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Contents

1 Introduction **2**

2 Rural vs Urban : electoral behaviour in Italy **16**

2.1 Introduction 16

2.2 Institutional background 20

2.3 Data 24

2.3.1 Urban and Rural 24

2.3.2 Control Variables 27

2.3.3 Elections 29

2.4 Empirical Strategy 30

2.4.1 Validity of the instrumental variable 35

2.5 Results 37

2.6 Robustness 40

2.6.1 North - Centre - South 41

2.6.2 Urban Potential 43

2.7 Discussion 45

3 Social closure and populism **47**

3.1 Introduction 47

3.2 Institutional background 50

3.2.1 Populism 50

3.2.2 Social closure . . . 51
3.3 Data and Identification strategy . . . 54
3.3.1 Social closure . . . 55
3.3.2 Vote preferences . . . 57
3.3.3 Empirical analysis . . . 59
3.4 Results . . . 59
3.5 Robustness . . . 61
3.5.1 Sources of endogeneity and identification strategy . . . 61
3.5.2 Estimates by sub-samples . . . 65
3.5.3 Democratic Party . . . 68
3.6 Discussion and Conclusion . . . 69

4 Landownership elites and the literacy's expansion: Historical Evidence from Italy 71

4.1 Introduction . . . 71
4.2 Background . . . 74
4.3 Data . . . 82
4.4 Empirical Strategy . . . 84
4.5 Results . . . 86
4.6 Parallel Trends, Robustness Checks and Extensions . . . 87
4.7 Conclusion . . . 89

5 Conclusion 92

A Rural vs Urban : electoral behaviour in Italy 95

A.1 Data . . . 95
A.1.1 Night lights (NTL) . . . 95
A.1.2 Population density . . . 96
A.1.3 Geographic controls . . . 96

A.1.4 Population controls . . . 97
A.1.5 Party vote preferences . . . 98
A.1.6 Extended Data Sources and Summary Statistics . . . 100
A.2 Instrumental Variable . . . 105
A.2.1 Endogeneity . . . 105
A.2.2 Endogenous sorting . . . 107
A.2.3 Placebo tests . . . 108
A.3 Alternative measures: population density . . . 112
A.4 Additional Results and Extended Specifications . . . 113

B Social closure and populism **121**
B.1 Data . . . 121
B.2 Alternative measures for social closure . . . 125
B.3 Yearly analysis . . . 128

C Landownership elites and the literacy's expansion: Historical Evidence from Italy **133**
C.1 Budget Expenditures for Elementary and Popular Education . . . 133
C.2 Data . . . 135
C.2.1 Literacy rate . . . 135
C.2.2 Land inequality . . . 136
C.2.3 Control Variables . . . 137
C.2.4 Extended Data Sources and Summary Statistics . . . 138
C.3 Additional Results and Extended Specifications . . . 141
C.3.1 Conley Standard Errors - Alternative Threshold . . . 141
C.3.2 Alternative measure for literacy rate . . . 141
C.3.3 Alternative measure for land inequality . . . 141
C.3.4 Land inequality and literacy rate by gender . . . 142

C.3.5 Accounting for north-south differences 142

List of Figures

2.1 Centre-periphery gradient 26
2.2 Rural - Urban Variables (2000-2020 average) 27
2.3 Votes shares for right-wing parties (L); M5S (C); Lega (R) 29
2.4 Average ruggedness 33

3.1 First Share (1993 and 2004) 57
3.2 Mean vote shares for right-wing parties 58

4.1 Expenditure of elementary and popular education 80
4.2 Literacy rate variation 1911-1921 83
4.3 Land inequality 1929 83
4.4 Parallel Trends 88

A.1 Right-Wing regional president and Regional land consumption 2006-2020 . . 106

B.1 Entropy 126

C.1 Expenditure of elementary and popular education 135
C.2 Scanned census excerpt about the literacy of the population for 1911 136
C.3 Scanned census excerpt about the time-variant controls for 1921 138

List of Tables

2.1 Rural urban variable summary statistics 27
2.2 Geographical and population controls 28
2.3 Vote preferences 29
2.4 Ruggedness summary statistics 34
2.5 Rural-Urban gradient on Vote Preferences 37
2.6 Alternative urbanization measure on Vote Preferences 38
2.7 First Stage 2SLS 39
2.8 Alternative urbanization measure on Vote Preferences - 2SLS 40
2.9 Rural-Urban gradient on Vote Preferences: North - Centre - South 42
2.10 Alternative urbanization measure: Urban Potential 44

3.1 Social Closure and Vote preferences 58
3.2 Effect of first share (2004) on Right-Wing parties preferences 61
3.3 Effect of First Share (1993) on Right-Wing parties preferences 62
3.4 Ruggedness summary statistics 62
3.5 Effect of Social Closure on Right-Wing parties preferences - 2SLS 63
3.6 Fist Share (2004) and Vote Preferences: North - Center - South sub-samples 66
3.7 First Share (2004) and Vote Preferences: Cities - Towns - Villages sub-samples 67
3.8 Entropy and Vote Preferences: Cities - Towns - Villages sub-samples 68

4.1 Summary statistics 85

4.2 Elite presence on Literacy rate . . . 91

A.1 Rural - Urban Variables' Description and Data Sources . . . 101
A.2 Control Variables' Description and Data Sources . . . 102
A.3 Vote Preferences' Description and Data Sources . . . 102
A.4 Yearly Population controls summary statistics . . . 103
A.5 M5S summary statistics . . . 104
A.6 Lega summary statistics . . . 104
A.7 Right-Wing parties summary statistics . . . 104
A.8 Sub-samples based on deciles of Night Lights . . . 109
A.9 Sub-samples based on deciles of Population Density . . . 109
A.10 Within-decile first stage F-tests . . . 110
A.11 Night-Lights delices - Party vote preference shares . . . 111
A.12 Population density delices - Party vote preference shares . . . 111
A.13 Alternative urbanization measure on Vote Preferences - 2SLS . . . 113
A.14 First Stage 2SLS . . . 114
A.15 Yearly Rural-Urban gradient on Lega Vote Preferences . . . 115
A.16 Yearly Rural-Urban gradient on Right-Wing Vote Preferences . . . 116
A.17 Yearly Rural-Urban gradient on M5S Vote Preferences . . . 117
A.18 Alternative urbanization measures on yearly Lega Vote Preferences . . . 118
A.19 Alternative urbanization measures on yearly Right-Wing Vote Preferences . . . 119
A.20 Alternative urbanization measures on yearly M5S Vote Preferences . . . 120

B.1 Control Variables' Description and Data Sources . . . 122
B.2 Yearly time-variant controls summary statistics . . . 123
B.3 Summary statistics for time-invariant controls . . . 124
B.4 Summary statistics for yearly party vote preferences . . . 124
B.5 Effect of Social Closure on Right-Wing parties preferences - 2SLS . . . 127

B.6 First Share (2004) and yearly vote preferences for Right-Wing parties - OLS 129
B.7 First Share (2004) and yearly vote preferences for Lega - OLS 129
B.8 First Share (1993) and yearly vote preferences for Right-Wing parties - OLS 130
B.9 First Share (1993) and yearly vote preferences for Lega - OLS 130
B.10 First Share (2004) and yearly vote preferences for Right-Wing parties - 2SLS 131
B.11 First Share (2004) and yearly vote preferences for Lega - 2SLS 131
B.12 First Share (1993) and yearly vote preferences for Right-Wing parties - 2SLS 132
B.13 First Share (1993) and yearly vote preferences for Lega - 2SLS 132

C.1 Variables' Description and Data Sources: Literacy rate 139
C.2 Variables' Description and Data Sources: Land Inequality 139
C.3 Variables' Description and Data Sources: Time-Variant variables 140
C.4 Elite presence and Literacy rate - Conley Standar Errors 144
C.5 Elite (mean) presence and Literacy rate 145
C.6 Land inequality (continuous) on Literacy rate 145
C.7 Share of land on Literacy rate 146
C.8 Elite presence on Male Literacy rate 147
C.9 Elite presence on Female Literacy rate 147
C.10 Analysis by sub-sample: North and South 148

Abstract

My dissertation comprises three distinct chapters in development economics.

The first chapter presents a very comprehensive literature review in the area of political economics.

In the second chapter, we study the effect of the degree of urbanisation on political preferences toward populist parties in the first two decades of the 21st century. We construct several measures to classify Italian municipalities on the rural-urban spectrum. We focus on the main Italian populist parties, namely the populist right and M5S. Adopting an IV strategy, we find the lower the degree of urbanisation, the higher the preferences for right-wing populist parties. At the same time, near city centres, preferences for right-wing populist parties are negative. We conclude the analysis by investigating possible mechanisms supporting our results through an analysis for each election date.

In the third chapter, we study how social closure contributes to shape populism preferences. The concept of social closure can be interpreted as a bond within a society. In social network models, this refers to the density of an individual's network, the number of neighbouring nodes and how they create new ones to define the extent of the network itself. We adopt the dimension of social closure by exploiting the surnames in telephone directories constructed by Buonanno and Vanin [2017]. Dwelling on right-wing populist parties. We find that the greater the social closure in a municipality, the greater the support for right-wing populist parties. The results remain similar using alternative measures. Our results contribute in a new way to the understanding of the phenomenon of populism, with

particular reference to the reinforcing process of right-wing populist propaganda.

In the fourth chapter, we study the relationship between landowner elites and the increase in literacy rate in the twentieth-century Italian context. In 1911, a school reform (Deneo-Credaro) was implemented in Italy. It centralised the primary school management, control and budgeting from the municipalities to the state. We employ the introduction of the reform as a quasi-experimental setting to study the impact of the reform according to the land inequality in a diff-in-diff analysis. We construct a panel data set at the municipality level, for newly digitised data on education for 1911 and 1921, where the former is the treatment year. We argue that the lost power over local administrations aside from the elite lead to a substantial increase in the population literacy rate. The results are consistent with performing different robustness checks.

The fifth and last chapter concludes.

Chapter 1

Introduction

The construction of the political preferences of a country's citizens, the distinction of socio-economic characteristics based on those preferences, the historical, cultural context that accompanies each electoral appointment, and new forms of electoral propaganda are all widely studied by political economists. All these elements have been revolutionised with the advent of new technologies, democratisation to access information, participation in social networks, and reduced transportation costs. Politicians have abandoned the traditional way of doing politics with mass parties and campaign rallies in the squares. Political campaigning has moved to social networks, television, less and less to print media. It has already become faster, more concise. Algorithms make it possible to reach the convinced voter and signal the uncertain to be persuaded. The economic crisis in the middle of the first and second decades in the 21st century then deeply marked global economies. Globalisation stumbled, leaving behind numerous losers. Thus, companies relocated, workers who used to contribute to the state coffers with their own contributions now became exactors of it by receiving unemployment. The grandchildren of those who fought in World War II are faced with increasing poverty.

From the social point of view, the event of new technologies allows the exchange of ideas with a wider audience of people. It is easier to reach people who share similar ideas. New

movements find platforms to spread their ideologies. Thus movements for social rights, for the defence of the environment are born; associationism is strengthened. This is in the view of most positivists. The other side of the coin, as described by a more negative view, sees alienation and growing individualism. Concomitant to the economic crisis arises general discontent. Divisions are created between those who can and those who have lost all possibilities. People from the professional figures most weakened by the crisis, mainly belonging to the primary and secondary sectors, lose hope along with their jobs. That is when, according to sociologists, that sense of resentment and nostalgia is created. Nostalgia for better times when social conflict was more peaceful, when values were certain and shared. A feeling that in Italy many summarise as "we were better off when we were worse off."

In the same period, then the big cities, the real driving force behind the economy and culture of many countries, grew and established themselves. The most important and innovative companies, capable of making the crisis an opportunity, establish themselves in those places. The tertiary sector develops to such an extent that it occupies a larger share of the population than the primary and secondary sectors added together. Fashion is made in cities, books, music, art, and culture are developed and distributed in cities. Cities become more and more important. They reassert their social and economic role now, just as they asserted it during the first and second industrial revolutions. In fact, already during the first industrial revolution, people migrated from the countryside to reside near the places of production. The secondary sector, factories increased and diversified, became more specialised. In doing so, whole areas of production are formed around which people reside. Now these places are left to the suburbs of large cities, whose centrality is no longer marked by the factory but by glazed skyscrapers.

All these phenomena, these silent revolutions, the groans from the forgotten victims, the isolated suburbs relegated to their own destiny become the setting of discontent but above all of growing inequality. Oppositions increase, as does social breakdown. Citizenship thus begins to divide between those who have the luxury of employment and those who

do not, between rich and poor. But the oppositions are also geographical warping. The United States pitted against eastern power, in the European context two different speeds between the north of the continent and the PIGS, an acronym to identify the late countries bordering the Mediterranean. Distinctions are also created within the countries themselves and sometimes even within smaller territorial units. The abandonment of cities that were central to national production, now closed or relocated, is documented. Those with higher employment move to settings where businesses are growing and there are good prospects. Those without education and wealth contribute to the creation of those who have been "left behind." The countryside and more rural areas are pitted against the cities, progress against ancient splendour, opportunity opposed to memory.

And as the situation gets worse, the echo of the spectre of immigration intensifies. The immigrant becomes an additional risk to one's opportunities, in some ways a competitor. Social clash is created between natives and "invaders," between those who feel their rights are threatened by foreigners.

Appeal to politics becomes inevitable. Citizens seek solutions in political parties' programs. The responses are diverse. Old continent countries form and intensify a European community project. They break down borders, free mobility of people and goods among member countries. They form the European central bank with the important task of setting monetary policy. And it is precisely at the time of the greatest economic crisis that countries turn to European institutions to lift the fortunes of their economies. In the East, China captains world growth with double-digit figures. The united states embrace around the historic Atlanticist role. All this until the advent of the crisis. The perspective in this circumstance changes. Looking at politics no longer as a lifeline, but as a scapegoat. The picture of politics changes and adapts. Politicians build their campaign on the characteristics of their constituents. And a totally new rhetoric is established, at least on the surface: populism.

It is clear, however, that although events have occurred all over the globe, it is difficult

to interpret them from an international or even comparative point of view. Every country is different, and sometimes different provinces within the same country are different. For this reason, it is important to circumscribe events to one country. In our case, the choice fell in Italy. Italy has a dense history of historical events; it was the centre of the world in Roman times. It has played a key role during all historical periods, a protagonist in both world wars. It is a founding country of the European community and a G7 member. However, in addition to the historical calibre and contemporary importance of Italy, it has enough heterogeneous socio-economic but also geographical characteristics to be the ideal candidate.

In this thesis, we study several aspects related to the Italian context. In two of the articles, I focus on the populist rise that has characterised contemporary politics. In the third article, on the other hand, opening a parenthesis on the past, the inequality underlying the articles on populism is brought back to the last century, when this was linked to land ownership.

In the first chapter, we study the effect of the degree of urbanisation on political preferences toward populist parties. The geography of Italy particularly lends itself to studies in which we contrast the population living in cities with those residing in rural areas. The juxtaposition of Milanese skyscrapers against the vastness of the Tuscan hills; the centuries-old juxtaposition of north and south; fascism first, socialist rise later to the long period of Berlusconism; these are all distinguishing features of Italy. The allocation and distribution of Italy's population across the territory dates back to the country's century-long development. Industrial revolutions, wars, and economic migrations have all contributed to this. The population, however, differs in characteristics according to where it resides. Cities tend to be inhabited by the most educated people. The economy is mainly based on the advanced third sector, and the cultural and entertainment environment is vibrant with a wide range of services. Rural areas, on the other hand, have larger houses, a more individualistic attitude, people working in the first and second economic sectors with a lower level of education.

Added to this are the various levels of administration in the country. Political power manifests itself vertically in Italy by following the principle of subsidiarity. This is such an important principle in the Italian context that it is enshrined in Article 118 of the Constitution: *"Administrative functions shall be attributed to municipalities, unless they are attributed to provinces, metropolitan cities and regions, or to the state, according to the principles of subsidiarity, differentiation and proportionality, in order to ensure their unitary exercise. Municipalities, Provinces and Metropolitan Cities shall exercise their own administrative functions and those attributed to them by state or regional legislation, in accordance with their respective powers. [...]"*. This principle basically states that administrative functions should be assigned to the institution closest to the citizen, unless they are assigned to a higher institution. Thus, the citizen will have a closer relationship with the local institution than the provincial, regional or state institution. Moreover, the same functions assigned according to this principle are also those that matter most and have the greatest impact on the citizen's life. The articles of Title V of the Italian Constitution list these functions. This additional element contributes to making Italy an extremely interesting context.

On the other hand, Italy is one of the earliest examples of populist rhetoric in response to people's difficulties. The Great Depression of the early twentieth century created great discontent among the population. The fascist party was able to sense that sense of dissatisfaction by proposing an alternative. In doing so, the far right, as in other countries, gained control of the country through coups, elections and civil violence. Almost a century later, history repeats itself. Italy becomes at the beginning of the 21st century one of the countries with a multitude of populist parties.

Defining populism, however, is difficult. Mudde [2004], Mudde [2007] and Mudde and Kaltwasser [2018] define populism as a "thin-centered ideology" that considers society ultimately separated into two homogeneous and antagonistic groups: "the pure people" and "the corrupt elite". This definition has several implications. First, it does not imply any socioeconomic priorities. Populism is about the moral superiority of "the people" over "elites"

and, therefore, the moral right of the people to rule. The "subtle centrality" means that populists have heterogeneous goals. Second, the "homogeneity" of the two groups leaves no room for pluralism, minority protection, and diversity of opinion. Third, the anti-elitist aspect implies that populists can bypass or suppress checks and balances, as they are considered tools of "corrupt elites". Müller [2016] agrees with the anti-elite and anti-pluralism aspects, but adds identity politics, as populists need to define who the "real" people are. Identity can take many forms: race, ethnicity, religion; it can also extend to the nation of citizens. Eichengreen [2018]'s definition shares the anti-elitist and nativist aspect, adding authoritarianism, as populism is accompanied by the weakening of checks and balances on the executive, attacks on minorities, and violence. Its definition is close to that of Norris and Inglehart [2019], who define "authoritarian populism as a philosophy and style of government that blends two sets of ideas".

All the elements of this inclusive definition are present in the Italian context. In the second chapter, we focus mainly on the populist right and the M5S. Although belonging to the same category, these parties are populist in their own way. The right-wing, with particular emphasis on the Lega, lays the foundation of its rhetoric on the most indigenous aspects. The claim refers to Italian characteristics. Religion, language, sovereignty, nationality become ingredients of political propaganda. The examples are numerous. The premier of the Lega, Matteo Salvini, held a rosary in his hands during his first rallies. Giorgia Meloni, leader of the Fratelli d'Italia party, shouts in the square, "I am Giorgia, I am a woman, I am a Christian, I am Italian." These are the most blatant actions. But on the daily, members of right-wing parties claim national sovereignty. In fact, they believe that the European union has taken away power in both political and, above all, economic terms. This cue gave rise to the no-euro movement, whose populist right-wing parties have been proponents. The goal: leave the Eurozone and return to the national currency, the lira. Anti-Europeanism is then accompanied by the fight against immigration. Incessant is the right wing's campaign against any kind of illegal immigration, particularly if it comes from

North African countries. The M5S, on the other hand, bases its propaganda on a pitting of "us" against "them." "We" represent civil society, decent people, people who pay taxes, who have difficulty making ends meet. "They" are the caste, they are the corrupt politicians, the politicians who live on golden salaries while watching the people suffer. Immediate reminder of Marie Antoinette of Habsburg-Lorraine.

The degree of urbanisation and populism in Italy are then an element of study in the second chapter.

We construct a classification according to rural-urban liking, accompanying it by two proxies. The first in which we exploit population density, the second in which we use nighttime light intensity. We thus obtain a categorical variable and two continuous variables that allow us to understand the degree of urbanisation of each Italian municipality. The greater the population density or the intensity of night lights, the greater the degree of urbanisation. We consider this for all electoral appointments for the election of the Chamber of Deputies. Unlike other electoral appointments, all citizens over the age of 18 are eligible to vote in elections for the Chamber of Deputies. In addition, elections for the Italian parliament are particularly important and heartfelt elections for the population. There have been five elections since the turn of the century.

In the main part of the second chapter, we present the average results for all electoral appointments. The lower the degree of urbanisation, the higher the preferences for right-wing populist parties. At the same time near city centers, preferences for right-wing populist parties are negative. The results for the M5S are different. The movement, initiated by comedian Beppe Grillo, was born on the Internet as a grassroots mobilisation. It garnered participation in big cities, until it became the first party in the 2018 elections. The populism of M5S, however, according to our results, does not gather support in rural and suburban areas. The degree of urbanisation, however, is not a totally exogenous element. The location of today's cities, the development of communities near natural resources, the expansion of productive areas are all the result of processes linked to the past. For these reasons,

we exploit an instrument in a 2SLS empirical strategy. In this case, the result is stark. Controlling for variables related to the socio-economic characteristics of the population and those of the municipalities, including fixed effects at the provincial level, we find that as the degree of urbanisation increases, right-wing populist parties lose support. In other words, as the degree of rurality increases, and thus in the peripheral areas of the country, support for parties from right-wing populist rhetoric increases. Nevertheless, we do not find significant results for the five-star movement.

In the second part of our analysis, we search for possible mechanisms to account for this phenomenon. These results are complemented by an annual analysis, i.e., for each election date. We find that support for the populist right and in particular the Lega is found mainly in the north, with a total absence in the south. Finally, we pay special attention to elections by breaking them down year by year. In all elections, voter behaviour is similar. The main support for the populist right comes from rural areas. However, two observations are important to note. The 2013 and 2018 elections are particularly emblematic. 2013 was the first election after the biggest crisis in decades. On that occasion, it was the centre-left that won in Italy. Although much of the literature blames the populist rise on the losers of globalisation (among many Rodríguez-Pose et al. [2018b]), we find that in fact only the extreme periphery maintained the same support between 2013 and 2018 maintained the same support between 2013 and 2018, while the rest of the population moderated their positions. In contrast, 2018, the year in which the first government totally composed of of elected officials from populist parties came into being, saw a significant distrust of populism in the city and a total embrace as the degree of urbanisation decreased. Our results are in line with the literature, helping to explain how support for populism is not limited to the characteristics of the population, but also to the places to the characteristics of the population, but also to the places where they live.

In the third chapter, we maintain a contemporary focus on the phenomenon of populism in Italy, while dwelling on another explanatory factor: social closure. The concept of social

closure can be interpreted as a bond within a society. In social network models, this refers to the density of an individual's network, the number of neighbouring nodes, and how they create new ones to define the breadth of the network itself. These elements present mainly in the sociological literature form the main element of the analysis in Chapter Three.

As early as the end of last century, Putnam [1993] stated in conclusion to his study of the Italian context that "everyone would be better off if everyone could cooperate." He points out that where social ties are stronger and the community is more united, political and economic outcomes are better. In other words, democracy and capitalism are a byproduct of social capital. His main work focuses on a construct the author calls "civic community," defined along four dimensions: i) civic engagement; ii) solidarity, trust, and tolerance; iii) political equality; and iv) social structures of cooperation. The observation of social structures is possible by taking into account associations and cooperatives. Putnam attaches great importance to association structures-critics say undue importance-because they "instill in their members habits of cooperation, solidarity and public spirit". Putnam's apparent argument is that dense social ties increase trust, and thus society ends up being characterized by democracy, state agency and political engagement, all key ingredients of good politics. Putnam finds that Italian regions characterized by high levels of civic engagement and a strong city-state tradition are more successful than others. This is also true of economic performance: northern regions, where social capital is widespread, show stronger economies.

The Italy traversed by Putnam, however, has changed a great deal. Increased welfare creates room for solidarity, but when faced with a crisis, agents' behaviour changes. It is Putnam himself who notes that all discussions about the characteristics of social capital end up being different perspectives on the concept of trust. "Trust lubricates social life", says Putnam [1993], and trust is the result of a process that leads gossip to create reputation, which in turn forms the basis of trust. To all this, however, there is a limit. A limit that, if crossed, can create negative effects. The same can be said of the political effects on social

capital. One possible explanation could be that, up to a certain level, social capital allows people in a community to take advantage of each other's virtues. Once the breaking point is passed, social capital begins to be too strong a force, turning into a source of splits and exclusions.

The analysis in the third chapter is based on these assumptions. How social closure helps to explain the rise of populism, assuming it is something that can explain it.

We construct two similar social closure variables, starting with the surnames present in each municipality in 1993 and 2004, respectively. In those years, in fact, there were for each municipality the telephone directory in which every owner of a landline phone was listed in it. Until 2004, there was no option to pot out, so by doing so we can have a proxy of the distribution of surnames for each community. The concentration of equal surnames may be the result of endogamy. Endogamy, as the practice of marrying within a specific social group, for example, may occur in a network, may be homogeneous within a specific group, such as the population of a specific territory. However, it is clear that in order to have a high level of endogamy, the community must be closed enough that there are no objective opportunities to marry outside members. This would mean that both access to new members and mobility or migration would be limited. To this could be added values, customs, traditions that further increase this phenomenon. However, all this contributes to a closed network, nurtured by members only and in which ideas are reinforced.

In this case, we dwell only on right-wing populist parties. The distinguishing reason for this is that, unlike right-wing parties, the rhetoric of the M5S is across-the-board and unfounded in principle. Pitting the good against the bad, the honest against the corrupt, us against them, does not help build a clear idea in the voter. It is a persuasive message but difficult to reframe in conversation without drawing on facts and events. Sometimes this information may be missed by many. The rhetoric of the populist right, on the other hand, although fueled by a sophisticated propaganda machine, is limited to simple, understandable and easily shared concepts. Being Italian, Christian, defending one's country from the

incursion of immigrants, are all straightforward concepts. That is why we dwell again on the House of Representatives elections in the interval from 2000 to 2020.

Here, we adopt an empirical analysis based on an OLS model by including both time-varying variables related to population characteristics and time-invariant variables about geographical size. The results of our analysis point in the direction that the greater the social closure in a municipality, the greater the support for right-wing populist parties. To obviate possible endogeneity problems related to missing values, we include an analysis with model 2SLS, in which the baseline results are confirmed. The mechanism in place is difficult to understand, particularly in the face of results using a traditional, non-populist party such as the Democratic Party (PD). Using PD, the main center-left party, our results are not statistically significant. This implies that the mechanism of reinforcement of ideas is related only to right-wing populist propaganda. Looking then at the breakdown between cities, towns and villages, in some ways we confirm the results of the second chapter. In fact, dividing our sample according to the size of the municipality according to the population present, we find that the phenomenon is particularly accentuated in towns and villages, and totally absent in cities. This is understandable. Towns and cities are distinguished by large migrations; they hold a central role culturally and economically. People meet there coming from different places sharing and exchanging ideas. Added to this is the possibility of meeting partners from outside one's core, expanding one's network. In more rural settings, on the other hand, where endogamy is more present, where level of education is lower, the reinforcement of ideas is more likely. Our results contribute in a new way to the understanding of the phenomenon of populism. Indeed, we do not limit ourselves to the sphere of social capital but lay a foundation for interactions between people and how this reinforces political propaganda. In the face of greater usability of data, it might be interesting to reconstruct the networks of a community and following their ideologies to understand the extent to which ideas become redundant and reinforced and when they encounter limitations and disruption.

We end the fourth chapter with a leap into the past, even before the Italian republic was born. While the 21st century has been marked by a deep crisis and the rise of populism, in the early 1900s the Italian context was totally different. Italy was about to experience the second industrial revolution in a vibrantly divided political environment. Most of the population was employed in the primary sector. The large cities we have referred to so far did not exist. The rural contexts are fruit of medieval history. Economic differences were based on the difference between landowners and workers. The country was marked by low schooling, and illiteracy was rampant.

The key to the development of an economy is education, especially the value of literacy. But when everyone in society shares this goal, it becomes attainable. People's rights or protection are limited when a group of individuals has the authority to direct the organizations responsible for achieving these goals, which slows a nation's economic growth (Acemoglu et al. [2001], Acemoglu et al. [2002], Ang [2013]). According to the formalization of Galor et al. [2009], various groups may have different interests in public authority. Accordingly, they will state their intentions to achieve these goals. Large landowners exert pressure on policy to stifle educational progress and limit the mobility of the rural labor force, which is why the expansion of formal education is delayed.

In this context, in the scissor between the need to be literate the country and the pressure from landowners to curb it, Giolitti's government presents an important reform: the Daneo-Credaro education reform. Until 1911, in the Kingdom of Italy, education was a municipal responsibility. This meant that each municipality, depending on its finances, took care of primary education. Clearly, the quality of service could depend on multiple factors: political will, available resources, political pressures, demand from the population, and opportunities to be pursued. It was within this framework that the Daneo-Credaro reform introduced for the first time in Italy the democratization of primary education, taking management away from the municipalities and centralizing it at the national level. Doing so imposed a national standard, equal economic resources and extraordinary resources in case of need. Education

became public expenditure but also a central and strategic affair.

