



**UNIVERSITA' DEGLI STUDI DI PADOVA**

**DIPARTIMENTO DI SCIENZE ECONOMICHE ED AZIENDALI  
"M.FANNO"**

**CORSO DI LAUREA MAGISTRALE IN  
ECONOMICS AND FINANCE**

**TESI DI LAUREA**

**"The legacy of history: long-term effects of pre-unity institutions on  
ethics, social capital and education in contemporary Italy"**

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**ANNO ACCADEMICO 2015 – 2016**



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## Introduction

This research finds its roots in two main ideas.

First of all, a large body of literature has shown that institutions are key determinants of economic development, and Acemoglu (2003) defines them as one of the fundamental causes of economic growth. Differences in institutions help understanding different paths of economic development and contribute to determine why certain areas reach economic prosperity and other areas do not.

In second instance, an interesting new-born field of literature has proved that history matters for the economic development of an area. This literature presents the intriguing idea that modern economies are affected by past institutions even after the institutions have ceased to exist (Acemoglu and Robinson, 2008).

Interestingly, past institutions can have long lasting effects on economic achievements of a country through different means.

Institutions that have ceased to exist can affect modern economic development through their impact on current institutions. Several papers identify the origins of heterogeneity of economic achievements in certain parts of the world in colonization, proving that different colonial institutions led to different institutional outcomes in modern times (Acemoglu, 2001; Engermann and Sokoloff, 1997; La Porta et al., 1997).

Other studies evidence how past institutions can also have an effect on culture, values and beliefs (Becker et al., 2016; Bukowski, 2015; Guiso, Sapienza and Zingales, 2013). This research aims at investigating whether evidence in this sense, that is, of an effect of past institutions on culture and values, can be found also in the Italian case. In particular we are focusing on the effects of pre-unity institutions on modern municipalities.

Putnam (1993) indicates the presence of a decisive discontinuity between centre and north Italy and south Italy, in terms of both economic development and institutional performance.

Indeed, in the Seventies all Italian regions were introduced to the same new institutional model, composed by national and local bodies, regions and provinces, but after small time new institutions showed different levels of performance (Almagisti, 2016). Italian local heterogeneity in terms of economic and social achievements constitutes a unique framework for research on regional development.

Some papers try to address the issue from a historic point of view (Putnam, 1993; Guiso, Sapienza and Zingales, 2013; Felice, 2010; Cappelli, 2015), but little as been discussed about lasting effects of pre-unity institutions, in the period comprising 16<sup>th</sup> and 17<sup>th</sup> Centuries, just

until unification. Putnam (1993), for example, argues that Italian heterogeneity and the difference in performance between northern and southern regions derives from different allocations of social capital. The author identifies the origin of different endowments of social capital in historic contingencies characterizing Italy in 11<sup>th</sup> and 12<sup>th</sup> Centuries.

This paper tries to fill the lack of empirical evidence regarding pre-unity institutions, arguing that also institutional framework in pre-unity States may have had lasting effects in different terms.

In particular, the experience of Papal States is peculiar among other pre-unity States, as the mixture of political and spiritual power characterizes it. Like in Becker et al. (2016), Bukowski (2015), Dell (2010), we choose to implement Regression Discontinuity Design that evaluates the effect of Italian pre-unity institutions on a discontinuous jump at the historic borders of pre-unity States. We use a dummy to express former Papal States affiliation and run Regression Discontinuity Design with municipalities lying on the either side of the borders respectively with Duchies of Parma, Modena and Kingdom of Lombardy-Venetia, Kingdom of the Two Sicilies, and Tuscany.

In the first part of the research we investigate whether the experience of inefficient institutions in former Papal States territories has lead people to develop an opposition to clergy and religion that went beyond politics, towards ethical matters. We use the proportion of votes favourable to divorce in 1974 and the proportion of religious marriages over total marriages as measures of the attitude towards religion. We show that former Papal States affiliation is associated with significantly higher proportion of votes favourable to divorce and significantly lower proportion of religious marriages, supporting our hypothesis of a reaction against the imposition of religiosity on lay society.

Secondly, we investigate the effects of pre-unity institutions on social capital. We provide new evidence on the issue of different endowments of social capital among different parts of Italy, as discussed by Putnam (1993), Almagisti (2016), Boix and Posner (1996), Felice, (2007, 2010, 2011), Guiso, Sapienza and Zingales (2004).

We make experiments on both social capital as political participation and civic engagement. We use as measures of political participation the voter turnout in 1974 and 2011 referendum, while the presence of no profit organizations and the number of volunteers as measures of civic engagement. There is evidence of significantly different endowments of social capital among municipalities lying on different sides of the borders. In particular former Papal States affiliation is associated with higher vote participation with respect to northern pre-unity states and Kingdom of the two Sicilies. As regards no profit organizations, used as measures of civic engagement, former Papal States affiliation is associated with significantly lower civic



engagement than Kingdom of Lombardy-Venetia and Duchies, but significantly higher civic engagement with respect to Kingdom of the two Sicilies.

Finally, we investigate educational attainment by testing whether former Papal States affiliation is associated with different educational qualification rates. This latter experiment is inspired by Bukowski's (2015) experiment on education regarding historical Partitions of Poland. Evidence from this last experiment shows significant differences in educational attainment among different parts of Italy, but as we will see, the interpretation of results is not straightforward.

Baseline models are integrated by robustness checks as within region models and the introduction of a multiple Regression Discontinuity Design model that considers two Papal States borders jointly.

The rest of the work is organised as follows: first, a review of the literature about the effects of history on economic development and of its three main fields (geography, culture, institutions) is performed; secondly, I provide historical background of pre-unity Italy; third, methodology is explained; finally, results are presented for every outcome separately.

# 1. Theoretical Background

## 1.1 Literature: history and growth, a general picture

A growing body of literature points towards the importance of history for economic development. Empirical evidence produced by these studies shows that historical contingencies or events can have long lasting effects on many outcomes of interest.

This study contributes to the field of literature that shows how history can have long-lasting effects through its impact on current formal institutions or on values, beliefs and cultural norms.

The origins of this line of literature can be traced to three lines of research that began around one decade ago, all of the three investigating colonial rule. Engerman and Sokoloff (1997,2002) examine the importance of factor endowments together with colonial rule in order to understand the subsequent economic development of American colonies. Acemoglu (2001) tries to better evidence the origins of current institutions and their importance for economic development. Finally La Porta et al. (1997, 1998) focused on legal institutions implemented by different colonizers and their long-term consequences.

Generally speaking, history can affect development through different channels, as it is embedded in factors which are considered fundamental causes of economic growth and prosperity: institutions, geography and culture (Acemoglu, 2007).

Fundamental causes of growth are different from proximate causes like physical and human capital, technology, and markets. These factors are instead associated to questions like why poor places in the world don't have better markets, better human capital, more investments, and better machinery and technology (Acemoglu, 2003).

In this first part of the work I provide a summary of this body of empirical research studying the effects of history on economic development, for each of the three fundamental causes of prosperity.

### 1.1.1 Geography

Geography is crucial in understanding the development of a Country, as it naturally determines the areas that are more favourable than others to economic activity.

Geography is, together with institutions, the main candidate to explain the fundamental causes of differences in prosperity between countries (Acemoglu, 2003). According to the *institutions hypothesis* some societies have good institutions that encourage investment in machinery, human capital, and better technology, achieving economic prosperity. On the other hand, according to the *geography hypothesis*, climate and ecology of a society shape both its technology and the incentives of its inhabitants, and emphasizes forces of nature as a primary factor in the poverty of nations. Resource constraints, physical geography, geopolitics have necessarily to be taken into consideration to explain the development of an area.

Literature following the *geography hypothesis* shows that levels of per capita income, economic growth, and other economic and demographic dimensions are strongly correlated with geographical and ecological variables such as climate zone, disease ecology, and distance from the coast (Sachs, 2003). Geography effect may work through direct channels such as effects on productivity, population growth, trade or investment, or indirect channels, such as effects on the choice of political and economic institutions.

The relationship between geography and institutions is still being investigated: geographic factors might be associated with institutions and economic performance either because they directly shape the sorts of institutions that evolve and thus indirectly affect performance or because they have a direct effect on economic performance, which in turn affects the quality of institutions (Engerman and Sokolof, 2002).

In an environment in which capital and people can move around with relative ease, the disadvantages of adverse geography, such as physical isolation, endemic disease, or other local problems, are magnified (Sachs, 2003), and adverse conditions can prevent the attractiveness for foreign capital inflows. Disease for example dramatically lowers the returns on foreign investment and raises transaction costs for international trade, migration and tourism. Sachs (2003) for example focuses on malaria transmission, which is also strongly related to climate conditions. The author provides an instrumental variable for malaria risk, computed as an ecologically-based variable which is built upon climatological and vector conditions on a country-by-country basis, and is therefore exogenous to public health interventions and economic conditions. By using this instrument he is able to show that

regions where there is a high risk of malaria transmission have lower per capita income than non-malarious regions, after controlling for the quality of government institutions.

Other scholars highlight how different paths in economic performance could be rooted in the indirect effects that geography and factor endowments may have on the way institutions evolve. These authors argue that the roots of economic disparities and inequalities lay in differences in the initial factor endowments.

Engerman and Sokoloff (1997, 2002) study American economies and claim that the factor endowments at the time of colonization were reflected in colonizer policies and had enduring impacts on the structure of colonial economies and ultimately on their long-term paths of institutional and economic development. While all colonies began with an abundance of land and other resources, other aspects of their factor endowments varied, contributing to substantial differences among them in the distribution of landholdings, wealth, and political power. Some, like the Caribbean, Brazil, or the southern colonies on the North American mainland, had climates and soil conditions well suited for growing crops, like sugar, coffee, rice, tobacco and cotton that were of high value on the market and more efficiently produced on large plantations with slave labour. An economy based on slavery served to generate a vastly unequal distribution of wealth and political power. In contrast, small family farms were the rule in the northern colonies of the North American mainland, where climatic conditions favoured a regime of mixed farming centred on grains and livestock, which exhibited no economies of scale in production. The circumstances in these regions encouraged the evolution of more equal distributions of wealth, more democratic political institutions and the pursuit of more growth-oriented policies.

The study is primarily qualitative in nature, and rather than identifying a direct effect of geography, underlines how crucial is the joint action of geography, natural endowments and institutions.

However findings from comparative studies of suffrage, public land, schooling, and other institutions in the perhaps limited context of the Americas are consistent with the notion that those societies that began with more extreme inequality or heterogeneity in the population were more likely to develop structures that advantaged members of elite classes by providing them with relatively more political influence or access to economic opportunities (Engerman and Sokoloff, 2002).

The clear implication is that institutions should not always be presumed to be exogenous, but economists need to learn more about where they come from to understand their relation to economic development.

### *1.1.2 Institutions*

Historical circumstances and events can shape the state and evolution of formal institutions that survive and affect economic interactions and outcomes today (North, 1990).

Institutions are the humanly devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions and codes of conduct), and formal rules (constitutions, laws, property rights). Together with the standard constraints of economics they define the choice set and therefore determine transaction and production costs and hence the profitability and feasibility of engaging in economic activity (North, 1991). A further distinction can be made between economic institutions, such as property rights and entry barriers, shaping economic incentives, and political institutions, such as form of government, shaping political incentives and the distribution of political power (Acemoglu, 2007).

Institutions, domestic institutions in particular, may have a permanent effect on the subsequent development of an area. Countries with better institutions, more secure property rights and less distortionary policies, will invest more in physical and human capital and will use these factors more efficiently to achieve a greater level of income (North and Thomas, 1973, Jones, 1981, North, 1981). But at the same time, there are no compelling reasons to think that societies will naturally gravitate toward good institutions. Institutions not only affect the economic prospects of nations, but also are central to the distribution of income among individuals and groups in society. This perspective implies that a potential change from dysfunctional and bad institutions toward better ones that will increase the size of the social pie may nonetheless be blocked when such a change significantly reduces the slice that powerful groups receive from the pie and when they cannot be credibly compensated for this loss (Acemoglu, 2003).

It is difficult to isolate exogenous sources of variation in institutions to estimate their effect on performance. Scholars were able to find one in European colonization of the globe, which started in the sixteenth century. These papers focus on the lasting impact that colonization had on the development paths of the colonies through institutions.

In their famous paper, Acemoglu et al. (2001) estimate the impact of institutions on economic performance using mortality rates expected by the first European settlers in the colonies as a source of exogenous variation in institutions, using a two stage least squares model.

The authors identify two sets of institutions, characterized by different colonization policies: “extractive states”, exemplified by the Belgian colonization of Congo, which did not

introduce much protection for private property, did not provide checks and balances against government expropriation, and were detrimental to investment and economic progress; on the other side, the “Neo-Europes”, where colonizers tried to replicate European institutions with emphasis on private property and checks against government power which enforced the rule of law and encouraged investment (Acemoglu et al., 2001). The colonization strategy was influenced by the feasibility of settlements, and extractive states were settled in areas with unfavourable environmental conditions, which can be measured through mortality rates. There is a high correlation between mortality rates faced by soldiers, bishops, and sailors in the colonies and European settlements; between European settlements and early measures of institutions; and between early institutions and institutions today. The authors estimate large effects of institutions on income per capita using this source of variation, a relationship not driven by outliers and robust to controls for latitude, climate, current disease environment, religion, natural resources, soil quality, ethno-linguistic fragmentation, and current racial composition.

The elegance of the paper lies in its ability to develop a clear and convincing historical narrative with supporting empirical evidence and to show how an historic event can affect past institutions, which through their persistence have an influence on income levels today (Nunn, 2009).

Further evidence comes from Dell (2010), studying the long lasting effects of mining labour system in South America, and Lee and Schultz (2012) studying the effects of English and French colonization of Cameroon.

Not only institutions can affect future economic development, as shown in Acemoglu (2001), Dell (2010), Lee and Schultz (2012), but also they can even persist over time, even through centuries, through different channels. Cultural evolution in this sense may also be closely interrelated to institutional development (Greif, 2006; Greif and Tabellini, 2010).

Becker (2016) provides an example of this relationship, proving that even if whole empires themselves perish, they can leave a lasting legacy in cultural norms and the ensuing functioning of state institutions several generations after their formal institutions have ceased to exist (Becker et al., 2016).

In particular, he finds that the Habsburg empire, characterized by a relatively decentralized, honest, and widely accepted state bureaucracy, still affects trust and corruption in local public services in Central and Eastern Europe today, even if it went down in 1918. Results show that individuals living in a community that used to be affiliated with the Habsburg Empire have greater trust in institutions and are less likely to use corruption when interacting with public local administration. These results are important for the understanding of the origins and

maintenance of collective action in general, because trust in the key institutions of the state and their proper functioning is crucial in facilitating collective action (Ostrom, 1998 as).

As regards channels through which the Habsburg affiliation persists, in the models the authors use additional control variables at individual and household level, which are potentially affected by past Habsburg affiliation. Habsburg Empire might have affected levels of income and wealth as well as education, urbanization and fertility, so these variables might be channels through which the Habsburg effect comes about. However, results show that the effect of having been part of Habsburg Empire is hardly affected by these controls. The authors conclude that in the case of the Habsburg Empire, history matters for current attitudes and behaviour not because formal institutions persisted, but because individual cultural norms with regard to local public services survived.

Bukowski (2015) provides further evidence on the persistence of institutions, in particular in education. The author shows that the legacy in terms of attitude towards education systems can persist over time through generational transmission, providing evidence coming from the Partitions of Poland (1815-1918).

The methodology used in Becker et al., (2016), Bukowski (2015), Dell (2010), Lee and Schultz (2012), will be discussed later, regarding Regression Discontinuity Design.

### 1.1.3 Culture

The third fundamental cause of growth is found in culture.

