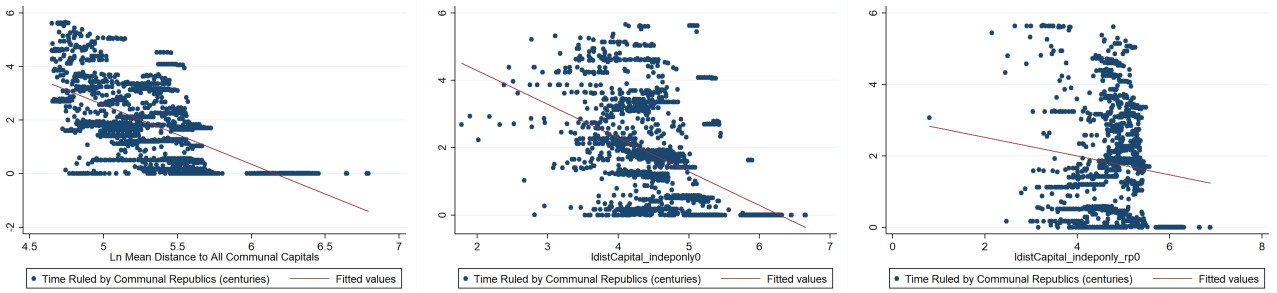
Dep. Var.	Tax Compliance - Municipality Level			
Sample	Within Republics			
	(1)	(2)	(3)	(4)
	Baseline Measure	Administrators' turnover	Baseline Measure	Administrators' Turnover
Time Ruled as:				
Communal	0.073*** (0.025)	0.059*** (0.018)		
Maritime	-0.081*** (0.030)	-0.648*** (0.203)		
Seed Communal			0.071*** (0.020)	0.071*** (0.019)
Annexed Communal			0.017 (0.020)	0.020 (0.022)
Seed Maritime			0.009 (0.018)	-0.010 (0.328)
Annexed Maritime			-0.098*** (0.028)	-0.820*** (0.215)
Free City	0.004 (0.009)	0.004 (0.009)	0.008 (0.008)	0.007 (0.008)
Normans	-0.211** (0.091)	-0.216** (0.086)	-0.217** (0.087)	-0.226*** (0.082)
Political Instability	-0.129*** (0.022)	-0.142*** (0.021)	-0.134*** (0.020)	-0.145*** (0.020)
All Controls	Yes	Yes	Yes	Yes
Observations	4,614	4,614	4,614	4,614
R-squared	0.271	0.272	0.277	0.277

The unit of observation is the location of a municipality today that was ever ruled by a Communal Republic. All reported coefficients are standardized. The dependent variable is the level of Tax Compliance measured as the share of households that pay the TV tax in a municipality. "Time Ruled as Communal (Maritime) Republics Baseline Measure" in Column 1 is a variable counting the number of centuries a municipality has been ruled by a new, small and independent sovereign polity with mainly continental power (power on the sea) in the period 1000-1800. "Time Ruled as Communal (Maritime) Republics Administrator's Turnover" in Column 2 is a variable counting the number of centuries a municipality has been ruled by a new, small and independent sovereign polity with mainly continental power (power on the sea) in the period 1000-1800, in which each Republican experience is weighted for an index measuring the turnover of government administrators. Within Communal and Maritime Republics, the "Seeds" are the locations where Republics firstly emerged while the "Annexed" are the locations subsequently incorporated into Republican areas. "Political Instability" is a variable accounting for the number of changes of rulers in the period 1000-1800. "Geographic" controls include average altitude and ruggedness of the municipality, pre-Colombian Exchange caloric suitability, distance to rivers and to the sea, a dummy variable accounting for municipalities on the coast and a dummy variable accounting for municipalities within 5 Km from the coast. "Historical Population and Routes" include municipality population in 1000 AD and distance to a bishop seat in 1000 AD and distance to Roman Roads. Modern control variables are "Income and population" and "Inequality" which account for 2001 income, population and the Gini indexes for income and land. Additional information on all variables can be found in the text. OLS estimates. Standard errors reported in parentheses are double-clustered along treatment dimensions (municipalities with the same sequence of rulers in the period 1000-1800 and length of Republican experience). ***, **, * indicate significance at 1-, 5-, and 10-% level, respectively.

6 IV: First Stage Scatter Plots

In this section we discuss possible instrumental variables to mitigate concerns of omitted variables. Figure A.13 reports the scatterplots (binscatters) of the relationship between the Time Ruled by Communal republics and the logarithm of the distance to the capital (Panel A - B) and the log of the average distance to all communal capitals (Panel C - D). Figure A.14 reports the scatterplots (binscatters) of the relationship between the Time Ruled by Communal republics and the logarithm of the distance to the capital (Panel A - B) and the log of the average distance to all communal capitals (Panel C - D).