Precisely by taking advantage of this education reform in the fourth chapter, we study the effect that the Daneo-Credaro reform had on literacy in the presence of land inequality. By land inequality, we mean the distribution of land ownership. A Gini index constructed by Buonanno et al. [2021] in which maximum land inequality occurs with the concentration of land ownership in the hands of a few. However, since land was the main occupation of the citizenry, the landowner was an extremely prominent figure in society. Our hypothesis is that a high concentration of land inequality may lead, even following Galor's theory, the landowner to contain the development of the school system, either through pressure on the mayor or through tacit subordination of his workers. The introduction of the reform eliminates any possible external pressure by homogenising the school system to all municipalities in Italy.

By manually digitising the paper censuses of 1911 and 1921, we construct literacy measures and various measures as controls over the population and municipalities. Thus exploiting the Credaro reform in the presence of land inequality, it is possible to study the effect of loss of power by the landed elite on primary education. The first difference is temporal and includes the introduction of the reform between 1911 and 1921. The second difference is in territorial inequality. Although it is a continuous variable, we calculate its median. The higher the land inequality, the greater the centralisation of land ownership; at the same time, the lower the land inequality, the greater the number of landowners with dispersion of power. We consider a strong elite in the case where the value of land inequality is greater than the median.

Our results show how the effect of reform contributed between the two decades to the increase in schooling. However, if we consider the effect of reform in the presence of land inequality, the effect is present and positive. The increased funding and the loss of power over primary schooling underlie the phenomenon. The lack of data related to this historical period does not allow us to substantiate these theories empirically. Nevertheless, from a

qualitative point of view, data on education spending shows a continuous increase, thanks to state investment. We also help to present several complementary findings, such as the effect of reform based on the gender of students and recenning any effects at the district and county level.

This chapter, although similar to other contributions in the literature, documents how, even in the Italian context, the presence of land inequality has limited the development of technological progress. The Daneo-Credaro reform lifted this limitation contributed to the increase in schooling, thus forming the personnel that contributed to the second industrial revolution.

Chapter 2

Rural vs Urban : electoral behaviour in Italy

2.1 Introduction

The populist rise in the world and in Italy has caught the attention of many. The phenomenon, although seemingly new finds its first examples in the early 20^{th} century with the rise of Fascism and Nazism (Eco [1995], Rodrik [2018]). One hundred years later, in the face of a new economic and identity crisis, it reappears. It therefore becomes crucial to understand its rhetoric and the mechanisms that contributed to its rise.

The literature on populism attempts to explain the phenomenon through various characteristics, with a primary focus on economic factors (e.g. Algan et al. [2017], Guiso et al. [2019], Lechler [2019], Dijkstra et al. [2020]). Like many other nations, Italy has experienced successive economic circumstances and political controversies that have fueled the emergence of new political entities that distinguish themselves from established parties. For example, the Northern League espouses secessionist rhetoric and moral superiority in the north, while Brothers of Italy emphasize nationalism and disdain for foreigners, even those from within Europe. Lastly, the M5S caters to a citizenry that has been economically disadvantaged

by the crisis, who envy the affluent middle class and the disconnected political class that is indifferent to the country's problems.

Italian populism thus found support and confirmation in many of the theories about its rise. The economic crisis of 2008 and the austerity policies that followed led a portion of the citizenry to shift their vote toward anti-establishment and otherwise populist parties (Algan et al. [2017], Guiso et al. [2019], Dijkstra et al. [2020]). Not only the economic crisis, the resulting loss of jobs (Lechler [2019]) and the growing lack of trust in institutions (Foster and Frieden [2017]) as well as the impact of trade (Autor et al. [2013]) also contributed to the rise of populism. Besides economic elements, social ones also contributed to explain the phenomenon. Other contributions consider peoples' identity, trust in politics and nationalism (Inglehart and Norris [2017], Cerrato et al. [2018], Boeri et al. [2018], Giuliano and Wacziarg [2020]). The emerging literature on populism explores the geographic dimension of voting, investigating whether people's physical location impacts their voting behavior. Dijkstra et al. [2020] exploit a measure of rurality, population density and distance from the capital. In their case, both density and rurality are significant in showing that urban dwellers are more likely to vote anti-European than those living in less dense suburban and rural areas. In contrast, they do not find satisfactory results about remoteness. Instead, de Dominicis et al. [2020] (and similarly Kenny and Luca [2021], Urso et al. [2023]) conduct a continent-wide study to try to understand what factors anti-European parties succeed in garnering votes for. They do this by considering the rural-urban spectrum constructed by Eurostat. Their analysis uses the breakdown to create sub-samples of the population thus studying the demographic and socioeconomic characteristics of urban, suburban and rural dwellers. The U.S. case is different, however, where Rodden [2016] shows that there is a clear and distinct difference in voting inclination related to where one lives. Essletzbichler et al. [2018] takes into account the difference between urban and rural centers in expressing their preference for leave in the Brexit vote. However, they do not fail to stress how there is a strong correlation between the characteristics of the population living in urban centers,

which are more educated, more affluent and likely less affected by the downsides of globalization. Other studies in the U.S. show correlation between rural areas and preference toward conservatives. Scala et al. [2015] show how in both the 2008 and 2012 elections, traditionally rural areas of the U.S. displayed more conservative positions. Scala and Johnson [2017], furthermore, study the political attitudes along the rural-urban continuum (using population density) and controlling by several demographic characteristics and gun control. Their multivariate spacial analysis confirms how Democrats collect higher preferences in large urban centres populated and in counties with well-educated people, a higher share of blacks and more Catholics. Contrary to the evidence presented earlier, Rodriguez-Pose [2018] views populism as a genuine response from neglected regions, i.e. "places that do not matter". He puts forward the theory that localities that have seen better days, particularly the forgotten suburbs and rural areas where industries once thrived, have now become irrelevant and obsolete. As a result, these regions lack dynamism, causing living conditions to decline and their rankings in the list of best places to live to plummet. Rodríguez-Pose et al. [2021] builds on the work of others, including Dijkstra and Poelman [2014] and McCann [2020], to contribute to a growing literature on the 'geography of discontent' or 'geography of resentment' Rodriguez-Pose [2018]. This strand of research argues that regional economic factors influence people's voting behavior and that certain territorial characteristics are more likely to lead to increased anti-system voting (Los et al. [2017], Garretsen et al. [2018]).

This paper investigates the impact of the degree of urbanization on political preferences towards populist parties in Italy. The geography of Italy provides a suitable context to compare the population residing in urban areas with those living in rural regions. There is a stark contrast between cities and rural areas, with the former being characterized by a developed third sector, a thriving cultural and entertainment scene, and access to a broad range of services. Conversely, rural areas are often excluded from renewal efforts and are becoming increasingly associated with nostalgia. Many socio-economic factors have been able to explain the populist phenomenon. We, however, introduce a geographic aspect of

vote placement in support of parties with populist rhetoric. Italian populism embodies all the elements that define populism. We therefore define populist as primarily the parties of the populist right and the M5S. These parties are distinguished by rhetoric based on opposing homogeneous and antagonistic groups; by anti-elite and anti-pluralism aspects. If the M5S bases its propaganda on honesty, the populist right dusts off elements such as religion, language, sovereignty and being Italian.

We construct several measures of urbanisation: a categorical variable according to the rural-urban gradient and nighttime light intensity[1]. We thus obtain a categorical variable and one continuous variables that allow us to understand the degree of urbanisation of each Italian municipality. The greater the population density or the intensity of night lights, the greater the degree of urbanisation. We look at all electoral appointments for the election of the Chamber of Deputies from 2000 to 2020.

The average results for all electoral appointments show that the lower the degree of urbanisation, the higher the preferences for right-wing populist parties. At the same time near city centers, preferences for right-wing populist parties are negative. The results for the M5S are different; it does not gather support in rural and suburban areas. The degree of urbanisation, however, is not a totally exogenous element. The location of today's cities, the development of communities near natural resources, the expansion of productive areas are all the result of processes linked to the past. For these reasons, we exploit an instrument in a 2SLS empirical strategy. In this case, the result is stark. Controlling for variables related to the socio-economic characteristics of the population and those of the municipalities, including fixed effects at the provincial level, we find that as the degree of urbanisation increases, right-wing populist parties lose support. In other words, as the degree of rurality increases, and thus in the peripheral areas of the country, support for parties from right-wing populist rhetoric increases. Nevertheless, we do not find significant results for the five-star movement. The results are supported by several robustness checks and alternative measures.

[1]In the appendix and in the robustness sections we propose alternative measures.

Our analysis makes significant contributions to several bodies of literature. Firstly, we enhance the existing literature on populism by presenting temporal evidence of populism's evolution in Italy over the past two decades. Secondly, we contribute to the field of economic geography by introducing an urbanization dimension to comprehend voting behavior. We disentangle the phenomenon in the conflict between urban and rural centers . Additionally, we believe our contribution is unique as we utilize the intensity of night lights to identify urban centers, deviating from the conventional approach of using it solely as a proxy for economic development. Specifically, our method of differentiating urbanization levels does not serve the purpose of dividing the population into distinct contexts. In contrast to Urso et al. [2023], our study views the degree of urbanization as an explanatory factor for understanding the populist phenomenon rather than a tool for comparing population characteristics.

We proceed as follows. Section 2.2 provides the institutional background; Section 2.3 describes the data; Section 2.4 introduces the model and empirical analysis. Section 2.5 provides the main results while section 2.6 addresses robustness analysis. Section 2.7 concludes.

2.2 Institutional background

Depending on which definition of populism one wants to consider, it is clear that Italy, indeed in light of its past, was one of the earliest examples of populist political parties. With its birth in 1991, the Northern League was the party of federal revolution, territorial discrimination, and promoter of secession by the north from the rest of the country. The simple and direct slogans "Roma big thief, the league does not forgive"; "Illegal immigrants: torture them! It's self-defense"; "Farther from Rome, closer to you" were part of a well-defined political vision in which the right of northerners was to be defended. The riches that was the consequence of northern productivity was placed in opposition to a south that, with its own levies, ingested the product of that labor. These at least were the national slogans

until the arrival of Matteo Salvini. In that circumstance, the party underwent a disruption in its essentiality. The need to broaden the electoral base, the search for consensus on a national basis inevitably required a change in strategy. Therefore, new boundaries, new enemies were defined and the party was re-branded. From "Lega Nord" (Northern League) to Lega, from northern secessionism to war against the euro and Europe, from discrimination against southerners to discrimination against non-EU citizens. In this regard, Albertazzi et al. [2018] go into great detail about the evolution and history of the league over the years. The ideological shift paid off in the 2018 general election, but is supported by underlying rifts between the party's leader and regional representatives. They demonstrate precisely how Regionalism has been replaced by a hollow form of nativist nationalism by analyzing Facebook posts. Populism remains at the core of the party's strategic communication, but the EU has replaced Rome as the "enemy" of the people.

However, if we broaden the vision to the Italian populist right, important components besides the League cannot be left out. Also populist, albeit with slightly different traits, are Fratelli d'Italia, CasaPound and Die Freiheitlichen (Trentino Alto Adige's independence party). Here the rhetoric is well centered on a fierce nationalism both toward supranational institutions such as the European ones and in the concept of citizenship with a strong rhetoric against immigrants. These are complemented by a rejection of social equality and egalitarianism by claiming to be Italian, Christian and believing in the family construct.

An alternative to the populist right, while maintaining similar rhetoric, lands on the Italian political scene is the fledgling 5-Star Movement. The "grillini"[2] adopt a strategy that always places two subjects in alternation, the good versus the bad, the honest from the dishonest, the people from the politicians. It is on these premises that the first V-day is organized in 2007. The event is held in multiple Italian cities with the aim of promoting a popular bill to ban convicted felons from sitting in parliament. The echo created is such that years later it leads to the cutting of parliamentarians. The M5S thus does not embrace

[2]Called that because it was Grillo himself in 2009 who promoted a "grassroots" mobilization with the adoption of direct democracy

those traits that distinguish the populist right, but with the same rhetoric campaigns always comparing "us" against "them". Just on the 2018 general election Albertazzi and Zulianello [2021] research the sentiments of the electoral base of the league and m5s. Their results show a league able to intercept the nationalist electorate, particularly in communities where there is a greater presence of islamists or euroskeptics. In contrast, M5S is more prosperous in more disadvantaged economic backgrounds, the Economic losers. Faggian et al. [2021] again dwelling on the 2018 elections alone, like Albertazzi and Zulianello [2021] find that the number of immigrants has a positive effect in preferences toward the league, as does rural-urban spectrum. « Both "people" and "place" matter » according to the authors.

Italy has not only been one of the first countries to experience the populist phenomenon, it has also suffered the effect of internal migration and the enlargement of cities. The ongoing phenomena are manifold. There is internal migration between different parts of the country, but also from the peripheral and mountainous areas to the city centres, with the latter continuing an inexorable extension. Multiple administrative reforms[3] have failed to reduce the number of municipalities, which now number almost eight thousand. In fact, small municipalities in Italy account for about 69% of the total[4]. This division between municipalities allows for an interesting classification of the degree of urbanisation. Our aim is therefore to study the phenomenon with a classification of the degree of urbanisation that is not limited to density but that internalises other elements that clearly distinguish the city and the periphery. There are, depending on the applications, alternatives of degree of urbanisation. Some examples exploit buildings as settlements to understand the degree of urbanisation. For example, the Atlas of Urban Expansion (Angel et al. [2011]) defines a city by the proportion of built-up area in 30 m by 30 m cells and their proximity to other built-up cells. De Bellefon et al. [2021] defines French urban areas using building density, while Esch

[3]Unioni e fusioni di comuni: Law No. 56 of 2014 on the reform of local authorities significantly changed the regulations on unions and mergers of municipalities. The institution of the union of municipalities is simplified with the abolition of a special form of union, namely the union for the optional exercise of all municipal functions. Other provisions then intervene on the internal organisation, the status of local administrations and the functions of unions of municipalities.

[4]Atlas of Small Municipalities by the National Association of Italian Municipalities

et al. [2013] creates clusters of built-up areas from cells of 12 m^2 using data from the German Aerospace Center. In the Italian context, Schiavone et al. [2022] is able, by exploiting data on household housing in the city of Bologna, to study the populist phenomenon between inequality and immigration. A further and new interpretation, again not applied to the study of political phenomena but to urban expansion, refers to the geometry of cities. Harari [2020] in fact, exploiting the more or less exogenous boundaries around cities, and with reference to their geometries, looks at Indian cities and the reasons for their development. A further approximation of the degree of urbanisation exploits information from individuals. In this case, data from cell phones, which offer the ability to track people and measure their location throughout the day (Kreindler and Miyauchi [2019]). This data, for example, makes it possible to study who is in the same building with whom at the same time (Atkin et al. [2022]).

In our case, however, we use the degree of urbanisation as conceived by the Ministry of Economic Development. The need to develop a measure that allows international comparison has led major international agencies[5] to develop a measure that is based on two principles. The first divides an area, according to density, into three classes: 1) cities, 2) cities and semi-dense areas, and 3) rural areas. The second by providing further detail by dividing the classification according to density into further sub-classifications. Undoubtedly, our primary rural-urban spectrum classification respects these principles. There is an additional specification following this choice that promises great advantages. Defining the degree of urbanisation, however, involves different factors depending on the disciplines (see Forstall and Chan [2015] for a comprehensive discussion of these issues). Some disciplines focus on the population size of a settlement. Other disciplines widen the net and include economic and social considerations to adjust the classification by size. Our rural-urban classification, according to the six different levels, responds to the literature on urbanisation as access to

[5]The European Commission, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Human Settlements Programme (UNHabitat), the International Labour Organisation (ILO), the Organisation for Economic Co-operation and Development (OECD) and The World Bank.

services. Among others, Rickardsson [2021] shows in the Swedish context how by adding access to services to the rural-urban division the propensity toward populists changes. The propensity to vote for a far-right party, in fact, decreases in the presence of greater provision of public services. Our classification despite initially glance being an urbanisation classification considers distance in travel time to the nearest urban pole. It includes, among others, access to secondary education, presence of strategic infrastructure in terms of transportation, access to medical and emergency medicine facilities. All essential services but also an element of distinction between segregated, suburban and isolated contexts.

2.3 Data

Municipalities We use all Italian municipalities for which we observe the outcome of an election between 2000 and 2020. Due to several reforms in Italy municipalities have changed, they were merged and split, and the provinces changed several times, in the considered years. For this reason we consider the municipality at year 2020.

2.3.1 Urban and Rural

We use different measures to capture the nature of each municipality. The difference between urban and rural differs according the interpretations and along time. Therefore we account for multiple definitions. Summary statistics are available in table 2.1. The image 2.3 shows the various urbanization classifications for each municipality. The left image displays exposure to night lights while the right one illustrates the center-periphery gradient size.

Centre-Periphery gradient First, we use the centre-periphery gradient by the Italian agency for territorial cohesion. It divides the municipalities into six categories according to their attractiveness, from center poles to ultra-peripheral. The category is defined taking in consideration multiple municipality's aspects, such as its main features, demography,

agriculture and sectoral specialization, digital divide, cultural heritage and tourism, health, accessibility, school and associationism between municipalities.

As described by Barca F. [2014], the following characteristics distinguish inland areas: they are significantly distant from the major centers of supply of essential services (education, health, and mobility); have important environmental resources (water resources, agricultural systems, forests, natural and human landscapes) and cultural resources (archaeological assets, historical settlements, abbeys, small museums, craft centers); constitute a profoundly diverse territory, the outcome of the dynamics of various and differentiated natural systems and the peculiar and centuries-old processes of anthropization.

In light also of the growing literature about the urbanization (among others the literature review by Glaeser and Kahn [2003]; Torrens [2008]; Galster et al. [2001]; Bae [2017]) of the population towards cities, the classification implemented by the ministry allows for the absorption of various attractive features. They are considered poles (of attraction) - defined as "service supply centers," according to a criterion of capacity to offer certain essential services such as: a higher education offer; a hospital; a train station making them attractive and central places. Inland areas are increasingly peripheral and isolated not only according to the lack of these essential services but also considering their distance from the hubs. According to the Agency for Territorial Cohesion (provider of the data), therefore, five classifications are considered in which the most rural entity, defined as ultra-peripheral, is over 75 minutes away from a served center. The image 2.1 distinguishes the six degrees of centrality according to their distance from a pole. We will therefore reiterate the pole as the most urbanized municipality. As distance increases and services offered decrease, we will reach more remote municipalities. The isolation of these municipalities will be a distinguishing feature for us to assess the behavior of its residents toward the main populist parties.

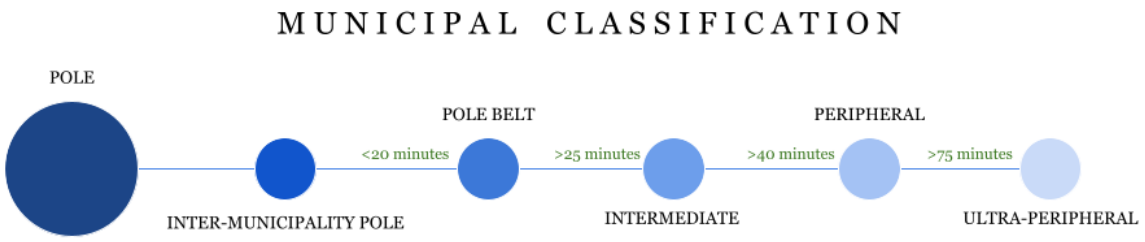


Figure 2.1: Centre-periphery gradient

Night light We supplement the categorical variables for urban and rural characterization with proxy variables. Similar to Ch et al. [2021] we use night lights (NTL). The use of these data has seen increasing exploitation in different research areas. Burchfield et al. [2006] exploit them to track urban development in U.S. cities based on satellite data between 1976 and 1992; Harari [2020] uses them with similar objectives in India. Davis et al. [2020] to reconstruct metropolitan areas in Brazil, China and India. Nonetheless, satellite data on the intensity of nighttime lights have found use in studies of economic growth (Henderson et al. [2012], Gennaioli et al. [2013], Pinkovskiy and Sala-i Martin [2016]), political economy of regional development (Gennaioli et al. [2013], Michalopoulos and Papaioannou [2013], Michalopoulos and Papaioannou [2014]) and spacial linkage between cities (Storeygard [2016]). In our case, we use version 4 of the time series of nighttime lights DMSP-OLS from the National Centers for Environmental Information. Specifically, it contains lights from cities, towns, and other sites with persistent lighting. By superimposing NTL[6] images on Italian municipalities (for the year 2020), we calculate the average color of pixels that fall within municipal boundaries. The result is a measure ranging from 0 to 63, where 0 represents complete darkness.

[6]See Appendix A.1.1 for more details about the Night Light variable construction.

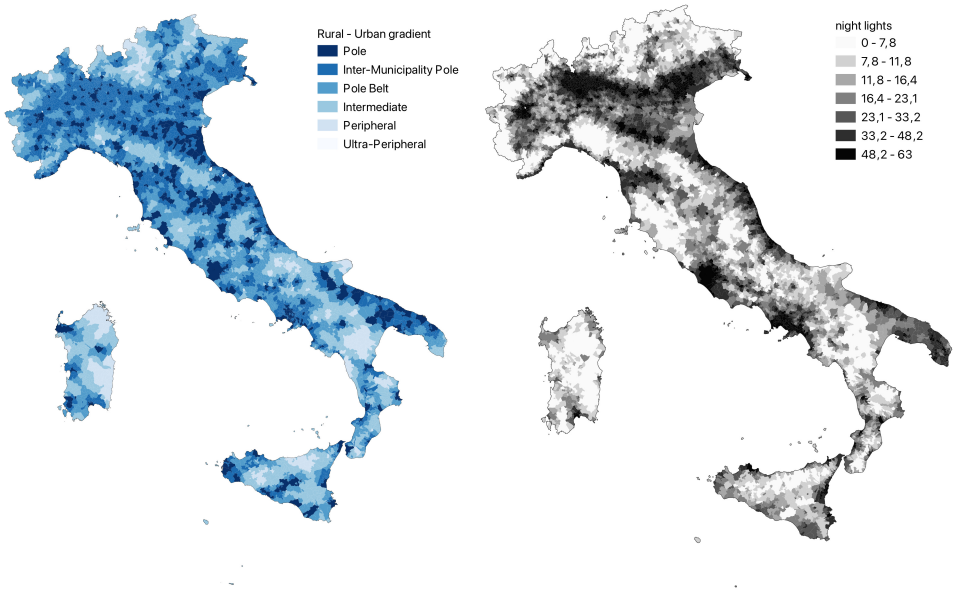


Figure 2.2: Rural - Urban Variables (2000-2020 average)

Table 2.1: Rural urban variable summary statistics

VARIABLES	N	mean	sd	min	max
Centre-Periphery gradient	7,902	3.705	0.999	1	6
Night light	7,902	24.74	17.18	0	63

Note The table consists of the urban classification variables. The center-periphery gradient is the categorical classification of municipalities from pole (urban size) to ultra-peripheral (rural) municipality. Night Lights represents a numerical value of annual average night light exposure. Population density is the ratio of population to land area.

2.3.2 Control Variables

To complete our data, we consider a set of control variables. We divide these between geographic and population variables[7]. Summary statistics are available in table 2.2.

Geographic controls Our geographic variables are percentage of mountainous territory, average altitude and distance from the sea. Dijkstra et al. [2020] naming their paper "The geography of EU discontent" explicitly wanted to point out how important geography and geographical characteristics can act on people's preferences. Other studies stress how even

[7]See Appendix for more details about single controls and data sources.

in Italy, altitude and mountainous terrain can help explain voting preferences Bazzoli and Lello [2022], as well as how distance from the sea can play a role Fujiwara et al. [2016].

Population controls Population-related variables include the share of high school graduates and college graduates. The "education gradient," or the increased votes Trump earned from Americans without a bachelor's degree compared to those with one, according to Mutz [2018], is responsible for 20 percentage point education gap among all voters. We include the share of unemployment who both Algan et al. [2017] and Lechler [2019] find a reason for rising non-mainstream party preferences and anti-EU sentiment. According to Gidron and Mijs [2019] and Guiso et al. [2019] the loss of income increases support for redistribution and sympathy for the extreme socialist party. Therefore we entail among our control variables also income per capita and the population age structure.

Table 2.2: Geographical and population controls

VARIABLES	N	mean	sd	min	max
High school graduate share	7,902	0.281	0.0504	0.0909	1.743
Higher education graduate share	7,902	0.0703	0.0266	0.00194	0.359
Income per capita	7,902	17,113	3,228	8,938	48,711
Population age structure	7,895	2.144	1.473	0.360	27.10
Unemployment share	7,902	10.85	7.632	0.894	43.44
Mean altitude	7,902	459.8	451.1	0.364	2,777
Distance from seaside	7,902	69.10	55.55	0.0354	229.5
Mountain share	7,902	26.41	36.50	0	100

Note The table includes control variables (on population and geographic). High school and higher education graduate are the share of people with a high school diploma and a degree equivalent to or higher than a college degree, respectively. Income per capita represents the average gross income received by the population in a given municipality. Population age structure displays the ratio of the share of people under 15 to the share of people over 65. Unemployment rate illustrates the share of unemployed people. Mean altitude, expressed in meters, represents the average altitude of the municipality. Distance from seaside, expressed in km, measures the distance of the municipality's centroid from the nearest coastline. Mountain share is the percentage of municipal area that can be classified as mountainous. All data are averaged over the years considered and at the municipal level.

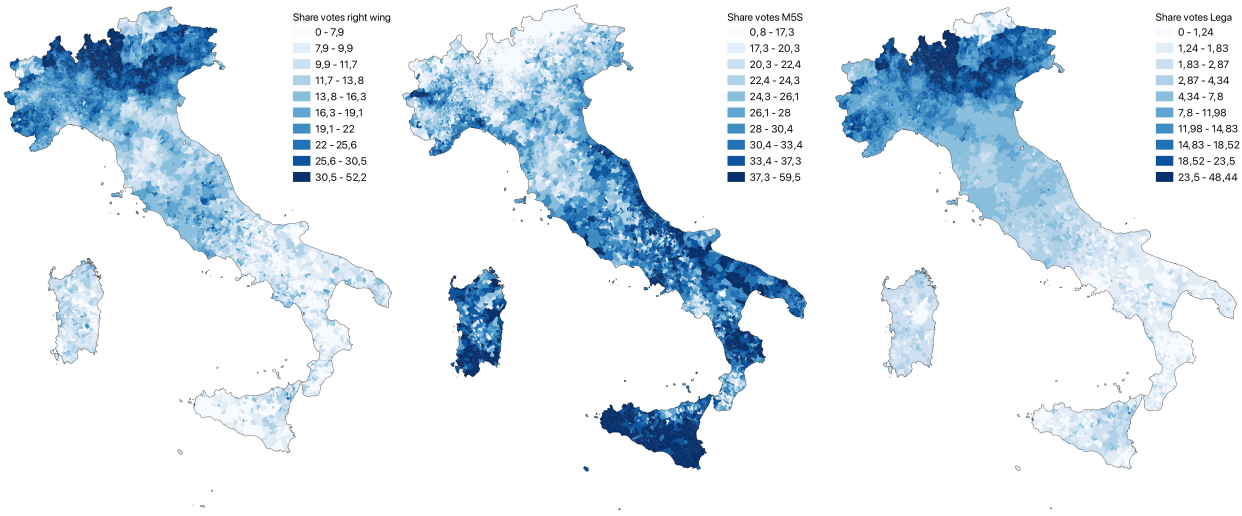


Figure 2.3: Votes shares for right-wing parties (L); M5S (C); Lega (R)

2.3.3 Elections

We account for all the national elections that took place between 2000 and 2020 constructing vote preferences variables. In Italy national elections took place five times (2001, 2006, 2008, 2013 and 2018). Legal age to cast a vote for the chamber of representatives is eighteen.

Table 2.3: Vote preferences

VARIABLES	N	mean	sd	min	max
Lega	7,901	10.38	9.089	0.204	48.44
Right-wing	7,901	17.94	8.780	2.217	52.23
M5S	7,902	26.69	8.079	0.831	59.54

Note The table entails summary statistics on vote preferences for the populist parties. Lega is the Matteo Salvini leaded party; right-wing entail all populist right wing parties (Lega included); M5S is the 5 stars movement. The values refer to the average votes for each party (or group parties) among the years they attended national elections.