Culture can be defined as a relatively fixed characteristic of a group or nation affecting beliefs, preferences and norms of behaviour. Old and new literature studies culture, and how it can affect human behaviour and economic activity. In particular religion and ethics is a fundamental part of the cultural background of a territory or a population, and is the main focus for the purpose of this study. A broad context of papers studies the association between religion and economic outcomes.

The idea that culture and norms of behaviour may be a channel through which history can affect long-term economic development is not new. In the first years of the twentieth century Max Weber (1930), in one of the most renowned and controversial works of modern social science, "*The protestant ethic and the spirit of capitalism*", attributed the higher economic prosperity of Protestant regions to a Protestant work ethic made of individualism and appreciation of worldly achievements.

Becker and Woessman (2009) respond to the sociological interpretations that Protestant ethic induced its followers to work harder with an alternative economic theory based on standard human capital models. The authors argue that Protestantism affected economic activity in Prussia by increasing education through the precept of personal reading of the Bible. In fact, Martin Luther explicitly favoured universal schooling in order to enable all Christians to read the Bible by themselves, and Protestant regions benefited of the higher prevalence of public schools. The ensuing literacy rate among Protestants was then favourable to economic activity.

In order to test this hypothesis, the authors first estimate the effect of Protestantism on literacy rates using distance from Wittenberg, the epicentre of reformation, as an instrument for Protestantism. The authors obtain significant results, proving that Protestantism indeed led to higher literacy rates across Prussian countries in the nineteenth century. Secondly, economic outcomes are considered. There is a positive casual effect between share of Protestants and economic outcomes, but this effect disappears when controlling for the share of literates. Finally, a three stage least squares model is developed, using jointly relationship between distance from Wittenberg and share of Protestants, Protestantism and share of literates, literacy and economic progressiveness.

The authors conclude that Weber was right in the observation that Protestant regions were economically more affluent than Catholic ones, across countries in 1900 and within Prussia in



the second half of nineteenth century (Becker, Woessmann 2009), but he was likely wrong in identifying the channel through which this pattern arises.

Nunziata and Rocco (2015) offer a new perspective to answer the question whether Protestantism is more favourable than Catholicism to economic activity.

A major issue in investigating the economic implications of religious ethics is that self-identification does not necessarily imply internalization of its ethical content, so the indications derived from a simple comparison of individuals' reported affiliations might be misleading (Nunziata and Rocco, 2015).

In order to fully understand the economic implications of a certain religious affiliation the authors choose to compare groups of minorities of Protestants and Catholics. Minority groups are likely to have a stronger adhesion to religious norms and ethics for a number of reasons: religion, along with language, history and culture, is an important element of people's identity, which may explain the willingness of minorities to defend their religious identities against the influence of the majority (Bisin and Verdier, 2000, 2001; Bisin, Topa and Verdier, 2004); secondly, a minority religion's clergy works harder to preserve its followers than does the clergy of a majority religion (Stark, Finke, and Iannaccone, 1995; Finke and Stark, 1998); finally, given that following a minority religion implies continuous pressure from surrounding dominant religions, membership can be justified only if the attachment to the faith is particularly strong.

Switzerland is an optimal set for the experiment, as it is an homogenous territory as regards economic conditions, and it hosts a variety of combinations of Protestant and Catholic minorities and majorities which are historically determined and with an almost perfect persistence over time. Using individual level data from Swiss census between 1970 and 2000, the authors are able to exploit the strong adhesion of religious minorities to their confessions' ethical principles to find that Protestantism is associated with a significantly higher propensity for entrepreneurship. Findings indicate that adherence to Protestant ethical principles increases the probability that an individual will be an entrepreneur by somewhat between 1.5 and 3.6 percentage points with respect to Catholics, after controlling for many individual-level characteristics.

## 1.2 Regression Discontinuity Design

Regression discontinuity design (RDD) was introduced in the Sixties as a way of estimating treatment effects in a non experimental setting where treatment is determined by whether an observed “assignment” variable (“forcing” or “running” variable) exceeds a known cut-off point. Since the late Nineties, a growing number of studies have relied on RD designs to estimate program effects in a wide variety of economic contexts.

The main idea behind the setting is that observations just below the cut-off are good comparisons to those just above the cut-off. This comes of course with two relevant hypotheses. First, the assignment variable cannot be manipulated; if this is true, RD captures randomized variation which is not assumed but comes directly from the inability to precisely control the assignment variable near the cut-off point (Lee and Lemieux, 2010).

Second, randomization around the cut-off implies that all other covariates should have the same distribution just above and below the cut-off. In other words, an RD design is appropriate if it is plausible that all other factors are continuously related to the assignment variable, because if other variables jump at the cut-off, the estimated effect will be potentially biased. The continuity assumption is necessary and cannot be tested, just as the identification assumption for the instrumental variable strategy.

RD designs thus locally approximate randomized experiments. With respect to RD designs, other techniques like instrumental variable or difference-in-difference need to make further assumptions about both exogeneity of the treatment and relationship of other covariates with the treatment and outcome variables (Lee and Lemieux, 2010).

In any RD design the estimation relies on assumptions about the relationship between the outcome and assignment variable near the cutoff point. Recently, researchers have begun to relax functional form assumption by using nonparametric or semiparametric approaches (Papay et al., 2011). A nonparametric procedure is essentially a local linear regression using data points close to the cut-off, after having determined an optimal bandwidth around the cutoff. If it is true that an incorrect parametric functional form in a parametric procedure will lead to biased estimators, a nonparametric procedure will also lead to bias unless the underlying function is exactly linear in the area being examined. There may be some functions where a low-order polynomial is a very good approximation and produces little or no bias, and therefore it is efficient to use all data points, both close and far away from the cutoff, in a parametric procedure. In other situations, a polynomial may be a bad approximation, and smaller biases will occur with a local linear regression. In practice,

parametric and nonparametric approaches lead to the computation of the same statistic. (Lee and Lemieux, 2010). As it is impossible to know which procedure leads to the smallest bias, Lee and Lemieux (2010) suggest to view the two strategies as complements, rather than substitutes.

RDD strategies have been further developed in more complicated cases. RDD can be used to describe cases in which multiple variables assign individuals to a single treatment. In other cases, exogenously imposed cut-offs on several assignment variables define a set of different treatments, that is, the case of multiple assignment variables simultaneously (Papay et al., 2011).

In this study we consider RDD in a geographical setting, with forcing variable being the distance from a certain boundary between nations, regions, areas. Such boundaries form a discontinuity in space and they make a division between treated and control areas.

Here follows some examples of Regression Discontinuity in literature, which inspired this research.

Dell (2010) examines long-run effects of the *mita*, an extensive forced mining labour system in effect in Peru and Bolivia between 1573 and 1812. The contribution to the *mita* was not homogenous: on one side of the subjected region all communities had to send one seventh of their adult male population to work in the Potosí silver and Huancavelica mercury mines, while on the other side all communities were exempt. While historical documents reveal that distance to the mines and elevation were two criteria used to assign the *mita*, in order to ensure that all other factors vary smoothly at the boundary, Dell focuses exclusively on the portion of the interested region that transects the Andean range in Southern Peru. Furthermore, given data availability she is able to limit the sample to districts within 50 km of the *mita* boundary. In the model, different specifications are used: a multi-dimensional specification involving a cubic polynomial in longitude and latitude; a single-dimensional model involving a cubic polynomial in distance to Potosí; a single-dimensional model involving a cubic polynomial in distance to *mita* boundary. Results show that a long-run *mita* effect lowers household consumption in 2001 by around 25%, with the coefficient being similar in all specifications and significant for one-dimensional RD estimates. Stunting in children increases by 6-7%.

Bukowski (2015) studies the Partitions of Poland (1815-1918) among Austria, Prussia and Russia as a laboratory to investigate how history matters for student performance, by exploiting the fact that the borders were not drawn to reflect any pre-existing socio-economic, historical, geographic or ethnic division.

While the Austrian educational system, and similarly the Prussian one, was financed from local taxes, and had compulsory elementary and optional secondary education, the Russian educational system in turn practically did not exist in the 19th century (Snyder, 2006), as it had no compulsory elementary schooling, no coherent organization of a school network and no political will for expanding education (Bukowski, 2015). The authors argue that differential legacy of Austria and Prussia originates from the different interaction between educational institutions and Polish identity, which is historically characterized by positive social norms towards educational systems.

A geographical two-dimensional regression discontinuity design in latitude and longitude is implemented, using a linear, quadratic, cubic and quartile polynomials. A dummy variable takes value 1 for former Russian areas and 0 for either Austrian or Prussian areas.

Results confirm the hypothesis that partitions have persisted through their impact on social norms toward local schools: test scores on the Austrian side of the former Austrian-Russian border are shown to be 0,6 standard deviation higher.

Lee and Schultz (2012) study Cameroon, which includes regions colonized both by Britain and France, and exploit the artificial former colonial boundary as a discontinuity within a national demographic survey, the 2004 Demographic and Health Survey of Cameroon. Using both a local regression discontinuity design performed on bands of varying widths around the border and a comparison of neighbouring villages near the boundary, the authors are able to show that rural areas on the British side of discontinuity have higher levels of wealth and local public provision of piped water.

Becker et al. (2016) provides evidence of persistence of institutions by investigating the experience of the Habsburg Empire. In particular, a fair, well-functioning and respected bureaucracy characterized the Habsburg Empire.

The authors are able to prove that first, because of the historical experience of a relatively decentralized, honest and widely accepted state bureaucracy, Habsburg positively affected people's trust in local public services. Second, this enduring effect on people's values reduces corruption in interactions with the local administration, despite the fact that formal institutions, laws, and legal regulations do not differ anymore between former Habsburg and non-Habsburg areas.

Microdata used is taken from Life in Transition Survey (LiTS) collected by the European Bank for Reconstruction and Development in 29 countries; the analysis is restricted to countries that are either successor states of the Habsburg Empire or neighbouring countries thereof, for a total amount of 17 countries. The first specification of the model compares individuals living in communities located within 200 km of each other on either side of the

long-gone Habsburg border, using country-fixed effects to restrict the analysis to variation within modern day countries. Indeed, this identification exploits the fact that the Habsburg border cuts through five countries today (Montenegro, Poland, Romania, Serbia and Ukraine). A large set of individual-level factors is controlled for.

In the second specification geographical RDD is implemented, using both different specifications in polynomials in distance to border and two-dimensional specifications in latitude-longitude space. Different sizes of bandwidth are used too, from 25 to 200 km. Overall, the authors find that respondents in a current household survey who live on former Habsburg territory have higher levels of trust in courts and police. They are also less likely to pay bribes for these local public services, demonstrating that the institutional heritage influences not only preferences and unilateral decisions but also bilateral bargaining situations in citizen–state interactions.

## 2. Historical background

In 19<sup>th</sup> Century, before unification in 1861, Italy was divided in: Kingdom of Sardinia, Kingdom of Lombardy-Venetia, Duchies of Parma and Piacenza, Duchy of Modena, Grand Duchy of Tuscany, Kingdom of Naples, Papal States, and territories subject to Austrian control.

Such divisions were the consequence of the Congress of Vienna of 1815, when ambassadors from all over Europe met in order to determine the new political framework after Napoleonic France's defeat and surrender. Congress' resolutions were inspired by the principles of legitimacy and equilibrium, that is, the replacement on the throne of dynasties governing before French Revolution and Napoleonic wars in order to re-equilibrate the relations among nations and ensure continental safety. No room was left for national inspirations arisen during Napoleonic age, while the first aim of the Congress was the freezing of conflicts among European nations in the name of a "legitimate" order accepted by all States.

In Italy, however, principle of legitimacy was not always respected, as Venice and Genova Republics were cancelled. Italy was subject to Austrian influence, either directly or indirectly. Austrian empire gained control of new-formed Kingdom of Lombardy-Venetia, comprising Lombardy and former Republic of Venice, while Habsburg Lorraine dynasty was restored to control of Tuscany and Modena. Duchies of Parma and Piacenza were given to Maria Luisa, Austrian emperor's daughter and Napoleon's wife, while Bourbon dynasty, of Spanish origins, was restored to control of the Kingdom of Naples with Ferdinand I. Bourbon dynasty was an important instrument of the Austrian hegemony on the peninsula, as it was involved in defensive arrangements and a series of other alliances with Vienna. The only exception to Austrian influence was Kingdom of Sardinia, reined by Savoy dynasty.

## 2.1 Papal States

The Papal States are territories of central Italy over which the Pope had sovereignty starting officially from 756 and lasting until 1870. The extent of papal control varied over the centuries and so did the geographical boundaries of the States. Modern regions of Lazio, Umbria, Marche and part of Emilia-Romagna were included under supremacy of the Pope.

The Pope had complete and absolute power. His supremacy was however different from other absolute monarchies of 17<sup>th</sup> century, as it comprised both spiritual and temporal power, and it was elective rather than hereditary.

In the 18<sup>th</sup> Century, Papal States were the most economically and politically backward territories in Italy, as land were in the hands of rich large owners in a structure of feudal kind. Where land was marshy, malaria was a social plague, while brigandage and beggary were other social issues.

Napoleonic invasion deranged Italian political equilibrium, and the territories of Papal States experienced two periods of French domination, the Roman Republic (1798-1801) and the period of annexation to the French Empire (1805-1814). In 1814 after the Congress of Vienna Pope Pio VII came out of exile and went back to Rome, and a specific Commission was assigned the task to cancel all French administration acts and to restore the previous regime of administration. Napoleonic codes were abrogated, and expropriated church properties were returned. The following years were characterized by strong reactionary and conservative policies, while the population was growing revolutionary sentiment and organizing revolutionary movements (Zorzi et al., 2009).

The brief experience of the Roman Republic in 1849 was crushed in 1850 by the French army. After unification of the Kingdom of Italy in 1961 Lazio remained under Papal control until annexation in 1870.

The coexistence of spiritual and temporal power in what characterizes Papal States experience. Administrative structures in Papal States were very complex and often it is hard to distinguish between spiritual and worldly competences (Soresina, 2015).

Generally speaking, Roman Curia is, still nowadays, the central administrative body of the Church, and is organized in different bodies, such as Secretariats, Congregations, Tribunals and Offices. In particular, in Papal States Congregations were administrative structures similar to ministers, and they were entirely composed by religious representatives who often had not the necessary qualification to comply with their tasks. The Pope had supreme authority and chose prefects and other administrative heads of Congregations, and many times

they were his relatives (Zorzi et al., 2009). The complexity of bureaucracy and the mixture of religious and political supremacy lead to an inefficient administration, characterized by privileges, corruption and limitation of freedom.

Here is how French magistrate, philosopher and politician Charles de Brosses describes Rome in one of his letters to the family, written in Italy between 1739 and 1740:

*“The form of government is the worst one can imagine. Nicolò Machiavelli and Tommaso Moro conceived a utopia; here reality is the exact opposite. Imagine what may come from a population that is composed for one third by priests, one third by people who almost don't work and for the last third, by people who don't work at all; a state devoid of agriculture, commerce, industries, but that is located in the middle of fertile countryside and along a navigable river; a state whose sovereign, always old, whose government lasts shortly, often not able to act individually, is surrounded by siblings intent on their own interests as much as they can; and a state where after every changing new thieves come in place of those who are already satisfied; a state that ensure impunity to whoever might disrupt social order, as long as he is a powerful person's friend, or he is on the border of a sacred asylum.”*



## 2.2 Grand Duchy of Tuscany

The Grand Duchy of Tuscany was ruled by the Medici, family of merchants and patrons of artists and scientists, from 16<sup>th</sup> Century until 1737. Merchant traditions, the enterprise of its economic actors, the vastness of its international relations and the cultural flurry made Tuscany the cradle of European Renaissance. From the beginning, Medici's regime is built upon previous republican institutions without the exclusion of aristocracy, but instead integrating existing aristocracy with new formed bureaucratic class. The stability of Tuscany's institutions, from Medici until the end of the Duchy, is funded on a compromise between aristocratic families and new emerging groups that are inserted in public professions (Carpanetto, Ricuperati, 1994).