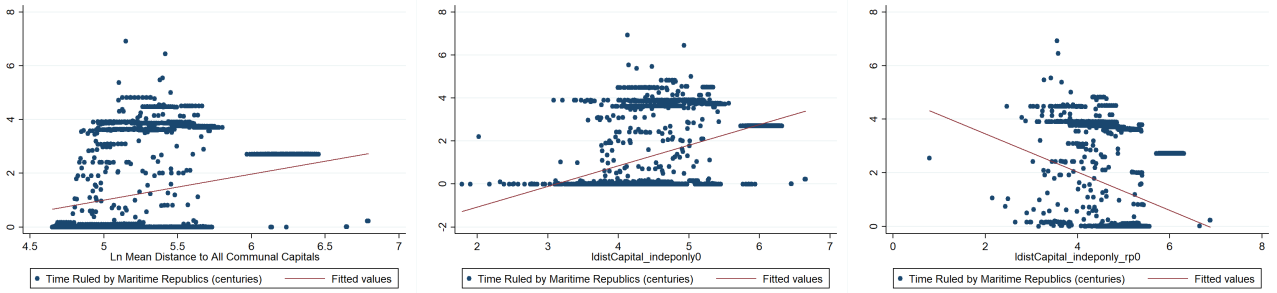
Figure A.13: Time Ruled by Communal Republics and Distances to Centers of Power



(a) Network of Communal Capitals (b) Communal Capital (own/closest) (c) Maritime Capital (own/closest)

Note: The figure depicts the scattered correlation between the number of centuries a municipality has been ruled by a communal republic and the logarithm of the average distance to the network of all communal capitals (Panel a), the own/closest communal capital (Panel b) and the own/closest maritime capital (Panel c).

Figure A.14: Time Ruled by Maritime Republics and Distances to Centers of Power



(a) Network of Communal Capitals (b) Communal Capital (own/closest) (c) Maritime Capital (own/closest)

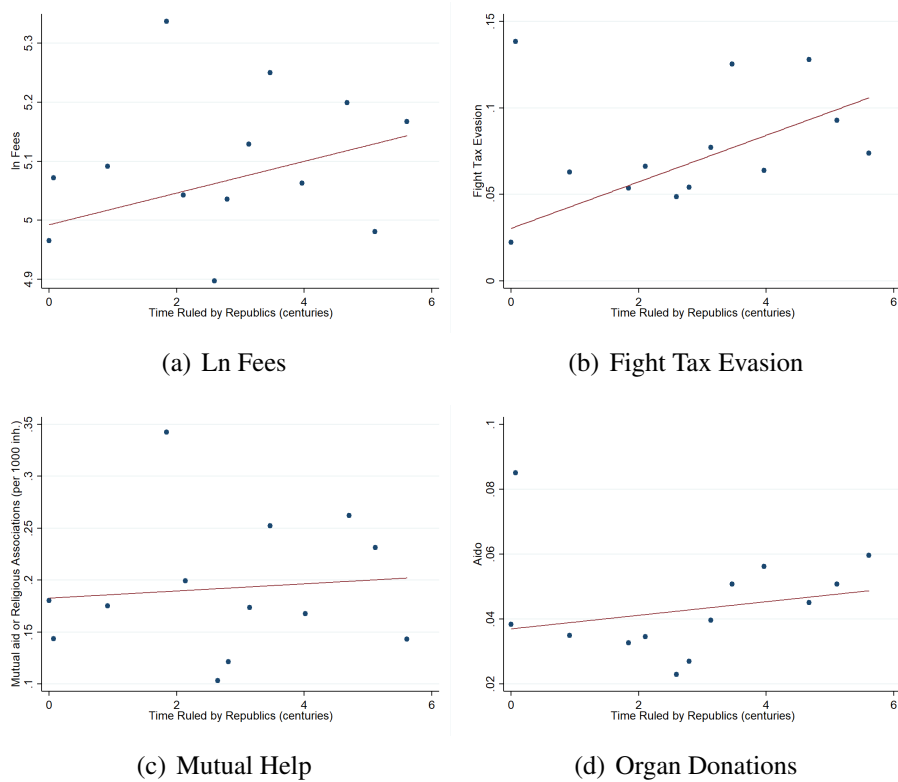
Note: The figure depicts the scattered correlation between the number of centuries a municipality has been ruled by a Maritime republic and the logarithm of the average distance to the network of all communal capitals (Panel a), the own/closest communal capital (Panel b) and the own/closest maritime capital (Panel c).