Populism is a broad and challenged topic in the last years literature. Many definitions has being excellently argued. Our preferred definition is the one introduced by Mudde [2004] added by the features highlighted by Müller [2017]. Mudde [2004], Mudde [2007] and Mudde and Kaltwasser [2018] define populism as a *"thin-centered ideology"* that considers society to be ultimately separated into two homogeneous antagonistic groups: *"the pure people"*

and *"the corrupt elite"*. This is indeed the dialectic expressed by M5S perhaps. The first presences of M5S in the Italian squares was accompanied by incitement of the crowd with slogans such as "vaffa", "honesty, honesty" and "no one stays behind" leading with time to the national V-day where "V" stands for "F**k Off". Müller [2017] completes the definition of populism adding the *"identity politics"* futures - identity can take many forms: race, ethnicity, religion, it may also expand to citizen nation or sub-national provenance. Many right and far-right parties in Italy fall into this definition of populism. Lega, before the leaderships of Matteo Salvini who gave a national spirit to the party, was characterized by the hate to the southern part of the country. It itself started as a regional and secessionist party. What started as north vs south, turned into Italians vs foreigners. According to this definition we define the populist parties. A comprehensive list of parties is attached in the Appendix. We, therefore, consider the performance of the major populist entities in Italy: "Movimento 5 Stelle" (M5S), "Lega" and "Right-wing parties".

2.4 Empirical Strategy

The Italian institutional setting together with the distribution and numerosity of the municipalities allow us to study the political behaviour on a geographical span. We analyze party preferences and populist attitude. Our main goal is to explore how rural-urban differences shape political preferences and attitude towards populist parties.

Rural-urban divide and political preferences For political preferences and electoral behaviour towards populist parties we consider the chamber of representatives elections.

$$y_{mt} = \beta_0 + \beta_1 RuralUrban_m + \beta_2 X'_{mt} + \beta_2 Z'_m + \lambda_p + \varepsilon_{mt} \tag{2.1}$$

y_{mt} is either the party vote share of either Lega, Right-wing or M5S. In our baseline estimations we only include the vote preference mean in the considered years. In the Ap-

pendix however we provide an extensive output for yearly results. Therefore, municipality, m, constitute our element of observation, while t will be the mean over the years here and the year dimension in the Appendix. Our dimensions of urbanization, $RuralUrban_m$, are the categorical variable *Centre-Periphery gradient* or *Night Lights*. In this case of the continuous variables (nightlights) the higher the value more urbanized is the area. Finally, standard errors are clustered at the provincial level. λ_p is a set of provincial fixed effects that controls for any-time invariant unobserved variable, while ε_{mt} represents the regression error. We control for time-variant, X'_{mt}, and time-invariant covariates, Z'_m, namely share of high school graduates and college graduates, share of unemployment, income per capita and the population age structure; and mountainous territory, average altitude, distance from the sea.

The OLS estimates, even when including provincial fixed effects, cannot be interpreted causally. In this particular framework, rurality and urbanisation of municipalities are not exogenous. In fact, in our analysis, we may run into possible occasions of endogeneity. This in fact may occur for three reasons: measurement errors, omitted variables and reverse causality.

Our measures of nighttime light exposure, although constructed properly could still contain measurement errors. This measure, in its construction, takes into account cloud phenomena and potential fires in the area, which would inevitably respectively decrease or increase the light intensity. Nevertheless, light intensity may be due to the efficiency or inefficiency of the lights themselves. Some cities for example might impose a limit on light pollution. Municipalities then may have adopted different technologies in public lighting. For example, the European Union in recent years has provided funding aimed at municipalities to replace public lighting systems. This funding is precisely aimed at achieving improvements in lighting performance, energy efficiency, traffic and facility safety as well as light pollution control. This could have an effect on our estimates. Specifically, the concern is to underestimate the effect of it to proxy the degree of urbanisation.

The construction of this variable, although homogeneous throughout the territory we cannot exclude that it is not victims of Measurement Errors.

A second source of endogeneity is related to the omitted variables. The literature on populism, as we discussed both in section 2.1 and by presenting the data (section 2.3) used in our analysis, has extensively investigated what possible factors drive choices in preferences toward parties. Nonetheless, although we are able to control for most of these phenomena, there are others that are difficult to quantify and therefore we are unable to include in our analysis, thus creating an omitted bias in our OLS estimation.

Finally, a final source of endogeneity is that of reverse causality. The effect we theorise can be reversed, more preferences toward populist parties could lead them to gain positions of political representation from which they can steer the political agenda, both in terms of urban development and in terms of distinction on all those factors that influence nighttime lighting. In our analysis, we focus on national elections, with reference to the House of Representatives. Over the years, not all the right-wing parties we consider have received seats in the chamber. The only party that has always received any and has been a member of governing coalitions has been the League. In the figure on the right, we include for each election year how many seats each party is allocated and whether it is a member of the governing coalition. The only party that has been in government, but without expressing its president, was the League in 2001 and 2008. Among the parties we consider, only the M5S was able to express the premier after winning 2018 elections. On such occasion, the Lega and M5S governed as a coalition for two years[8]. Nevertheless, many of the choices in land development and urbanisation are delegated to decentralised bodies. Therefore, even if at the national level that party does not sit in parliament, this can affect regional, provincial

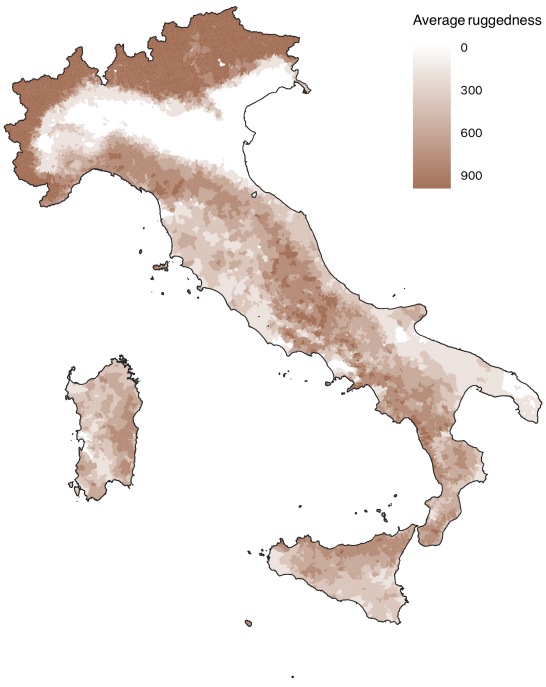
[8]The 2001 and 2008 elections saw 30 and 60 deputies belonging to the League elected to the majority benches, respectively. In 2006, membership in the minority coalition, the Lega had 26 deputies. In 2013, the Lega elected 18 deputies, Fratelli d'Italia 9 and M5S 109, all appearing in the governing minority. In contrast, 2018 saw a victorious result for populist parties, specifically the League elected 74 deputies, Fratelli d'Italia 20, and the M5S 135. It was precisely to the M5S that the president of the republic gave a mandate to compose the government team, thus constituting the yellow-green government resulting from the alliance with the Lega. The Chamber of Deputies of the Italian Parliament had 630 members until 2020

and municipal politics if it presides over them.

For these reasons our identification strategy relies on the use of instrumental variable to prove that the rural-urban gradient generates effects on populist preference.

A municipality becomes a big cities and it develops through the year for a multitude of factors. Cities are defined as settlements that, generated by a process of geographic concentration of population, production facilities and services, differ in structure and size. Since the concentration that characterizes the cities does not concern only the population but also the production facilities and services, they are places where there are strong interchanges both with neighboring and distant territories, both with the set of natural and socio-cultural conditions that form the environment or local. Their development and evolution occur as a result of both endogenous (demographic dynamics, evolution of productive and socio-professional structures) and exogenous factors (global economic and social changes, technological transitions and modes of production, environmental changes).

Figure 2.4: Average ruggedness



They might be flawed by the usual drawbacks. First, an omitted variable bias may

be at work. It might be the case that people living in cities are more educated and have better jobs together with more socially active clique. Moreover rurality of municipalities, in particular for a country as Italy, is not exogenous. The origins of the municipalities in Italy are already witnessed in the Middle Ages. Already in the year 1000, in fact, new urban centers were formed and existing ones were reborn. Within the cities, people of different social conditions lived together. Many cities developed as autonomous bodies, placing the surrounding countryside under their control. These cities gave the name of municipalities and consisted of real city-states with their own laws and magistrates, although the territory was subject to larger bodies, such as fiefdoms. This autonomy was fueled by the possibility of trading and having economic ties with other cities. The infrastructure that enabled this was both geographic and engineering in nature. In the present case, as discussed by Donaldson [2015] infrastructure increases mobility and trade but also increases the level of wealth of those who benefit from it. Modern roads, however, are built on those same routes that the Romans anciently laid out. Roman roads are therefore exogenous to modern urban planning. The development of cities is therefore a much more ancient process and independent of contemporary wills.

Table 2.4: Ruggedness summary statistics

VARIABLES	N	mean	sd	min	max
Ruggedness	7,888	221.2	213.3	0.894	1,151

The table summarizes some statistics for average ruggedness. Data from Buonanno and Vanin [2017].

In turn, however, contemporary cities have a strong path dependence. In fact, cities tend to be located where they were originally formed (Bleakley and Lin [2012]). Geographical conditions are indeed crucial. It was precisely the proximity to waterways and seas that made possible the flourishing of cities such as Rome or the marine republics of Amalfi, Genoa, Pisa and Venice. The proximity of fertile and easily accessible land was a fundamental condition for the establishment of cities (Motamed et al. [2014]). Conversely, settlement

conditions, hilly or uneven terrain, may have incentivized the establishment of smaller towns, considering impressive war defenses, may have survived to the present day. There are several examples of medieval villages located in strategic positions where territorial conditions simplified defensive action. Ruggedness also affects the suitability of the land to build cities and, in particular, to trade between places (Nunn and Puga [2012]). It's challenging to construct roads and communication networks linking different sections of the country when the terrain is quite rough. As a result, it is likely that nations with rocky terrain create several towns on the land that functioned as population, commerce, and exchange hubs for particular regions of the country. Therefore, roughness ought to result in less dense urban development.

The statistical relationship between ruggedness and our measures of urbanization is immediate. The great cities of the past were founded following the concept of accessibility and proximity to resources, where therefore the terrain was less impervious. Contemporary cities, built on the foundations of those same cities, have now urbanized favorably to the terrain that hosts them. For these reasons we instrument our rural-urban dimensions with ruggedness. Our fist stage has the following specification[9]:

$$RuralUrban_m = \beta_0 + \beta_1 Ruggedness_m + \beta_2 X'_m + \varepsilon_m \tag{2.2}$$

In this case $Ruggedness_m$ in the average ruggedness for municipality m. By estimating our 2SLS model, we look for $RuralUrban_m$'s effect on voting preferences for those municipalities for which treatment status has been changed by the instrument.

2.4.1 Validity of the instrumental variable

Staiger and Stock [1994] discuss the five assumptions for the validity of an instrument. We discussed in the paragraph before one of them. Below we discuss the other assumptions.

The second of which refers to random assignment. Random assignment means that

[9]We discuss the validity of the instrument in the Appendix

each municipality's surface has the same chance of having a certain ruggedness level. We can assume this because ruggedness is a natural characteristic of the land that is hard to change.

The third one is the monotonicity. After adjusting for other potential variables, we would require municipalities with greater levels of ruggedness to have at least the same level of population density or nightlights' intensity as municipalities with lower levels of ruggedness for this assumption to hold. Due to the geographic isolation that ruggedness produces for a city, we contend that there are no valid reasons why this assumption should not be true. In fact, a larger degree of surface irregularity in a municipality raises the cost of housing and infrastructure.

SUTVA, for this fourth assumption to be true, it is necessary for one municipality's political preferences and degree of urbanisation to be independent of and unaffected by those of its neighbouring municipalities. If close municipalities interact and have an impact on one another's, this is unlikely to hold. Some municipalities are more affected by the instrument, meaning their development is more influenced by things like ruggedness, than others. However, even for municipalities that are more affected, the degree of reciprocal influence between them is reduced because of geographic isolation caused by ruggedness. This is especially true for municipalities that are less urbanized, which are more likely to be influenced by their neighbors. Finally, the last assumption in order to validate our instrument is the ability of our instrument to explain enough variation in the endogenous variables through which we proxy the urbanization gradient.

In the table 2.7 we present the Cragg-Donald Wald first-stage F-test for the most complete specifications of both population density and nightlight's intensity. Both our F tests are well beyond the limit of 10 indicated by Staiger and Stock [1994].

2.5 Results

Proceeding with the empirical results, we initially present our OLS model, including the various controls, with the average value of voting preferences across years. The year-by-year analysis, on the other hand, can be accessed in the Appendix. Next, we discuss the first-stage successor to the 2SLS model in which we instrument urbanization using ruggedness land.

Table 2.5: Rural-Urban gradient on Vote Preferences

VARIABLES	(1) Lega	(2) Right-Wing	(3) M5S
Intermunicipality pole	-1.154***	-1.506***	0.443
	[0.292]	[0.337]	[0.364]
Pole Belt	-0.201	-0.099	0.155
	[0.200]	[0.245]	[0.251]
Intermediate	0.356*	0.689***	-1.037***
	[0.210]	[0.259]	[0.270]
Peripheral	0.437*	0.787***	-2.228***
	[0.223]	[0.282]	[0.323]
Ultra-Peripheral	0.384	0.602*	-3.685***
	[0.283]	[0.366]	[0.503]
Observations	7,894	7,894	7,895
R-squared	0.911	0.852	0.708
Controls	Yes	Yes	Yes
Province FE	Yes	Yes	Yes
Adj. R-squared	0.910	0.849	0.704

Note Standard OLS estimation with province fixed effects. The unit of observation is the municipality. The dependent variables are: Mean preference votes for Lega in columns (1); Mean preference votes for Right-Wing parties in columns (2); Mean preference votes for M5S in columns (3). Inter-municipality pole are placed between the Pole (omitted), most urban classified municipality, and the pole Belt, placed at 20 minutes distance from the Pole. Intermediate, Peripheral and Ultra-Peripheral are respectively 25, 40 and 75 minutes far from the Pole. Controls include both geographical and populations variables. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

OLS is shown in table 2.5 and table 2.6. In Table 2.5 we show the results of voting preferences against the League, the right and M5S, and what we can observe is how different the

vote turns out to be depending on how urban or rural the municipality is. The League as well as right-wing populist parties tend to have a statistically significant and very negative result in the more urbanized component. Distancing themselves from urban centers, on the other hand, their preferences change sign. They then find more support from the more rural areas. Different is the propensity to vote towards the "grillini". These, in fact, find no support at all in the more suburban areas; on the contrary, support through votes is increasingly negative (nominally) the further one moves away from urban centers. Looking instead at Table 2.6 in which the concept of urbanization is continuous, the signs are similar. In this case, all values are statistically significant. Night light has as its minimum value 0 (maximum rurality) and 63 (maximum urbanization). It is evident how the League, and even more so the right-wing, see their votes decrease as they approach urban centers, in contrast to the 5stars who instead see their votes increase. Similarly, in the case of population density, as population density increases, support for the right and the League decreases, while it increases towards the M5S.

Table 2.6: Alternative urbanization measure on Vote Preferences

	(1)	(2)	(3)
VARIABLES	Lega	Right-Wing	M5S
Night Lights	-0.009**	-0.019***	0.067***
	[0.004]	[0.004]	[0.005]
Observations	7,894	7,894	7,895
R-squared	0.911	0.851	0.706
Controls	Yes	Yes	Yes
Province FE	Yes	Yes	Yes
Adj. R-squared	0.909	0.848	0.702

Note Standard OLS estimation with province fixed effects. The unit of observation is the municipality. The dependent variables are: Mean preference votes for Lega in columns (1); Mean preference votes for Right-Wing parties in columns (2); Mean preference votes for M5S in columns (3). Night Lights is the annual average exposure to night lights. Pop. Density is the municipal average population density over the years. Controls include both geographical and populations variables. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Given the concerns for omitted variables and possible reverse causality, we turn to 2SLS regression. We begin by presenting the first stage on table 2.7.

Table 2.7: First Stage 2SLS

VARIABLES	(1) Night Lights	(2) Night Lights
Ruggedness	-0.038***	-0.021***
	[0.001]	[0.001]
F-test	*2799.18*	*376.86*
Observations	7,887	7,880
Controls	No	Yes
Province FE	No	Yes

Note First stage regression in the 2SLS setting. The dependent variables in columns one and two is the exposure to night lights. The dependent variable is the average ruggedness. Odd column contain no controls while even column account for control variables. Controls include both geographical and populations variables, as well as province fixed effects. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

As we can observe in the sign, the effect of ruggedness on both of our variables, night light exposure and Population Density, is negative. Accordingly, where the terrain is more rugged, there is less population density and less nighttime exposure to artificial light. In both cases, therefore, it expresses a sign of poor urbanization. Next, we move to the second stage results in table 2.8.

In light of our analysis we can observe how in comparison to our results in the table 2.6 the magnitude increased while maintaining the same sign and statistical significance for the league and right-wing parties. In contrast, however, preferences toward M5S while maintaining similar sign does not maintain its statistical significance. The latter situation is particularly peculiar especially if we consider the results of the table 2.5 in which it seems that the 5 stars fail to gather support in less urbanized areas. These results, however, are in line with the literature that sees the "grillini", in light of their rhetoric, having their electoral base in that better educated civil society that tends to live in suburban areas of cities. In the

Table 2.8: Alternative urbanization measure on Vote Preferences - 2SLS

VARIABLES	(1) Lega	(2) Right-Wing	(3) M5S
Night Lights	-0.102***	-0.120***	0.030
	[0.020]	[0.023]	[0.029]
Observations	7,880	7,880	7,881
R-squared	0.902	0.840	0.704
Controls	Yes	Yes	Yes
Province FE	Yes	Yes	Yes
Adj. R-squared	0.901	0.837	0.700

Note Second stage regression in the 2SLS setting. The unit of observation is the municipality. The dependent variables are: Mean preference votes for Lega in columns (1); Mean preference votes for Right-Wing parties in columns (2); Mean preference votes for M5S in columns (3). Night Lights is the annual average exposure to night lights. Controls include both geographical and populations variables, as well as province fixed effects. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

next sections, we try to disentangle the effect of the M5S according to a more disaggregated geographic base.

The league, and better right-wing populist parties, on the other hand, find particular support in rural areas. The regress of urbanization is matched by an increase in electoral support. It is precisely in rural settings, those areas that Pose calls forgotten by politics, the economy and investment, that the citizenry embraces a sterile rhetoric of social revenge justified by hatred of any scapegoat. In doing so, the idea of nationalism, of discrimination against those who come to the country with the intention of "stealing Italian jobs," of returning to a time when everybody was better off, find fertile ground among the population.

2.6 Robustness

To provide some robustness to our main result, we check whether it is confirmed by an analysis across sub-samples in section 2.6.1. In section 2.6.2, we explore the impact using an

alternative measure of urbanization that incorporates previously unquantifiable urban potential based on the limited information currently available regarding individuals' locations.

2.6.1 North - Centre - South

Let us begin by subdividing our sample according to geographical breakdown. Indeed, the heterogeneity that distinguishes Italy is such that it creates differences between municipalities and provinces, but this also extends to larger portions of the territory. The historical difference between the north and south of the country has inspired multiple academic contributions. The lack of equal opportunities depending on the area to which they belong (Checchi and Peragine [2010]); employment characteristics, the driving productive sector and the response in the face of major crises (Lagravinese [2015]); and differences in traditions and social capital in dealing with the recent endemic crisis (Durante et al. [2021]). Although these are recent insights into the gap between the northern and southern parts of the country however, the origins of the differences are far more rooted in the past. Felice [2011] makes an excellent analysis of this. Well before the referendum of 1942, in fact, Italy was already divided into north and south, manifesting this difference on that occasion. Then there are famous cases of the state within the state with the presence of criminal organisations in the south rampant in a mainly agricultural territory that faced the industrialisation, infrastructure and growth of the north. We therefore believe that the division of kingdoms before the unification of 1861, the differences in social capital, in occupation possibilities, growth and perspective may still be an intrinsic element in the territory, such as to influence its electoral choices.

For this reason, we subdivide our sample into north, center and south (including islands)[10]. The analysis presented in Table 2.9 includes the main breakdown in the rural-urban gradient. In the southern part of the country, in the case of the league and right-wing

[10]To the northern part belong: Valle d'Aosta, Piemonte, Liguria, Lombardia, Trentino Alto Adige, Veneto, Emilia Romagna, Friuli Venezia Giulia. The centre part is composed by: Toscana, Lazio, Umbria, Marche. Finally, the following belong to the southern classification: Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicilia, Sardegna

Table 2.9: Rural-Urban gradient on Vote Preferences: North - Centre - South

	North			Centre			South		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	Right-Wing	Lega	M5S	Right-Wing	Lega	M5S	Right-Wing	Lega	M5S
Intermunicipality pole	-1.724***	-1.987***	1.031**	-0.820*	-0.005	-0.835	-0.969**	-0.122	0.938
	[0.504]	[0.431]	[0.457]	[0.450]	[0.150]	[0.635]	[0.420]	[0.092]	[0.775]
Pole Belt	0.592*	0.168	0.675**	-0.292	0.066	0.229	-0.228	-0.089	-0.030
	[0.339]	[0.301]	[0.319]	[0.385]	[0.115]	[0.454]	[0.334]	[0.076]	[0.579]
Intermediate	1.642***	1.007***	-0.505	-0.075	0.109	-0.558	0.159	0.012	-1.581**
	[0.371]	[0.329]	[0.345]	[0.422]	[0.122]	[0.511]	[0.352]	[0.086]	[0.618]
Peripheral	2.307***	1.756***	-2.082***	1.175**	0.293*	-0.960	-0.104	-0.024	-2.433***
	[0.478]	[0.423]	[0.460]	[0.505]	[0.150]	[0.592]	[0.371]	[0.088]	[0.661]
Ultra-Peripheral	2.890***	2.579***	-2.149***	-0.144	0.215	-0.946	-0.070	-0.010	-3.596***
	[0.870]	[0.849]	[0.795]	[1.513]	[0.348]	[1.292]	[0.424]	[0.114]	[0.792]
Observations	4,375	4,375	4,375	969	969	970	2,550	2,550	2,550
R-squared	0.759	0.807	0.661	0.396	0.561	0.575	0.319	0.400	0.470
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.756	0.804	0.657	0.374	0.546	0.560	0.305	0.388	0.459

Note Standard OLS estimation. The table shows the results for each sub-sample according to the territorial division north, center, south. The unit of observation is the municipality. The dependent variables are: Mean preference votes for Lega in columns (2), (5) and (8); Mean preference votes for Right-Wing parties in columns (1), (4) and (7); Mean preference votes for M5S in columns (3), (6) and (9). Inter-municipality pole are placed between the Pole (omitted), most urban classified municipality, and the pole Belt, placed at 20 minutes distance from the Pole. Intermediate, Peripheral and Ultra-Peripheral are respectively 25, 40 and 75 minutes far from the Pole. Controls include both geographical and populations variables as well as provinces fixed effects. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

parties, there is no statistical significance, apart from the case of the inter-municipality pole with a negative sign for the right. The M5S, on the other hand, lose votes in the more remote and rural constituency with increasingly negative and statistically significant nominal values. The centre does not appear to particularly explain the phenomenon. Instead, the effect in the northern part of the country is evident. Here the right as well as the Lega is not rewarded in terms of votes in the more urbanised areas. The coefficients, however, are increasingly positive and statistically significant the greater the rurality of the municipality. In contrast, the support for the M5S is different. In their case, the coefficient is positive near urban centres and negative reaching the suburbs. Although with different nominal values, the north of the country is in line with our results for the whole country.

2.6.2 Urban Potential

The various definitions of urbanization used in our analyses only underscore the growing importance of cities. Indeed, throughout history cities have been centers for technological innovation, culture, institutional progress and commerce (Pirenne [2014] and Glaeser [2012]). But what makes a city contemporary undoubtedly has ties to its position in the past. Our analysis with the instrumental variable goes in this direction. In Bosker and Buringh [2017]'s analysis, nevertheless, the fundamental thesis is that cities reside where they are for geographic reasons, in the second specification instead they exploit a concept called urban potential. The latter is a measure used by several authors, e.g. Harish et al. [2016], Black and Henderson [2003], De Vries [2013] or Stewart [1947]. We specify urban potential as the following: $UP_i = \sum_{j=1,i=1,}^{N} \frac{pop_j}{D_{ij}}$. This measure is a distance weighted sum of population of all neighbouring municipalities within a given radius. Similarly to Bosker and Buringh [2017] we construct a measure for urban potential by constructing four concentric circles for each potential city, i.e. 5km, 10km, 20km and 50km. Unlike the analysis performed by Bosker in our case, however, we do not impose any threshold for the population in that circle. In fact, our goal is to construct a continuous measure in the rural-urban spectrum. Thus, by summing up the population relative to the distance of the latter, we give a different weight to the population distribution. Cities such as Milan will have enough width to contain smaller radii, such that their potential is that of the city itself. The same distance, however, leads extremely rural realities to have little urban potential, such that even if it were rural but close to a large city, the population weight of that city would be minimised. The city surrounded by urban potential will be encircled by communes. In contrast, in the case of a remote community, it loses centrality even if surrounded by a multitude of municipalities.

Table 2.10 shows the results for our analysis. Similarly, as in the table for the 2SLS analysis, we instrument all our measures for urban potential with the different radii with the average ruggedness. We interpret urban potential as a variable whereby the greater the

Table 2.10: Alternative urbanization measure: Urban Potential

VARIABLES	(1) Right-Wing	(2) Right-Wing	(3) Right-Wing	(4) Right-Wing	(5) Lega	(6) Lega	(7) Lega	(8) Lega	(9) M5S	(10) M5S	(11) M5S	(12) M5S
Urban Potential 5km	-0.172***				-0.165***				0.219***			
	[0.019]				[0.018]				[0.023]			
Urban Potential 10km		-0.101***				-0.097***				0.129***		
		[0.009]				[0.008]				[0.010]		
Urban Potential 20km			-0.060***				-0.058***				0.077***	
			[0.005]				[0.004]				[0.005]	
Urban Potential 50km				-0.040***				-0.038***				0.051***
				[0.003]				[0.003]				[0.003]
Observations	7,887	7,887	7,887	7,887	7,887	7,887	7,887	7,887	7,888	7,888	7,888	7,888
R-squared	0.204	0.601	0.752	0.802	0.351	0.692	0.822	0.867	-0.588	0.187	0.489	0.591
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.193	0.596	0.749	0.799	0.342	0.688	0.820	0.865	-0.610	0.176	0.482	0.585

Note Second stage regression in the 2SLS setting. The unit of observation is the municipality. The dependent variables are: Mean preference votes for Lega in columns (1); Mean preference votes for Right-Wing parties in columns (2); Mean preference votes for M5S in columns (3). Urban potential is our measure for the urban potential of a municipality depending on the population at different radii of distance: 5km, 10km, 20km and 50km. The variables urban potential are instrumented by the average ruggedness. Controls include both geographical and populations variables, as well as province fixed effects. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

distance weighted sum of the population for a municipality in light of all other municipalities, the greater its urban potential. The choice of multiple radii allows us to include any rural or morphological differences, as well as the coverage of a territory known to consist of multiple municipalities, sometimes very close together. Similar to our Population density and NTL variables, the coefficients for both the right and the league are negative and statistically significant, unlike the M5S, which despite the significance has positive coefficients. Importantly, as radius and therefore urban potential increases, party preferences decrease. A larger radius in fact includes distant territories, mainly because radii are constructed with geodesic distance. In distant municipalities, however, as we saw in Table 5, right-wing populist parties gather more support in suburban municipalities. The effect, therefore, as the radius increases, is mitigated precisely by the preferences of rural areas.

2.7 Discussion

Recent visualisations[11] of housing density show that Italy is an interesting example for studying the contrast between urban centres and rural places in terms of policy preferences. The characteristics of people living in cities are different from those that characterise citizens in the suburbs. These then differ even more in terms of income, education level and path (Dijkstra and Poelman [2014]). Controlling for this heterogeneity, we focused on understanding how this contrast shapes policy preferences. Exploiting the urban-rural gradient through a classification of Italian municipalities we look at voters' electoral preferences for the last five House of Representatives elections. We consider among the parties three emblematic and leading parties of the populist political landscape in Italy, namely the League, M5S and a cluster of right-wing parties classified as populist. Our baseline results show that preferences for right-wing parties are allocated mainly in urban areas. Moving away from urban centres, as this distance increases, the populist right finds fertile ground. The opposite effect stands, however, for the M5S. Facing a problem of endogeneity we instrument our alternative ranking variables of the degree of urbanisation. We show how as the degree of urbanisation decreases, support for right-wing populist parties increases. In contrast, there is a lack of significance for M5S. The rhetoric of the populist right exploits the sense of nationalism, the fight against immigration, and the return to a lost glory. This rhetoric finds particular appreciation, according to our results, in more rural areas. Researching further possible mechanisms, we find that support for the populist right and particularly for the Lega is found mainly in the north, with total absence in the south.