As regards religion, although Catholicism was the state religion, Medici supported tolerance towards other religions and in cities like Florence and Livorno non-Catholic communities were present, such as Jewish, Protestant, Muslim.

When the last male Medici died the House of Habsburg Lorraine succeeded with Francis Stephen of Lorraine, husband of Maria Theresa. The Habsburg dynasty proved to be enlightened and reformer, and so did Leopold, son of Maria Theresa, who implemented leading economic, financial and judicial reforms. Furthermore, he proposed brave reforms inspired by jurisdictional principles in his ecclesiastical policy, such as the cancellation of the right of asylum and cancellation of religious orders of no public interest, limitation of ecclesiastical properties, state control of the formation of the clergy, suppression of the Inquisition. He even tried to impose Tuscan as language of religious public acts and condemn the cult of relics, but had to abandon its purposes because of the opposition of the population. The importance of a distinction between spiritual and secular power was a driver of Leopold's policies. Here's what Scipione de' Ricci, Jansenist bishop and Leopold counsellor, writes to the Grand Duchy in 1786:

*"It will be established as a principle that in all schools of the Grand Duchy catholic doctrine will be taught on the ground of distinction of the two powers, as Jesus Christ did not give to the Church pure spiritual power, and temporal power being given by God to sovereigns independently from it."*

Leopold's brave choices were however vanished by the conservative and reactionary policies of his successor, Ferdinand III.

In 1799 the French troops conquered Tuscany, and Napoleon constituted the Republic of Etruria (1799-1807). Since 1807 until the fall of Napoleon, Tuscany was part of the French Empire.

After the Congress of Vienna, the Habsburg Lorraine dynasty was restored to control with Ferdinand III, brother of the Austrian emperor. Restored Tuscany was not characterized by persecutions and purges, and the House of Habsburg Lorraine maintained its reformer attitude. Ferdinand III abrogated Napoleonic codes, but was careful in perfecting previous codes by Leopold, and he further reformed commerce and fiscal system. Overall, pre-unity Tuscany is characterized by a relative institutional continuity. Moreover, in 1818 the government expresses the principle according to which the administration of charity entities and the protection of public health is a prerogative of the State. Grand Duchy of Tuscany is therefore the first state to consider the Church as a subsidiary in those areas (Almagisti, 2016).

As a centre for the European cultural development during the Renaissance, the Grand Duchy was able to maintain and develop its artistic and intellectual heritage in the following centuries. With respect to other states, less tight press and culture control characterized the Habsburg domain and literary and cultural clubs and academia proliferated. Tuscany was home of a wide class of intellectuals, artists and scientists, and the University of Pisa a centre of Italian Enlightenment.

Tuscany appears peculiar with respect to other pre-unity states. I expect that not only the attitude of the sovereigns that succeeded on the throne towards ecclesiastical policies, but also the vivid cultural environment in which Renaissance and Enlightenment could find full expression have made Tuscan population observant of the principle of secularity of the state. We don't expect to find either positive or significant differences in this sense with Papal States municipalities in our regressions.

### 2.3 Kingdom of the Two Sicilies

The Kingdom of Naples comprehended the southern portion of Italy since Middle Ages until 1860. It was often united politically with Sicily.

In XVI century the Spanish conquered Sicily and Naples, which were held by viceroys for two centuries. As a result of Spanish Succession the Kingdom of Naples came under the influence of the Austrian Habsburgs, but in 1734 Spanish gained again control of Sicily and Naples, and were governed by the Bourbons as a separate kingdom. During Napoleonic era, southern part of Italy had a brief republican experience with the Parthenopean Republic (1799-1801) and became Kingdom of Naples under French control since 1806. In the meanwhile Sicily was still under control of the Bourbons. After the Congress of Vienna, in 1816 Naples and Sicily were formally united in the Kingdom of the Two Sicilies in control of the Bourbons.

As in other pre-unity States, the main economic activity in the Kingdom was agriculture. However a middle bourgeois class developed only in XVIII century after the elimination of feudalism. Before the republican experience in 1799, almost 70% of the population lived in feudal territories and was subject to a feudal jurisdiction (Meriggi, 2002). Local large landowners were in complete control of the territories, and the ancient aristocracy had all kind of privileges. The large majority of the population was composed by a mass of peasants tied to the land by servile constraints that originated in the Middle Ages (Botta, 2010). The dismantling of feudalism started under French domination with Joseph Bonaparte, Napoleon's brother. Also because of the absence of industries and weak commerce, the Kingdom of Naples was characterized by economic and cultural backwardness, although Naples has been an important centre of European Enlightenment. When Ferdinand IV of Bourbon was back on the throne, the return to the previous regime was less traumatic than in other parts of Italy, as he decided to keep many of Joseph Bonaparte and Murat's reforms. His enlightened absolutism tried to address some of the issues of the kingdom.

## 2.4 Education in Italy before unification

In 18<sup>th</sup> Century Italy, primary and lower secondary education is a direct consequence of private precepts (Dal Passo, 2003), rather than a real public institution. From the second half of 18<sup>th</sup> Century, however, a greater attention towards the organization of public education emerges, thanks to reform projects of the Enlightenment. The Enlightened idea of an educational system open to the whole population, as part of the project of a lay and autonomous State started developing among enlightened sovereigns like Maria Theresa in Lombardy. But poor life conditions of the populations, lack of teachers, scarce state interventions and the almost complete absence of didactic caused the ineffectiveness of all reformative attempts.

Restoration involved the return of education in clerical hands, as all responsibility of educating the population was left to religious orders, Jesuits mostly, and ecclesiastical authorities chose teachers. The aim of this reorganization was to cancel all trace of Napoleonic influences and enlightened culture, which were considered as dangerous means of diffusion of ideas that could destabilize political and moral order.

Catholic tradition considered education as subordinated to confessional practices and catechism was at the centre of educational system. Throughout Italian peninsula, proper schools existed in bigger towns only, and were almost absent in rural centres.

In Papal States there was no state financed educational system. The first real institutional reform of the educational system occurred in 1824, when Pope Leo XII created *Congregatio Studiorum*. What characterizes education in the Papal States is that religious authorities supplied education in its entirety. Universities, seminaries and municipal schools composed the educational system in Papal States. Free parish schools had a certain importance, while private for money schools were addressed to prepare kids for humanitarian studies (Raffaele, 2004).

Most of the teachers were priests, chosen by a commission headed by the local bishop. Female teachers had to be necessarily unmarried, and had to demonstrate morality and upright ways. Lay teachers were only a tiny minority. Secondary education, composed by colleges and gymnasias, was generally reserved to those willing to start a clergyman carrier, and however reserved to males.

The most important Universities were in Rome and Bologna, and six other universities were present on the kingdom. Religious representatives were also at the top of universities' structures.

Notwithstanding the attempt to enlarge the educated portion of the population, illiteracy rates were very high: Bowring (1838) states that 1 over 50 children attended school in 1838. Until unification, the inefficiencies of educational institutions added up over the years.

Felice (2007) shows that in 1861 literacy rate was 28.1% in Emilia-Romagna, 21% in Marche, 19.9% in Umbria, 32.3% in Lazio.

Also in Tuscany religious orders control popular educational system, while wealthy families could afford for private teachers. During its reign, Leopold put effort in trying to deliver education from religious control, but notwithstanding the dissolution of the Company of Jesus (1773), few progresses were made.

Leopold's reform of the educational system, *Regolamento generale di tutte le scuole del Granducato* (1778), which planned the organization of three levels of education and provided rules for recruitment of teachers, did not find application.

During Restoration, in the Kingdom of the two Sicilies the Bourbons affirmed a centralistic and bureaucratic policy, progressive and linear (Raffaele, 2004). The aim of new reforms was to constitute a new system made by the relationship between institutions and local power, through the introduction of a peripheral public apparatus that had to be widespread distributed throughout the territories of the Kingdom. Reforms tried to address the needs of the population, including education, as State was trying to be the promoter of civil progress.

Ferdinand Restoration was however founded on the principle of compliance with the Church's precepts and opinion, as religion was still considered a guarantor of public and private morality. This promotion of Christian doctrine reflected also in education, while Jesuits came back to Sicily in 1804 and monopolized lower secondary education. Other religious orders had important educational centres.

Projects of reforms of secondary education were reserved to scholars and wealthier segments of the population. In 1820-1821 social rebellions stopped all reformation plans, pushing the government to implement a reactionary and conservatory attitude.

In the following decades little advancements were made in terms of education reforms, and at the time of unification illiteracy rates in southern Italy were the highest in the new-born Kingdom (Felice, 2007).

The Kingdom of Lombardy-Venetia under the Habsburgs was characterized by the most advanced public education system. The system, financed by the States and the municipalities, was organized in primary *minor* schools, distributed in every parish centre, and *major* schools in bigger towns. Education was open to both males and females, and education was mandatory from six until twelve years old. Teachers were instructed in *normal* schools, technical schools prepared for a career in commerce and industry.

Universities of Padova and Pavia were advanced centres of high-level education. However, educational systems in all pre-unity states had common criticalities, such as scarcity of infrastructure and teachers, seasonal school leaving to work in the fields, low teacher salary. All these problems of course reflected in the quality of teaching.

## 2.5 Italy in 1861: economic indicators and disparities

Italy was among the first countries in the world to publish its own historical series of national accounts in 1957, when ISTAT, Italian National Statistics Institute, published a complete system of national accounts with yearly time series starting from 1861 and ending in 1955.

It is now widely recognized that ISTAT's pioneering work had serious inconsistencies that were not fully remedied by subsequent revisions (Felice, 2015). It was only on occasion for the 150th anniversary of Italy's unification in 2011 that a project coordinated by the Bank of Italy in cooperation with Istat and Tor Vergata University of Rome published a reconstruction of the national accounts for the whole century and a half since unification (Baffigi, 2011). Furthermore, a growing body of literature (Felice, 2007, 2010, 2011, 2015; Cappelli, 2015) has now estimated the main features of Italy's modern economic growth from unification to present day, discussing many variables beyond GDP estimates, such as living standards, social capital and inequality of personal income distribution. Also, notwithstanding the difficulty to ascertain product levels at the regional level, these authors were able to discuss regional inequalities and paths of development at the regional level.

The Kingdom of Italy was officially born on 17 March 1861. The unification process had started just two years before and formally ended with the annexation of Rome in 1870. Around 1860, the Italian economy was made up of various local economic systems that followed the political map of pre-unification Italy but with some additional fragmentation, such as disparities within the former southern kingdom, the Papal States or the kingdom of Savoy (Felice, 2010). Italy at the time was still predominantly agricultural, with urban life and manufacturing and tertiary poles mostly located on the western coast, from Turin and Genoa southward to Naples and Palermo (Felice, 2010).

From the time of unification, Italian GDP per capita has increased about thirteen fold (Felice, 2015). The overall result is remarkable but appears to be in line with what is found in other countries, and the features of Italy's growth over the hundred-year period are qualitatively similar to those of other advanced countries (Maddison, 2001). Italy was a country rich in labour, with the fifth largest population in Europe after France, Germany, Austria-Hungary and the United Kingdom, but poor income-wise, and even poorer with regard to human and physical capital, especially in the South (Felice, 2015).

Vecchi (2011) offers an extraordinary reconstruction of life conditions of Italians from 1861 to 2001, and let us know that the poverty of the new-born Italian Kingdom was of many

forms. In 1861 life expectancy at birth was 29-30 years, illiteracy rate was almost 80%, and 43.9% of total population was in absolute poverty.

As regards regional inequalities, different theoretical approaches share the belief that over the long run regional inequality is somehow self-correcting, although for various reasons the pace of convergence may proceed at a slower rate than expected (Felice, 2011), but Italy seems not to adhere to such framework, and the lack of convergence has been widely recognized.

The problem of the south (*questione meridionale*) has been debated with at least three different views (Felice, 2011). The first view, prevailing up to the 1990s, holds that at the time of Unification the north-central regions, due to a better geographical position, more favourable natural endowments, and higher human and social capital, were already more advanced, and thus a natural fit for industrialization. A second and opposite view holds that the south was exploited by the north. A third and more recent view argues that although the south as a whole may have ranked somewhat lower than the centre-north in the second half of the nineteenth century, it is misleading to consider southern Italy as a uniformly backward area, and considers it conversely as a highly diversified region. Furthermore, at least three other arguments have attracted the attention of scholars towards the Italian case: the role of international openness and in particular of emigration, the failure of state intervention and the role of social capital. In fact, Italy has been identified as a country that is largely characterized by regional differences in social factors, social capital and culture, in the sense of values and attitudes, and these 'social factors' have been increasingly regarded as major determinants of differences in economic outcomes (Felice, 2011).

Felice (2001) provides estimates of value added per capita at the regional level for benchmark years between 1891 and 1951. Results show that the north-south divide was not particularly prominent in 1891 or even in 1911. In the first half of the twentieth century, however, differences increased. The northwest pulled ahead first, while the central and north-eastern regions successfully caught up between 1938 and the present day, and by 2001 they were not far behind the northwest. The Mezzogiorno mostly fell behind in 1911-51, especially during the interwar years, and although it began to converge during Italy's economic boom (1951-71), it fell back again, although to a lesser extent, from the 1970s on.

The figures also suggest that, in order to analyse the pattern of regional inequality, Italy is better divided into three rather than two macroeconomic areas. Within both the centre/north-east and the Mezzogiorno, regional differences were very high in 1891 and 1911. The three-part classification took shape in the interwar years when, in contrast to an increasing divergence at the national level, a process of convergence within the three macro-areas took place.



Overall, according to Felice (2001), out of the three hypotheses outlined before about the problems of the south, the most recent one, which regards southern Italy as being highly diversified, seems to be more in line with present estimates. Disparities were remarkable within southern Italy, but on average this area as a whole was not far below the rest of the country (Felice, 2011).

At the odds with this result there is relevant evidence of a remarkable north-south divide in terms of social indicators, as anticipated before. Felice (2007) discusses regional disparities in terms of social indicators as height, education, life expectancy and human development index. At the time of Unification regional discrepancies in levels of education were higher than those for income or life expectancy. In 1871, literacy rate in the south was 16%, against 30% in north-east and 55% in north-west. The convergence of the south proceeds at high speed until the 1970s, but slows down in the last two decades, and little differences persist even in 2001. Further evidence comes from the elaboration of regional Human Development Index and Improved Human Development Index, two composite indexes which incorporate three different dimensions of welfare: resources, longevity and knowledge or education. Both the two indices confirm the conclusion about a rapid convergence of the south until the 1970s and the subsequent slowing down of the process, which was overall insufficient to fill the gaps, visible even in 2001.

The historical picture seems to support this explanation for the persistent backwardness of the south, that is, a lower social capital, and the somehow correlated institutional failure and pervasiveness of organized crime (Felice, 2011). Southern regions characterized by relatively low levels of organized crime (Abruzzi, Lucania, and Sardinia) are in fact the only ones to have (slowly) converged in recent decades.

Furthermore, the evidence presented in Felice (2011), pointing to the fact that the recent divergence in the south is due to decreasing activity rates (labour force as a share of total population), gives more strength to the social capital explanation, for two reasons. Firstly, a backward society relying on familism, as southern Italy supposedly is, tends to maintain lower employment rates, *in primis* of female workers. This is even truer if it is no longer an agricultural economy, where rural housewives may be counted in the labour force. Secondly, workers in illegal activities, which expanded in the south during recent decades due to the rise of criminal organizations, as well as a widespread moral and social attitude of resistance to state control, often go unconsidered in the official accounts, resulting in inaccurately lower activity rates (Felice, 2011).

### **3. The persistence of Italian pre-unity institutions**

Italy displays a mosaic of different regional paths of economic development, and the persistence of its regional inequalities has made Italy the European country where research on regional development is most abundant (Felice 2010).