7 The Social Contract and Population Today: Scatters

7.1 Public Policies, Cooperation and Civic Cultures

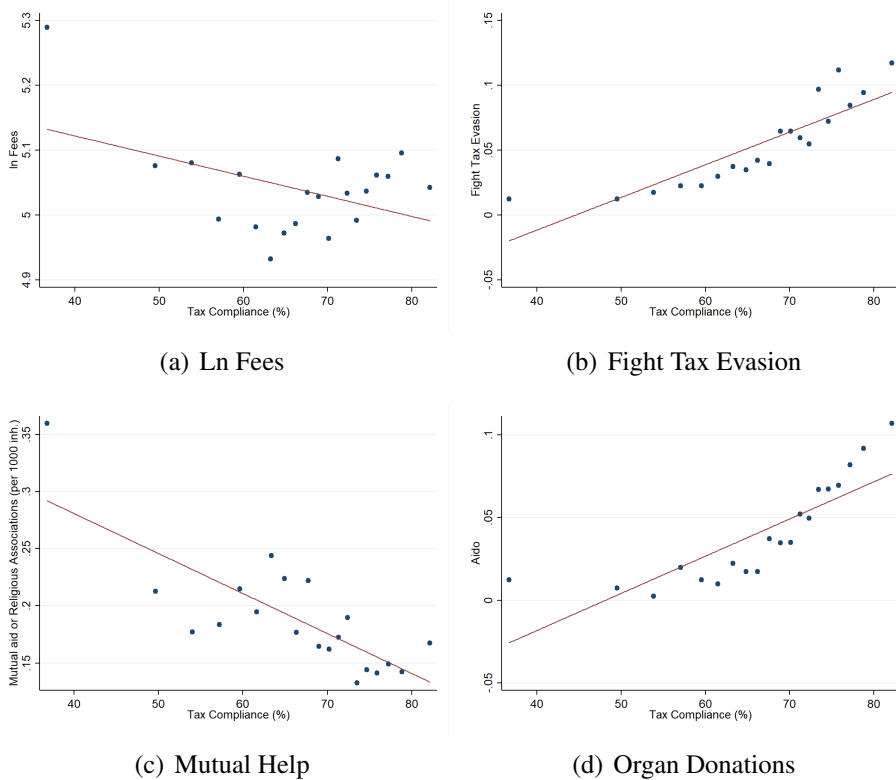
Figures A.15 and A.16 depict the unconditional correlations between the duration of the republican experience and tax compliance in the population, respectively, with the measures of efficacy of fiscal institutions, the presence of mutual aid and religious organization and the organ donation, respectively.

Figure A.15: Time Ruled by Republics, Public Policies and Civic Attitudes



Note: The figure depicts the binned correlation between the number of centuries a municipality has been ruled by a republic and measures of (a) Revenues for citizen’s payment of fees (Ln Fees) (b) public policies against tax evasion (“Fight Tax Evasion”), (c) civic attitudes in terms of the total number of non-profit associations (mutual aid or religious) and (d) presence of associations for organ donation.