Finally, we pay special attention to elections by breaking them down into single appointments. In all elections, voter behaviour is similar. The main support for the populist right comes from rural areas. However, it is important to point out two observations. The 2013 and 2018 elections are particularly emblematic. 2013 was the first election after the biggest

[11] Terence Fosstodon recently buslished on Twitter population density visualization maps for multiple countries, among which Italy

crisis in decades. On that occasion, it was the centre-left that won in Italy. Although much of the literature allocates the responsibility for the populist rise to the losers of globalisation (among many Rodríguez-Pose et al. [2018a]), we find that in fact only the extreme periphery maintained the same support between 2013 and 2018, the rest of the population mitigating their positions. In contrast, 2018, the year in which the first government totally composed of elected officials from populist parties was created, saw a significant distrust of populism in the city and a total embrace as the degree of urbanisation decreased. Our results are in line with the literature, however, helping to explain how support for populism is not limited to population characteristics but also to the places where they live. This could have important implications on the allocation of campaign resources for candidates in order to better convince the median voter, but it is also an important result for social policy planning.

Chapter 3

Social closure and populism

3.1 Introduction

Social capital has been a widely studied element in economics. The virtues of social capital already in early studies have been shown to bring benefits in both the political and economic spheres (de Tocqueville [1835]). Putnam et al. [1992] also argues how the density of social ties increases trust, and thus society ends up being characterized by democracy, state authority, and political commitment, all key ingredients of good politics. What is important is that trust reduces transaction costs by limiting opportunism, thus encouraging investment; at the same time, associational networks accelerate information transfer, increasing knowledge spillovers that help create fast-growing innovation clusters, but excessive proliferation of group interests can stifle economic growth (Lyon [2005]). The same may be true for the political impacts of social capital. One possible explanation is that social capital allows members of a society to benefit from the qualities of others up to a certain point. When the breaking point is reached, social capital becomes too powerful, becoming the cause of divisions and exclusions.

In this article, our main contribution lies in studying the extent to which social closure might affect preference towards populism. Various scholars have examined the significance

of social capital in political and economic contexts. de Tocqueville [1835] initially noted the advantages of tight-knit societies, while Putnam [1993] emphasized the role of social capital in democratic and economic success, particularly in Italy. However, Putnam et al. [1992] focused on creating and promoting social capital without questioning its origins. Tarrow [1996] challenged Putnam's perspective, suggesting that social capital is influenced by complex socio-economic and cultural events rather than being an independent factor. Knack and Keefer [1997] found that nations with formal structures safeguarding property and rights, and fewer divisions along ethnic and class lines, exhibit greater civic trust and cooperation. This observation can be interpreted as the presence of "horizontal networks," encompassing linguistic and ethnic homogeneity and visible relationships. Maintaining linguistic and ethnic uniformity has been shown to facilitate increased trade (Platteau [1994]). With particular emphasis on social capital and populism, Algan et al. [2017], Boeri et al. [2018], Dustmann et al. [2017] and Giuliano and Wacziarg [2020] all find a negative relationship between social capital and support for populist parties. Algan et al. [2018] also finds that support for the main French populist party "front national" comes precisely from those who most embrace deeper cultural traits. In the U.S. context, for example, Alesina et al. [2018] show how those among Republicans who feel the least trust in the government actually hold it responsible for the lack of many inter-generational. At the same time, Kuziemko et al. [2015] shows how the white population is skeptical of federal government policy.

Given the various contributions to support the functioning of a larger or smaller network. The presence of greater compactness among inhabitants, due in our case to a greater presence of the same surnames, can create synergies within the community. Trust, honour, obligations, shared values[1] and incentives (Tabellini [2008]) constitute driving elements within a society. Thus, faced with the rise of parties from a nationalist, anti-Europe, anti-

[1]Moral values, i.e. the behavioural practices, goals, and habits which are validated by the society we are part of, can explain populism. Sandel et al. [2005] for example, emphasises how morality can be a lever on the electorate, such as, for example, loyalty. Enke [2020] presents solid evidence that the emergence of populism is linked to a steady movement in Americans' moral ideals away from universalist and toward community ones.

immigrant rhetoric typical of the populist right-wing dialectic, we believe that in the face of a social closure presence such a narrative has found reinforcing opportunity. Instead, in the presence of a more heterogeneous society in which interactions with "outsiders" are greater, acceptance of diversity may neutralise such sentiment.

To analyze social closure on populism in Italy, we utilize two distinct variables based on surnames, encompassing the years 1993 and 2004 in each municipality. During that period, telephone directories were available, containing the names of individuals who owned landline phones. The presence of these directories allowed us to examine the level of endogamy within communities. It becomes apparent that communities with limited opportunities for interaction with external individuals exhibit a high degree of endogamy. Such limitations can stem from restricted access for new members, as well as limited mobility or migration. Additionally, cultural values, customs, and traditions contribute to this phenomenon by further reinforcing the closed nature of the community. Consequently, this closed network thrives solely on the contributions of its members, reinforcing existing ideas and perspectives.

We adopt an empirical analysis based on an OLS model by including both time-varying variables related to population characteristics and time-invariant variables about geographical size. The results of our analysis point in the direction that the greater the social closure in a municipality, the greater the support for right-wing populist parties. To support our findings we investigate the phenomenon and mechanisms in more detail through an alternative empirical technique and by considering alternative measures and sub-samples.

Our analysis makes significant contributions to several bodies of literature. Firstly, we enhance the existing literature on populism in Italy. Besides the literature on trust and social capital, our work is mostly related to studies on the effect of social interaction, peer monitoring, and peer pressure on populism (Sandel et al. [2005], Enke [2020], Tabellini [2008]).

We proceed as follows. Section 3.2 provides the institutional background; Section 3.3 describes the data, the model and empirical analysis. Section 3.4 provides the main results

while 3.5 provides further results and robustness checks. Section 3.6 concludes.

3.2 Institutional background

3.2.1 Populism

When it comes to populism, there are multiple elements that favour support for such parties. Guriev and Papaioannou [2022] collect various theoretical and empirical reasons supporting the rise of votes toward populist parties. In fact, besides economic factors, the rise of populism can be linked to numerous non-economic explanations. In this paper, we investigate the effect that social closeness has on the populist rise. Though there are no similar contributions in the Italian context, the concept of social closeness can contribute to the already established literature about the cultural and social elements that explain populism (see Guriev and Papaioannou [2022] for a recent literature review). Our analysis is circumstantial to Italy. Indeed, the country, like several other European nations, has not been graced by the proliferation of parties with populist dialectics. Although there are several definitions and characteristics that the more or less recent literature has indicated to define a populist party, we dwell on Taggart [2004], which we believe can describe it in an accomplished way according to several elements.

First and foremost, populism is antagonistic to representative politics. Populism would not exist without representativeness, so in a sense, it is a consequence of representativeness itself. Populists encounter difficulties because of the complexity of representative politics. Second, populists often identify with a "heartland," a fictionalised version of the target demographic. The definition of "heartland" is based on social and economic indicators rather than geographic and ethnic character. Populists regularly resort to history: the "heartland" is a wonderful existence that has been lived before and proven to be possible. The "heart of the country" is distorted by the present, which dictates the need to restore it to its original state. This is clear by observing the discourse of the right, which is centred on Christianity

(see Shterin and DeHanas [2019], Marzouki et al. [2016]), nationalism, contempt for the EU (for example Dustmann et al. [2017]), repudiation of migrants (among othersBarone et al. [2016], Halla et al. [2017], Edo et al. [2019], Becker et al. [2016], Viskanic [2017], Hangartner et al. [2019]), and the weight of the euro. Third, populism lacks fundamental principles. It is not an ideology with all the accompanying norms, guidelines and interpretations. Every value comes from the "heart". This lack is a sign of weakness, but it also gives a populist movement a chance to acquire broad support. If populism is a response to institutions and elites, then as these shift in time and geography, so do populism and its claims. Each populist movement sees itself in terms of specific characteristics Müller [2016], rather than as part of a larger movement. Finally, populism can be confirmed as context-dependent because it is a practice rather than an idea. Fourth, populism arises from the perception of a a major crisis. Not a real and serious crisis, but a feeling of crisis. This indicates that populism can arise naturally from a crisis (for example Algan et al. [2017]), but it can also be a rhetorical tool used to amplify anxieties that would otherwise go unnoticed in order to gain control. The idea that history is in the midst of a turning point is one of the core beliefs of populists (Taggart [2004], p. 282). Populists constantly exploit the sense of crisis to give their message a sense of urgency and excess of meaning. Fifth, the self-limiting quality of populism. Populists are reluctant to engage in politics. It is a short circuit that makes long-term sustainability very difficult. These five ingredients create the populist recipe, including the Italian one. Since the birth of the Northern League in the early 1990s, as well as the rest of the right-wing populist parties, the claims made and the rhetoric advocated falls right into these five ingredients. And there are many contributions in the literature analysing their growth and effects.

3.2.2 Social closure

Social closeness, as defined by sociologists, refers to the process of constructing identities and communities; it is a process of drawing boundaries and using scarce resources for group pur-

poses only (Durkheim [2019]). It is understood as a process precisely because the definition of one's group membership begins as early as school age, where supposedly homogeneous classes begin to divide into separate peer groups or sports teams. This process then continues throughout adult life through participation in, but also exclusion from, the labour market or becoming a member of a community. The major challenge then is how to reconstruct the members of a society, how to quantify the compactness of a community, and through what channels values and principles are inherited and transmitted. The importance of interactions within a community manifest themselves, according to some, as a network. Already Granovetter [1973], Coleman [1988] and Putnam [2000] argued that social networks play a key role. In fact, if we look at a community with the interaction between people we can quantify the nodes that bind them - the knowledge in common between people - we can quantify the intensity of connections. Networks in turn can be more or less open as well as they can have different sizes. Coleman [1988](p. 318) for example, discusses the advantage of closed networks by arguing how dense networks facilitate trust and norms by facilitating effective sanctions. Community size therefore may play a role. Large community size is often negatively correlated with prosocial behaviors such as volunteering, working on public projects, and informally helping friends and strangers (Putnam [2000], 119, 206). This may be due to the possibility of interaction between people. In a larger network people simply have less time to socialize with each other. The result is fewer friends and less social collaboration. On these premises, Allcott et al. [2007] measuring the size of networks conclude that "small is better." The pool of potential friends is smaller in small towns, which increases the likelihood of two friends' neighborhood networks overlapping. Their findings support Coleman [1988]'s hypothesis that networks with higher closure offer high levels of trust among friends, which encourage collaboration and improve well-being. Networks with high closure allow more social punishment among users, according to this reasoning.

Certain it is that networks do not always coincide with the whole community. In our case, the dimension of analysis is the municipality and despite the controls imposed in the

empirical analysis, the heterogeneity between communities is evident. At equal closure, however, the intensity of ties in the network may play a role. Granovetter [1973] theorises the link between weak and strong ties. Although weak ties are often denounced as generating alienation (Wirth [2011]), in his theorization they become indispensable for individuals' opportunities and their integration into communities; strong ties, which generate local cohesion, lead instead to general fragmentation. The synergy between strong and weak ties makes possible an otherwise utopian social equilibrium. In our case, strong ties will be those that reiterate populist propaganda; weak ties, on the other hand, enable inclusion of new members within the community by creating opportunities for reflection and openness. In light of this reflection, therefore, it becomes inevitable to understand the meaning of "interaction", dwelling particularly on strong ties. The most intuitive notions about the "strength" of an interpersonal bond should be met by the following definition: the strength of a bond is a combination of the amount of time, emotional intensity, intimacy (mutual trust) and mutual services that characterize the bond (Granovetter [1973]). This intensity of bonding within a group can have different effects depending on the openness of the group. In the face of high intensity, the greater the closure the better the results. Conversely, when network closure is threatened by the presence of out-group contacts, the result is that of a cohesive group containing only one perspective, one skill, one resource (Burt [1995]).

The concept of social closure can be interpreted as a bond within a society. Endogamy, as the practice of marrying within a specific social group, for example, can manifest itself in a network can be homogeneous in a given group, such as the population of a given territory. Karlan et al. [2009] interprets the role of network connections between individuals. Within a social network there will be multiple interactions and, according to the authors, this influences trust between agents. Similarly, Glaeser et al. [2003], show how distrust within the same network can reduce in a wavelike manner by amplifying. Thus, in a context of familiarity, social disintegration due to including new individuals can nurture distrust that is reinforced by an increasing lack of interaction. Similarly, if we think of families (and therefore

household heads' surnames) as a given element, the increase in entropy can be interpreted as an enlargement of the network itself. Using the school context, Allcott et al. [2007] shows that there is a strong correlation between grade size and network closure, which is negative. Given that this may be due to the grade size itself, they control for this mechanism. They conclude that inquiry by controlling for the effect of network size itself by finding that the effect of Channel closure is mitigating. As Coleman [1988], a social closure contributes to greater pro-social behaviour. If in fact we interpret the actions of individuals not as independent and the result of maximizing their own utility, but, as argued by the multitude of sociologists, that actions are actually governed by social norms, rules and obligations, it is important to evaluate the latter elements in policy choices. Following Coleman's (Coleman [1988]) thesis, it can be seen that social closure is a fuel for at least two of the elements that make up social capital according to the author, namely: obligations and expectations, information channels and social norms. The absence of social closure therefore causes a lack of fertile ground for the formation of social capital itself. Closure, as interpreted by Coleman, is the interaction of a closed circuit within a network. Faced with daily interaction between peers, mutual expectations and the development of norms about the behaviour of others are formed. Similarly, this happens as a reinforcing phenomenon in the relationship between parents and children in inheriting values and obligations. Social structure closure is important not only for the existence of effective norms but also for another form of social capital: the trust of social structures that allows the proliferation of obligations and expectations.

Indeed, social capital has been an element of investigation to expiate populism.

3.3 Data and Identification strategy

In this passage, we present the data used in our empirical analysis. Our dependent variable is votes toward populist parties. We consider the group of right-wing populist parties and

the most discussed one, Lega. Since our goal is to understand how the attitudes of these parties change in the presence of greater social closure, we turn to describing this dimension before discussing our vote shares.

3.3.1 Social closure

Social closure can be a key element in understanding economic phenomena. There are several contributions in the empirical literature that exploit networks to measure economic-financial dimensions. For example, Buonanno and Vanin [2017] exploit social closure to study criminal behaviour in the Italian context. Their results assert how social closeness strengthens social sanctions and social control. As a result, local interactions become more cooperative, but on a larger scale, cooperation is decreased. Others link social capital and social closure to the rise of populism (among others Della Posta and Rehman [2020] and Rodríguez-Pose et al. [2021]); as well as to the functioning of institutions themselves (Besley [2020]).

Another extensive literature is that which interprets society as networks. Lavy and Sand [2019] and Van den Bos et al. [2018] analyze the networks mechanism in pre-schools and school environments. Karlan et al. [2009] (and similarly Mobius and Szeidl [2007]), for example, observe social networks as a space for building a theory of trust based on the enforcement of informal contracts. Cai et al. [2015] study the influence of social networks on weather insurance adoption and the mechanisms through which they operate. Ambrus et al. [2014], on the other hand, develop a model in which connections between individuals serve as social guarantees to enforce informal insurance payments. Although the latter examples build theoretical models, in practical application they draw on the reconstruction of real networks. For example, Allcott et al. [2007] look at the effects of people's switch off from Facebook. The randomised experiment, however, exploits a sub-sample of people who decided to participate in the experiment itself.

Our challenge is to understand how populism changes in the face of social closure on a national scale, in all municipal communities. To do this, therefore, we need a proxy for social

closure. We respond to this challenge as in Buonanno and Vanin [2017] by thus exploiting surnames within a community. Although for purposes other than the study of populism, others have exploited surnames to understand inequality in the labour market (Arai and Skogman Thoursie [2009]), to understand intergenerational mobility (Clark and Cummins [2015] and Güell et al. [2015]), rather than to analyse gender discrimination and opportunity (e.g. Goldin and Shim [2004] and Rubinstein and Brenner [2014]).

The measure we use is the distribution of surnames in each municipality. The surname reflects the male migration history and reproduction patterns of a community. We prefer two measures - proxies for social closure - namely the distribution of communes in 1993 and 2004. The authors extracted data on surnames from the national telephone directory (SEAT - Society of Telephone Subscriber Directories). The number of individual subscribers (18,546,891) amounts to approximately 33 percent of the entire population in 1993, covering practically all Italian households. Thus, the entire distribution of surnames in 1993 as well as 2004 is available for each municipality. It is then important to point out that inclusion in these lists was independent of people's will. Only after 2005, in fact, did the op-out option from the lists become optional. In the present case, therefore, our two measures will be the percentage of the most present surname in each municipality for 1993 and for 2004, respectively First Share (1993) and First Share (2004).

We can, therefore, interpret this measure as social closure. The higher the concentration of same surnames in a community, the greater their cohesion. Conversely, a low concentration of same surnames and the greater will be the inflow into that community from non-member families, creating in some ways a dispersion. The same authors, Buonanno and Vanin [2017], for example, show that openness of societies, represented by a low concentration of surnames, is positively associated with almost all types of crime.

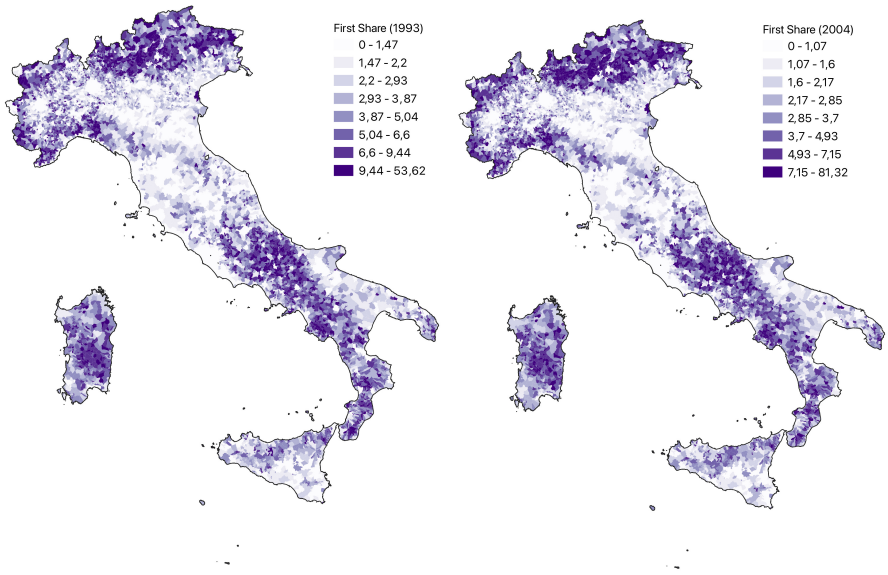


Figure 3.1: First Share (1993 and 2004)

The figure on the left represents the distribution the most common surnames. The figure on the left shows the distribution across municipalities of the share of the first most common surname in 1993, while the one on the right refers to 2004. The figure is of our own reworking on data from Buonanno and Vanin [2017].

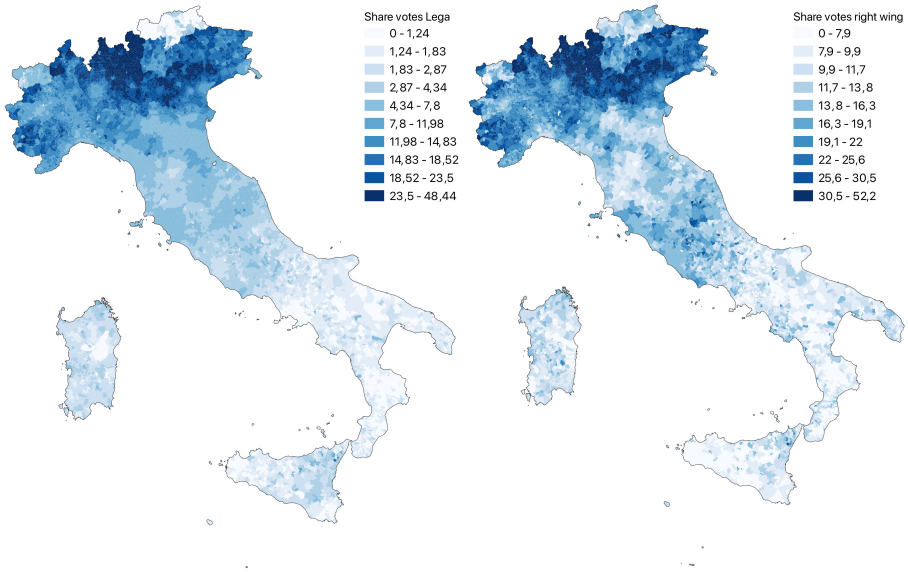
3.3.2 Vote preferences

Our goal will be to see how preferences toward populist parties change according to social closure. We therefore consider the populist right-wing parties. As previously discussed, this political ideology combines right-wing politics with populist rhetoric and themes. According to Mouffe [2011] the rise of right-wing populism has often been a consequence of the blurring of differences between the traditional parties of the left and right, due to a crushing of these parties toward the center, and the ability of these new movements to be able to give expression to needs no longer represented by existing parties. It is interesting to note in Figure 3.2 how the distribution of the vote is extremely territorial. It becomes apparent how right-wing parties[2] have a major support in the northern area of the country.

[2]We consider the following parties belonging to the populist right: "Alternativa Sociale"; "Casapound Italia"; "Destra Nazionale"; "Fiamma Tricolore"; "Forza Nuova"; "Fratelli D'Italia"; "Fronte Nazionale"; "Grande Nord"; "La Destra"; "La Destra - Fiamma Tricolore"; "Lega D'Azione Meridionale"; "Liga Fronte Veneto"; "Movimento Sociale Fiamma Tricolore"; and Lega (itself is composed of multiple territorial parties: "Lega"; "Lega Nord"; "Lega d'Azione Meridionale"; "Lega Nord Valle D'Aosta"; "Lega Nord-Die Freiheitlichen-Basta Euro"; "Lega Per L'Autonomia Alleanza Lombarda Lega Pensionati"; "Lega Salvini

In Table 3.1 we entail, among others, the summary statistics on vote preferences for the populist parties. By mean vote share, we mean the average number of votes gained in the years in which these parties took part in electoral appointments for the renewal of the House of Representatives[3] (namely the election of 2001, 2006, 2008 and 2013).

Figure 3.2: Mean vote shares for right-wing parties



The figure on the right represents the average vote share acquired by all right-wing populist parties in the electoral appointments for the renewal of the House of Representatives from 2001 to 2018. On the left the average vote share for Lega in the same time span.

Table 3.1: Social Closure and Vote preferences

VARIABLES	N	mean	sd	min	max
First Share (2004)	7,890	3.897	3.690	0.012	81.32
First Share (1993)	7,880	5.168	4.519	0.238	53.62
Right-Wing parties	7,901	17.94	8.780	2.217	52.23
Lega	7,901	10.38	9.089	0.204	48.44

Note The table entails summary statistics on social closure measure and vote preferences for the populist parties. First Share (1993) and First Share (2004) are our social closure proxies, i.e. respectively the share of the most common surname in 1993 and 2004. Right-wing and Lega are respectively the right-wing's and Lega's average votes share among the years they attended national elections. All variables are at the municipal level.

Premier"; "Lega Sud"; "Lega Veneta Repubblica")

[3]Annual analyses for both league and all populist right-wing parties are enclosed in the appendices.

3.3.3 Empirical analysis

Our main specification is the following:

$$Populist_m = \beta_0 + \beta_1 Social\_Closure_m + \beta_2 X'_m + \beta_2 Z'_m + \lambda_p + \varepsilon_m \tag{3.1}$$

Our $Social\_Closure_m$ variable is First Share, as already discussed is concentration of the most common surname in a community, in our case the municipality. Our dependent variable is the vote share $Populist_m$ for populist right-wing parties. X'_m is a set of population control variables. Z'_m, on the other hand, is a set of geographic control variables [4]. Finally, standard errors are clustered at the provincial level. λ_p is a set of provincial fixed effects that controls for any-time invariant unobserved variable, while ε_m represents the regression error. In our empirical strategy therefore, as in the case of Buonanno and Vanin [2017], we use First Share as a proxy for our social closeness. As discussed in the introductory part of this paper, there are multiple mechanisms that we believe can occur. A greater propensity to intermarry with members of the same community may reinforce beliefs and norms among the community. In the opposite case where, on the other hand, the population is extremely diverse, opportunities for interaction with members of society other than one's own group may be rare and even avoided. Faced with a heterogeneous population, the rhetoric of nationalism, identity, cohesion, Christianity, all of which can be declined to group membership versus the rest would thus not find fertile ground.

3.4 Results

In our baseline presented in the table 3.2, our baseline evidence on the association between social closure and preference for populist parties. We report in the same table both preferences for right-wing populist parties (including the League) and those of the League alone. In column (1) as well as column (4) in the face of a total absence of controls, we have a

[4] See Appendix for control variables.

positive correlation and they are statistically significant. In columns (2) and (5) instead we enter F.E. at the provincial level. Both of our variables, i.e., Vote Preferences and First Share, in fact, have a relationship with territory. In the case of preferences toward parties, in fact, some of them have a territory in which they are preexisting, in which they have proliferated and whose political vision is most shared by the population. At the same time, First Share and consequently consort choice may be linked to the conditions of the area in which one lives. Greater migration difficulty, customs and traditions may play a key role in this direction. We believe we can grasp these difficult-to-quantify dimensions by inserting the provinces' fixed effect, in the presence of which our coefficients appear positive and statistically significant. Finally, by inserting, in column (3) for the right-wing populist parties and in column (6) for the League alone, our control variables both related to population and municipal geography we obtain in both cases again positive coefficients, statistically significant but nominally lower. Nevertheless, in both cases in the face of greater share of the most common surname with a more close society the preferences toward populist parties is greater. The same happens in the case of preferences toward the League alone.

In Table 3.3, on the other hand, we exploit the share of the surname most present in a municipality in 1993. In some ways we can interpret this dimension as in the previous table 3.2. In this case, the greater the value of first share, the greater the population present that shares the same surname, in essence a proxy for social closure. When confronted with first share in comparison to Table 3.2, the values are all positive. The first difference is the presence of statistical significance already in the pure correlation between first share and our voting preferences. In column (2) and (5) we again enter the fixed effect provinces. Again nominally we get a smaller coefficient resulting from the effect of municipal location. In column (3) we include both population and geographic controls in the first share effect toward preferences toward the populist right. Although the effect remains positive, there is an absence of statistical significance at 90 percent. In contrast, however, in column (6) by

Table 3.2: Effect of first share (2004) on Right-Wing parties preferences

	Right-Wing			Lega		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS.	OLS
First Share (2004)	0.229***	0.163***	0.055***	0.233***	0.176***	0.054***
	[0.030]	[0.017]	[0.020]	[0.032]	[0.016]	[0.017]
Observations	7,889	7,889	7,775	7,889	7,889	7,775
R-squared	0.009	0.839	0.852	0.009	0.898	0.912
Controls	No	No	Yes	No	No	Yes
Province FE	No	Yes	Yes	No	Yes	Yes
Adj. R-squared	0.009	0.836	0.850	0.009	0.897	0.910

Note Standard OLS estimations. The unit of observation is the municipality. The dependent variable is the mean vote share for Right-Wing parties and Lega. The First Share (2004) variable represent the share of the most common surname in a municipality in 2004 and it is our proxy of social closure. Columns (1) and (4) contains no controls; columns (2) and (5) include province f.e.; columns (3) and (6) includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

including controls in the effect of first share on preferences toward the League, the coefficient is positive and statistically significant. This could be related precisely to the type of rhetoric in place.