As previously seen, the determinants and characteristics of such inequalities have been discussed by many authors, and recent debate addresses the issue of regional disparities starting from the time of unification, in years following 1861. Indeed, among the factors that might help to explain regional differences, one of the most peculiar is certainly Italy's legacy of pre-unification states (Cappelli 2015).

Institutions of Papal States, Grand Duchy of Tuscany and Kingdom of the two Sicilies have been rather stable over time, and they have very different characteristics. A government characterized by an absolute power that mixes spiritual and temporal power reigned in Papal States, while Tuscany had the experience of a government that is oriented towards state intervention and the overcoming of oligarchic control and involvement in the public confrontation of different social classes (Almagisti, 2016).

The aim of this study is to understand if these institutions in force before unity have had long lasting effects, in a similar way to Becker et al. (2016) for Habsburg Empire. The regional heterogeneity in modern Italy complicates the identification of such effects, and in order to overcome the problem, Regression Discontinuity Design seems the best methodology to use. RDD is implemented around former historic borders of pre-unity states.

The experience of Papal States in the centre of Italy is peculiar with respect to the other parts of the Country and deserves particular attention. I am willing to understand whether a secular experience of a despotic clerical government in the Papal State area has changed the attitude towards religion. This may have happened if the oppression, inefficiency and corruption that characterized the Papal State have generated an opposition in population that went beyond politics. Not only it has led people to develop hostility towards such institutions, but also to grow particular attention and interest towards the secularity of the state and respect of individual freedom, against the imposition of religious principles on the lay society.

In the first part of the work we are considering variables concerning ethics and demand for secularism of the state. We consider variables which express personal preferences towards choices that involve the religious sphere and ideas of personal freedom: we look at the results of 1974 referendum about divorce, to test whether municipalities that were part of the Papal State have a different probability of being favourable to divorce.

We further look at the probability of choosing a religious marriage with respect to a civil one. We propose two other outcomes that might help explaining the higher demand for secularity of the state in former Papal States municipalities.

First, we consider variables related to social capital and cooperation. Social capital is also identified as one of the major source of discrepancy among Italian regions (Felice 2007, 2010). Putnam's hypothesis (1993) arguing that the different endowments of social capital in Italian territories can be traced back to different Middle Ages experiences needs to be integrated, as medieval *comuni* are not the only relevant historic institutional reality (Almagisti, 2016).

Participation rates to 1974, 2011 referendum, presence of no profit organizations and number of volunteers in such organizations are the variables that we consider in order to investigate whether the experience of the Papal state has lead people to develop greater social participation and engagement, or other relevant differences in terms of endowments of political participation and civic engagement.

The second proposed outcome is education. Indeed, education interacts with social capital, and is usually a predictor of political and social engagement (Heliwell and Putnam, 1999).

Similarly to education, scholars trace back to the time of unification important discrepancies among Italian regions in terms of education and human capital (Felice 2007). Even though a path of convergence among different parts of Italy has certainly developed over decades, some differences are still visible.

Our research question is rather whether a higher attention for secularization of the state and a higher social capital in former Papal States territories come together with a higher demand for education once better institutions are established in unified Italy.

For these reasons we investigate whether an impact of pre-unification institutions is still present at the municipality level in terms of all levels of education: illiteracy rates, primary-lower secondary school qualification, upper secondary qualification, university degree.

### 3.1 Data and empirical strategy

The analysis draws on municipality-level data published by ISTAT in 2011 “Misure dei Comuni” and “Atlante dei Comuni” registers, which are two collections of many surveys collected by ISTAT over the years. In particular, data about marriages refer to 2012, data about TV subscriptions refer to 2009, while data about literacy and education refer to 2001.

In order to perform our analysis on 1974 referendum, we created the first digital archive of results of that referendum at the municipal level. Results were digitalized from official paper registers provided by Italian Ministry of Interior.

The distance of each municipality from former historic borders are measured using QGIS, a geographic information system open source software. The ancient borders were drawn on the map of modern Italy using the software thanks to data about historical affiliations of each municipality.

We are comparing the following borders in year 1848:

- north border of Papal States, comprehensive of Kingdom of Lombardy-Venetia and Duchies of Parma and Modena
- Papal States and Kingdom of the Two Sicilies;
- Papal States and Grand Duchy of Tuscany.

The borders have been chosen because they have been rather stable over centuries, and so have been the kingdoms within them and their institutions, while in the north many different dominations and political influences have been succeeding over time in a less stable way. For this reason, the interpretation of differences among municipalities in the northern regions of Italy could be more complicated and misleading.

We follow Dell (2010), Becker et al. (2016), Bukowski (2015), Lee and Schultz (2012) and employ a regression discontinuity design that evaluates the effect of Italian pre-unity institutions on a discontinuous jump at the borders.

We focus on local linear regression, and for each regression the optimal bandwidth around the border is computed using the strategy developed by Imbens and Kalyanaraman (2012), in particular using a uniform kernel distribution. Bandwidth is computed using the command developed for Stata by Calonico, Cattaneo and Titiunik (2014).

With respect to Dell (2010) and Bukowski (2015), who employ a two-dimensional geographical RDD using a polynomial of latitude and longitude, similarly to Lee and Schultz

(2012) we will employ a one-dimensional strategy that controls in distance from the border. An interaction of distance and dummy variable is also included as control.

Like in Becker (2012), this study involves the historic settling of a long-gone political border. The long temporal distance between modern days and pre-unity situations was a period of strong economic growth and progress, extraordinary historic events such as two World Wars, heterogeneous economic policies and programs, economic peculiarities of different territories, and it is hard to imagine that we are able to correctly identify in our models the effect of institutions which ceased to exist more than 150 years ago after all Italy has been through after unification. As anticipated before, a within-region or even within-province study would enable us to test even more convincingly the importance of pre-unity borders in explaining differences among Italian regions, but pre-unity borders follows almost exactly modern regions' borders.

However, in order to ensure a greater robustness of our results, in the only two cases where historic border crosses modern regions, Latium and Emilia Romagna, within region studies are implemented as further robustness checks.

In the following pages I present the borders that we consider through three maps obtained using QGIS, showing an example of buffer around each of them. The sample buffer is 40 km wide.

Figure 1: 40 km buffer around former Papal States - Kingdom of Lombardy - Venetia and Duchies of Parma and Modena border

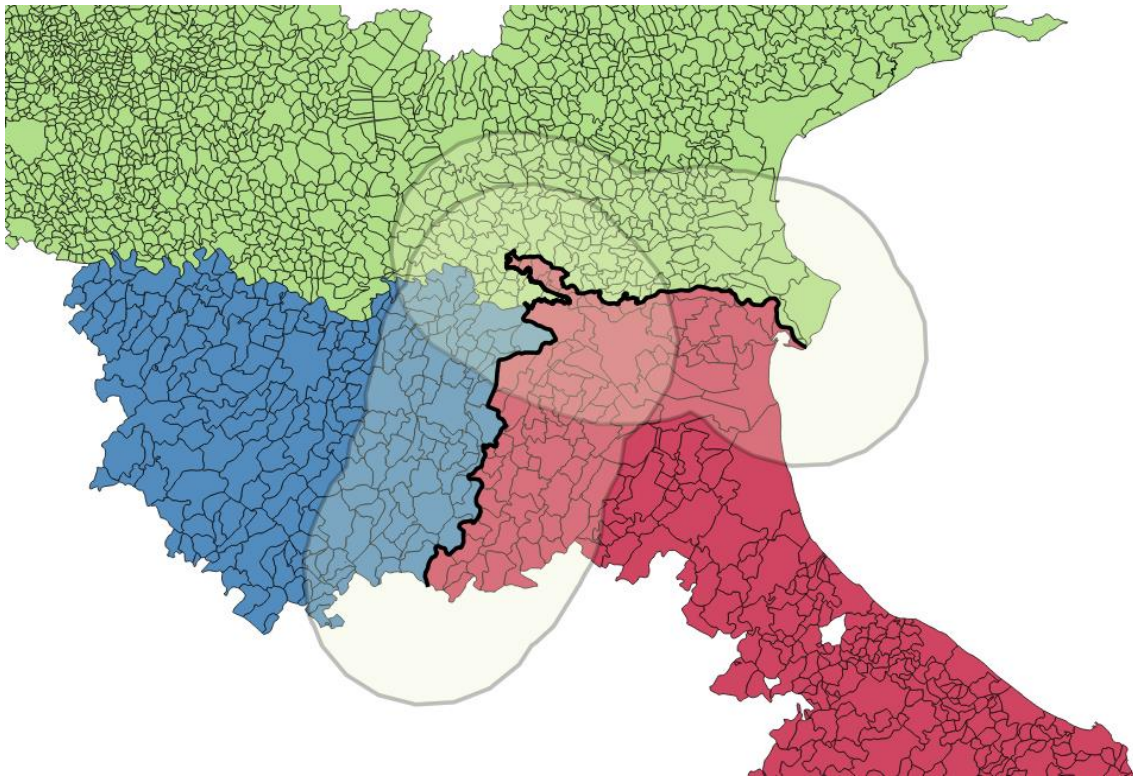


Figure 2: 40 km buffer around former Papal States and Kingdom of the two Sicilies

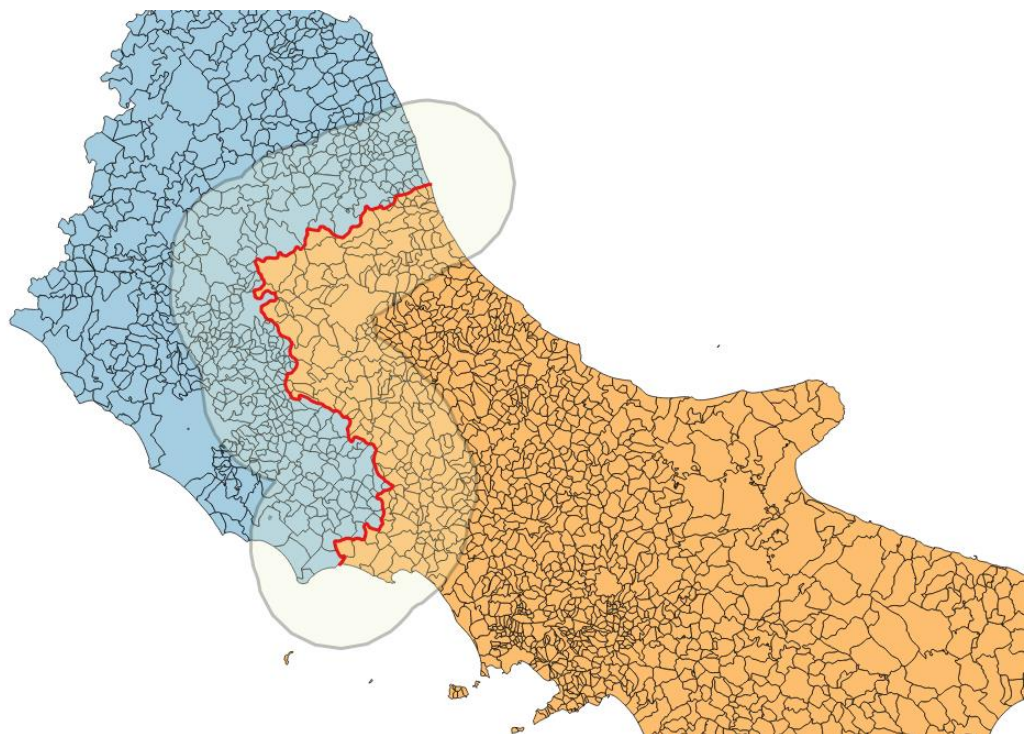
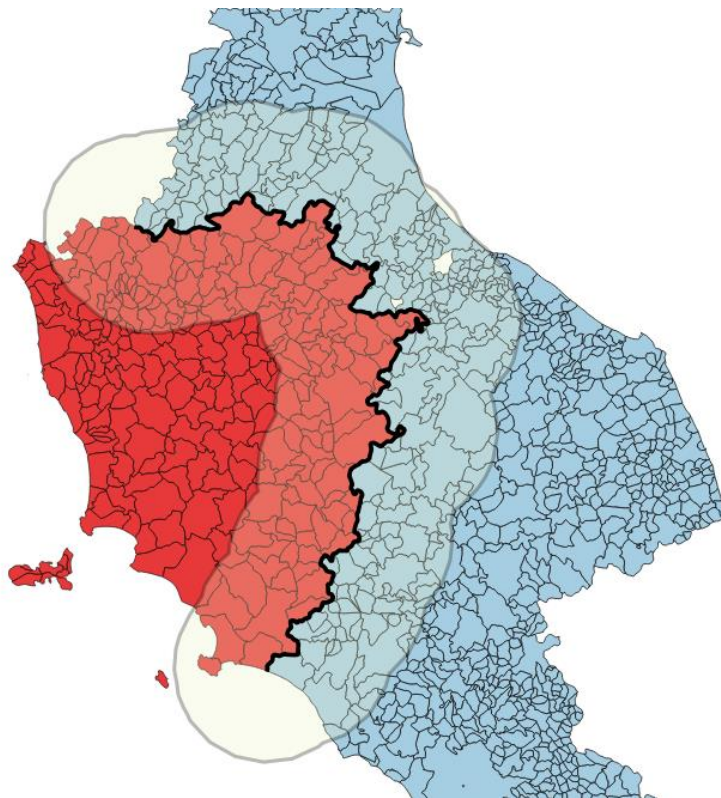


Figure 3: 40 km buffer around former Papal States - Grand Duchy of Tuscany border



The model can be written as:

$$Y = \alpha + \beta_1 PS + \beta_2 D + \beta_3 PS * D + \beta_4 X + \mu$$

where D indicates distance from the border, and PS a dummy for municipality on the Papal States side of the border. Our coefficient of interest is  $\beta_3$ , indicating the marginal effect of historic affiliation to Papal States. Y is our outcome of interest at the municipality level.

X is a vector of municipality level controls. Baseline specification includes the following controls:

Population - population census;

Area - municipality land area, expressed in kmq;

Mountainous area - indicates the ratio between mountainous area and total area;

Height - indicates the height above sea level of the municipality, expressed from the centre;

Seismicity - municipalities are classified in four categories expressing their seismic risk; categories are determined according to PGA, Peak Ground Acceleration, and frequency and intensity of seismic events. It is five-category scale going from 1 (high seismic risk) to 5 (very low seismic risk).

Seismicity is used as a control as it could increase religiosity. The religious coping theory refers to the activity of drawing on religious beliefs to understand and deal with adverse life events. In particular, Bentzen (2015) combines subnational district level data on values across the globe from the World Values Survey with spatial data on natural disasters and finds that individuals are more religious when their district was hit by recently by an earthquake. Moreover, individuals are more religious when living in areas with higher long-term earthquake risk.

Dimension - it is a dummy variable which takes value 1 if the population is greater than 15000, 0 otherwise;

Urban - three-category scale indicating level of urbanization;

Houses pre-1900 - indicates the ratio of houses built before 1900 on total number of houses;

Class ages – we control for the proportion of the population ranging from 15 to 54 years old.

To conclude, to control for region dummies seems not appropriate in this model.

The first reason, regarding 1974 referendum, is that modern Italian regions with ordinary autonomy started to be concretely established only in 1968 with law number 108 of February 17th, even though regions had been defined in 1948 in the Constitution. Therefore, it is hard



to imagine an effect of regional institutions on the 1974 referendum results, only six years after their establishment.

As regards modern outcomes, such as education in 2001 or participation to referendum vote in 2011, simple region dummies may capture variability driven not only by local institutions, but other local characteristics. As modern region borders correspond in most cases to historic borders, collinearity may cause these dummies to capture even the effect of former affiliation to Papal States. We therefore chose to insert in the baseline model other variables in order to control for the effect of local institutions, for outcomes in years 2001-2011-2012 (that is, all outcomes except for results of 1974 referendum). We use faith in local (regional) institutions in 2014, expressed as the average score on a 0 to 10 scale expressed by people aged more than 14, and the ratio of local education expenses on Italian GDP in 2011, both provided by ISTAT<sup>1</sup>, as measures of the goodness and perception of local institutions.