Figure A.16: Tax compliance, Public Policies and Civic Attitudes

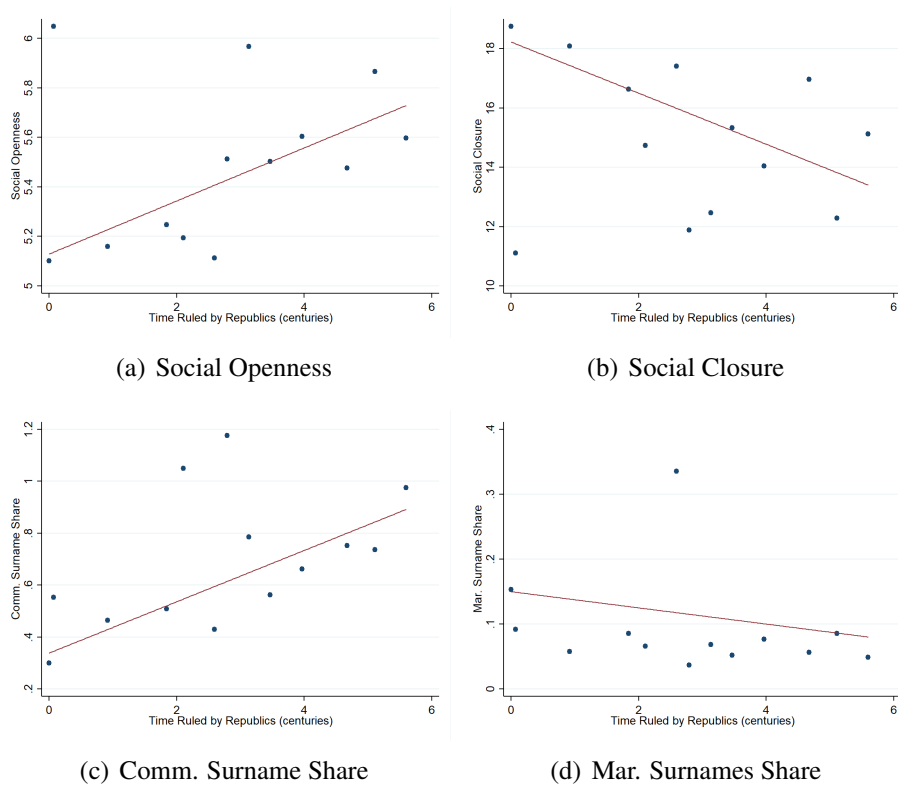


Note: The figure depicts the binned correlation between Fiscal Compliance and measures of (a) Revenues for citizen's payment of fees (Ln Fees) (b) public policies against tax evasion ("Fight Tax Evasion"), (c) civic attitudes in terms of the total number of non-profit associations (mutual aid or religious) and (d) presence of associations for organ donation.

7.2 Population Diversity and Social Openness

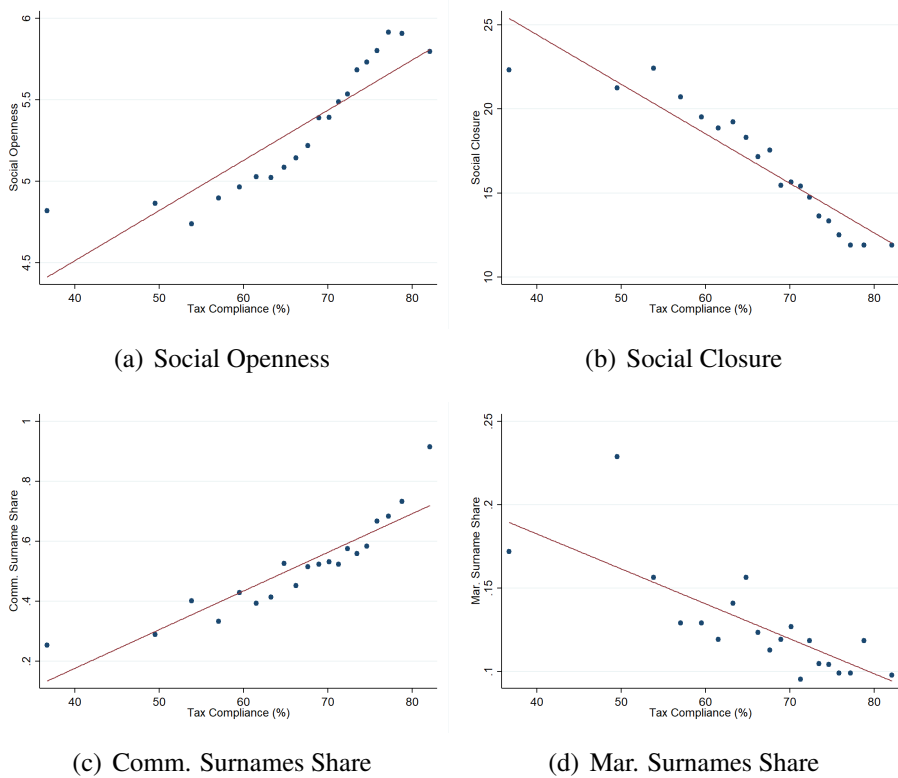
Figures A.17 and A.18 depict the unconditional correlations between the duration of the republican experience and tax compliance in the population, respectively, with the measures of population diversity and social openness.

Figure A.17: Time Ruled by Republics, Population Diversity and Social Openness



Note: The figure depicts the binned correlation between the number of centuries a municipality has been ruled by a republic and measures of (a) Social Openness (entropy of surnames) (b) Social Closure (top 5 names), (c) Communal Surname Share (share of surnames originated from a communal republic) (d) Maritime Surname Share (share of surnames originated from a maritime republic).

Figure A.18: Tax compliance, Population Diversity and Social Openness



Note: The figure depicts the binscattered correlation between the number of centuries a municipality has been ruled by a republic and measures of (a) Social Openness (entropy of surnames) (b) Social Closure (top 5 names), (c) Communal Surname Share (share of surnames originated from a communal republic) (d) Maritime Surname Share (share of surnames originated from a maritime republic).

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