3.5 Robustness

3.5.1 Sources of endogeneity and identification strategy

Our empirical strategy falls back on the use of an instrumental variable so that we can show that, in the presence of social closure, support toward populist parties is more substantial. This is because there's concern with some possible sources of endogeneity linking the two variables. This could happen if i) there are omitted variables correlated with both explanatory and dependent variables, ii) if explanatory regressors present measurement errors, iii) if there is reverse causality, i.e., if social closure affects votes for populist parties and, simul-

Table 3.3: Effect of First Share (1993) on Right-Wing parties preferences

	Right-Wing			Lega		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	OLS	OLS	OLS	OLS.	OLS
First Share (1993)	0.137***	0.118***	0.024	0.157***	0.144***	0.040***
	[0.026]	[0.014]	[0.014]	[0.027]	[0.012]	[0.012]
Observations	7,880	7,880	7,763	7,880	7,880	7,763
R-squared	0.005	0.841	0.856	0.006	0.900	0.914
Controls	No	No	Yes	No	No	Yes
Province FE	No	Yes	Yes	No	Yes	Yes
Adj. R-squared	0.005	0.839	0.853	0.006	0.898	0.912

Note Standard OLS estimations. The unit of observation is the municipality. The dependent variable is the mean vote share for Right-Wing parties and Lega. The First Share (1993) variable represent the share of the most common surname in a municipality in 1993 and it is our proxy of social closure. Columns (1) and (4) contains no controls; columns (2) and (5) include province f.e.; columns (3) and (6) includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

taneously, the latter affects the error term. Circumstances ii) and iii) can be excluded, the shares of votes are taken from the Government database; and the votes for populist parties are unlikely to affect the surname distribution in particular if we consider the timing of the populist phenomenon's emergence. Moreover, it does not seem plausible that a party's rhetoric in the absence of active and restrictive policies might affect family name inheritance. This assumption is more supported if we consider that not only the right-wing parties we consider as populist were not governing (or sitting in the parliament) but most of them were not born yet.

Table 3.4: Ruggedness summary statistics

VARIABLES	N	mean	sd	min	max
Ruggedness	7,888	221.2	213.3	0.894	1,151

The table summarizes some statistics for average ruggedness. Data from Buonanno and Vanin [2017].

The source of endogeneity therefore could be caused by omitted variable. A lower concentration of surnames at the communal level could be due to multiple factors. These could be a higher level of education that secondarily leads to greater mobility by making it more likely to meet partners who are not part of one's community. So could economic conditions, intended as job opportunities and wealth; the degree of urbanization and the size, in terms of population, of the municipality in which one lives. Several of these elements may, in fact, have constituted reasons for a greater or lesser concentration of surnames. For this reason we include several controls, both referring to population and about municipality. Nevertheless, other elements such as individual choices, cultural elements, and family reasons are difficult to measure and therefore difficult to include in our empirical analysis, creating an omitted variable bias in our OLS estimation.

Table 3.5: Effect of Social Closure on Right-Wing parties preferences - 2SLS

Panel A: first-stage					
Average Ruggedness	0.197***			0.3301***	
	[0.000]			[0.000]	
F-Test	22.90			37.21	
	(1)	(2)		(3)	(4)
	Right-Wing	Lega		Right-Wing	Lega
Panel B: second-stage					
First Share (2004)	0.996***	1.130***	First Share (1993)	0.710***	0.621***
	[0.284]	[0.324]		[0.179]	[0.155]
Observations	7,774	7,774		7,762	7,762
R-squared	0.828	0.736		0.783	0.865
Controls	Yes	Yes		Yes	Yes
Province FE	Yes	Yes		Yes	Yes
Adj. R-squared	0.826	0.732		0.780	0.863

Note 2SLS estimations. The unit of observation is the municipality. The dependent variable is the mean vote share for Right-Wing parties and Lega. The First Share variable is the share of the most common surname in a municipality. The entropy variable is our proxy of social closure. Columns (1) and (2) are respectively the effect of entropy on right-wing parties and Lega; columns (2) and (5) are respectively the effect of the share of the most common surname on right-wing parties and Lega. Table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

We then include geographic controls and population controls[5]. We also include fixed effects at the provincial level. Although it is not possible to measure family values and cultural biases that might cause the higher or lower concentration of surnames, in an area as heterogeneous as Italy, controlling by province might capture these differences. Despite including these control variables, omitted variables might persist. For this reason, we use ruggedness as an instrument for a 2SLS analysis. Specifically, we instrument the concentration of surnames with average ruggedness at the municipal level. Ruggedness also affects the suitability of the land to build cities and, in particular, to trade between places (Nunn and Puga [2012]). It's challenging to construct roads and communication networks linking different sections of the country when the terrain is quite rough. As a result, it is likely that nations with rocky terrain create several towns on the land that functioned as population, commerce, and exchange hubs for particular regions of the country. Therefore, roughness ought to result in less dense urban development. Ruggedness is a measure of the irregularity of a terrain. The greater the irregularity of a terrain, the greater will be the difficulties in connecting it with neighboring territories. Therefore, in the face of the geographical characteristics of the communal terrain, the relationship with the concentration of surnames will be negative. Communities that are geographically more isolated will have a consequent tendency to be closed to other communities contributing to the further concentration of such surnames.

Our first stage has the following specification:

$$Social\_Closure_m = \beta_0 + \beta_1 Ruggedness_m + \beta_2 X'_m + \varepsilon_m \tag{3.2}$$

Once we have this social closure instrument, we then examine how it affects our choices for various parties. The outcomes of the IV estimations that consider the province fixed effects, and the previously mentioned list of controls are presented in Table 3.2. The first-stage regression, displayed in Panel A of Table 3.5, validates the instrument's goodness-of-fit. The

[5]These variables are listed and described in the appendix.

average ruggedness's existence is highly significant and bears the anticipated sign. These estimations do not exhibit a weak instrument problem, according to the F-test result for the omitted instrument, which is 49.33 for entropy and 37.21 for first share. The OLS results and the 2SLS estimations are qualitatively consistent overall. However, our IV estimates' magnitude is consistently greater than the comparable OLS estimates' magnitude. Moreover, we observe statistical significance for both parties.

3.5.2 Estimates by sub-samples

North - Center - South In this section, we perform several alternative specifications to check the robustness of our estimates. Indeed, we divide the sample according to geographic basis (north, center and south) and according to the degree of urbanisation (cities, towns, villages). In Table 3.6 we replicate the analysis presented in Table 3.2 but dividing our sample by geographic basis[6]. The columns below North present the coefficients for the populist right and the league. The results in this case in both sign and statistical significance do not deviate from the results, including the entire sample. The coefficients, however, are nominally larger. However, the sign is different, although the coefficients are statistically significant, in the case of the central regions of the country. In this part of the country, heterogeneity of surnames leads to greater support for right-wing populist parties. In contrast to the north, support for the League alone is small compared to the right-wing in a broader sense. This could be due to the kind of rhetoric that is presented in the center of the country as well as its own political history. The mechanism may be different from what is presented in the north. The dispersion of surnames with a more heterogeneous population may be attracted by a new political agenda, where the sentiment is not so much discriminatory as nationalist revenge. In the south, on the other hand, the entropy effect on the population's

[6]The north consists of the following regions: Piedmont, Valle D'Aosta, Lombardy, Trentino Alto Adige, Veneto, Friuli Venezia Giulia, Liguria and Emilia Romagna. The regions in the center are: Tuscany; Umbria; Marche and Lazio. The regions we classify as South are: Abruzzi; Molise; Campania; Apulia; Basilicata; Calabria; Sicily and Sardinia.

political preferences is zero. It does not exhibit statistical significance. In fact, southern Italy has not exhibited nationalist traits since the 1946 referendum.

Table 3.6: Fist Share (2004) and Vote Preferences: North - Center - South sub-samples

	North		Centre		South	
VARIABLES	Right-Wing	Lega	Right-Wing	Lega	Right-Wing	Lega
Fist Share (2004)	0.266***	0.341***	0.005	-0.099***	0.058*	-0.030***
	[0.035]	[0.040]	[0.068]	[0.018]	[0.031]	[0.010]
Observations	4,325	4,325	960	960	2,490	2,490
R-squared	0.272	0.302	0.094	0.354	0.079	0.106
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.270	0.301	0.0836	0.346	0.0754	0.102

Note Standard OLS estimations. The unit of observation is the municipality. The dependent variable is the mean vote share for Right-Wing parties and Lega. The entropy variable is our proxy of social closure. The sample is divided by geographical division: north, centre and south. The table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Urban - Rural gradient In Table 3.7 we subdivide our sample according to the population present in the municipality. We consider three categories: cities with a population greater than 50 thousand, villages with a population less than 10 thousand, and towns that are intermediate between the other two. We can see that for both the Lega and the right in general, support in towns is negative, but not statistically significant. The correlation between social closure and preferences toward populist parties is absent in cities, strongly present in the intermediate size Town and diverse in smaller towns. In fact, in the latter case, the league maintains sign and magnitude, while the right loses statistical significance.

Table 3.7: First Share (2004) and Vote Preferences: Cities - Towns - Villages sub-samples

	Cities		Towns		Villages	
VARIABLES	Right-Wing	Lega	Right-Wing	Lega	Right-Wing	Lega
First Share (2004)	-0.259	0.725	0.581***	0.686***	0.202***	0.226***
	[0.615]	[0.492]	[0.130]	[0.136]	[0.025]	[0.025]
Observations	111	111	1,059	1,059	6,605	6,605
R-squared	0.601	0.726	0.563	0.626	0.561	0.609
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.557	0.695	0.558	0.622	0.561	0.609

Note Standard OLS estimations. The unit of observation is the municipality. The dependent variable is the mean vote share for Right-Wing parties and Lega. The entropy variable is our proxy of social closure. The sample is divided by geographical division: cities, towns and villages. The table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

3.5.3 Democratic Party

Finally, in this paper we consider the usual right-wing populist parties, and find a substantial presence to support our thesis. We then consider in this section the same analysis performed in Table 3.5 with a non-populist party. The largest center-left party historically alternative to the centre right and most politically belligerent toward the populist right is the Democratic Party. It embraces values symmetrically opposite to the populist right, centring its policy at the national level on values of social democracy and social liberalism, promotes integration and European federalism. In fact, the result of the empirical analysis, presented in Table 3.8, prospects us a lack of statistical significance in the correlation between social closure and preferences for the Democratic Party. The mechanism in place against the populist right has no basis in the Italian centre-left.

Table 3.8: Entropy and Vote Preferences: Cities - Towns - Villages sub-samples

	(1)		(2)
VARIABLES	PD		PD
First Share (2004)	0.158	First Share (1993)	0.084
	[0.318]		[0.189]
Observations	7,762		7,762
R-squared	0.596		0.595
Controls	Yes		Yes
Province FE	Yes		Yes
Adj. R-squared	0.593		0.589

Note 2SLS estimations. The unit of observation is the municipality. The dependent variable is the mean vote share for the Democratic Party (PD). The First Share variable is the share of the most common surname in a municipality. The entropy variable is our proxy of social closure. Columns (1) and (2) are respectively the effect of entropy and the share of the most common surname on PD vote preferences. Table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

3.6 Discussion and Conclusion

In this chapter, the concept of populism is examined using the social closure principle. This might be seen as social contracting. In social network models, this is used to describe the density of a person's network, the number of nearby nodes, and the process by which nodes are added to the network to determine its size. The results of our empirical analysis show that the greater the closeness of a community the greater the support for right-wing populist parties. In the baseline we exploit two measures, the percentage of the surname most present in 1993 and the surname most present in 2004. In the appendices we contribute to our results with a measure of municipality dispersion. In this case instead of using the concentration of the first surname, we analyze how heterogeneous a community is. In all cases, in the face of increasing first-dream concentration, or in the face of decreasing community heterogeneity, support for right-wing populist parties increases.

To further understand the phenomenon in Appendix B.3 we also include the analysis with reference to each election date. The results are in line with the baseline with one interesting element. In 2018 none of our social closure measures have statistical power. That election saw the populist right gain many votes, such that the League became the party supporting the governing majority. For the League to have achieved such a result, it must have gathered preferences across the population. In this sense, the extent of the networks may have contributed to their success, rather than its density.

Both time-varying variables linked to population characteristics and time-invariant variables regarding geographic size are included in the primary analysis, which is based on the OLS model. We include a 2sls model analysis, in which the baseline findings are validated, to avoid any potential endogeneity issues caused by missing information. Understanding the process in place is challenging, especially in light of outcomes obtained with a traditional, non-populist party like the Democratic Party (PD).Our findings are not statistically significant when using PD, the dominant center-left party. This suggests that the right-wing populist propaganda is the only source of the process of idea reinforcement. We may next

validate the findings of the second chapter in certain respects by looking at the breakdown between cities, towns, and villages. In reality, we discover that the phenomena is more amplified in towns and villages, and completely missing in cities, when we divide our sample according to the size of the municipality according to the existing population. This is comprehensible. Large migrations distinguish towns and cities, which play a crucial role in both culture and economy.People from all over the world gather there to share and exchange ideas. This is supplemented with the potential of meeting partners from beyond one's core network, so increasing one's network. In more rural contexts, where endogamy is more prevalent and education levels are lower, idea reinforcement is more common. Our findings add to our knowledge of the phenomena of populism in a novel way.

Indeed, we do not confine ourselves to the realm of social capital, but rather build the groundwork for interpersonal relationships and how this feeds political propaganda. In the face of increased data usability, it may be worthwhile to reconstruct a community's networks and track their ideology to determine the extent to which ideas become duplicated and reinforced, as well as when they experience restrictions and disruption.

Chapter 4

Landownership elites and the literacy's expansion: Historical Evidence from Italy

4.1 Introduction

Education and the importance of literacy is the main instrument for the progress of a country's economy. However, this is possible when this goal is common to all members of society. When a group of people has the power to control the bodies dedicated to the achievement of these goals, the rights or protection of people are restricted, slowing down the economic development of a country (Acemoglu et al. [2001], Acemoglu et al. [2002], Ang [2013]. As formalized by Galor et al. [2009] different groups may have different interests in public power. They will therefore express their goal in pursuit of these objectives. Large landowners are influencing the political process to hinder educational changes and impede the mobility of the rural labor force, which is causing the delay in formal education growth. This paper, similarly to Cinnirella and Hornung [2016], studies the relationship between the concentration of landowning elite and primary education in twentieth-century Italy.

Until the Daneo-Credaro school reform of 1911, the control and management of primary education was in the hands of the municipalities. With the implementation of the reform, control, management and funding was taken from the municipalities and centralised by the state. This led to the landowning elites losing the power of control over local government and, consequently, decisions on primary education. We suggest that the concentration of elites has influenced access to primary education by limiting it. The loss of this sphere of influence incentives peasants to engage in formal education differently. Furthermore, the reform introduces a national budget and spending plan for all schools. In doing so, there is a compensation of the differences, in economic terms, between the municipalities where the elites restricted the development of primary education and the municipalities where this did not happen.

We compose a unique panel of all Italian municipalities in 1911 and 1921 of newly digitized data. We construct the data from municipality census for 1911 and 1921. We collected information about the local population, the number of literate people (divided by gender) and the concentration of the landed elites. The structure of our dataset allows us to estimate the effect of the elites' loss of power over primary education (due to the newly introduced reform) on the literacy rate. We find that the weakening of local elites leads to a substantial increase in the literacy of the entire population. The loss of control of local finance by the elites removes their leverage over the population, allowing the latter to help educate themselves and enable the accumulation of human capital. We also find that the effect is more pronounced in rural contexts. This shows that in contexts with a low population, concentration of arable land and a strong landowning elite, the effects of the reform are greater. On the other hand, in urban contexts, the development of manufacturing industry and the need for skilled personnel had already led to a literacy process.

We contribute to the literature by showing the relationship between the lost power of landowner elites over education and the increase in literacy rate in the twentieth-century Italian context. The research on the long-term economic effects of human capital disparity is

extensive. Cinnirella and Hornung [2016] look at how substantial landownership concentration influenced the spread of mass education in nineteenth-century Prussia. Landownership concentration and enrolment rates are found to be negatively related in cross-sectional estimations. They claim that agricultural changes, such as the gradual eradication of serfdom, are a major factor in the shift in enrolment. The findings support the hypothesis that labor liberation boosted private demand for schooling. Galor et al. [2009] look into the negative link between land ownership disparity and human capital accumulation. Large landowners resisted the introduction of human capital-promoting institutions like public schools because of a lack of complementarity between human capital and the agricultural sector, according to their theoretical paradigm. They use variance in the distribution of landownership and educational spending between states and across time during the period 1900–1940 to evaluate their model's prediction for the United States. They find that more land inequality has a negative impact on education spending, which is in line with their theoretical assumptions. They instrument landownership inequality through the interplay of statewide variations in the relative price of agricultural products associated with economies of scale and variation in climatic variables across states to ensure that the impact is causal.

Beltrán Tapia et al. [2021] investigates the causes of uneven access to land empirically, concentrating on two elements that are frequently mentioned in the literature: geography and history, with the latter alluding to the Christian Reconquest of the Iberian Peninsula between the 9th and 15th centuries. Based on data on the number of landless peasants at the district level in 1860, their findings reveal that, while geography had a role, the institutional context created by the Reconquest was crucial in explaining the uneven distribution of land in pre-industrial Spain. Similarly to our purposes, Cappelli and michelangelo.vasta@unisi.it [2019] show how a reform of the school system to concentrate the management of schools to a central body led to an increase in literacy rate. This was in a quasi-experimental setting in which municipalities were deprived of the management of schools, there was an increase in resources and a national standardisation of teaching. Their identification strategy, based on

PSM, shows a link between the shift to centralization and faster human capital accumulation.

We proceed as follows. Section 4.2 provides the theoretical and historical background emphasizing the Italian reform in education; Section 4.3 describes the data; Section 4 introduces the model and empirical analysis. Section 5 provides the main results and addresses some empirical strategy issues by robustness analysis. Section 6 concludes.

4.2 Background

The path to the Daneo-Credaro reform Italy in the late 1890s was characterized by a political turnaround under Giovanni Giolitti, who was able to combine the needs of the working class fruit of union representation and the labor movement; the industrial bourgeoisie; and the reformist wing of the Social Party. Giolitti understood that the economic and social transformations that had occurred in the 1990s required a reversal in the educational policy of the liberal state, which had hitherto favored the education of elites, aiming at the democratization of the school system through the strengthening of legislation concerning popular education, both basic and vocational Mele [1988].

Industrial development imposed at all levels a change of phase, to meet the needs of a "more articulate and solid educational model, - culturally elevated - than that of rural and backward societies" (Valerio [2002]). It was during his programmatic speech in 1903 that the prime minister declared the goal of the new government to be the improvement of the conditions of the working classes. The "war on illiteracy, ignorance, and superstition," was a primary duty "of an enlightened democracy," which his government aimed at with the concurrence also of the political forces representative of the laboring and emerging productive classes"[1].

To make these words concrete, an initial law was passed by Education Minister Nunzio Nasi requiring municipalities to establish elementary school classes and consolidating the position of teachers. The following year, in 1904, with the passage of Law 407 known as

[1] Camera dei Deputati, atti parlamentari, legge XXXI, 1° Dicembre 1903, p.9. 201-9.203, in Valerio [2002]

the Orlando Law. It provided for the increase of compulsory schooling from six to 12 years. It extended the elementary course to four years, at the end of which boys who wished to continue their studies in secondary schools had to take a "maturity" examination; the others could complete their schooling obligation in the fifth and sixth grades, which constituted a "popular course", at the end of which an elementary school license was obtained[2]. The law for the first time authorized the possibility of the formation of mixed classes. Evening and holiday schools for illiterates were enhanced; school meals paid for by municipalities were increased; and the economic conditions of teachers were improved.

Nevertheless, the Orlando Law did not produce the hoped-for effects. In 1909 the analysis of the newly appointed minister of education, Edoarso Daneo[3], are supported by the conclusions of the Corradini Commission, which carved out a fact-finding survey of elementary schooling in the 1907/1908 school year. The final report denounced poor literacy, precarious conditions of school buildings and insufficiency in school furniture and materials. The same commission confirmed that Law 407 failed to achieve its goals because it did not affect the setting of the school system given to it by the Casti Law, which had delegated all elementary education to the jurisdiction of elementary education and their paltry budgets. This fact made the reasons in support of the need to take the competencies of elementary and basic education away from the municipalities and avocate it to the state stronger [4].

In doing so, in 1911 the newly appointed minister, Luigi Credaro, took up Daneo's plan, which, with some modifications, was passed into law in June 1911. The Daneo-Credaro law established the principle that elementary schooling was a state public service. Consistent was the intervention towards technical and vocational schooling under the pressure of the process of strong industrialization that took place in the country.

[2]Valerio [2002], op. cit., p.48

[3]C.M. 22 Dicembre 1909, n.1, *Applicazione delle leggi sull'istruzione obbligatoria*

[4]Ministero della Pubblica Istruzione, *L'istruzione primaria e popolare in italia con particulare riguardo all'a.s. 1907/08*, Report submitted to the Minister of Education by the Director General for Primary and Popular Education, Dr. Camillo Corradini, vol. 4, Tip. Operaia Romana Cooperativa, Rome, 1910

The city council at the turn of the century Royal Decree No. 269 of May 21, 1908[5] updates the consolidated text of municipal and provincial law. It subdivides the kingdom into provinces, districts, commandments and municipalities. We focus in this section on the municipal administrative structure in light of its decision-making power over the elementary school.

Each municipality has a council, a junta and a mayor. The eligible population elects its municipal councilors. These vote by an absolute majority for their aldermen who will make up the municipal council. The mayor, head of the municipal administration and government official, is elected by the municipal council by secret ballot. Election is subject to several conditions. The citizen must be at least 21 years old, enjoy civil rights, be able to read and write, and meet other requirements. These other requisites include paying municipal taxes, not being a woman, and complying with Article 22[6] of the rule. The structure of electing local representatives in concert with the limited features of the active and passive electorate suggests that local politics was not particularly participatory. There were, in fact, few taxes present in such years. The main taxes in fact affected land and real estate. Added to this is evidence of influence on politics by landowners. Although there are not multiple accounts of such pressure or subjection to the vote by landowners in Italy, there are multiple cases in the rest of Europe.

Elite power over local politics The literature focuses primarily on the political channel to explain the negative relationship between landownership inequality and education. According to this literature, the mechanism works through large landowners who influence the political process to prevent changes in the supply of schooling by voting against the expansion of public spending on education. [7]

[5]Available in the original language at the following link: https://www.robertocavalloperin.it/wp-content/uploads/A6-0-rd-n-269-1908.pdf

[6]Article 22 defines those who enjoy neither active nor passive electorate

[7]Large landowners are typically said to be protective of their economic standing and opposed to redistributive taxation for public goods like education (see Gallego [2010], Galor et al. [2009], Go and Lindert [2010], Naidu [2012], Ramcharan [2010]). However, Acemoglu and Robinson [2006] contend that Prussian landowners' high degree of entrenchment and low political rents after 1870 rendered it unprofitable for them

Added to these are several accounts of the pressures of landowners on politics, society, and justice in late nineteenth-century Europe.

In Spain, the latifundist elite ruled the countryside through a caciquismo, a kind of bossism. Its function was to circumvent the central government. The cacique was a local ruler, a manipulator of votes and a distributor of patronage who operated outside the formal hierarchy. The interaction between land elites and caciquismo enabled control of territory and institutions. Similarly, in Prussia land elites opposed any attempt at societal modernization. There was vivid agrarian conservatism with a total absence of acceptance of osiations other than their own interests (Spring [2019]). In the French case, an example is that of the British region. Nobles in these areas had influence over the rest of the population, either directly through control of leases with their tenants and sharecroppers, or indirectly through traditional prestige when they had no such economic power. These regions had a stable agricultural order that gave the nobles the leading role (Zeldin [2019]).

According to Hoppen [1988] "At the end of the 19th century, in Ireland the grandees cited their rule by using: the power they enjoyed over their properties, some mechanisms economic and social character, their control over local administration and justice, and finally by mediating in the relations between tenant farmers and the state apparatus." In the case of eligible laborers, pressure from the landowners came in different ways. It could be the offer of better land, increasing or decreasing rents, or threatening eviction. It was simply either voting as suggested by the latifundist or incurring no favors and hostile behavior on the part of the latifundist.

In the Italian case, there is little evidence of the behavior of Italian landowners. Trebisacce [2018] analyzes the southern case in the face of various reforms designed to improve the educational sector. His analysis discusses the intent of the southern latifundists not to change the situation, while the northern bourgeoisie and investors hoped for more and more schooling and training to be exploited in the factories. Historian Giuseppe Giarrizzo's

to obstruct movements toward industrialisation.

(Giarrizzo [1992]) judgment was that illiteracy was an essential component of the power bloc exercised by the ruling classes in the Mezzogiorno at the time of the unified state citation 15. In light of these observations, we can assume that school reforms and the improvement of elementary education were necessary conditions for the country's development. All, however, are fed by the demand side of education. In the northern part of the country, it was the bourgeoisie and entrepreneurs in the nascent industry who sought literate personnel. With the prospect of better working conditions, it was the countryside and its people who wanted to educate themselves with the intention of being able to work in those same factories. The southern case, however, was different. The southern landowners had no interest in encouraging education. The demand side, that is, the farmers, never expressed this need except for those who aspired to be part of the great migration to the united states (Trebisacce [2018]).

The Reform The Daneo-Credaro reform earns its name from the minister Credaro who signed the law 487 on June 4, 1911[8]. The reform carried out a general revision of the structure of the elementary school, taking it away in part from the municipalities, thus facing the expenses for the maintenance of primary schools. The reform covered the entire country and involved all municipalities. Primary school management thus passed from the municipalities to the central state. The latter expressed its choices, influence and management through its representatives. A supra-municipal organisation called provincial school administration was introduced by the state.

The provincial school administration comprises the School Council, the School Deputation and the Government Delegation. The government delegation for elementary and popular education was established in each municipality. The School Board, an executive body, comprises 15 members, including a head teacher, two state representatives, six local representatives and serves for four years. The board decides by absolute majority. It classifies schools, promoting and establishing national schooling targets. It is also in charge of financing, facilities management, and personnel management. The aspect of financial

[8]Available in the original language at the following link: www.gazzettaufficiale.it

management and national recruitment of teachers are the two major contributions of this body. They also introduced the school deputation. It comprises seven members, four of whom are elected by the provincial council and remain in office for two years. The school deputation has complementary and supporting tasks to those of the council. It also acts as a disciplinary board for the staff of primary and secondary schools in the municipalities of the province. Specifically, in case of emergency, it takes the measures that are the responsibility of the school board, prepares the provincial budget, reports to the council on the proposals submitted by the municipalities concerning the construction, renovation of buildings and other school premises; decides on the division of classes; decides on teachers' applications; monitors the progress of the schools; prepares acts and proposals for the provincial council. The government delegation encompasses state representatives (Ministry of Education, Treasury and Chief Accountant of the Prefecture). Its tasks mainly concern approvals and proposals for expenditure as well as the management of the school budget. The government delegation in charge of the school budget has contributed enormously to the development of primary education. Municipalities that were previously underfunded now see their school budgets aligned with the rest of the nation.

However, the reform had a broader aim than mere administrative reorganisation. In fact, it set out to reorganise the entire school sector. The new and generous additional funds in fact contributed to the creation of teaching management circles, the compulsory scholastic patronage in all municipalities, regimental schools and prison schools; it allocated funds for popular, school and teacher libraries, for schools for the handicapped and for kindergartens. For the first time, the Daneo-Credaro law recognised that primary schools were to be taken over by the State. There has been a general increase in teachers' salaries, as well as substantial recruitment of qualified staff. There is an incentive to modernise and build new schools, and a ban on closing any existing schools.

Unfortunately, municipal budgets from the beginning of the 20^{th} century cannot be found. Nonetheless, there is empirical evidence, in addition to the political course and intent of the

reform itself, of the increase in resources allocated to primary schooling. In the appendix, we show an analysis that looks at spending on elementary education broken down into total spending and per capita spending. If, however, we already look at the aggregate expenditure items on a national level[9], we can appreciate the large increase in the contribution from the state to the municipalities.

In Figure 4.1 we include the total expenditures for elementary and popular education and the total expenditure for elementary teachers' salaries[10]. In the proposed graph, we can observe the increase in transfers from the state to the municipalities over the years. The line of total expenditure contains both expenditure for teachers; expenditure for the construction, treatment and furnishing of educational establishments; as well as expenditure for new professional figures in the provincial superintendency.

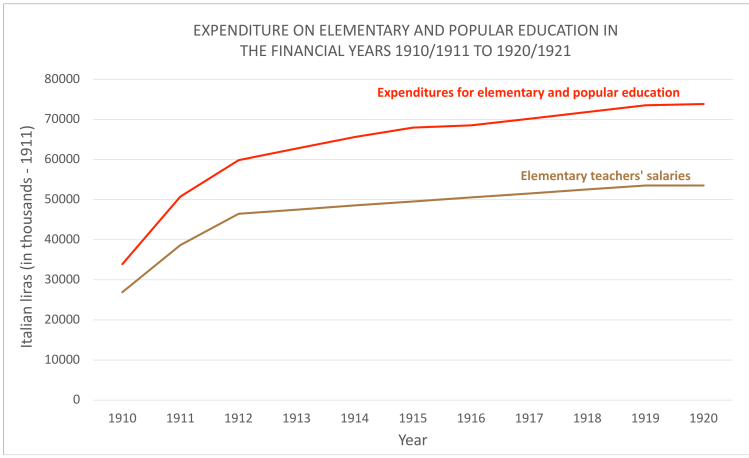


Figure 4.1: Expenditure of elementary and popular education

Note The chart represents the budget attached to Act 487 of 1911. The growth in national spending for the various expenditure chapters is expressed in thousands of contemporary Italian liras.