In the next pages I present a summary of descriptive statistics of control variables for a 40km sample around each border.

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<sup>1</sup> ISTAT, “*100 statistiche per capire il Paese in cui viviamo*”, 2015 edition.  
ISTAT, “*Rapporto BES 2015*” (benessere equo e sostenibile).

Table 1: descriptive statistics of 40 km around north Papal States border sample

	Papal States				North (Duchies and Kingdom of Lombardy-Venetia)			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Population	10283.41	27194.13	328	261362	15106.57	42155.17	819	371337
Mountainous	0.124	0.329	0	1	0.259	0.433	0	1
Dimension	0.122	0.328	0	1	0.187	0.392	0	1
Height	106.562	222.101	0	1131	120.635	215.656	0	841
Seismicity	3.447	0.651	2	4	2.948	0.394	2	4
Urban	1.822	0.503	1	3	1.625	0.567	1	3
House spre1900	592.493	2148.85	3	32457	890.114	2997.231	6	27674
Age 15-54	0.501	0.407	0.412	0.616	0.517	0.414	0.398	0.634
Educational expenses	2.672	0.133	2.5	3.2	2.612	0.033	2.6	2.7
Faith in institutions	3.93	0.183	3.8	4.3	4.15	0.133	3.8	4.2

Table 2: descriptive statistics of 40 km around south Papal States border sample

	Papal States				Kingdom of the two Sicilies			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Population	4296.312	7856.163	95	68503	14808.89	147716.5	126	2546804
Mountainous	0.773	0.379	0	1	0.659	0.445	0	1
Dimension	0.052	0.222	0	1	0.104	0.306	0	1
Height	560.818	328.385	2	1433	449.748	226.794	4	1070
Seismicity	1.727	0.574	1	3	2.023	0.437	1	3
Urban	1.303	0.479	1	3	1.466	0.575	1	3
Houses pre1900	411.398	537.007	0	5574	648.302	378.072	0	65143
Age 15-54	0.523	0.521	0.222	0.603	0.517	0.524	0.318	0.607
Educational expenses	4.154	0.771	3.3	6.9	3.473	0.279	3.3	4.1
Faith in institutions	3.469	0.104	3.3	3.6	3.580	0.0393	3.5	3.6

Table 3: descriptive statistics of 40 km around Tuscany - Papal States border sample

	Papal States				Grand Duchy of Tuscany			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Population	13783.24	33571.21	576	358079	11982.7	31061.52	313	371337
Mountainous	46.714	58.404	0	372.04	38.389	62.185	0	525.08
Dimension	0.190	0.394	0	1	0.171	0.377	0	1
Height	298.690	229.129	3	1388	284.259	202.421	2	915
Seismicity	2.417	0.552	2	4	2.346	0.502	2	4
Urban	1.476	0.599	1	3	1.446	0.593	1	3
Houses pre1900	1433.81	3504.994	204	42464	699.406	1918.124	2	27674
Age 15-54	0.488	0.365	0.341	0.571	0.496	0.294	0.409	0.569
Educational expenses	3.175	0.120	2.6	3.2	3.233	0.619	2.6	4.1
Faith in institutions	4.295	0.020	4.2	4.3	3.849	0.317	3.5	4.2

## 3.2 Ethics

In the first part of the study we try to understand whether the experience of Papal States, where political power accompanied spiritual leadership, has lead people to change their attitude towards ethical matters and religion.

In order to do that we consider first the results of 1974 referendum on divorce and see whether municipalities that used to be affiliated to the Papal States are more likely to be in favour of divorce. Secondly, we consider the proportion of religious marriages over total marriages in year 2012.

### *3.2.1 Divorce referendum, 1974*

The referendum on divorce law was held on May 12, 1974. Voters were asked whether they wanted to repeal the Fortuna-Baslini law of 1970, which allowed divorce for the first time in Italian history (abrogative referendum). Therefore, an answer “Yes” indicated the will to outlaw divorce, while an answer “No” indicated the will to keep it in force. Christian groups collected initial petitions, with strong support from the Catholic Church.

The vote fired up public opinion and political discussion: Christian groups asserted the sacredness of marriage tie, ratified by the priest in front of God, while the counterparts affirmed the importance of freedom of choice. Democrazia Cristiana, Movimento Sociale Italiano, Südtiroler Volkspartei and Partito democratico italiano di Unità monarchica supported “Yes”. Socialists, communists, republicans, liberals and radicals supported “No”.

Catholic Church considered divorce as a serious offense to the sacred promise of two spouses who decided to join their lives in front of God. Marriage was considered indissoluble. Divorce was also thought to be dangerous because of the disorder it creates within the family, especially for children. The spreading of divorce was considered as a true social plague.

The referendum was defeated by 59.26% against 40.74%, allowing divorce to remain in force. Our outcome of interest is the ratio between votes favourable to divorce (answer “No”) and the sum to total votes, favourable and unfavourable. A high ratio means that a high percentage of voters wanted divorce to stay in force. A greater likelihood of being favourable to divorce indicates that people living in a certain municipality do not recognize themselves in the ideas

about marriages expressed by the Church, but rather are against the imposition of Catholic doctrine on the whole Italian society and have a more worldly conception of marriage.

Table 4 shows results for the effect of Papal States affiliation on the proportion of favourable votes to divorce. Columns (1), (2), (3) show results for each considered boundary: Kingdom of Lombardy-Venetia, Kingdom of the Two Sicilies and Grand Duchy of Tuscany. Municipality level controls are included in each regression.

I remark that in this regression regional characteristics, faith in local institutions and regional educational expenses on Italian GDP, are not included. First, it would not make sense because we are considering an outcome dated back in 1974, while data about regional institutions date 2011 and 2014. Secondly, regional institutions started to be materially implemented only in 1968, and considering the time that takes to completely organize and settle the bureaucratic and organizational system of regions it seems reasonable to assume that there is no significant effect of these institutions from 1968 till 1974.

Table 4: effect of historic affiliation with Papal States on proportion of votes favourable to divorce over total votes, referendum 1974

Referendum 1974	(1) North	(2) South	(3) Tuscany
Papal States	0.1554*** (0.014)	0.0127 (0.013)	-0.0602*** (0.018)
Distance	0.0000*** (0.000)	0.0000*** (0.000)	0.0000*** (0.000)
Papal States*Distance	-0.0000*** (0.000)	-0.0000 (0.000)	-0.0000** (0.000)
Observations	579	815	349
R-squared	0.520	0.253	0.204
controls	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls.

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Results show how municipalities that used to be part of Papal States have a greater proportion of votes favourable to divorce. The coefficient for Papal States on the northern boundary is highly significant, at 1% level, and indicates that being a municipality within former Papal States boundaries increases the proportion of favourable votes to divorce of 0.15 percentage points. This result is coherent if we consider the preponderant role of Catholic Church in north-eastern regions, Veneto especially. Indeed, a strong religious mark characterized Venetian patriciate since the early days of the Republic (Cracco, 2009). Venetian bishops exercised both spiritual and civil control on the population, especially in rural areas, and their authority was the result of the interpenetration between episcopal office and belonging to Venetian aristocracy. Moreover, after Restoration and the dissolution of Serenissima Republic, people started to develop a sense of extraneousness towards institutions, and started conceiving the Church as the only institutional body that was able to protect and regulate society (Almagisti, 2016).

The coefficient against Kingdom of the Two Sicilies is positive but not significant.

Tuscany instead shows to be even more favourable to divorce with respect to Papal States. This result however is not surprising given cultural and political tradition of Tuscany, and instead shows that perhaps political heritage from pre-unity period has transmitted over centuries.

The coefficient for distance from the border is significant in all the three models, but indicates no sizeable effect of distance on our outcome of interest, while the interaction of distance and the dummy for Papal States is not significant in the model for Kingdom of the Two Sicilies.

Overall results support our hypothesis of a reaction to centuries of political supremacy of the Church in former territories of the Papal States. Municipalities that experienced centuries of Papal supremacy seem to refuse the imposition of a Catholic ideology on society.

### 3.2.2 Religious marriages

The second considered outcome is the proportion of religious marriages over total marriages in year 2012. This variable indicates the preference towards a religious ceremony to sanction the birth of a new family. Even though the choice of a religious marriage does not necessary correspond to a full internalisation of the principles expressed in a religious marriage, the choice of a civil marriage indicates the preference toward a civil recognition of a personal union, that is recognition in front of the state, in terms of laws, rights and duties.

Table 5 shows the effect of historic Papal States affiliation on the proportion of religious marriages in 2012. Columns (1), (2), (3) show results for each considered boundary: Kingdom of Lombardy-Venetia, Kingdom of the Two Sicilies and Grand Duchy of Tuscany. Municipality level controls are included in each regression, including controls for regional institutions.

Table 5: effect of historic affiliation with Papal States on proportion of religious marriages over total marriages, year 2012

Religious Marriages	(1) North	(2) South	(3) Tuscany
Papal States	-0.1163*** (0.035)	-0.0702 (0.044)	0.0433 (0.065)
Distance	-0.0000 (0.000)	0.0000* (0.000)	-0.0000 (0.000)
Papal States*Distance	0.0000 (0.000)	-0.0000 (0.000)	-0.0000 (0.000)
Observations	483	831	340
R-squared	0.187	0.092	0.057
controls	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls, faith in local institutions, ratio of regional educational expenses on Italian GDP. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The coefficient for Papal States considering the boundary with northern regions is negative, indicating that historic Papal States affiliation decreases the proportion of religious marriages over total marriages by 0.11 percentage points. The effect is not sizeable but highly significant, at 1% level.

The coefficient for Papal States versus Kingdom of the Two Sicilies is negative but not significantly different for zero. Like for 1974 referendum, Tuscany is the exception with respect to the other states. The coefficient indicates a higher proportion of religious marriages in Papal States with respect to Tuscany. However, this result is not statistically significant.

Both our results on divorce and religious marriages prove empirical evidence to our hypothesis of a reaction to years of imposition of Catholic ideology in the government of the State.



### 3.3 Social capital and cooperation

Social capital is studied in modern literature as one of the determinants of the good functioning of institutions; it can lead to higher levels of civic success and economic development. The policy-making community has embraced the creation of social capital as a solution for social problems as diverse as promoting economic development in Africa and stemming urban decay in Los Angeles (Boix and Posner, 1996).

Social capital is discussed in two different ways in contemporary academic literature (World Bank, 2004).

The first, primarily associated with sociologists Burt, Lin and Portes, refers to the resources, such as information, ideas, support that individuals are able to produce by virtue of their relationships with other people. The second and more common approach is associated with political scientist Robert Putnam and refers to “features of social life (networks, norms and trust) that enable participants to act together more efficiently to pursue shared objectives” (Putnam, 1995). Similarly, the OECD defines social capital as “networks together with shared norms, values and understandings that facilitate co-operation within or among groups” (Keeley, 2007). Chatting with neighbours, engaging in recreational activities, joining associations and organizations or political parties are all forms of social capital that characterize the ways in which the members of a community interact. Social capital can be considered as a measure of cooperation among people that are part of a community.

Social capital is related to political participation, but the terms are not synonymous.

Political participation refers to relations with political institutions, while social capital refers to relations with one another. Putnam (1995) uses the term “civic engagement” to refer to people’s connections with the life of their communities, that is the networks, norms of reciprocity and trust that are fostered among the members of a community.

Civic engagement is correlated with political participation, but causality between the two is an empirical question and not a logical certitude. Rather, empowerment and political action can be considered as part of social capital. Indeed social links can be distinguished in: “bonds”, links to people based on a sense of common identity, such as family, close friends, neighbours; “bridges”, that stretch beyond a sense of identity, such as distant friends, colleagues and associates; “links” to people or groups further up and down the social ladder, ties to people in a position of authority, such as representatives of public and private institutions (Keeley, 2007 and Grootaert et al., 2004).

Narayan (2002) defines empowerment as the expansion of assets and capabilities of people to participate in, negotiate with, influence, control and hold accountable institutions that affect their lives. Empowerment refers to the expansion of freedom of choice and action to shape one's life, and it implies control over resources and decisions.

Several authors have addressed the issue of differences in terms of social indicators among different parts of Italy. Culture, values and attitudes differ a lot across Italian regions and they have been increasingly regarded as determinants of differences in economic outcomes.

In his famous work *"Making democracy work: civic traditions in modern Italy"*, Putnam (1993) evaluates the institutional performance of twenty Italian regional governments using surveys, interviews and a diverse set of policy indicators. His central finding is that wide variations in the performance of these governments are closely related to the vibrancy of associational life in each region. In northern Italy, where citizens participate actively in sports clubs, literary guilds, service groups and choral societies, regional governments are efficient in their internal operation, creative in their policy initiatives and effective in implementing those initiatives (Putnam, 1993). In southern Italy, by contrast, where patterns of civic engagement are far weaker, regional governments tend to be corrupt and inefficient.

The reason for these differences among different parts of Italy is, according to Putnam, historical, and his analysis starts from 11<sup>th</sup> and 12<sup>th</sup> centuries. As Europe emerged from feudalism, the bonds of personal dependence lord-vassal got weaker in Northern regions, which were characterized by flourishing commercial cities, but got stronger in the South, where in Papal States and Norman territories population remained subjects rather than learning to be citizens.

In the North, where there was more equality, cooperation was easier to sustain, while inequalities that characterized social life in the South fuelled resentments that prevented cooperative practices from crystallizing (Boix and Posner, 1996). Indeed, cooperation among unequal is problematic because there is always the incentive for one of the parties to defect from cooperative arrangements that perpetuate the *status quo*, as the poor is not satisfied with the existing distribution of resources and the rich can easily abandon any arrangement with low costs. Moreover, the rich will prevent and crush any form of cooperation and association among the poor to maintain its political and economic privileges. So, according to this view, cooperation and social capital did not develop in the South because feudal relations and concentration of power in the hands of local landowners prevented it.

Almagisti (2016) provides further arguments to explain the differences in endowments of social capital among Italian regions, in particular considering pre-unity Veneto and Tuscany.

In Veneto, the strong identification in Venetian Republic has led people to develop a sense of extraneousness towards institutions after the Republic dissolution. In particular, Venetian Republic built its social capital through different means, a strong religious orientation, the development of a set of symbolic elements aimed at arousing the identification with the Republic's government, and the myth of internal peace as a form of legitimation of Venetian aristocracy. The loss in identification in institutions and the preponderant role of the Church involved the rise of family as the central social body. The family was the central social body that contributed to the production of social capital, and fiduciary relationships rarely overcame familiar ties. This social capital was steeped in faith in the clergy (Almagisti, 2016). Tuscany, on the other hand, was characterized by a relative continuity in institutional setting. Since 18<sup>th</sup> Century, territories of the Grand Duchy of Tuscany were subject to a political reformative attempt which is peculiar with respect to whole Europe (Almagisti, 2016). On the economic side, free trade and sharecropping characterized Tuscany. Lorraine dynasty's strong political interventionism comprised the construction of a modern market system, with greater freedom of contract; sharecroppers maintained strong fidelity relationships with owners, and such ties were strengthened by patronal philanthropism and common peasant sense (Almagisti, 2016). This kind of economic relationships fostered social capital and strong relations with local institutions.

As we have previously seen, Felice (2007) identifies important discrepancies among Italian regions in the years immediately after unification, and in other studies (Felice, 2010, 2011 and 2015) includes social capital as one of the factors that can help explaining the north-south divide. Some studies explore empirical causality linking social attitudes to institutions and economic development in Italian case.

Guiso, Sapienza and Zingales (2004) argue that social capital is a central factor explaining Italy's financial development. They use electoral participation and blood donations as measures of social capital, and find that high social capital areas are characterized by a higher access to institutional credit, use of checks and investment in stock.

Differently from evidence at present day, research on social capital as a factor of Italy's regional long run growth has developed only recently.

Guiso, Sapienza and Zingales (2008) investigate the legacy of medieval free city-state experience of the Middle Ages and find that cities that experienced self-government in the Middle Ages have more civic capital today, measured by number of non-profit organizations per capita, existence of an organ donation organization and frequency of children's cheating on a national examination. Consistent with Putnam's conjecture, they find that Northern cities that experienced a period of independence in early Middle Ages have significantly higher

levels of civic capital today by all three measures. For example the number of voluntary associations is 25% higher. The authors use an instrumental variable strategy, by using the presence of a bishop before year 1000 and strategic military position as predictors for free-city status.

In his recent working paper, Cappelli (2015) provides estimates of social capital across the country's sixty-nine provinces at ten-year intervals between 1871 and 1911. Three indexes are computed in order to measure social capital, the first two based on charitable institutions and mutual aid societies, the third computed as a measure of trust starting from crime rates. These indexes provide the first systematic assessment of social capital disparities across Italian provinces in years 1871-1911. Interestingly, the study find a limited impact of social capital on economic development, measured by industrial growth and socioeconomic well-being, while human capital seems to have driven the process of Italy's regional divergence before the Great War.

In this part of the work we investigate both political participation and "civic engagement", using different outcomes. The following results add empirical evidence to the picture of heterogeneity in the development of social capital in Italy, by investigating long-term social capital development in Italy before unity, by using regression discontinuity design.

First, we test whether greater demand for secularity of the state in Papal State territories come together with greater political engagement, whether the experience of inefficient institutions in pre-unity states in Southern Italy has lead people to develop a greater attention towards political participation.

Our outcomes of interest are voter turnouts in 1974 and 2011 referendum, expressed as the ratio between voters and people eligible to vote.

As a measure of "civic engagement" we investigate the presence of no-profit organization. We use as outcomes the number of no-profit organizations and the number of volunteers in them, both weighted for the population census at the municipality level.

### 3.3.1 Political participation – voter turnout

After having assessed that former Papal States affiliation increased the proportion of votes favourable to divorce in 1974, I am willing to test if it has increased also participation rates. My second outcome of interest regards 2011 referendum instead. The popular referendum of June 12 and 13, 2011 asked four questions about the repeal of laws concerning the privatization of water services (two questions), nuclear energy, and a provision exempting the Prime Minister and the Ministers from appearing in the court. All the four referendum were accepted, and the four laws repealed.

Table 6 shows results for the effect of Papal States affiliation on voter turnout in 1974. Table 7 shows results for voter turnout in 2011. In both tables, columns (1), (2), (3) show results for each considered boundary: Kingdom of Lombardy-Venetia, Kingdom of the Two Sicilies and Grand Duchy of Tuscany. Municipality level controls are included in each regression.

Table 6: effect of historic affiliation with Papal States on voter turnout in 1974 referendum

Voters 1974	(1) North	(2) South	(3) Tuscany
Papal States	0.0169*** (0.003)	0.0512*** (0.013)	-0.0029 (0.007)
Distance	-0.0000 (0.000)	0.0000*** (0.000)	0.0000** (0.000)
Papal States*Distance	-0.0000 (0.000)	-0.0000 (0.000)	-0.0000*** (0.000)
Observations	446	463	393
R-squared	0.310	0.422	0.174
controls	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls. Robust standard errors in parentheses \*\*\* p<0.01, \*\*p<0.05, \* p<0.1

Table 7: effect of historic affiliation with Papal States on voter turnout in 2011 referendum

Voters 2011	(1) North	(2) South	(3) Tuscany
Papal States	0.0130* (0.007)	0.0360*** (0.009)	0.0245 (0.016)
Distance	0.0000 (0.000)	-0.0000* (0.000)	-0.0000 (0.000)
Papal States*Distance	-0.0000 (0.000)	0.0000* (0.000)	0.0000* (0.000)
Observations	723	726	265
R-squared	0.392	0.138	0.115
controls	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls, faith in local institutions, ratio of regional educational expenses on Italian GDP.

Robust standard errors in parentheses \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Results provide evidence of a greater voter turnout in former Papal States territories both in 1974 and 2011 with respect to Kingdom of Lombardy-Venetia and Duchies and Kingdom of the two Sicilies. This regression includes local institution controls. Notable differences in the number of observations among different borders are due to the different optimal bandwidth size.

The coefficients are highly significant: the coefficient for Papal State against Kingdom of the two Sicilies is significant at 1% level in both years, and so is the coefficient against northern Italy in 1974. Significance declines at 10% level for the coefficient indicating Papal States territories against Kingdom of the two Sicilies in 2011.

A higher voters turnout in former Papal States municipalities with respect to Kingdom of Lombardy-Venetia can be explained as, according to Almagisti (2016), local realities developed different types of social capital over the centuries. In Veneto for example, family has absolute centrality, and social capital is built mainly upon family ties and smaller communities, while there is less cooperative attitude towards institutions after the experience of dissolution of Venetian republic.

In Tuscany, on the other hand, the disrepute of political institutions that characterizes other parts of Italy does not come true (Almagisti, 2016), and institutional mechanisms and political tradition has fostered a good attitude towards local institutions and social participation. Indeed, the coefficient for Tuscany is not significant, but of negative sign.

A positive effect of former Papal States affiliation on political participation exists also with respect to former Kingdom of the Two Sicilies municipalities, even though inefficient institutions characterized both states, still rooted in feudal rules and social structures. A positive effect of Papal States affiliation on political participation can be interpreted as a reaction to the experience of a government that embedded both political and spiritual power. Our hypothesis is that people living in those municipalities have developed and transmitted from one generation to another a greater attention towards the participation to political process as a way to actively be part of the shaping of institutions.

Interestingly, taking into consideration the southern border, the effect of former Papal States affiliation is larger for 1974 referendum with respect to 2011 referendum, showing that people in those municipalities were even more interested in participating in a political discussion concerning ethics and expressing themselves in favour of divorce, as seen in the previous results. This result is coherent to our hypothesis of a reaction against the imposition of religious precepts on all the society.

### 3.3.2 Civic engagement

Table 8 and 9 show results for our measures of civic engagement, concerning no profit organizations. The two outcomes considered are per capita number of no profit organizations with volunteers and number of volunteers over population.

Table 8: effect of historic affiliation with Papal States on per-capita no profit organizations

	(1)	(2)	(3)
No profit organizations	North	South	Tuscany
Papal States	-0.0013*** (0.000)	0.0012** (0.001)	-0.0017* (0.001)
Distance	-0.0000*** (0.000)	0.0000 (0.000)	0.0000 (0.000)
Papal States*Distance	0.0000 (0.000)	-0.0000 (0.000)	-0.0000 (0.000)
Observations	1,920	772	348
R-squared	0.213	0.209	0.403
controls	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls, faith in local institutions, ratio of regional educational expenses on Italian GDP. Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 9: effect of historic affiliation with Papal States on number of volunteers over local population

	(1)	(2)	(3)
Volunteers	North	South	Tuscany
Papal States	-0.0438*** (0.007)	0.0273*** (0.010)	-0.0510** (0.024)
Distance	-0.0000 (0.000)	0.0000** (0.000)	0.0000 (0.000)
Papal States*Distance	0.0000 (0.000)	-0.0000 (0.000)	-0.0000 (0.000)
Observations	1,623	854	334
R-squared	0.265	0.195	0.350
controls	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls, faith in local institutions, ratio of regional educational expenses on Italian GDP. Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



Our results about civic engagement seem to support Putnam's theory (1993), as overall differences exist between northern and southern regions. Such differences may be the result of even more ancient historic contingencies, starting from 11<sup>th</sup> and 12<sup>th</sup> century.

If we believe our model, we are identifying only the effect of institutions that characterized pre-unity States, in 18<sup>th</sup> and 19<sup>th</sup> century. In particular, the effect of pre-unity institutions is that municipalities belonging to former Papal States territories have less civic engagement than northern regions and Tuscany, but more civic engagement than southern regions. Coefficients are highly significant, at 1% and 5% for Papal States versus North and South, at 5% and 10% for Papal States against Tuscany.

Putting together all the pieces might not be easy. Previous results about 1974 referendum and religious marriages give us the idea that municipalities that were affiliated to Papal States have developed greater attention towards the secularity of the State. Also, in these municipalities people participate more to the political process, at least in vote regarding social issues. Given these results, we may consider former Papal States municipalities "less religious" today. As regards civic participation however, we cannot exclude that a positive effect on engagement in no profit associations is driven by religion.

Religious participation and church attendance constitute an important place in which people develop civic skills by entering in contact with the rest of the community. Anthropology, sociology, experimental psychology, and experimental economics have collected over the years evidence on so-called "religious prosociality" (Norenzayan and Shariff, 2008 for a review), that is the idea that religion facilitates acts that benefit others at a personal cost.

Congregations can mobilize their members for civic involvement in a number of ways. First, when clergy and other religious leaders stress the importance of reaching out to those who are in need during sermons, homilies, teachings, or prayers (Brewer, Kersh and Petersen, 2003, Wuthnow, 2002, 2004). Secondly, congregations informally encourage civic engagement through supplying personal friendship networks that provide social incentives to be active (Verba, Schlozman and Brady, 1995). Third, congregations expose people to important information about civic engagement in communities by hosting speakers from social service and community agencies and by including announcements about civic activities in religious service programs (Brewer et al., 2003, Chaves, 2004, Chaves et al., 2002). Fourth, congregations cultivate skills that are transferable to civic efforts outside of congregations since they offer opportunities for members to participate in a range of leadership activities that involve writing letters, planning meetings, giving presentations, and attending meetings where decisions are made (Cavendish, 2000, Verba et al., 1995).

However, Beyerlein and Hipp (2006) prove that there are at least two conditions under which congregations influence active involvement in civic organizations. These are the type of congregation activity in which members participate and the context in which the activity occurs. The authors find evidence of significant effect of congregational activity beyond religious service on civic participation and different effects of different religious traditions, with a positive effect of Catholicism on social engagement.

The higher presence of churches and other religious structures may have favoured to a certain degree social interactions among people living in former Papal States municipalities, and these social interactions may have generated greater civic consciousness, developing social capital skills and social participation. Although in our results about marriages and abortion these municipalities show less attachment to religious principles, accordingly to the argument proposed by Beyerlein and Hipp (2006), other types of congregational activities linked to religious structures may have fostered social skills and participation.

The extent to which religion is implicated in human cooperation remains open to scientific debate (Norenzayan and Shariff, 2008).

Another interpretation of our results might be that social engagement and political participation have grown together, as a way of contributing to the pursuing of a better society and as a reaction in a lay direction to the experience of a government that had also spiritual authority. In this case, human prosociality would be fostered by the cultural spread of reliable secular institutions, such as courts, policing authorities, and effective contract-enforcing mechanisms, contributing to the development of a secular moral authority. Tuscany in this sense is clear evidence. Indeed, there are many examples of modern, large, cooperative and not very religious societies, such as those in Western and Northern Europe, that nonetheless retain a great degree of intragroup trust and cooperation (Norenzayan and Shariff, 2008).

In both cases, signs of a persistence of pre-unity institutions show up in our results, and in particular the experience of Papal States shows to impact the social capital of the considered communities. Further research with other outcomes could enrich the discussion on the complex framework of social capital in Italy, regarding for example religious attendance or involving more detailed data on no profit organizations in Italian municipalities.

### 3.4 Education

In the third part of the work I discuss our results on educational attainment.

We chose it as our last outcome of interest because education has been discussed in the literature in its relationships with religiosity and social capital, and so completes our framework of discussion.

First of all, education can affect individuals' preferences and behaviour, and can also impact economic development indirectly if it leads to secularization, democratization and enhanced civic participation. The relationship between education, religion or secularization has been widely discussed.

Many philosophers and social scientists from Durkheim to Weber have argued that increased levels of education would diminish the need for religious adherence, because if education improves cognition and the ability for critical thinking, more educated people should be less likely to believe in supernatural forces, reducing religiosity (Mocan and Pogorelova, 2014).

However, bias due to omitted variables cause many cross-sectional studies to provide contradictory evidence, that is a positive relation between education and religiosity (Iannaccone, 1998).

Recent studies overcome the problem through different techniques. Becker, Nagler and Woessman (2014) construct a unique panel dataset of advanced-school enrolment and Protestant church attendance in German cities between 1890 and 1930 and find that while cross-sectional estimates replicate a positive correlation, in panel models where fixed effects account for time-invariant unobserved heterogeneity education, but not income or urbanization, is negatively related to church attendance. Moreover, in panel models with lagged explanatory variables, educational expansion reduces church attendance.

Moran and Pogorelova (2014) use compulsory schooling reforms in 11 European countries as a source of exogenous variation and show that exposure to these education reforms indeed increased the years of completed education. By employing micro data from the European Social Survey, they analyse how individuals' propensity to identify themselves as religious and the extent of their religious activities are impacted by their education levels. They find consistently large negative effects of schooling on self-reported religiosity, social and solitary religious acts (religious services and frequency of praying). Moreover, increased mandatory years of schooling reduces individuals' propensity to believe in luck and horoscopes.

Cesur and Mocan (2014) using a unique survey of adults in Turkey find that an increase in educational attainment due to an exogenous secular education reform decreased women's

propensity to identify themselves as religious, lowered their tendency to wear a religious head cover and increased tendency for modernity.

On the other hand, the relationship between social engagement and education is puzzling.

Coleman (1988) first modelled the relation going from social to human capital, by demonstrating the effect of social capital in the family and in the community in aiding the formation of human capital. Coleman used remaining in high school until graduation versus dropping out as measure of human capital. Both social capital in the family and social capital outside it, in the adult community surrounding the school, showed evidence of considerable value in reducing the probability of dropping out of high school. In other words, greater social capital fosters demand for education.

Accordingly, La Porta, Lopez-de-Silanes, Schleifer and Vishny (1997) find that the effect of trust on schooling outcomes is quite strong, as one standard deviation increase in trust raises the percentage of high-school graduates in the population by one-half of a standard deviation, and school adequacy by one-third of a standard deviation.

More recently, Fan (2006) analyses a framework in which social capital, identified in religion, affects children's education, *à la Coleman*. Fan develops a model in which people's religious participation are determined by the concern for their children's human capital accumulation as well as their religious beliefs. Religious capital is considered as conducive to children's education and moral development, and a household's religious participation enhances the social capital for the creation of the children's human capital.

At the same time, conversely education could be a channel of development of social capital, causing reverse causality. The main argument in this direction starts from the assumption that social trust arises when a community shares a set of moral values in such a way as to create regular expectations of regular and honest behaviour (Fukuyama, 1995). This set of common regular behaviour is created through repeated interactions in voluntary organizations. Individuals learn to trust each other by meeting and interacting on a voluntary basis, for example in schools (Bjornskov, 2009). Schooling has a socialization effect, which in the last resort could induce individuals to trust and engage in voluntary activity. Higher learning implies that individuals become better informed and better at interpreting perceived information, as well as becoming more conscious of the consequences of actions taken by themselves and others. Indeed, education is one of the most important predictors of many forms of social and political engagement (Helliwell and Putnam, 1999).

These arguments will help us in discussing the results of our regressions investigating educational outcomes.

We include education as the last outcome of interest, and four variables are considered, one for each level of qualification in 2001 at the municipality level:

- literacy rate, computed as the ratio of illiterates over total population;
- primary school qualification rate, computed as the ratio of people with a primary or lower secondary school qualification over total population;
- secondary school qualification rate, computed as the ratio of people with an upper secondary school qualification over total population;
- university qualification rate, computed as the ratio of people with a university degree (*Laurea*) over total population.

Tables 10 to 12 show the effect of Papal States affiliation on the four outcomes, for all three borders considered. Municipality level controls are included in each regression.