Land inequality The reform takes place in a major agrarian economy where land owners had an important presence in the municipality's social life. We study the effect of the reform of literacy rate but in a context where land owners played a socio-economical role.

[9]The graph is produced by the authors using data from the table "Elementary and Popular Education Expenditure in the Financial Years from 1911-1912 to 1920-1921" annexed to the Daneo-Credaro law

[10]Please, look at the appendix to appreciate the division between the different expenditure chapters.

The various areas' histories serve as the foundation for the historical justifications for land allocation. We cannot ignore the organisation of the kingdoms before to their merger if we are thinking about the country's unification process. The landowners and bourgeoisie of the various kingdoms behaved according to conventional social and economic norms, which was frequently followed by effective enlistment in the aristocracy. The tactics of marriage partnership, the expansion of noble sociability, or the purchase of titles and estates may all be seen as tools of bourgeois dominance [11].

Unfortunately, however, there is no quantitative evidence of land distribution prior to the 1929 agrarian census. Although the Daneo-Credaro reform was passed and its effects manifested themselves before the first agrarian census, there are no particular reasons in the literature to believe that any increase in schooling led to a sudden change in the extent of land ownership at that time. Total plus there are two elements that we believe may have affected the latifundist dimension. The first is the processing technique and the type of product processed, while the second is the first major emigration to America.

According to Silverman [1968], in fact, some areas in Italy were characterised by share-cropping, in which the landowner stipulated a formal contract with the peasant head of the family for the full-time work of all the adult members of the family. According to this contract, the sharecropper was responsible for providing the necessary farm implements and labour. Since the contract was signed between the landowner and the head of the family, the larger the family, the greater the return to the sharecropper. Additionally, the latter had the authority to transfer the contract to a larger family each year rather than renewing it with the sharecropper family. In other contexts farmers own property, but the holdings are modest and dispersed, also because of the system of partial inheritance. In addition, farmers often reside in village centres rather than on their property and frequently mix a

[11] More than for any other time in the nineteenth century, the Napoleonic period has a particularly rich literature on the social history of elites. The following are some of the most important contributions and critical synthesises: C. Zaghi, Property and the Ruling Class in Napoleonic and Georgian Italy, in ≪Annuario dell'Istituto storico ital. per l'età moderna e contemporanea≫, voll. XXIII-XXIV, 1971-1972; C. Capra, Nobili, notabili, élites: dal 'modello' francese al caso italiano, in ≪Quaderni Storici≫, 1978, n. 37; R. Zangheri, Gli anni francesi in Italia: le nuove condizioni della proprietà, in ≪Studi Storici≫, 1979, n. 1.

variety of economic pursuits to satisfy their subsistence needs.

The remittances from emigrants favoured a considerable diffusion of small farming property, which in itself could not, however, bring about decisive changes in agriculture. "The peasant property that was formed remained in the vast majority of cases characterised by the very small size of holdings and the great fragmentation of the various funds, by the persistence of traditional agricultural practices, with little use of fixed capital, with very little technological equipment and almost exclusive use of labour capital, as had been the case from time immemorial" (Massullo [2001]).

Therefore, we use data on land inequality from the agriculture census from 1929 by Buonanno et al. [2020]. They gathered new data on land ownership distribution at the municipal level [12]. The census offers information on the number of farms in each municipality, broken down by size range. They created multiple indices of land inequality by meticulously mapping historical municipalities to current municipalities, allowing for changes in their borders through time. If we look at the map4.3 of land inequality (the main measure of land ownership concentration in our analysis) we notice more unequal areas in the main Italian plans. Besides the measure of land inequality we also exploit the share of land occupied by farms according to size (in hectares) over the total share of land occupied by farms in the municipality.

4.3 Data

Literacy Rate We use a panel of all Italian municipalities in 1911 and 1921 of newly digitized data. We construct the data from municipality census for 1911 and 1921. We have 236 "circondari" and 71 provinces. The "circondari" are subdivisions of the Italian kingdom bigger than municipalities and smaller than provinces. For each municipality, the census of the population of the kingdom - from the Ministry of Agriculture, Industry and

[12]There is extensive reporting on the digitisation and construction of the variables both in the paper, but especially in the appendix.

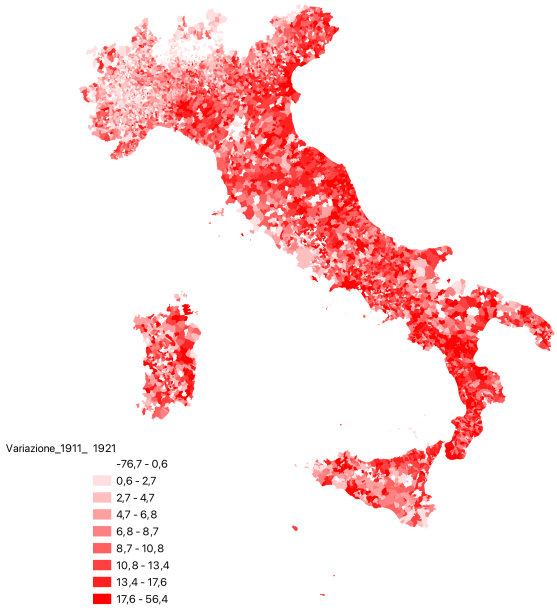


Figure 4.2: Literacy rate variation 1911-1921

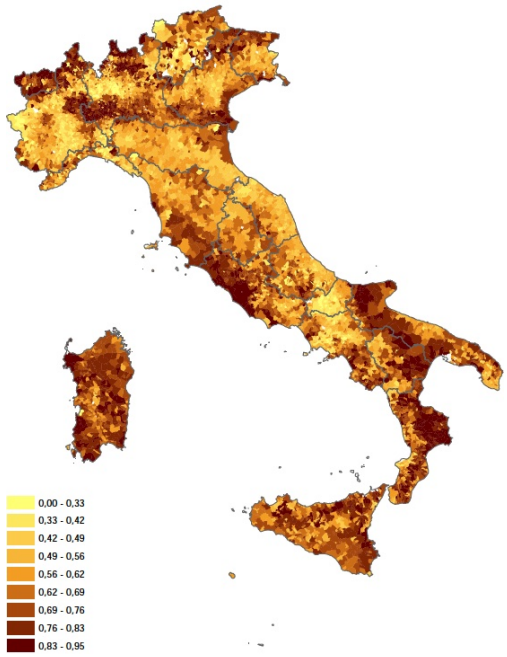


Figure 4.3: Land inequality 1929

Note The map on the left represents the percentage change in literacy rate between 1911 and 1921. The map on the right depicts the spatial distribution of land inequality in 1929, measured as the Gini coefficient of agricultural farms (Buonanno et al. [2020])

Commerce; Directorate General of Statistics and Labor - records the number of people who can read and write and the number of illiterate people, distinguished by gender. It is through this digitisation that we have constructed the literacy rate for each municipality for both years, and the literacy rate by gender, as the ratio of literate people over the municipality population. The literacy rate mean for 1911 is 65.18%, while 1921 mean is 73.44%, with a decrease in variance between the two years. From the same sources (population censuses) we also digitized data on time-variant variables such as the municipality population, the distribution of the population living in the city center and those living in the rural areas, the municipal's surface and others [13].

Historical Land Ownership The other key element of our analysis is land inequality. In this case, we use data from Buonanno et al. [2020]. They collected new data on land

[13] A full list of covariates and sources can be found in the appendix

ownership distribution at the municipality level for the years 1929. For each municipality, using data of 1929 agriculture census, they construct different measures of land ownership distribution. They constructed such index starting from the raw information provided by the Census of Agriculture - Agrarian Cadastre (Catasto Agrario) for 1929. The census contains information on the number and total area of land according to size classes. The size classes range from 0 to half a hectare, from 0.51 hectares to 1, from 1.01 to 3 and so on. For each class, the number of plots of that size and the total area of land of that size is given. Using this information they compute a standard Gini index of inequality based on this reconstructed distribution of estates. In the main analysis we use their measure of Gini index of land inequality in the municipality, however in the robustness analysis section we also use the raw data, i.e. the number of landowners according to the land size.

Table 4.1 contains the summary statistics of the variables described above. As argued above qualitatively, we can observe how, on average, the literacy rate of both males and females and consequently of the entire population increased a decade later. For the year 1929, instead we present our land inequality variable. Finally, the rest of the variables are our time-variant controls. The process of constructing these variables is extensively explained in the appendix C.2.

4.4 Empirical Strategy

The reform is presented as a quasi-experimental setting. Indeed, we use the reform introduced in 1911 to study the effect of land inequality on the schooling rate. In 1911, the elementary education was managed by municipalities. In these same municipalities, there's a peasantry reality characterised by landowners. As Spring discusses in his book and especially in the first chapter, there are many European testimonies of the presence of agrarian elites. The English case is striking, where not only did the landowning elite have influence over the municipalities, but was so important that it formed a branch of parliament. French

Table 4.1: Summary statistics

Year 1911

Variable	Obs	Mean	Std. dev.	Min	Max
Population literacy rate	8316	65,18	24,54	5,26	100
Female literacy rate	8316	70,45	21,46	5,85	100
Male literacy rate	8316	60,53	27,72	2,68	100
Legal population	8289	4400,34	15282,65	58	668633
Rural population	7255	1552,81	31111,02	29	94694
Families	8282	899,36	3493,80	11	157481
Surface	8272	3406,81	5573,95	5	207462

Year 1921

Variable	Obs	Mean	Std. dev.	Min	Max
Population literacy rate	8315	73,44	21,31	11,16	100
Female literacy rate	8315	76,99	19,22	6,09	100
Male literacy rate	8315	70,17	23,86	3,84	100
Legal population	8315	4657,18	17864	58	770611
Urban population	7264	1348,35	2602,15	28	45928
Families	8315	1000,58	4341	10	201820
Surface	8309	3467,45	6024,01	5	211477

Year 1929

Variable	Obs	Mean	Std. dev.	Min	Max
Land inequality	8190	0.6004	0,15	0	0.95

Note The table contains summary statistics for the variables divided by year. Population literacy rate is the dependent variable, while land inequality is our independent variable. The rest of the variables are included in the empirical analysis as time-varying controls.

landowners did not live in the country either, preferring cities and leading discussions in bourgeois drawing rooms. Like their fellow Europeans, we think that Italian landowners also had an interest in manifesting their influence on local and national institutions. According to Galor's theory moreover, this interest was not limited to political influence but also in the choices regarding the education of the population. A less educated population could in fact only find employment in modest fields. An underdeveloped and poorly financed primary school system could therefore be of great advantage to the landowners. Introducing the Daneo-Credaro reform took this power away from the latifundia by shifting the management to a supra-municipal and state-funded body. The same funding for schools and

school implementation is managed by a representative of the treasury. Exploiting therefore the Credaro reform in the presence of land inequality, it is your aim to study the effect of the loss of power by the latifundist elite on primary education. Empirically, we use a Diff-in-Diff model. The first difference is temporal and comprises the introduction of the reform between 1911 and 1921. The second difference consists in the land inequality. Although it is a continuous variable, we calculate its median. The higher the land inequality, the greater the centralisation of land ownership, at the same time, the lower the land inequality and the greater the number of landowners themselves with a dispersion of power. We consider a strong elite in the case where the value of land inequality is greater than the median. The absence of data prior to 1911 unfortunately does not allow us to compare the trend before the introduction of the reform. Formally, we estimate the following baseline specification:

$$\text{Literacy Rate}_{it} = \beta_0 + \beta_1 \text{Reform}_{it} + \beta_2 \text{Elite}_i + \beta_3 \text{Elite in Reform}_{it} + \beta_4 X_{it} + \theta_i + \varepsilon_{\text{it}} \quad (4.1)$$

where $\text{Literacy Rate}_{it}$ is the population literacy rate for each municipality at a given point in time. Reform_{it} it's a dummt variable that measures the introduction of the school reform Daneo-Credaro. Elite_{it} measures historical presence of land inequality; if the municipality has a level of land inequality greater than its median the variable takes value 1, and 0 otherwise. $\text{Elite in Reform}_{it}$ is the interaction between the passing of the reform and the elite variable. We will interpret it as the effect of reform in the presence of high land inequality. θ_i stands for region fixed effects interacted with . To deal with any endogenous variable we run all regression in a panel fixed effect manner. X_{it} included the geographic and population time-variant variables.

4.5 Results

Main Results Table 4.2 contains the main results of our baseline estimation. We can observe that in presence of land inequality the reform has a positive effect on the population

literacy rate. We can interpret our results as one percentage increase in land inequality after the reform leads to a 1,09 percent increase in literacy rate. The effect persist being statistically significant with regional fixed effects. We also investigate the behaviour between rural and urban areas.

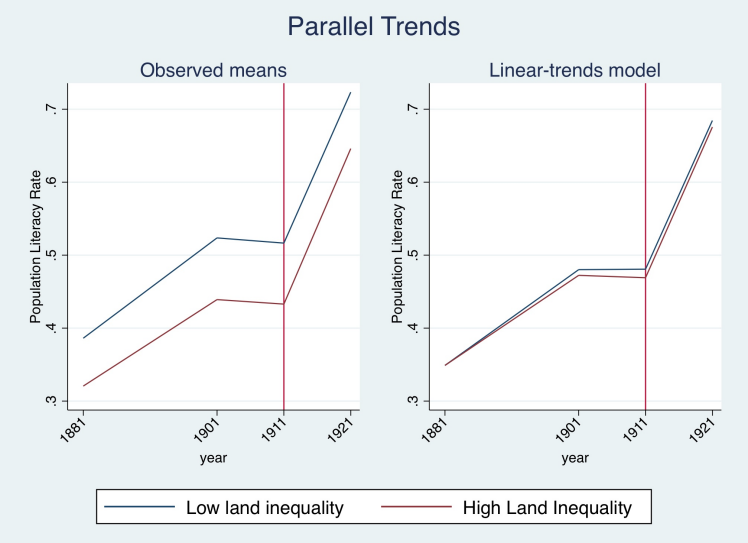
In this case, we define urban those municipalities with a population higher than 10,000 people. Urban contexts are historically and in the present day hubs of trade, labour and interculturalism. Although there is no data on population employment according to urban/rural context for all municipalities, we can observe that the effect of the policy is more solid in the urban areas. Urban areas are intended for industrial production sites (especially manufacturing) and that therefore the elitist power of the landowners is obscured by the presence of the bourgeoisie and professionals. On the other hand, we note that the effect in rural areas is statistically significant and has a higher value than in the whole sample. This shows that in the presence of low population in rural areas and with a concentration of land ownership the effect of reform is decisive. From this first analysis we can therefore appreciate how the centralisation of school management and the copious funding for education led to an increase in schooling. Even in cases where the landowning elite is present and presumably active in the administration of citizenship.

4.6 Parallel Trends, Robustness Checks and Extensions

In graph 4.4 we present trend parallels. It is possible to see how the parallels between literacy levels before 1911, the year of the reform, are particularly far apart. With the introduction of the reform, the entire population sees a benefit. Although the difference in literacy level between high land inequality and low land inequality decreases, we are not facing total convergence. This may be because of several reasons. The absence of annual data and the method of data collection may have limited the number of observations to better appreciate

the effect. In addition, 1921, the year for which we assess the effect of the reform and the only year from the available data after the introduction of the reform, is only two years after World War I. The effect could therefore be mitigated by potential beneficiaries who ran to arms, however.

Figure 4.4: Parallel Trends



Our results from the baseline analysis show that post-reform settings with higher land inequality benefit most in terms of increasing literacy levels. In the appendices we compliment our results with several additional findings. First, we test whether the phenomenon is related more to the male or female sex. In a patriarchal society, there might be interest in favouring the education of male children. In our results, however, the phenomenon is parallel to both sexes. This result is in line with the intent of the reform. Indeed, it aims to promote literacy among the population without placing any particular gender constraints.

Another discriminatory element in our empirical strategy falls on the choice to discriminate between high land inequality. In the baseline, we classify the presence of land inequality, where the value within a given municipality is greater than the median. We reproduce the analysis with a different classification; in fact, we exploit the mean. The result does not deviate from the results described above.

In light of spatial characteristics, there may need to be a degree of territoriality related to the effect. Only in the northern half of the nation are the results favourable and statistically significant. However, in the southern half of Italy, no substantial data is provided. This could coincide with a potential consequential mechanism of change, namely increased demand for education. In fact, unlike the south, which saw industrialization many years later, the roots of the industrial revolution were being laid in the north during all those years.

Finally, instead of using the continuous variable of land inequality, we exploit its categorization into classes. We find that the reform has a greater negative impact on small landowners because their share of land is smaller. This could be due to the fact that landowners are the ones who work on the property. Land is worked by family members in the rural tradition, especially for small plots of land. If small plots of land are considered, the influence on schooling is negative, as if to say that young people do not enter the local education system. The effect of reform changes sign, becoming positive, as the percentage of land increases, particularly for medium-sized plots (between 50 and 100 hectares). Finally, there is no statistical significance for exceptionally large plots of land larger than 100 hectares. It is likely that in addition to the rarity of such situations, given the size of the property, it is essential to have processing technology that requires the landowner to use specialised equipment and employees.

4.7 Conclusion

As discussed by Galor et al. [2009] the presence of elites has had an important impact on the management of local and national administrations. Thus, the centralisation of education, its funding and autonomy from local interference brings independence to education itself. The Daneo-Credaro reform therefore allows us to study the effect of centralisation of education by the state interfering with local power. This is even more relevant if we consider that in recent years in the same context the choices being made are to return the centrality and

autonomy of educational choices to the local dimension.

This paper shows how the centralisation of education through the 1911 reform led to a higher level of literacy at the national level. Not only because of the effects of the reform itself, but especially in the way it was implemented. Our findings show autonomy from local power allowed for a substantial increase in the schooling of students of both sexes, arguably aiding the country's coming industrial revolution. We demonstrate that for alternative measures of land inequality, independently of local effects or gender difference the downsize of local power on elementary schools increased the literacy rate.

Table 4.2: Elite presence on Literacy rate

	(1)	(2)	(3)	(4)
	Literacy rate		Literacy rate - Region FE	
Reform	7.65***	7.67***	4.09***	4.14***
	(0.122)	(0.131)	(0.156)	(0.167)
	[0.846]	[0.845]	[0.745]	[0.744]
Elite in Reform	1.22***	1.36***	0.80***	1.09***
	(0.169)	(0.185)	(0.151)	(0.164)
	[0.520]	[0.546]	[0.275]	[0.283]
Constant	65.17***	65.25***	65.16***	65.89***
	(0.042)	(0.198)	(0.036)	(0.168)
	[0.340]	[0.312]	[0.125]	[0.121]
Observations	16,607	14,638	16,599	14,633
R-squared	0.539	0.545	0.659	0.660
Number of municipalities	8,321	7,757	8,317	7,754
Panel FE	✓	✓	✓	✓
RegionTime FE	x	x	✓	✓
Clustered Errors	✓	✓	✓	✓
Controls	x	✓	x	✓
	Literacy rate in Urban		Literacy rate in Rural	
Reform	9.48***	9.49***	7.57***	7.58***
	(0.519)	(0.539)	(0.123)	(0.134)
	[0.592]	[0.608]	[0.862]	[0.862]
Elite in Reform	-0.67	-0.35	1.25***	1.38***
	(0.703)	(0.741)	(0.173)	(0.189)
	[0.505]	[0.532]	[0.523]	[0.545]
Constant	55.61***	55.96***	65.84***	65.27***
	(0.158)	(1.040)	(0.043)	(0.366)
	[0.196]	[0.186]	[0.351]	[0.320]
Observations	1,072	1,026	15,535	13,612
R-squared	0.585	0.590	0.541	0.549
Number of municipalities	599	584	7,843	7,278
Panel FE	✓	✓	✓	✓
RegionTime FE	x	x	x	x
Clustered Errors	✓	✓	✓	✓
Controls	x	✓	x	✓

Panel OLS estimation with fixed effects. The unit of observation is the municipality. The dependent variable is the population literacy rate based on the 1911 and 1921 population census. Reform is a dummy variable equal to one in 1921, and zero in 1911. Elite in reform is the interaction between the passing of the reform and the elite variable. Elite is equal to 1 if the land inequality value is higher than its median, 0 otherwise. Robust standard errors clustered at the municipality level are in round parentheses; Conley standard errors at the 50 kms cutoff in square brackets. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Chapter 5

Conclusion

This thesis consists of three chapters. In the second, we study the effect of the degree of urbanisation on political preferences toward populist parties.

We examine voters' electoral preferences for the previous five House of Representatives elections using the urban-rural gradient and a taxonomy of Italian municipalities. We include among the parties three archetypal and major populist political parties in Italy, notably the League, M5S, and a cluster of right-wing populist groups. Our baseline results reveal that preferences for right-wing parties are mostly distributed in cities. As one moves further away from metropolitan centres, the populist right finds fertile footing. The M5S, on the other hand, has the opposite impact.

Faced with an endogeneity dilemma, we instrument our alternative ranking factors of the degree of urbanisation. We show that as the degree of urbanisation declines, so does support for right-wing populist parties. M5S, on the other hand, has no relevance. The populist right's rhetoric capitalises on a sense of nationalism, the battle against immigration, and the restoration to a lost grandeur. According to our findings, this discourse is more popular in more rural regions.

Our findings are consistent with the literature, and they serve to explain how populist support is not restricted to demographic features but also to where people reside. This

might have significant ramifications for how politicians allocate campaign resources in order to better convince the average voter, but it is also an important conclusion for social policy planning.

We looked at how social closure in a community contributes to the reinforcement of right-wing populist discourse in the second chapter. This is used to represent the density of a person's network, the number of close nodes, and the mechanism by which nodes are added to the network to determine its size in social network models. According to the findings of our empirical investigation, the more the closeness of a community, the stronger the support for right-wing populist parties. In the baseline, we use two measures: the percentage of the most common surname in 1993 and the percentage of the most common surname in 2004. Indeed, we do not limit ourselves to social capital, but rather provide the framework for interpersonal interactions and how they feed political propaganda. In the face of growing data usability, it may be beneficial to reconstruct a community's networks and follow its ideology in order to identify the extent to which ideas are repeated and reinforced, as well as when they are restricted or disrupted.

In the fourth chapter, we investigate the impact of a national education reform in the Italian Kingdom of 1911 on population literacy in the setting of land inequality. As Galor et al. [2009] discusses, the presence of elites has had a significant influence on the operation of local and national administrations. Several instances from other European nations in the last century exist. Thus, education gains independence through centralization, finance, and autonomy from local meddling. As a result of the Daneo-Credaro reform, we may investigate the impact of centralisation of education by the state interfering with local power. This is even more essential when we realise that in recent years, in the same framework, decisions have been taken to restore centrality and autonomy.

We illustrate how the 1911 reform of centralising education resulted in a greater level of literacy at the national level. Not simply because of the reform's implications, but also because of how it was handled. Our findings reveal how independence from local control

allowed for a significant rise in schooling for pupils of both sexes, perhaps assisting the country's upcoming industrial revolution. We show that, for various measures of land inequality, regardless of local impacts or gender differences, reducing local power in primary schools boosted literacy rates.

Appendix A

Rural vs Urban : electoral behaviour in Italy

This Online Appendix accompanies the paper "Rural vs Urban: electoral behaviour in Italy". Section A.1 present the data, the construction of the rural-urban indexes, data sources and data construction details for all the variable of interest. Section A.2 presents an extensive discussion on the instrumental variables together with proofs of validity and placebo tests. Section A.4 presents additional results complementing the empirical analysis section in the main text.

A.1 Data

A.1.1 Night lights (NTL)

Nighttime Lights time series are data collected by the U.S. Air Force Defense Meteorological Satellite Program (DMSP) satellites orbiting the globe. We use the version "F182013.v4c stable_lights.avg_vis." As the provider's website National Centers for Environmental Information reports: "The cleaned-up avg_vis contains lights from cities, towns, and other sites with persistent illumination, including gas flares. Ephemeral events, such as fires, were dis-

carded. Then background noise was identified and replaced with zero values. Data values ranged from 1 to 63. Areas with zero cloud-free observations are represented by the value 255."

The image then reports a gradation from black of darkness to white of brightness. Following Lowe [2014], the image displayed on the map and intersected with the shapefile of Italian municipalities created a projection of the image into municipal boundaries. The detail of the pixels included in each boundary then allows us to create an average of the brightness in that municipality. The choice of satellite images fell on the most recent data available, i.e., dating back to the year 2013.

A.1.2 Population density

Finally, population density is another tool we use to differentiate urban from rural settings. Indeed, if we consider that cities are becoming more and more populous, although their surface area remains constant, it is reasonable to think that this makes them increasingly urbanizing and central to the socio-economic landscape. Added to this is evidence in which precisely the more rural and therefore less densely populated areas there is greater electoral support for populist parties[1]. We calculate the population density for the various municipalities by considering the changes that unions and divisions have made over the years. In this way, the municipality's population and surface are related to the punctual annuality.

A.1.3 Geographic controls

Mean altitude The average elevation for each municipality is the average elevation value between the maximum and minimum elevation for each municipality as of 2011. According to ISTAT, the distributor of the data, the processing is done by GIS methodology using the Zonal statistics as table algorithm of ARCGIS 10.1. Coastal municipalities express minimum

[1] see among others Bonikowski [2017], Essletzbichler et al. [2018], Gordon [2018], Martin et al. [2018], Dijkstra et al. [2020], Cramer [2016], Rodden [2016]

height equal to zero, unless otherwise stated. The value therefore, may be negative. The maximum altitude value is represented by Courmayeur with an elevation of 4810m, making it the highest municipality in Italy. The value is expressed in meters.

Mountainous territory The municipal mountainous variable is an elaboration of the authors. Istat, in fact, provides the breakdown of the municipal surface according to elevation. We therefore calculate municipal mountain share as a percentage of municipal area with an elevation greater than 600m. Some municipalities, which are above this elevation, therefore have totally mountainous territory.

Distance from seaside Seaside distance represents the geodetic distances from the centroid of each municipality to the nearest coastline. The elaboration is performed by the authors. Using QGis, it is in fact possible to calculate for each municipality (shapefile municipalities 2020) the centroids and thereby calculate the distance of the latter to the nearest coastline.

A.1.4 Population controls

Education The share of high school graduates and college graduates represents the share of the population holding a high school diploma and college degree equivalent or higher, respectively. The calculation is takes into account the exact number of high school graduates for each year considered for each municipality.

Income per capita Income per capita is the gross income per capita for each municipality. The "Agenzia delle Entrate" makes accessible for the years of our interest municipal data from the citizenship tax returns. We calculate income per capita as the total gross income of the population inhabiting in the municipality by dividing it by the number of taxpayers.

Age structure and Unemployment Population age structure is the ratio of the share of the population under 15 to the share of the population over 65. While unemployment rate is the unemployment rate, defined as people actively seeking work, for each municipality for each year considered.

A.1.5 Party vote preferences

As mentioned in the introductory part of the paper and in more detail in the given section, in this paper we consider the League and M5S parties and a group of right-wing populist parties. The data, expressing preferences for each party at the municipal level, were kindly made available by the Election Office of the Ministry of Interior. For the creation of the vote shares we manually classify the parties in the left/right spectrum. And consequently the parties of the populist right. In the paper we devote study and analysis of voter behavior on the average preference share. In the appendix, on the other hand, the same empirical analysis is conducted year by year. By average preference share we mean the average vote share for each party between the years 2001, 2006, 2008, 2013 and 2018.

Lega

The League party was founded in 1991 having Umberto Bossi as its first president. Art.1 of the statute mentions:

> *"Lega Nord per l'Indipendenza della Padania" (hereafter referred to as "Lega Nord", "Lega Nord - Padania" or "Movimento"), is a confederal political movement constituted in the form of an unrecognized association that has as its purpose the achievement of the independence of Padania through democratic methods and its international recognition as an independent and sovereign Federal Republic.*

Nevertheless, with the rise of Matteo Salvini in 2017, the party is reformed in its essence from Lega Nord to Lega and then Lega per Matteo Salvini. In that case, Article 1 becomes:

> *League for Salvini Premier is a confederal political movement constituted in the form of an unrecognized association that has as its purpose the peaceful transformation of the Italian state into a modern federated state through democratic and electoral methods. League for Salvini Premier promotes and supports the freedom and sovereignty of peoples at the European level.*

In our dataset, we have several parties belonging to the Lega party. This is because although the League has adapted to a wider electorate, it has retained a local component. The league in the north will continue to present itself as Lega Nord, while in other territories it takes different connotations. Let us therefore consider these parties as the League:

- Lega
- Lega Nord
- Lega d'Azione Meridionale
- Lega Nord Valle D'Aosta
- Lega Nord-Die Freiheitlichen-Basta Euro
- Lega Per L'Autonomia Alleanza Lombarda Lega Pensionati
- Lega Salvini Premier
- Lega Sud
- Lega Veneta Repubblica

For each year, therefore, we calculate the preference share toward these parties by dividing them by the valid votes, thus creating the annual shares. Finally, the average of these creates the Mean vote share for the League used in the specified main.