Table 10: effect of Papal States affiliation on qualification rates (versus Kingdom of Lombardy-Venetia and Duchies)

	(1)	(2)	(3)	(4)
North	Illiterates	Primary Lower Sec	Upper Secondary	University
Papal States	0.0048*** (0.001)	-0.0160*** (0.004)	0.0046 (0.004)	0.0010 (0.002)
Distance	0.0000*** (0.000)	-0.0000*** (0.000)	0.0000 (0.000)	0.0000 (0.000)
Papal States*Distance	-0.0000 (0.000)	0.0000 (0.000)	-0.0000*** (0.000)	-0.0000 (0.000)
Observations	1,487	905	905	1,062
R-squared	0.199	0.401	0.285	0.453
controls	YES	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls, faith in local institutions, ratio of regional educational expenses on Italian GDP.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 11: effect of Papal States affiliation on qualification rates (versus Kingdom of the two Sicilies)

	(1)	(2)	(3)	(4)
South	Illiterate	Primary Lower Sec	Upper Secondary	University
PapalState	-0.0036** (0.001)	0.0277*** (0.007)	-0.0118** (0.006)	-0.0031 (0.002)
Distance	-0.0000*** (0.000)	0.0000** (0.000)	-0.0000 (0.000)	-0.0000** (0.000)
PapalStateDistance	0.0000** (0.000)	-0.0000*** (0.000)	0.0000** (0.000)	0.0000*** (0.000)
Observations	971	627	755	577
R-squared	0.259	0.215	0.165	0.242
controls	YES	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls, faith in local institutions, ratio of regional educational expenses on Italian GDP.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 12: effect of Papal State affiliation on qualification rates (versus Grand Duchy of Tuscany)

	(1)	(2)	(3)	(4)
Tuscany	Illiterate	Primary Lower Sec	Upper Secondary	University
PapalState	-0.0007 (0.002)	-0.0323*** (0.010)	0.0257*** (0.006)	0.0074** (0.003)
Distance	0.0000* (0.000)	-0.0000*** (0.000)	0.0000*** (0.000)	-0.0000 (0.000)
PapalStateDistance	-0.0000 (0.000)	0.0000 (0.000)	-0.0000 (0.000)	0.0000 (0.000)
Observations	331	337	348	428
R-squared	0.181	0.389	0.324	0.403
controls	YES	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls, faith in local institutions, ratio of regional educational expenses on Italian GDP.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Evidence for the northern border is conflicting. The coefficient for the ratio of illiterates is positive and significant at 1% level, indicating that municipalities that used to be part of Papal States have higher illiteracy levels. At the same time, the coefficient for primary and lower secondary school qualification is negative and significant.

Because the coefficient for secondary school is not significant, we are not able to say which one of the following is true: if the coefficient for upper secondary school was positive, then it would mean that although there are more illiterates in former Papal States municipalities, people that started schooling reached higher levels of education, and that would also compensate for lower primary qualification rate; if the coefficient was negative, then it would mean that actually fewer people in former Papal States municipalities managed to complete primary or lower secondary school.

Considering only the two significant coefficients for illiterates and primary and lower secondary qualification, we tend to interpret the results as lower demand for education in former Papal States municipalities.

Things change when considering the comparison with the Kingdom of the two Sicilies. Former Papal States municipalities have lower illiteracy rates, the coefficient being significant at 5% level, and higher primary-lower secondary school qualification. At the same time, former Papal States municipalities show to have lower upper secondary school qualification rates. In other words, it seems that in former Kingdom of the two Sicilies municipalities there are more illiterates, but people that started schooling reached higher levels of education. Overall, the interpretation of these results is not straightforward, but apparently we cannot exclude a higher demand for education in former Kingdom of the Two Sicilies municipalities with respect to Papal States ones.

As regards Tuscany border, Papal States affiliation has a positive effect on upper secondary qualification rates and university degree rates. Both coefficients are significant, at 1% and 5% level respectively.

Historiography has highlighted the inadequacy of pre-unity regimes in terms of education, although such inadequacy can be considered a direct consequence of more general economic and social structures. Considering the inefficiency of educational systems also in Papal States, it is hard to think of a positive long lasting effect of these institutions on modern educational attainment. Therefore, the results of our comparison on the Tuscany border are surprising.

A possible explanation of the positive effect of Papal States affiliation on educational attainment, in a similar way to previous outcomes, is a reaction to centuries of inefficient institutions. Once better institutions are established, after Italian unification, citizens residing in the former Papal States developed higher demand for education. The same holds for former

Kingdom of the two Sicilies, which were also characterized by inefficient institutions and poor educational system.

Further arguments can be found in the attitude towards religion in former Papal States municipalities. Our results on ethics, abortion and religious marriages give us evidence of lower religiosity in these municipalities. Coherently with a view of positive association between education and secularity (Becker, Nagler and Woessman, 2014; Mocan and Pogorelova, 2014), less religious municipalities should also have greater levels of educational attainment.

However, this argument has a couple of weaknesses to consider. First, it is not clear whether in this case greater consciousness about the need for secular institutions has lead people to increase demand for education, or reversely education has fostered secularity, as discussed by most of the literature. Second, Tuscany is historically and culturally characterized by an anti-clerical attitude as well.

Finally, we can integrate our discussion with previous results about social capital. We found evidence of greater social capital of former Papal States municipalities with respect to Kingdom of the Two Sicilies.

A model as the one developed by Coleman (1988), which assumes a relationship going from social capital to human capital, is not always applicable in our results.

The model is applicable for the northern border, where municipalities with higher social capital, as predicted by our model, have also higher educational attainment.

Considering Papal States and Tuscany border instead, our results show that former Papal States municipalities have less social capital in terms of vote participation and civic engagement, but higher demand for education. Conversely, with respect to Kingdom of the two Sicilies former Papal States municipalities have more social capital but less demand for higher levels of education. For these two cases a model à la Coleman is not applicable.

Coherence between results about social capital and education would strongly support our hypothesis of development of greater demand for education once better institutions are established, but this conflicting evidence leaves open space for further debate on how to explain this empirically significant effects of pre-unity institutions, which shows to be there in any case.



## **4. Robustness checks**

### **4.1 Within-region studies**

A lot has happened in Italian history in more than a hundred and fifty years after unification. Italy has developed economically and socially, has gone through two world wars, and has become one of the founder members of the European Union.

As stated before, one of the characteristics of Italy that has attracted the attention of scholars is its regional heterogeneity, with different paths of economic development and great variety of local economic systems. Not only among different regions, but even at the provinces' level or strictly territorial there are peculiar differences: take for example the case of industrial districts in northern and central Italy.

The study of Italian regional heterogeneity is interesting in terms of economics of growth, but at the same time is challenging. In particular, in a research like this one the assumption of being able to identify the effect of institutions that ceased to exist more than a century and a half ago is crucial, but also fragile. The differences among Italian regions are the result of course of starting conditions at the time of unification, but mainly of different economic programs that succeeded over the years, political differences, and local institutions differences.

In order to correct identify the effect of pre-unity institutions we should be able to control for all these aspects in our models. We should then think to restrict our comparison groups of municipalities, for example comparing municipalities in the same modern region, or even province, that is crossed by a historic pre-unity border.

The pre-unity borders follow mostly modern regional borders, with few exceptions, as we can see in figure 4, which represents modern regions' borders on pre-unity states. Red lines indicate Papal States border, and they cross modern regions in two cases only, Latium and Emilia Romagna.

We restrict our sample, while methodology remains the same. Regression Discontinuity design is implemented, controlling for distance and interaction between distance and a dummy for Papal States. Optimal bandwidth around the border is computed for each outcome using Imbens and Kalyanaraman's (2012) strategy implemented in Stata.

Figure 4: modern Italian regions and pre-unity states



By comparing municipalities in Latium and Emilia that are on the opposite side of pre-unity borders, we are able to refine our analysis with even more convincing evidence.

In the following page, figures 5 and 6 represent in detail the municipalities on historic borders in Emilia Romagna and Latium, in a sample 40 km buffer.

Figure 5: 40 km buffer around historic Papal States border, Emilia Romagna

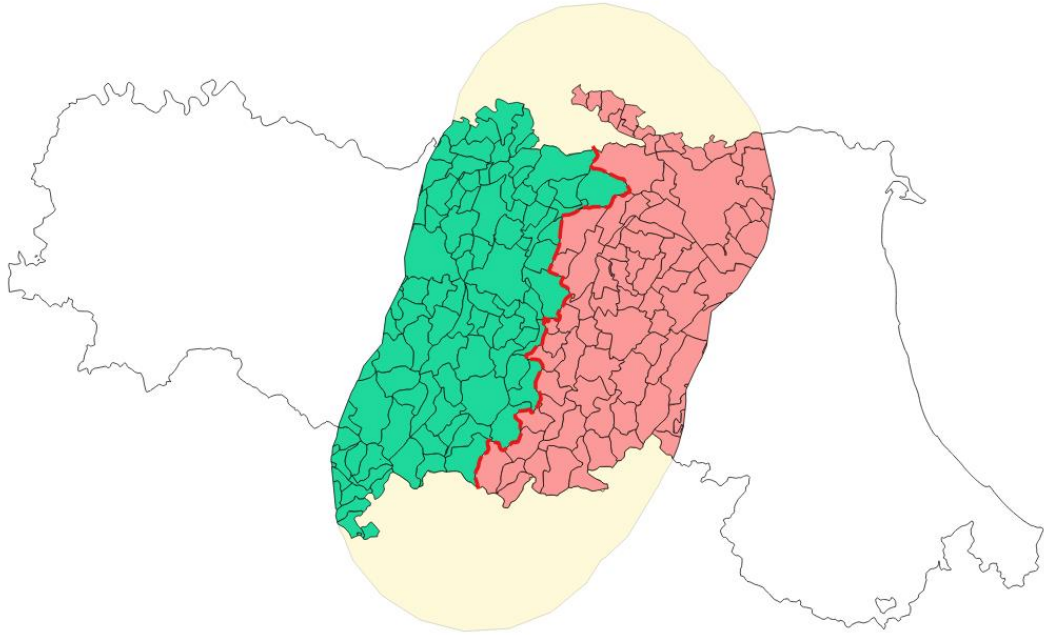
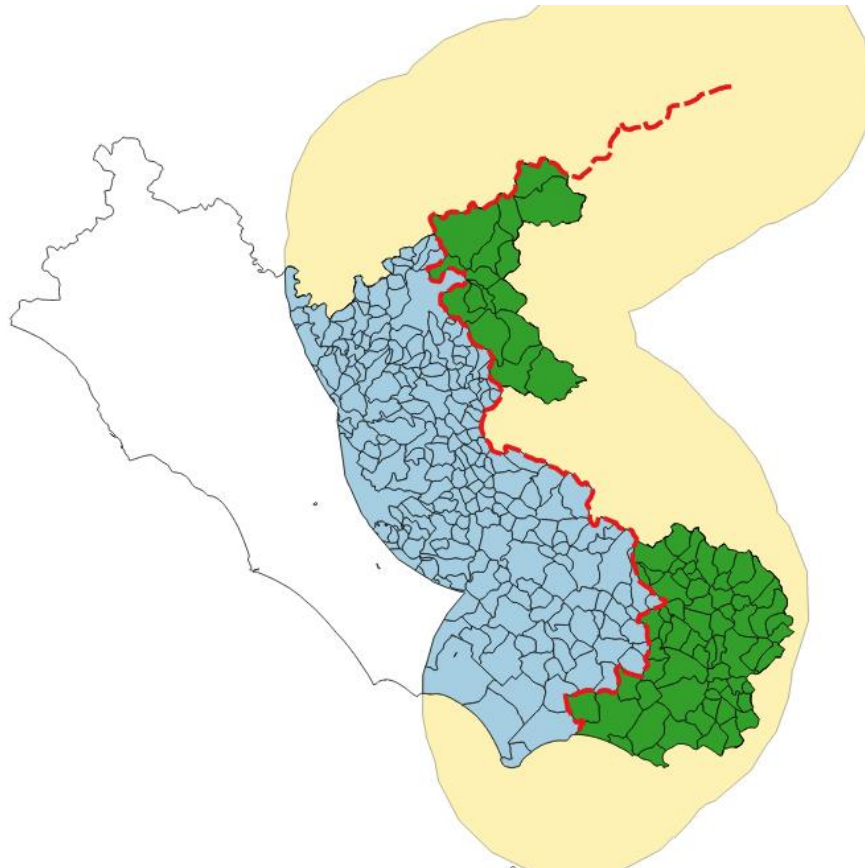


Figure 6: 40 km buffer around historic Papal States border, Latium



#### 4.1.1 Ethics

Tables 13 and 14 show robustness checks results on the two outcomes considered to investigate the attitude towards ethical issues. These are the ratio of votes favourable to divorce in over total votes in 1974 referendum, and the proportion of religious marriages over total marriages in 2012.

Table 13: effect of historic affiliation with Papal States on proportion of votes favourable to divorce, referendum 1974, and number of religious marriages in 2012, Emilia Romagna

Emilia Romagna	(1) Referendum74	(2) Religious Marriages
Papal States	0.0060 (0.016)	-0.0356 (0.042)
Distance	-0.0000* (0.000)	0.0000 (0.000)
Papal States*Distance	0.0000 (0.000)	-0.0000 (0.000)
Observations	192	183
R-squared	0.586	0.270
controls	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 14: effect of historic affiliation with Papal States on proportion of votes favourable to divorce, referendum 1974, and number of religious marriages in 2012, Latium

Latium	(1) Referendum74	(2) Religious Marriages
Papal States	0.0624*** (0.021)	-0.1651** (0.064)
Distance	0.0000 (0.000)	0.0000 (0.000)
Papal States*Distance	-0.0000 (0.000)	-0.0000 (0.000)
Observations	326	346
R-squared	0.349	0.091
controls	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Coefficients for municipalities within Emilia Romagna are not significant, although their sign is coherent with our hypotheses of greater acceptance of abortion and lower number of religious marriages in former Papal States municipalities.

Interestingly, coefficients for Latium are significant at 5% level. They represent a higher degree of attention towards secularity in former Papal States territories, as former Papal States affiliation increases the proportion of votes favourable to divorce and decreases the proportion of religious marriages.

These results constitute important evidence supporting our hypotheses of long lasting effects of pre-unity states, in particular regarding culture and demand for secularism of the State in modern days.

#### 4.1.2 Social capital

Tables 15 to 18 replicate our previous experiments on outcomes measuring social capital. First, voter turnout in 1974 and 2011 is investigated as a measure of political participation. Then the number of per-capita no profit organizations and volunteers is used as measure of civic engagement.

Table 15: effect of historic affiliation with Papal States on voter turnout in 1974 and 2011 referendum, Emilia Romagna

Emilia Romagna	(1) Voters 1974	(2) Voters 2011
Papal States	0.0070 (0.005)	-0.0087 (0.010)
Distance	0.0000 (0.000)	-0.0000*** (0.000)
Papal States*Distance	-0.0000 (0.000)	-0.0000 (0.000)
Observations	163	226
R-squared	0.569	0.421
controls	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls. Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 16: effect of historic affiliation with Papal States on voter turnout in 1974 and 2011 referendum, Latium

Latium	(1) Voters 1974	(2) Voters 2011
Papal States	0.0328* (0.017)	0.0385*** (0.013)
Distance	0.0000*** (0.000)	-0.0000 (0.000)
Papal States*Distance	-0.0000* (0.000)	0.0000 (0.000)
Observations	267	332
R-squared	0.412	0.128
controls	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900. Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 17: effect of historic affiliation with Papal States on per-capita no profit organizations and volunteers, Emilia Romagna

	(1) No profit Organizations	(2) Volunteers
Emilia Romagna		
Papal States	0.0001 (0.000)	-0.0156* (0.009)
Distance	0.0000*** (0.000)	0.0000*** (0.000)
Papal States*Distance	-0.0000 (0.000)	-0.0000 (0.000)
Observations	322	322
R-squared	0.595	0.444
controls	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 18: effect of historic affiliation with Papal States on per-capita no profit organizations and volunteers, Latium

	(1) No Profit Organizations	(2) Volunteers
Latium		
Papal*States	0.0002 (0.001)	0.0049 (0.012)
Distance	0.0000 (0.000)	0.0000** (0.000)
Papal States*Distance	-0.0000* (0.000)	-0.0000** (0.000)
Observations	334	344
R-squared	0.189	0.191
controls	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Like in regressions regarding ethical themes, as for political participation further evidence on effect of historic Papal States affiliation comes from our within Latium study.