Movimento 5 Stelle

The 5 Star Movement, as mentioned in the opening component of the paper, is a movement that started from a provocation by comedian Beppe Grillo. Growing participation in the platform materializes politically with the election of the movement's first members in local elections. However, the movement begins to gather great participation following the first street mobilizations, particularly the first "V day," held in multiple Italian squares. The movement lands in parliament with the 2013 elections, collecting a relative majority of votes in the parliament. For this reason, in our dataset, the preference share for M5S refers to the years 2013 and 2018, while in the main results of the paper these are averaged, thus obtaining the mean share votes for M5S.

Right-Wing parties

Finally, in our analysis, we consider right-wing populism. As previously discussed, this political ideology combines right-wing politics with populist rhetoric and themes. According to Mouffe [2011] the rise of right-wing populism has often been a consequence of the blurring of differences between the traditional parties of the left and right, due to a crushing of these parties toward the center, and the ability of these new movements to be able to give expression to needs no longer represented by existing parties. Let us therefore consider the right-wing populist parties by calculating their vote share for different years. As in the Lega's case, the mean vote share is the average of the five different election years. Hereafter, the full list of populist right-wing parties entailed. Although the Lega is not listed, it is part of our right-wing parties group.

- Alternativa Sociale
- Casapound Italia
- Destra Nazionale
- Fiamma Tricolore
- Forza Nuova
- Fratelli D'Italia
- Fronte Nazionale
- Grande Nord
- La Destra
- La Destra - Fiamma Tricolore
- Lega D'Azione Meridionale
- Liga Fronte Veneto
- Movimento Sociale Fiamma Tricolore

A.1.6 Extended Data Sources and Summary Statistics

Data Sources

This section provides definition and sources for all variables in the paper: Table A.1 focuses on urbanization measures, Table A.3 on vote preferences data, Table A.2 describe all covariates in the analysis.

Table A.1: Rural - Urban Variables' Description and Data Sources

Pole. Equals one if the municipality corresponds to a pole. *Source*: National Strategy Inner Areas - Agency for Territorial Cohesion under the direct supervision of President of the Council of Ministers of the Italian Republic (2014)
Intermunicipality pole. Equals one if the municipality corresponds to an intermunicipality pole. *Source*: National Strategy Inner Areas - Agency for Territorial Cohesion under the direct supervision of President of the Council of Ministers of the Italian Republic (2014)
Pole belt. Equals one if the municipality corresponds to a pole belt municipality. *Source*: National Strategy Inner Areas - Agency for Territorial Cohesion under the direct supervision of President of the Council of Ministers of the Italian Republic (2014)
Intermediate municipality. Equals one if the municipality corresponds to a pole. *Source*: National Strategy Inner Areas - Agency for Territorial Cohesion under the direct supervision of President of the Council of Ministers of the Italian Republic (2014)
Peripheral municipality. Equals one if the municipality corresponds to a peripheral municipality. *Source*: National Strategy Inner Areas - Agency for Territorial Cohesion under the direct supervision of President of the Council of Ministers of the Italian Republic (2014)
Ultra-peripheral municipality. Equals one if the municipality corresponds to an ultra-peripheral one. *Source*: National Strategy Inner Areas - Agency for Territorial Cohesion under the direct supervision of President of the Council of Ministers of the Italian Republic (2014)
Night Lights. Brightness of the night lights (from 0 to 63) foreach municipality. *Source*: National Centers for Environmental Information (NCEI)
Population density YYYY. Population density computed as resident population over surface in square km. *Source*: Censimento Permanente Popolazione e Abitazioni

Summary Statistics

In this section we provide annual summary statistics for all variables taken into consideration. Clearly, variables related to the geographical characteristics of municipalities are time invariant. That table A.4 presents a set of summary statistics for the control variables concerning the population. Table A.5, Table A.6 and Table A.7 contain the summary statistics

Table A.2: Control Variables' Description and Data Sources

Mean Altitude. Average elevation for each municipality. *Source*: Principali Statistiche Geografiche Sui Comuni by ISTAT
Mountainous territory. Percentage of municipal area with an elevation greater than 600m. *Source*: Principali Statistiche Geografiche Sui Comuni by ISTAT
Distance from seaside. Geodetic distances from municipality to coastline expressed in kms. *Source*: Confini Delle Unità Amministrative 2020 by ISTAT; Coast-line shapefile by ISTAT
High school graduate share. Share of the population holding a high school diploma. *Source*: *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT
Higher education graduate share. Share of the population holding a college degree equivalent or higher. *Source*: *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT
Income per capita. It is the gross income per capita for each municipality.. *Source*: *Source*: Income and main Irpef variables on a municipal basis by "Agenzia delle Entrate"
Population Age Structure. It's the ratio of the share of the population under 15 to the share of the population over 65. *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT
Unemployment Rate. Population unemployment rate. *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT

Table A.3: Vote Preferences' Description and Data Sources

Lega YYYY. Votes share for Lega (all election appointments). *Source*: Election Office of the Ministry of Interior
Right-wing YYYY. Votes share for Lega (all election appointments). *Source*: Election Office of the Ministry of Interior
M5S YYYY. Votes share for Lega (elections 2013 and 2018). *Source*: Election Office of the Ministry of Interior

for the yearly vote share preferences.

Table A.4: Yearly Population controls summary statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Unemployment Rate 2001	7,902	10.20	8.859	0	51.32
Income per capita 2001	7,902	12,735	3,050	5,313	42,960
Higher education graduate share 2001	7,902	0.0734	0.0303	0	0.452
High school graduate share 2001	7,902	0.280	0.0685	0.0625	2.175
Population age structure 2001	7,899	2.727	2.672	0.346	83
Unemployment Rate 2006	7,902	10.20	8.859	0	51.32
Income per capita 2006	7,902	17,942	3,162	9,495	83,319
Higher education graduate share 2006	7,902	0.0710	0.0279	0	0.433
High school graduate share 2006	7,902	0.272	0.0557	0.0768	2.083
Population age structure 2006	7,901	1.882	1.359	0.222	33
Unemployment Rate 2008	7,902	10.20	8.859	0	51.32
Income per capita 2008	7,902	19,728	3,002	11,079	54,497
Higher education graduate share 2008	7,902	0.0699	0.0270	0	0.420
High school graduate share 2008	7,902	0.267	0.0513	0.0823	2.022
Population age structure 2008	7,900	1.903	1.495	0.200	49
Unemployment Rate 2013	7,902	10.25	6.307	0.638	42.18
Income per capita 2013	7,902	16,988	3,594	6,796	53,973
Higher education graduate share 2013	7,902	0.0701	0.0263	0	0.423
High school graduate share 2013	7,902	0.268	0.0477	0.0897	2.033
Population age structure 2013	7,902	1.981	1.444	0.276	54.00
Unemployment Rate 2018	7,902	13.42	6.754	1.020	43.06
Income per capita 2018	7,902	18,170	3,825	6,198	48,186
Higher education graduate share 2018	7,902	0.0673	0.0247	0	0.239
High school graduate share 2018	7,902	0.320	0.0427	0.0653	0.515
Population age structure 2018	7,900	2.266	1.610	0.388	52.00

Note The table includes population control variables. Proposes a series of summary statistics for the variables considered. High school and higher education graduate are the share of people with a high school diploma and a degree equivalent to or higher than a college degree, respectively. Income per capita represents the average gross income received by the population in a given municipality. Population age structure displays the ratio of the share of people under 15 to the share of people over 65. Unemployment rate illustrates the share of unemployed people. The population control variables are divided by year entailing all years of election.

Table A.5: M5S summary statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
M5S 2013	7,902	23.72	7.093	0.127	58.11
M5S 2018	7,902	29.66	11.68	0	73.61

Note The table entails summary statistics on vote preferences for M5S. Both variables refer to the vote share preferences for the M5S party, respectively for 2013 and 2018.

Table A.6: Lega summary statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Lega 2001	7,901	6.156	7.816	0	48.53
Lega 2006	7,902	6.627	7.173	0	47.22
Lega 2008	7,902	11.52	12.84	0	62.24
Lega 2013	7,902	5.949	7.368	0	49.18
Lega 2018	7,902	21.66	12.58	0	62.96

Note The table entails summary statistics on vote preferences for Lega. Variables refer to all national election appointments for chamber of deputies between 2001 and 2018.

Table A.7: Right-Wing parties summary statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Right-Wing 2001	7,901	17.94	7.508	0.101	55.17
Right-Wing 2006	7,902	19.79	7.732	2.041	62.34
Right-Wing 2008	7,902	14.71	12.95	0	66.33
Right-Wing 2013	7,902	9.848	7.657	0	56.52
Right-Wing 2018	7,902	27.43	13.33	1.266	74

Note The table entails summary statistics on vote preferences for right-wing parties. Variables refer to all national election appointments for chamber of deputies between 2001 and 2018.

A.2 Instrumental Variable

A.2.1 Endogeneity

In this section, we discuss in more detail possible channels of reverse causality. As mentioned in section 2.4, only in the most recent elections have populist parties achieved a consensus that would allow them to hold ministerial positions in national governments. Nevertheless, Right-Wing parties as well as the M5S have taken part in the elections of institutions of local importance, such as regions, provinces and municipalities. It is useful then to recall how Title V of the Italian Constitution places special emphasis on the division of powers between the state and lower entities. This makes it difficult to understand the source of political will in, for example, building a road or improving public lighting. This makes this deepening mere speculation rather than correlation and even less causation.

The table on the left in figure A.1 we subdivide the regions according to four proxy lustrums, aware that elections in Italy regional elections do not exactly coincide with these periods[2]. Although some regions maintained a center-right or center-left government throughout the two decades, other regions experienced alternating government. Discrimination between regions by populist government is then not possible. In many cases, regional elections are characterised by coalitions composed of multiple lists and parties supporting one candidate.

[2]R stands for centre-right coalition president; L for centre-left coalition president; C stands for transversal president, neither right nor left.

	2000	2005	2010	2015
Piemonte	R	L	R	L
Valle d'Aosta	C	C	C	R
Lombardia	R	R	R	R
Veneto	R	R	R	R
Friuli Venezia Giulia	L	R	L	R
Liguria	R	L	L	R
Emilia Romagna	L	L	L	L
Toscana	L	L	L	L
Umbria	L	L	L	L
Marche	L	L	L	L
Lazio	R	L	R	L
Abruzzo	R	L	L	R
Molise	L	R	L	R
Campania	L	L	R	L
Puglia	R	L	L	L
Basilicata	L	L	L	R
Calabria	R	L	R	R
Sicilia	R	R	L	R
Sardegna	L	R	L	R

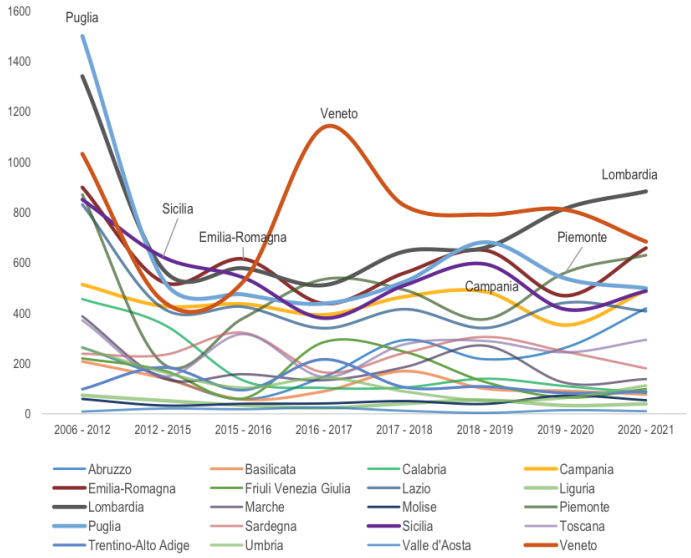


Figure A.1: Right-Wing regional president and Regional land consumption 2006-2020

Looking at the right part of figure A.1, the result of ISPRA's reworking (Munafò [2022]), we can see how land consumption sees a decrease between 2006 and 2012 for various regions, and then maintains a fairly similar wave motion regardless of who governs the region. Veneto and Lombardy, which have had right-wing regional presidents for the past two decades, have seen their soil consumption increase over the years, as has Emilia Romagna, which, on the other hand, comes from two decades of center-left presidents. The regions that nominally have done the most land consumption belong to the northern and southern areas (Sicily, Puglia and Campania). In contrast, the centre and the rest of the regions maintain similar average land consumption between years. Therefore, we cannot allocate more land consumption to populist parties.

Another factor favouring urbanisation could be targeted investments in public works, which further accentuates the phenomenon. If we then look at the data from the observatory of territorial public accounts belonging to the agency for territorial cohesion[3] (presidency of the council of ministers), however, it is not clear how the expenditures are allocated and to

[3]Expenditures by Economic Category allows us to observe spending on productive activities and public works, i.e. included are expenses for administration, operation, support related to: agriculture, marine fisheries and aquaculture, commerce, housing and urban development, industry and handicrafts, tourism, other expenditures in the economic field and for additional public works that are not reflected in the other productive functions

whom the political responsibility for the works falls. We also do not know through which channels these can be consolidated. Public infrastructure, transfers to families, support for entrepreneurship, and amnesty actions in fact, fall on the entire population. Their financing very often is co-participated by public companies, local governments, the central state and European funds. With this in mind, even regions with a non-populist government may need works that are carried out regardless of the colour of the region. It is therefore unlikely, precisely because of this cooperation between entities, that there will be more urban development in the presence or absence of a region president belonging to a populist party.

The same principle applies to lighting. Funds for public lighting are aimed at upgrading municipal public lighting systems to achieve improvements in lighting performance, energy efficiency, traffic and facility safety, and light pollution control. These are European[4] funds channelled by the regions and distributed to municipalities. The difference between improving lighting thus turns out to be a supra-national goal, the achievement of which depends on the efficiency of the regional bureaucratic system rather than political will.

All these examples make us rule out the hypothesis that the presence of elected parliamentarians who are members of populist parties can increase or decrease the degree of urbanisation or the level of enlightenment. The co-participation of multiple entities, investment by multiple agents, and the promiscuity of political value in the face of the implementation of projects and works all support our hypothesis that it is the rural-urban gradient that contributes to the preferences of populist parties and not vice versa.

A.2.2 Endogenous sorting

Despite considering various variables to classify the degree of urbanisation in our empirical strategy, this does not exclude that, in reality, the effect we observe is due to people and not

[4]The Directive 2012/27/EU of the European Parliament and of the Council aims to adapt EU energy laws and align them with the 2030 climate and energy goals and contribute to the Energy Union strategies to: reduce Europe's dependence on energy imports; reduce emissions; promote jobs and growth; strengthen consumer rights; and alleviate energy poverty. The European Union itself, through its financial institutions, provides structural funds to member countries to implement the directive.

where they live. Other studies (Essletzbichler et al. [2018], Scala and Johnson [2017], Dijkstra and Poelman [2014]), differently than us, focus on analysing population characteristics based on factors such as degree of urbanisation, population density, or similar classifications. While population information holds significance in our analysis, it is not our primary area of interest. Rather, we include population characteristics as control variables to ensure accurate estimates and account for potential omitted variable biases. To reinforce these premises, we attempt to divide our sample based on different criteria, such as educational level, income, and unemployment.

Multiple papers discuss the characteristics of citizens in large urban centres (Fan and Stark [2008], Lucas [2004], Edlund et al. [2015], Baum-Snow and Hartley [2020], Couture et al. [2019]). A common pattern emerges: well-educated individuals are selected for more competitive jobs that offer higher salaries. With higher incomes, they choose to move and live in urban contexts close to their workplace and that provide better amenities than rural towns (Su [2022]). It follows that the level of unemployment is also lower in cities compared to rural areas.

A.2.3 Placebo tests

Together with having the instrument carrying a casual effect on the independent variables and the absence of confounding for the effect of the instrument on the dependent variables, there's a third important condition that our IV must satisfy, i.e. the exclusion restriction. The exclusion restriction in fact indicates that the instrument only affects our dependent variable through the degree of urbanisation.

Although it may seem unlikely, the ruggedness of the terrain could bring favour to populist parties. Indeed, an impervious terrain does not allow for the development of agriculture, industrial advancement and an economy capable of employing many people. The lack of economic perspective, and the feeling of being left behind, are pressure points for populist rhetoric. Progress and economic prosperity that comes with education and employment can

neutralise the populist rise. However, this would mean that our instrument has a direct effect on our variable outcome, violating the exclusion restriction assumption. In our main analysis, we added a set of population controls that compose a first step in capturing other ruggedness effects on policy preferences. Nevertheless, in this section, we perform a placebo test to address this concern.

Table A.8: Sub-samples based on deciles of Night Lights

Variable	Mean	Std. Dev.	Min.	Max.	N. Obs
Night Lights 1	4,434	1,471	0	6,591	791
Night Lights 2	7,982	0,781	6,592	9,306	790
Night Lights 3	10,815	0,856	9,315	12,281	790
Night Lights 4	13,784	0,854	12,284	15,360	790
Night Lights 5	17,307	1,155	15,361	19,308	790
Night Lights 6	21,963	1,581	19,310	24,818	791
Night Lights 7	28,236	2,114	24,825	31,958	791
Night Lights 8	36,410	2,707	31,965	41,364	790
Night Lights 9	47,371	3,738	41,381	54,048	789
Night Lights 10	59,132	2,542	54,069	63	790

Note Summary statistics for 10 sub-samples of municipalities, divided based on Night Lights deciles.

Table A.9: Sub-samples based on deciles of Population Density

Variable	Mean	Std. Dev.	Min.	Max.	N. Obs
Pop. Density 1	13,490	5,277	1,004	21,409	791
Pop. Density 2	28,880	4,455	21,417	36,913	790
Pop. Density 3	46,270	5,376	36,918	55,377	790
Pop. Density 4	66,128	6,293	55,401	77,507	790
Pop. Density 5	91,332	8,614	77,510	106,978	790
Pop. Density 6	127,381	12,816	106,991	150,934	791
Pop. Density 7	182,377	20,542	150,973	220,254	790
Pop. Density 8	277,316	37,106	220,380	348,534	790
Pop. Density 9	497,209	98,258	348,561	698,977	790
Pop. Density 10	1629,704	1369,250	699,014	12468,460	790

Note Summary statistics for 10 sub-samples of municipalities, divided based on Population Density deciles.

To do this, we first divide our sample into groups for which our urbanisation proxies are stable. To do this, we create sub-samples based on the decides of the variables Pop density and night light intensity. The logic behind this placebo is that whereas urbanisation

is steady in each of these sub-samples, roughness can change. We can be more certain that our instrument does not break the exclusion constraint if variations in ruggedness are not associated with variations in the results. We split our sample based first on the night lights by presenting the summary statistics in Table A.8. We can say that our sub-samples are stable, except perhaps for observations two through four. Given the distribution of the population density variables density function, the latter, unlike night lights, is more stable in the first deciles. We provide summary statistics for the sub-samples according to population density deciles in Table A.9.

The second step is to check the validity of our instrument. Table A.10 shows the results of the first stage of our 2SLS regression. In all cases, the result of our Wald F-test is extremely low. This leads us to state that in all our sub-samples, our instrumental variable ruggedness, because of how stable our urbanisation proxies are within each decile, it is unable to adequately capture fluctuations in the endogenous factors.

Table A.10: Within-decile first stage F-tests

PANEL A - Night Lights	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
Wald F statistics	5.84	0.03	1.84	3.78	0.38	1.74	0.59	1.03	2.53	5.54
PANEL B - Pop. Density	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
Wald F statistics	3.72	0.91	0.02	0.04	0.96	0.17	0.01	1.80	0.00	3.32
Observations	784	788	788	790	789	790	789	790	789	783
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note Kleibergeen-paap Wald F statistics for 2SLS regressions over 20 sub-samples of municipalities based on the deciles of Night Lights (Panel A) and Pop. Density (Panel B). In each case either Night Lights or Pop. Density is instrumented with ruggedness. Controls include both geographical and populations variables as well as provinces fixed effects. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

The last step is to run our OLS regressions of our outcome on ruggedness for each of our sub-samples. We include in this case all the controls we used in the previous analysis, but we also include both our urbanization proxies as additional controls. This to exclude the possibility of presenting a reduced form of 2SLS.

Table A.11 contains the results for night lights. In this case there are 9 out of 30 deciles with a significant effect. Though these are the minority there may still be possible channels

Table A.11: Night-Lights delices - Party vote preference shares

PANEL A - Lega	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
Avg Ruggedness	-0.002	0.003**	0.004**	0.000	-0.004***	0.000	-0.001	-0.006***	-0.002	-0.001
	[0.002]	[0.002]	[0.002]	[0.001]	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]
PANEL B - Right-Wing	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
Avg Ruggedness	-0.003	0.004**	0.005**	-0.001	-0.005***	0.000	-0.001	-0.006***	-0.002	0.001
	[0.002]	[0.002]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
PANEL C - M5S	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
Avg Ruggedness	-0.002	0.001	0.000	-0.001	0.007**	0.000	0.002	0.004	0.003	-0.003
	[0.002]	[0.002]	[0.003]	[0.002]	[0.003]	[0.003]	[0.002]	[0.003]	[0.002]	[0.002]
Observations	787	786	786	788	790	791	791	789	784	788
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note Standard OLS for 30 distinct sum-samples of municipalities. The dependent variables are the share of votes, respectively for, Lega party in Panel A; Right-Wing parties in Panel B; M5S in Panel C. The sample is divided according to stable night-lights sum-samples. Controls include both geographical and populations variables as well as provinces fixed effects. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.12: Population density delices - Party vote preference shares

PANEL A - Lega	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
Average Ruggedness	-0.001	0.000	-0.000	0.006***	0.001	-0.001	-0.001	-0.000	-0.003*	-0.004**
	[0.002]	[0.002]	[0.001]	[0.001]	[0.001]	[0.002]	[0.001]	[0.001]	[0.002]	[0.002]
PANEL B - Right-Wing	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
Average Ruggedness	-0.002	0.002	0.000	0.005***	0.001	-0.003	-0.001	0.000	-0.003	-0.002
	[0.002]	[0.002]	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]
PANEL C - M5S	**Decile 1**	**Decile 2**	**Decile 3**	**Decile 4**	**Decile 5**	**Decile 6**	**Decile 7**	**Decile 8**	**Decile 9**	**Decile 10**
Average Ruggedness	0.004	0.001	-0.004*	-0.003	0.003	0.002	0.006**	0.000	0.001	-0.002
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]	[0.003]	[0.002]	[0.002]	[0.002]
Observations	784	788	788	790	789	790	789	790	789	783
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note Standard OLS for 30 distinct sumsamples of municipalities. The dependent variables are the share of votes, respectively for, Lega party in Panel A; Right-Wing parties in Panel B; M5S in Panel C. The sample is divided according to stable population density sum-samples. Controls include both geographical and populations variables as well as provinces fixed effects. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

in place that we do not consider that could bis some observation groups. In the case of regressions with population density (Table A.12), on the other hand, the groups in which ruggedness is still significant are quantitatively fewer. In the latter case, the instrument is more effective. Although there are these observations in the OLS analysis, this effect should not be able to bias our results. The variable referring to the ruggedness of the terrain moves

in the opposite of populists' preferences. The higher the ruggedness, the lower the support for right-wing populists. The same for the league in Table A.12. As a further result supporting exclusion restriction the panel C in Tables A.11 and A.12 where we consider preferences toward M5S the correlations in our sub-samples are minimal. As a result, our study backs up the exclusion constraint, the most problematic validity assumption for our instrument. After taking our array of variables into account, we showed that, for sub-samples of towns with stable levels of night lights or population density, differences in roughness are not related to variations in populist inclinations. We may be more confidence in the objectivity of the 2SLS coefficients showing the association between urbanisation and sympathies for populist parties given the absence of other unexplained effects of roughness on our conclusion.

A.3 Alternative measures: population density

Alternatively to the results presented in section 2.5 and those in section 2.6 here we define a final condition of rurality tied to population density. In light of the fact that our unit of observation is the municipality, we calculate the density as population divided by area in squared kms. Both Carozzi et al. [2020] and Carr and Tavares [2014] use a similar approach to proxy for urban and city measures. There is indeed evidence that population density as a proxy for rurality influences increasing voting preferences toward populist parties, both in the European (Bonikowski [2017], Essletzbichler et al. [2018], Gordon [2018], Martin et al. [2018], Dijkstra et al. [2020]) and U.S. (Cramer [2016] Rodden [2016]) context.

We present the results for both the OLS and 2SLS empirical strategy in table A.13 while the first stage of the 2SLS is provided in table A.13.

Table A.13: Alternative urbanization measure on Vote Preferences - 2SLS

	OLS			2SLS		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Lega	Right-Wing	M5S	Lega	Right-Wing	M5S
Pop. Density	-0.000***	-0.001***	0.001***	-0.004***	-0.005***	0.001
Observations	7,894	7,894	7,895	7,880	7,880	7,881
R-squared	0.911	0.851	0.703	0.870	0.793	0.703
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.910	0.849	0.699	0.868	0.790	0.699

Note OLS and second stage regression in the 2SLS setting. The columns (1),(2) and (3) report OLS coefficients, while (4), (5) and (6) the 2SLS coefficients. The unit of observation is the municipality. The dependent variables are: Mean preference votes for Lega in columns (1) and (4); Mean preference votes for Right-Wing parties in columns (2) and (4); Mean preference votes for M5S in columns (3) and (6). Pop. Density is the municipal average population density over the years. Controls include both geographical and populations variables, as well as province fixed effects. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

A.4 Additional Results and Extended Specifications

In this section we propose, following the same empirical strategy, the annual results. As previously pointed out, in fact, the electoral appointments were multiple, and although in our analysis we consider the two decades of the 21st century in a single analysis, it cannot be denied that the economic-social upheavals that followed over the years were multiple. In 2001, the euro had just landed on the European continent. The elections of 2006 and 2008 were marked by major political scandals, recall among many the alleged buying and selling of senators with the aim of ending the Prodi government. Technical governments, in conjunction with first the global economic crisis and then the sovereign debt crisis. The rise of the 5-star movement in 2013 until the yellow-green and yellow-red governments after the 2018 elections. We therefore look in the following tables at voting trends and the effect urbanization has on voter preferences for each political party in each year.