The coefficient for 1974 referendum is significant at 10% level, while the one for 2011 referendum is significant at 1% level, providing very robust results. Both coefficients are positive, proving evidence of a higher political participation in municipalities that experienced centuries of institutions mixing secular and spiritual power.

Limited evidence is found instead regarding civic engagement. The only significant coefficient is for the number of volunteers over total municipal population in Emilia Romagna. Results however are coherent with previous tests on the northern border. The coefficient tells us that in former Papal States municipalities there are fewer volunteers, testifying a lower social capital. The explanation for this might be that municipalities in Papal States, which were organized in institutions of feudal kind, had not the possibility of developing social capital and forms of civic engagement (Putnam 1993).

Both coefficients for our experiment in Latium are not significant.



### 4.1.3 Education

Table 19 and 20 sum up our results about education for all qualification levels. For each qualification level, proportion over municipal population is computed.

Table 19: effect of Papal States affiliation on qualification rates, Emilia Romagna

Emilia Romagna	(1) Illiterates	(2) Primary Lower Sec	(3) Upper Secondary	(4) University
Papal States	0.0006 (0.001)	0.0031 (0.005)	0.0057 (0.004)	0.0058*** (0.002)
Distance	-0.0000*** (0.000)	0.0000 (0.000)	0.0000** (0.000)	0.0000*** (0.000)
Papal States*Distance	0.0000*** (0.000)	-0.0000* (0.000)	-0.0000** (0.000)	-0.0000** (0.000)
Observations	318	261	261	289
R-squared	0.414	0.523	0.430	0.643
controls	YES	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 20: effect of Papal States affiliation on qualification rates, Latium

Latium	(1) Illiterate	(2) Primary Lower Sec	(3) Upper Secondary	(4) University
PapalState	-0.0047* (0.002)	0.0349*** (0.011)	-0.0108 (0.009)	-0.0067* (0.003)
Distance	-0.0000 (0.000)	0.0000 (0.000)	0.0000 (0.000)	-0.0000 (0.000)
PapalStateDistance	0.0000 (0.000)	-0.0000** (0.000)	0.0000 (0.000)	0.0000* (0.000)
Observations	361	312	336	301
R-squared	0.248	0.276	0.245	0.251
controls	YES	YES	YES	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls.

Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Significant evidence is found also in our experiments about educational attainment.

As for Emilia Romagna, municipalities that used to be affiliated to Papal States have a higher proportion of people who got a university degree, the coefficient being significant at 1% level. The coefficient proves a higher demand for education in these municipalities.

As for Latium, former Papal States municipalities have a lower proportion of illiterates, coefficient being significant at 10% level, and higher proportion of people with a primary or lower secondary qualification, significant at 1% level. Also, the coefficient for university is negative and significant at 10% level. These results are similar to when considering the whole Papal States – Kingdom of the two Sicilies border.

Overall, it seems that in former Kingdom of the two Sicilies there are more illiterates, but people who started an education path managed to complete higher schooling levels, as confirmed by the significant coefficient for university graduation rate. Like in previous experiments about education, we cannot exclude the interpretation of a higher demand for education in former Kingdom of the two Sicilies, which was also characterized by an inefficient educational system.

## 4.2 Double RDD: an introduction

In many Regression Discontinuity Design settings exogenously imposed cutoffs on several assignment variables define a set of different treatments. Papay et al. (2011) generalize the standard Regression Discontinuity Design to include multiple forcing variables, modelling simultaneously discontinuities that arise when multiple criteria determine placement into several different treatment conditions.

There are indeed many situations in which values on different forcing variables assign participants to a set of different treatment conditions, think for example about public education tests with cutoffs in different subjects, or public policy programs with multiple eligibility criteria.

In this last part of the work, we start discussing the implementation of a double RDD into a geographical setting. In particular, we consider jointly Papal States, Kingdom of the two Sicilies and Grand Duchy of Tuscany. Our two forcing variables are distance from the border between Papal States and Kingdom of the two Sicilies and distance from the border between Papal States and Grand Duchy of Tuscany. The treatments that these two variables determine are, like in previous standard RDD, being part of former Papal States against either Kingdom of the two Sicilies or Tuscany.

We adapt the model presented by Papay et al. (2011) in the following way:

$$Y = a + \beta_1 PT + \beta_2 PS + \beta_3 distT + \beta_4 distS + \beta_5 PT * distT + \beta_6 PT * distS + \beta_7 PS * distS + \beta_8 PS * distT + \beta_9 X + \mu$$

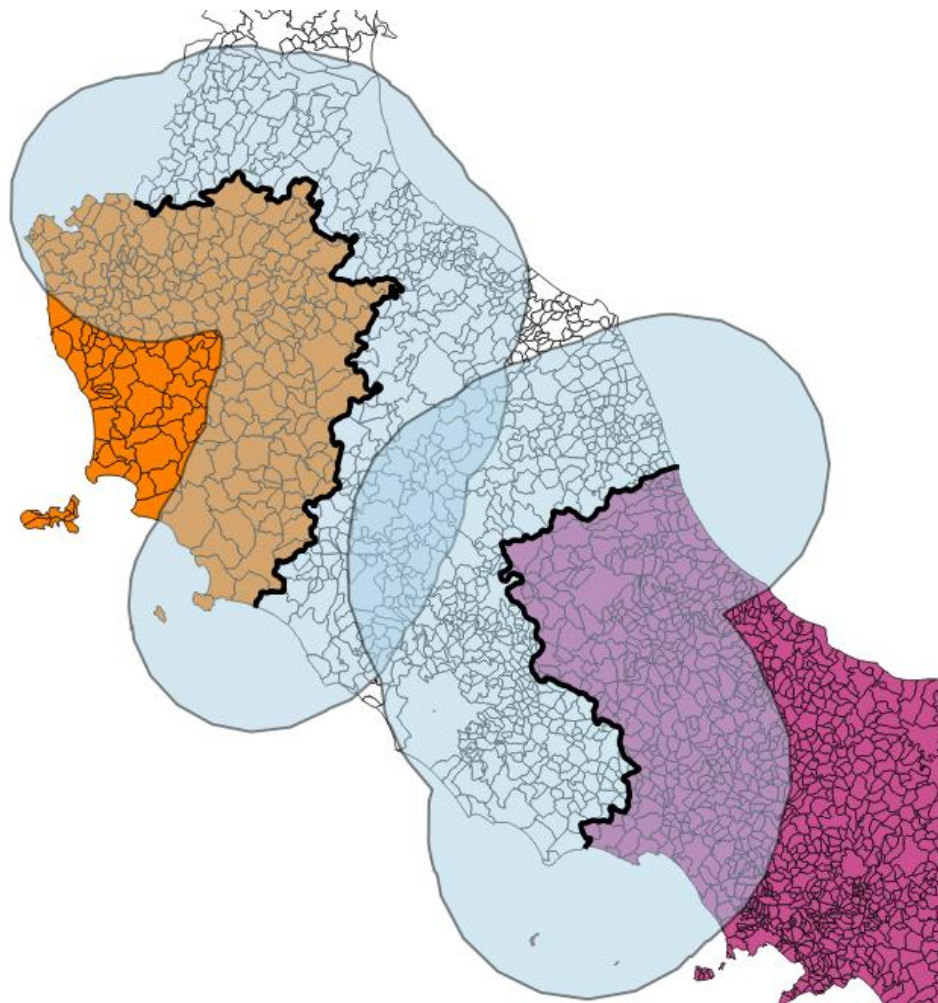
where PT indicates affiliation to former Papal States versus Tuscany, PS affiliation to former Papal States versus Kingdom of the two Sicilies, distT is the distance from the Tuscany border and distS the distance from Kingdom of the two Sicilies border. X contains the same municipality level controls used in previous regressions, including controls for local institutions.

Alternatively to simple distance from the borders, one might think of measuring latitude and longitude of all municipalities and develop a multi-dimensional RDD in those measures, like in Dell (2010).

As in previous experiments, optimal bandwidth around the two borders is computed using Imbens and Kalyanaraman's (2012) strategy.

In the following page, Figure 7 graphically represents our setting.

Figure 7: optimal bandwidths around Papal States borders for double RDD



As we can see in the picture, bandwidths are such that almost all municipalities in Papal States are considered, and therefore our local linear regression is very close to a parametric procedure.

We apply our model to the proportion of religious marriages and see if results are coherent with previous models. Table 21 sums up our results.

Table 21: effect of former Papal States affiliation on the proportion of religious marriages over total marriages in 2012, double RDD design

VARIABLES	(1) Religious Marriages
PT	0.3739*** (0.062)
PS	-0.1789** (0.077)
distT	0.0000*** (0.000)
distS	0.0000*** (0.000)
PT*distT	-0.0000*** (0.000)
PS*distS	0.0000* (0.000)
PT*distS	-0.0000*** (0.000)
PS*distT	0.0000*** (0.000)
Observations	1,379
R-squared	0.112
controls	YES

Controls include: population, area, mountainous area, height, seismicity, dimension, urbanisation, houses built before 1900, class age controls, faith in local institutions, ratio of regional educational expenses on Italian GDP. Robust standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

In our previous regression on religious marriages results were not significant as regards Kingdom of the two Sicilies and Grand Duchy of Tuscany, while in this new model the estimated coefficients are highly significant and coherent with our previous hypothesis.

In particular, municipalities in territories that used to be part of Papal States have a higher proportion of religious marriages with respect to municipalities in former Grand Duchy of Tuscany and lower proportion of religious marriages with respect to municipalities affiliated to former Kingdom of the Two Sicilies. The coefficients are significant at 1% level and 5% level respectively, and are of similar magnitude to the coefficients obtained in the standard RDD.

Overall, the model adds evidence to our hypothesis of a long-term effect of pre-unity institutions on attitude towards religion and ethics. Former Papal States territories have developed a preference towards civil marriages as part of a greater attention towards the secularity of society, but the effect does not overcome the anticlerical political and cultural legacy that instead characterizes Tuscany municipalities.

## Conclusions

The aim of this paper is trying to assess whether Italian pre-unity institutions have had long lasting effects on modern municipalities. The experiment is inspired from a recently developed field of literature which investigate long lasting effects of historic contingencies on economic development, such as Becker et al. (2016), Bukowski (2015), Dell (2010).

Italy constitutes a unique context for its framework of regional heterogeneity in terms not only of paths of economic development, but also of social and cultural characteristics. These differences are the results of years of different experiences and contingencies, and identifying the origins of the differences among modern regions is challenging, as designed models should be able to control for all factors that produce heterogeneity.

We use Regression Discontinuity Design (RDD) as our methodology. Thanks to RDD we are able to compare modern Italian municipalities that are close enough to historic borders, and therefore they are comparable, controlling for other factors, except for the fact that they have been subject to different institutions in Centuries preceding unification.

Thanks to a software using GIS technology we were able to reproduce historic borders and compute the distance of each municipality from them. Local linear regression is implemented, and optimal bandwidth around historic borders is computed using Imbens and Kalyanaraman's (2012) strategy for each regression.

We provided empirical evidence for different scopes of long-lasting effects of pre-unity institutions on modern Italian municipalities.

We first started discussing the attitude towards ethical matters, arguing that the experience of an inefficient government in Papal States territories that mixed secular and spiritual power has fostered a reaction that went beyond politics to impact also ethical principles in people living in those territories. Indeed, former Papal States municipalities have a greater proportion of votes favourable to divorce in 1974 referendum and a lower proportion of religious marriages over total marriages in 2012, proving evidence of higher demand for secularization of the state and the opposition towards the imposition of a religious ethics on the whole society.

Secondly, we investigated social capital, as most scholars have shown it is as an important source of discrepancies among Italian regions. The effect of pre-unity institutions on social capital is heterogeneous and coherent with historical contingencies in those States.

We consider voter turnout in 1974 and 2011 referendum as a measure of political participation. Municipalities that used to be affiliated with Papal States have significantly higher vote participation in both years with respect to Kingdom of Lombardy-Venetia and

Duchies and Kingdom of the two Sicilies. We argue that this is the effect of different institutional experiences in Centuries preceding Italian unification, and consider these results as evidence to Almagisti's (2016) hypothesis that different parts of Italy developed different forms of social capital. Moreover we argue that the opposition towards Papal States' institutional structure, which has transmitted also in social matters as shown before, has lead people to develop a greater attention towards political participation as a way to participate to the shaping of institutions.

We don't find significant evidence of different political participation between Papal States municipalities and Tuscany. We argue that Tuscany is historically characterized by political and economic institutions that fostered the construction of social capital characterized by faith and acceptance of institutions, and participation in them.

We also investigate the number of per capita no profit organizations and proportion of volunteers on municipal population as measures of civic engagement. Results seem to support Puntam's (1993) hypothesis, as we find significant differences in civic engagement mainly between northern and southern regions. In particular, municipalities belonging to former Papal States territories have less civic engagement than northern regions and Tuscany, but more civic engagement than southern regions.

In the third part of our research we investigate educational attendance, using as outcomes the proportion of municipal population having a certain qualification rate. Educational systems were badly organized and poor in resources in all pre-unity states, with perhaps the only exception being Kingdom of Lombardy-Venetia under Austrian domination. Therefore, it is hard to imagine a positive persistent effect of those institutions.

Former Kingdom of Lombardy-Venetia affiliation is associated with significantly lower illiteracy levels and higher primary and lower secondary qualification rates. Being also insignificant the coefficient for upper secondary education and university, we interpret these results as higher educational attainment in northern regions. This is the only case where we may suppose a positive lasting effect of pre-unity institutions, as a consequence of Austrian experience.

With respect to Kingdom of the two Sicilies, former Papal States affiliation is associated with significantly lower illiteracy levels, higher primary and lower secondary and lower upper secondary qualification rates. Therefore, it seems that even if former Kingdom of the two Sicilies affiliation is associated with higher illiteracy levels, people that started education reached higher schooling levels.

Surprisingly, Papal States affiliation increases educational attainment in our experiment around the border with Tuscany. This result is hardly explainable considering at least two



perspectives. First, higher educational attainment in former Papal States municipalities is hardly explainable considering a positive relationship between attention towards secularity and demand for education (Becker, Nagler and Woessman, 2014; Mocan and Pogorelova, 2014), as Tuscany itself is characterized by an anti-clerical attitude. Secondly, it is explainable neither through a social capital argument, considering a positive relationship between social capital and education (Coleman, 1988; Fan, 2006; Bjornskov, 2009; Helliwell and Putnam, 1999), as previous experiments showed evidence of greater social capital in Tuscany.

Considering the experiments about education on the three borders jointly, there is no great evidence of a greater demand for education in former Papal States municipalities. There is rather evidence of heterogeneous effects interacting among them, at the institutional and social capital level.

Further within region experiments were made, in the only two cases where modern regions are crossed by historic borders, in order to restrict even further our sample of comparable municipalities and control for other possible sources of heterogeneity. Further evidence comes from our multiple RDD model that considers jointly two Papal States borders. These experiments prove the robustness of our experiments and in most cases confirm previous results.

Our experiment on Italian pre-unity states supports the idea that former institutions can leave a legacy even after generations of common statehood (Becker et al., 2016). In particular, we proved evidence of an effect on cultural norms, attitudes towards institutions, and on social capital. The interactions of these effects with other outcomes, such as educational attainment need to be further investigated.

Anyways, evidence proves that good governance can generate a cultural basis that facilitates collective action into the future (Becker, 2016), but also bad governance can affect the cultural basis that will determine the behaviour of collective action.

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