Table A.14: First Stage 2SLS

VARIABLES	(1) Pop. Density	(2) Pop. Density
Ruggedness	-0.658***	-0.470***
	[0.028]	[0.048]
F-test	*555.78*	*96.56*
Observations	7,887	7,880
Controls	No	Yes
Province FE	No	Yes

Note First stage regression in the 2SLS setting. The dependent variables in columns one and two are the mean population density. The dependent variable is the average ruggedness. Odd column contain no controls while even column account for control variables. Controls include both geographical and populations variables, as well as province fixed effects. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.15: Yearly Rural-Urban gradient on Lega Vote Preferences

	(1) 2001	(2) 2006	(3) 2008	(4) 2013	(5) 2018
Intermunicipality pole	-1.046***	-0.852***	-0.997***	-0.805***	-1.810***
	[0.267]	[0.249]	[0.386]	[0.236]	[0.448]
Pole Belt	-0.276	-0.158	0.262	-0.266	-0.146
	[0.188]	[0.176]	[0.268]	[0.170]	[0.310]
Intermediate	0.100	0.325*	0.972***	0.134	0.670**
	[0.202]	[0.187]	[0.283]	[0.181]	[0.327]
Peripheral	0.027	0.428**	0.984***	0.293	0.814**
	[0.213]	[0.208]	[0.305]	[0.200]	[0.360]
Ultra-Peripheral	-0.064	0.807**	0.830**	-0.002	0.572
	[0.268]	[0.334]	[0.386]	[0.244]	[0.486]
Observations	7,898	7,901	7,900	7,902	7,900
R-squared	0.871	0.826	0.912	0.876	0.872
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.869	0.824	0.911	0.874	0.870

Note Standard OLS estimation. The unit of observation is the municipality. The dependent variable is the vote share for Lega in 2001 elections. Inter-municipality pole are placed between the Pole (omitted), most urban classified municipality, and the pole Belt, placed at 20 minutes distance from the Pole. Intermediate, Peripheral and Ultra-Peripheral are respectively 25, 40 and 75 minutes far from the Pole. Column (1) contains no controls; column (2) include province f.e.; column (3) includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.16: Yearly Rural-Urban gradient on Right-Wing Vote Preferences

	(1) 2001	(2) 2006	(3) 2008	(4) 2013	(5) 2018
Intermunicipality pole	-2.495***	-1.508***	-0.899**	-0.687**	-1.839***
	[0.468]	[0.381]	[0.398]	[0.305]	[0.503]
Pole Belt	-0.806**	0.235	0.353	-0.057	-0.080
	[0.407]	[0.275]	[0.269]	[0.220]	[0.361]
Intermediate	0.053	0.951***	1.013***	0.690***	0.836**
	[0.422]	[0.298]	[0.283]	[0.236]	[0.379]
Peripheral	-0.081	0.991***	1.026***	0.854***	1.127***
	[0.453]	[0.338]	[0.312]	[0.268]	[0.421]
Ultra-Peripheral	-0.881	1.356***	0.844**	0.821**	0.771
	[0.559]	[0.513]	[0.400]	[0.388]	[0.563]
Observations	7,898	7,901	7,900	7,902	7,900
R-squared	0.612	0.653	0.906	0.766	0.851
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.606	0.647	0.904	0.763	0.849

Note Standard OLS estimation. The unit of observation is the municipality. The dependent variable is the vote share for Lega in 2001 elections. Inter-municipality pole are placed between the Pole (omitted), most urban classified municipality, and the pole Belt, placed at 20 minutes distance from the Pole. Intermediate, Peripheral and Ultra-Peripheral are respectively 25, 40 and 75 minutes far from the Pole. Column (1) contains no controls; column (2) include province f.e.; column (3) includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.17: Yearly Rural-Urban gradient on M5S Vote Preferences

	(1)	(2)
	2013	2018
Intermunicipality pole	-0.239	1.121**
	[0.347]	[0.482]
Pole Belt	0.473*	-0.247
	[0.260]	[0.314]
Intermediate	-0.710**	-1.701***
	[0.285]	[0.339]
Peripheral	-1.644***	-3.277***
	[0.341]	[0.411]
Ultra-Peripheral	-3.630***	-4.258***
	[0.486]	[0.679]
Observations	7,902	7,900
R-squared	0.612	0.773
Controls	Yes	Yes
Province FE	Yes	Yes
Adj. R-squared	0.606	0.769

Note Standard OLS estimation. The unit of observation is the municipality. The dependent variable is the vote share for Lega in 2001 elections. Inter-municipality pole are placed between the Pole (omitted), most urban classified municipality, and the pole Belt, placed at 20 minutes distance from the Pole. Intermediate, Peripheral and Ultra-Peripheral are respectively 25, 40 and 75 minutes far from the Pole. Column (1) contains no controls; column (2) include province f.e.; column (3) includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.18: Alternative urbanization measures on yearly Lega Vote Preferences

	(1) 2001	(2) 2006	(3) 2008	(4) 2013	(5) 2018
Night Lights	-0.000	-0.012***	0.003	-0.001	-0.040***
	[0.004]	[0.004]	[0.005]	[0.003]	[0.005]
Observations	7,898	7,901	7,900	7,902	7,900
R-squared	0.870	0.826	0.911	0.875	0.872
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.868	0.823	0.910	0.873	0.870
Pop. Density	-0.000***	-0.000***	-0.000***	-0.000***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	7,898	7,901	7,900	7,902	7,900
R-squared	0.870	0.826	0.912	0.876	0.872
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.868	0.823	0.910	0.874	0.870

Note Standard OLS estimations and 2SLS estimation. The unit of observation is the municipality. The dependent variable is the vote share for Lega in 2001 elections. Night Lights is the annual average exposure to night lights. Pop. Density 2001 is the municipal population density in 2001. Column (1) contains no controls; column (2) include province f.e.; column (3) includes both geographical and populations variables as well as province f.e.; columns (4) represents our 2SLS estimation where both Night Lights and Pop. Density 2001 are instrumented by average ruggedness. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.19: Alternative urbanization measures on yearly Right-Wing Vote Preferences

	(1) 2001	(2) 2006	(3) 2008	(4) 2013	(5) 2018
Night Lights	-0.020***	-0.017***	0.003	-0.019***	-0.048***
	[0.006]	[0.005]	[0.005]	[0.005]	[0.006]
Observations	7,898	7,901	7,900	7,902	7,900
R-squared	0.609	0.651	0.905	0.765	0.851
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.603	0.646	0.904	0.762	0.849
Pop. Density	-0.000***	-0.001***	-0.000***	-0.000***	-0.001***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Observations	7,898	7,901	7,900	7,902	7,900
R-squared	0.609	0.652	0.905	0.765	0.851
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.603	0.646	0.904	0.762	0.849

Note Standard OLS estimations and 2SLS estimation. The unit of observation is the municipality. The dependent variable is the vote share for Lega in 2001 elections. Night Lights is the annual average exposure to night lights. Pop. Density 2001 is the municipal population density in 2001. Column (1) contains no controls; column (2) include province f.e.; column (3) includes both geographical and populations variables as well as province f.e.; columns (4) represents our 2SLS estimation where both Night Lights and Pop. Density 2001 are instrumented by average ruggedness. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table A.20: Alternative urbanization measures on yearly M5S Vote Preferences

	(1)	(2)
	2013	2018
Night Lights	0.058***	0.093***
	[0.006]	[0.007]
Observations	7,902	7,900
R-squared	0.608	0.773
Controls	Yes	Yes
Province FE	Yes	Yes
Adj. R-squared	0.602	0.769
Pop. Density	0.000***	0.001***
	[0.000]	[0.000]
Observations	7,902	7,900
R-squared	0.603	0.771
Controls	Yes	Yes
Province FE	Yes	Yes
Adj. R-squared	0.597	0.767

Note Standard OLS estimations and 2SLS estimation. The unit of observation is the municipality. The dependent variable is the vote share for Lega in 2001 elections. Night Lights is the annual average exposure to night lights. Pop. Density 2001 is the municipal population density in 2001. Column (1) contains no controls; column (2) include province f.e.; column (3) includes both geographical and populations variables as well as province f.e.; columns (4) represents our 2SLS estimation where both Night Lights and Pop. Density 2001 are instrumented by average ruggedness. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Appendix B

Social closure and populism

This Online Appendix accompanies the paper "Social Closure and Populism". Section B.1 present the data, the data sources and data construction details for all the variable of interest. While, section B.2 provides the results for an alternative measure of social closure. Section B.3 presents additional results complementing the empirical analysis section in the main text.

B.1 Data

The following tables entail sources and summary statistics:

- Table B.1 reports control variables' description and data sources;
- Table B.2 reports yearly population controls summary statistics;
- Table B.3 reports summary statistics for time-invariant controls;
- Table B.4 reports summary statistics for yearly party vote preferences;

Table B.1: Control Variables' Description and Data Sources

Mean Altitude. Average elevation for each municipality. *Source*: Principali Statistiche Geografiche Sui Comuni by ISTAT
Mountainous territory. Percentage of municipal area with an elevation greater than 600m. *Source*: Principali Statistiche Geografiche Sui Comuni by ISTAT
Distance from seaside. Geodetic distances from municipality to coastline expressed in kms. *Source*: Confini Delle Unità Amministrative 2020 by ISTAT; Coast-line shapefile by ISTAT
High school graduate share. Share of the population holding a high school diploma. *Source*: *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT
Higher education graduate share. Share of the population holding a college degree equivalent or higher. *Source*: *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT
Income per capita. It is the gross income per capita for each municipality.. *Source*: *Source*: Income and main Irpef variables on a municipal basis by "Agenzia delle Entrate"
Population Age Structure. It's the ratio of the share of the population under 15 to the share of the population over 65. *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT
Unemployment Rate. Population unemployment rate. *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT
Population Density. The ratio between population and surface (expressed in squared km). *Source*: Censimento Permanente Popolazione e Abitazioni by ISTAT
Social Capital. Synthetic variable measuring social capital in a municipality. *Source*: Buonanno et al. [2021]

Table B.2: Yearly time-variant controls summary statistics

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Unemployment Rate 2001	7,902	10.20	8.859	0	51.32
Income per capita 2001	7,902	12,735	3,050	5,313	42,960
Higher education graduate share 2001	7,902	0.0734	0.0303	0	0.452
High school graduate share 2001	7,902	0.280	0.0685	0.0625	2.175
Population age structure 2001	7,899	2.727	2.672	0.346	83
Pop. Density 2001	7,902	281.9	626.3	1.188	13,157
Unemployment Rate 2006	7,902	10.20	8.859	0	51.32
Income per capita 2006	7,902	17,942	3,162	9,495	83,319
Higher education graduate share 2006	7,902	0.0710	0.0279	0	0.433
High school graduate share 2006	7,902	0.272	0.0557	0.0768	2.083
Population age structure 2006	7,901	1.882	1.359	0.222	33
Pop. Density 2006	7,902	293.5	634.8	1.142	12,502
Unemployment Rate 2008	7,902	10.20	8.859	0	51.32
Income per capita 2008	7,902	19,728	3,002	11,079	54,497
Higher education graduate share 2008	7,902	0.0699	0.0270	0	0.420
High school graduate share 2008	7,902	0.267	0.0513	0.0823	2.022
Population age structure 2008	7,900	1.903	1.495	0.200	49
Pop. Density 2008	7,902	299.0	638.4	1.035	12,372
Unemployment Rate 2013	7,902	10.25	6.307	0.638	42.18
Income per capita 2013	7,902	16,988	3,594	6,796	53,973
Higher education graduate share 2013	7,902	0.0701	0.0263	0	0.423
High school graduate share 2013	7,902	0.268	0.0477	0.0897	2.033
Population age structure 2013	7,902	1.981	1.444	0.276	54.00
Pop. Density 2013	7,902	304.0	645.2	0.786	12,125
Unemployment Rate 2018	7,902	13.42	6.754	1.020	43.06
Income per capita 2018	7,902	18,170	3,825	6,198	48,186
Higher education graduate share 2018	7,902	0.0673	0.0247	0	0.239
High school graduate share 2018	7,902	0.320	0.0427	0.0653	0.515
Population age structure 2018	7,900	2.266	1.610	0.388	52.00
Pop. Density 2018	7,902	301.3	642.0	0.767	12,186

Note The table includes population control variables. Proposes a series of summary statistics for the variables considered. High school and higher education graduate are the share of people with a high school diploma and a degree equivalent to or higher than a college degree, respectively. Income per capita represents the average gross income received by the population in a given municipality. Population age structure displays the ratio of the share of people under 15 to the share of people over 65. Unemployment rate illustrates the share of unemployed people. Population density is the share between the municipality population and surface. The population control variables are divided by year entailing all years of election.

Table B.3: Summary statistics for time-invariant controls

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Mean Altitude	7,902	459.8	451.1	0.364	2,777
Distance from seaside	7,903	69.10	55.55	0.0354	229.5
Mountainous territory	7,902	26.41	36.50	0	100
Social Capital	7,785	0.506	0.220	0.0723	3.137

Note The table includes time-invariant control variables. Proposes a series of summary statistics for the variables considered. Mean Altitude is the average elevation for each municipality; Distance from seaside is the geodetic distances from municipality to coastline expressed in kms; Mountainous territory is the percentage of municipal area with an elevation greater than 600m; Social Capital is a synthetic variable measuring social capital in a municipality constructed by Buonanno et al. [2021]. The time-invariant control variables are divided by year entailing all years of election.

Table B.4: Summary statistics for yearly party vote preferences

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max
Right-Wing 2001	7,901	17.94	7.508	0.101	55.17
Lega 2001	7,901	6.156	7.816	0	48.53
Right-Wing 2006	7,902	19.79	7.732	2.041	62.34
Lega 2006	7,902	6.627	7.173	0	47.22
Right-Wing 2008	7,902	14.71	12.95	0	66.33
Lega 2008	7,902	11.52	12.84	0	62.24
Right-Wing 2013	7,902	9.848	7.657	0	56.52
Lega 2013	7,902	5.949	7.368	0	49.18
Right-Wing 2018	7,902	27.43	13.33	1.266	74
Lega 2018	7,902	21.66	12.58	0	62.96

Note The table includes party vote preferences. Proposes a series of summary statistics for the variables considered. Lega represents the vote share preferences for Lega party. Right-Wing is the vote share preferences for right-wing parties.

B.2 Alternative measures for social closure

Our preferred measure for social closure is the distribution for the most common surname share. In this section, however, we run our main specification for an alternative measure of social closure, entropy by Buonanno and Vanin [2017]. The authors state that *"Under patrilineal transmission, apart for mutations, such as new surnames due to misspelling or to voluntary changes, which are typically limited in number, over time a community's surname distribution essentially becomes more diverse when men with new surnames arrive from outside to form new households, whereas it becomes less diverse when men either leave the community or inbreed (that is, form new households with women of the same community), in the latter case because surnames tend to disappear due to the positive probability of having no male offspring. Thus, a community with a history of closure ends up with a highly concentrated surname distribution, whereas one with a history of openness will have a more diverse distribution."* Using 1993 telephone directory data, they are able to collect surnames according to their numerosity for each Italian municipality. Their measure of social closure is defined as follows:

$$Entropy = -\sum_{i=1}^{S}(p_i \log p_i)$$

where S is the total number of surnames in the municipality of interest and p_i the percentage of people with the surname i. The more variable surnames are in a municipality the higher the value of entropy. Figure B.1 shows the distribution for the entropy measure for all municipalities.

$Social\_Closure_m$ in our main specification (equation 3.2) refers in this case to entropy. Our dependent variable remains the same, i.e. the vote share $Populist_m$ for populist right-wing parties. The rest of the specifications remain the same. Table B.5 shows the results for both OLS and IV analysis concerning the effect of entropy on preference share for right-wing

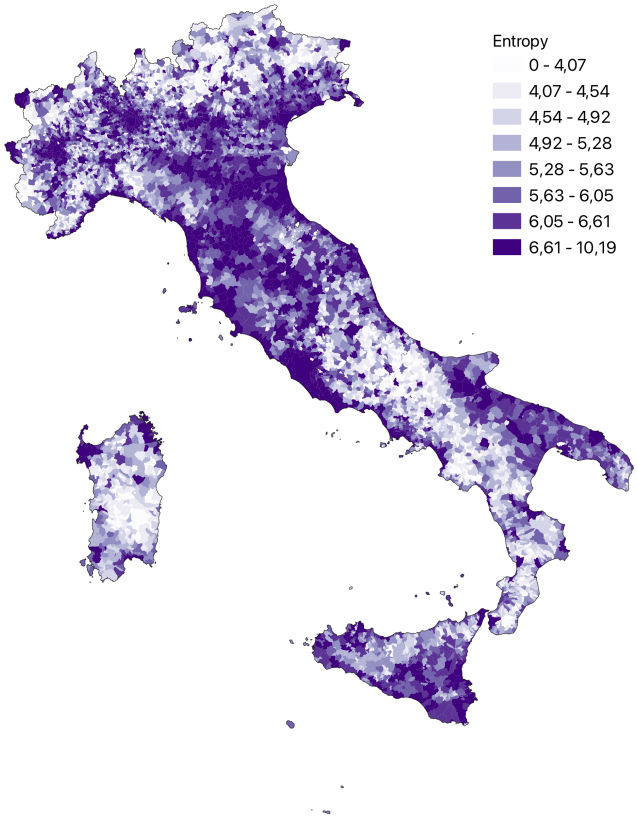


Figure B.1: Entropy

The figure represents the distribution for entropy. The figure is of our own reworking on data from Buonanno and Vanin [2017].

parties. Since Entropy represents the dispersion of surnames, its interpretation is inverse to that of first share; in fact, the greater the value of entropy, the greater the dispersion of surnames in a municipality. The results, therefore, are consistent with our baseline, where we use First Share. The OLS analysis is statistically significant and negative, including both fixed effect provinces, time-invariant controls regarding population, and time-invariant controls regarding municipal geographic characteristics. Columns (4) and (8), on the other hand, present the results for the second stage of the IV analysis. In this circumstance, Entropy is instrumented by average ruggedness. The first stage has the following specification, $Entropy_m = \beta_0 + \beta_1 Ruggedness_m + \beta_2 X'_m + \varepsilon_m$. Between entropy and average ruggedness at the first stage, there is a statistically significant negative correlation. In fact, if the correlation between first share and average ruggedness is positive, on the contrary in this

circumstance, the greater the ruggedness of the terrain, the lower the dispersion of surnames in that municipality. As discussed in section 3.5.1 ruggedness minimises the possibility of mobility and interaction with others such that endogamy may be greater. In the face of greater ruggedness, there will simply be a greater concentration of people who are part of the same community, identified in this case by their surnames. The correction coefficient is -0.600 (average ruggedness divided by 1000), with a standard error of 0.085 and an F-test of 49.33 that ascertains the consistency of our analysis.

Table B.5: Effect of Social Closure on Right-Wing parties preferences - 2SLS

	Right-Wing parties				Lega			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	OLS	OLS	OLS	IV	OLS	OLS	OLS	IV
Entropy	-0.067	-0.704***	-0.134**	-3.907***	-0.077	-0.862***	-0.267***	-3.417***
	[0.086]	[0.051]	[0.063]	[0.941]	[0.089]	[0.043]	[0.051]	[0.807]
Observations	7,880	7,880	7,763	7,762	7,880	7,880	7,763	7,762
R-squared	0.000	0.844	0.856	0.771	0.000	0.904	0.914	0.859
Controls	No	No	Yes	Yes	No	No	Yes	Yes
Province FE	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Adj. R-squared	0.000	0.842	0.853	0.767	0.000	0.902	0.912	0.856

Note OLS and 2SLS estimations. The unit of observation is the municipality. The dependent variable is the mean vote share for Right-Wing parties and Lega. The entropy variable is our proxy of social closure. Columns (1) and (5) are respectively the effect of entropy on right-wing parties and Lega without controls; columns (2) and (6) include province fixed effects; columns (3) and (7) both geographical and populations variables as well as province f.e.; columns (4) and (8) are the results for the second stage IV regression where Entropy is instrumented by the average ruggedness. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

B.3 Yearly analysis

In our main analysis, our variables are the average for the last two decades. In this case, however, there have been five electoral appointments: 2001, 2006, 2008, 2013, and 2018. Right-wing parties on the various occasions have competed in general elections, sometimes in coalition, some others times as a single party. In order to gain a better understanding of the effect of our social closure variable on each election and how it affected the different party identifications, we offer a series of tables in the following section.

- Table B.6 reports yearly result for OLS analysis between First Share (2004) and yearly votes for the right-wing parties;
- Table B.7 reports yearly result for OLS analysis between First Share (2004) and yearly votes for the Lega party;
- Table B.8 reports yearly result for OLS analysis between First Share (1993) and yearly votes for the right-wing parties;
- Table B.9 reports yearly OLS analysis between First Share (1993) and yearly votes for the Lega party;
- Table B.10 reports yearly result for 2SLS analysis between First Share (2004) and yearly votes for the right-wing parties;
- Table B.11 reports yearly result for 2SLS analysis between First Share (2004) and yearly votes for the Lega party;
- Table B.12 reports yearly result for 2SLS analysis between First Share (1993) and yearly votes for the right-wing parties;
- Table B.13 reports yearly 2SLS analysis between First Share (1993) and yearly votes for the right-wing parties;

Table B.6: First Share (2004) and yearly vote preferences for Right-Wing parties - OLS

	2001	2006	2008	2013	2018
	(1)	(2)	(3)	(4)	(5)
First Share (2004)	0.038	0.063***	0.024	0.094**	0.032
	[0.028]	[0.024]	[0.026]	[0.038]	[0.028]
Observations	7,779	7,782	7,781	7,783	7,781
R-squared	0.615	0.657	0.905	0.766	0.851
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.609	0.652	0.904	0.763	0.849

Note Standard OLS estimations. The unit of observation is the municipality. The dependent variable is the yearly vote share for right-wing parties. The First Share variable is the share of the most common surname in a municipality. The table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.7: First Share (2004) and yearly vote preferences for Lega - OLS

	2001	2006	2008	2013	2018
	(1)	(2)	(3)	(4)	(5)
First Share (2004)	0.056**	0.054***	0.028	0.070**	0.036
	[0.027]	[0.018]	[0.026]	[0.032]	[0.028]
Observations	7,779	7,782	7,781	7,783	7,781
R-squared	0.870	0.828	0.912	0.877	0.872
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.868	0.825	0.910	0.875	0.870

Note Standard OLS estimations. The unit of observation is the municipality. The dependent variable is the yearly vote share for Lega. The First Share variable is the share of the most common surname in a municipality. The table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.8: First Share (1993) and yearly vote preferences for Right-Wing parties - OLS

	2001	2006	2008	2013	2018
	(1)	(2)	(3)	(4)	(5)
First Share (1993)	0.019	0.023	0.015	0.044**	0.004
	[0.021]	[0.020]	[0.021]	[0.017]	[0.022]
Observations	7,767	7,769	7,768	7,770	7,768
R-squared	0.619	0.660	0.908	0.768	0.854
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.613	0.655	0.906	0.765	0.852

Note Standard OLS estimations. The unit of observation is the municipality. The dependent variable is the yearly vote share for right-wing parties. The First Share variable is the share of the most common surname in a municipality. The table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.9: First Share (1993) and yearly vote preferences for Lega - OLS

	2001	2006	2008	2013	2018
	(1)	(2)	(3)	(4)	(5)
First Share (1993)	0.077***	0.052***	0.014	0.030**	0.013
	[0.015]	[0.015]	[0.020]	[0.014]	[0.020]
Observations	7,767	7,769	7,768	7,770	7,768
R-squared	0.873	0.829	0.913	0.879	0.874
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.871	0.827	0.912	0.877	0.872

Note Standard OLS estimations. The unit of observation is the municipality. The dependent variable is the yearly vote share for Lega. The First Share variable is the share of the most common surname in a municipality. The table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.10: First Share (2004) and yearly vote preferences for Right-Wing parties - 2SLS

	2001	2006	2008	2013	2018
	(1)	(2)	(3)	(4)	(5)
First Share (2004)	2.231***	1.171***	0.465	1.103***	0.527
	[0.549]	[0.361]	[0.289]	[0.329]	[0.344]
Observations	7,778	7,781	7,780	7,782	7,780
R-squared	-0.056	0.496	0.896	0.629	0.840
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	-0.0726	0.488	0.895	0.623	0.838

Note 2SLS estimations. The unit of observation is the municipality. The dependent variable is the yearly vote share for right-wing parties. The First Share variable is the share of the most common surname in a municipality. First Share is instrumented by average ruggedness. Table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.11: First Share (2004) and yearly vote preferences for Lega - 2SLS

	2001	2006	2008	2013	2018
	(1)	(2)	(3)	(4)	(5)
First Share (2004)	1.553***	1.201***	0.671**	0.842***	0.425
	[0.382]	[0.316]	[0.301]	[0.246]	[0.308]
Observations	7,778	7,781	7,78	7,782	7,78
R-squared	0.580	0.627	0.892	0.790	0.864
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.574	0.621	0.890	0.787	0.862

Note 2SLS estimations. The unit of observation is the municipality. The dependent variable is the yearly vote share for Lega. The First Share variable is the share of the most common surname in a municipality. First Share is instrumented by average ruggedness. Table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.12: First Share (1993) and yearly vote preferences for Right-Wing parties - 2SLS

	2001	2006	2008	2013	2018
	(1)	(2)	(3)	(4)	(5)
First Share (1993)	1.433***	0.744***	0.326*	0.702***	0.354*
	[0.301]	[0.212]	[0.177]	[0.190]	[0.203]
Observations	7,766	7,768	7,767	7,769	7,767
R-squared	0.194	0.556	0.901	0.679	0.845
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.181	0.549	0.899	0.674	0.843

Note 2SLS estimations. The unit of observation is the municipality. The dependent variable is the yearly vote share for right-wing parties. The First Share variable is the share of the most common surname in a municipality. First Share is instrumented by average ruggedness. Table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table B.13: First Share (1993) and yearly vote preferences for Lega - 2SLS

	2001	2006	2008	2013	2018
	(1)	(2)	(3)	(4)	(5)
First Share (1993)	0.998***	0.748***	0.453**	0.537***	0.288
	[0.204]	[0.174]	[0.183]	[0.143]	[0.182]
Observations	7,766	7,768	7,767	7,769	7,767
R-squared	0.706	0.717	0.899	0.821	0.868
Controls	Yes	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.702	0.712	0.898	0.819	0.866

Note 2SLS estimations. The unit of observation is the municipality. The dependent variable is the yearly vote share for Lega. The First Share variable is the share of the most common surname in a municipality. First Share is instrumented by average ruggedness. Table includes both geographical and populations variables as well as province f.e.. Robust standard errors are in square parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Appendix C

Landownership elites and the literacy's expansion: Historical Evidence from Italy

This Online Appendix accompanies the paper "Land Inequality and School Reform: evidence from Italy". Section Section C.1 is complementary to the section 4.2 within the fourth chapter. Section C.2 present the historical data collection exercise, the construction of the literacy rates, data sources and data construction details for all the variable of interest. Section C.3 presents additional results complementing the empirical analysis section in the main text.

C.1 Budget Expenditures for Elementary and Popular Education

The graph in figure C.1 represents budget expenditures for elementary and popular education in fiscal years 1910-11 to 1920-21 as attached in the Daneo-Credaro law. The budget items contain the following expenditure headings:

- "Royal school inspectors - tenured staff" contains expenses for royal school inspectors, tenured teachers' salaries, and substitute teachers. The allowances for residence in Rome and for expenses for the performance of inspection duties;

- "Elementary teachers' salaries" contains expenditures for elementary, night school, and holiday teachers; merit checks; capital increase in pensions; and grants to widows and orphans of elementary teachers;

- "Construction, repair and furnishing of school buildings" contains expenditures for construction, repair, and mortgage support for school buildings. Expenditures for maintenance and furnishing of buildings;

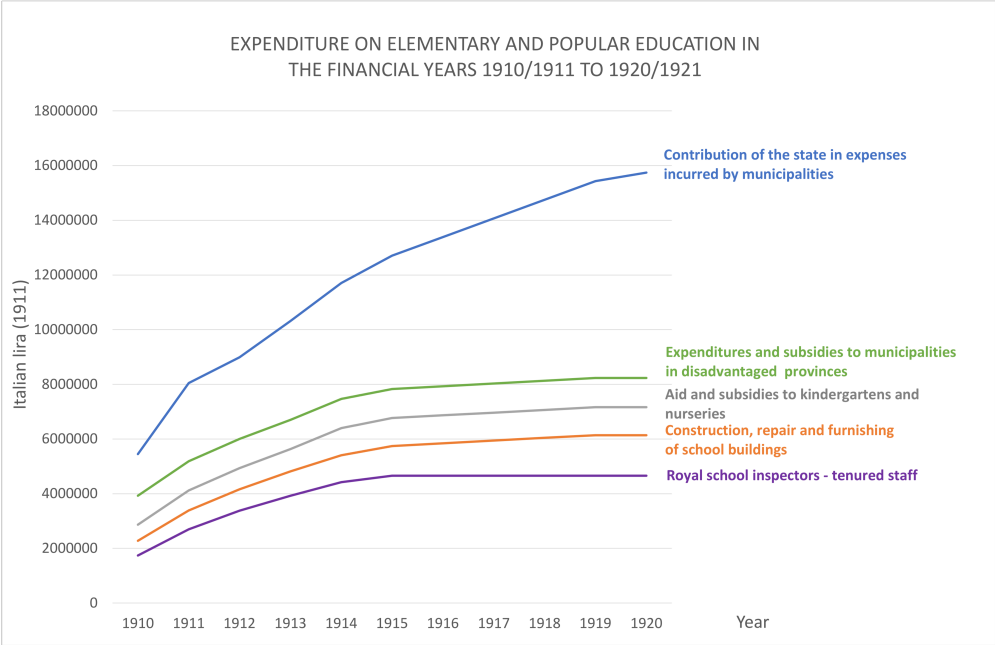
- "Aid and subsidies to kindergartens and nurseries" expenses for kindergartens, their establishment and maintenance;

- "Expenditures and subsidies to municipalities in disadvantaged provinces" contains subsidies aimed at maintaining schools in municipalities in Basilicata, Naples, and southern provinces. Subsidies for elementary education in rural areas, educational assistance, and disadvantaged areas;

- "Contribution of the state in expenses incurred by municipalities" contains contributions from the state that contribute to the payment of expenses incurred by municipalities for loans and interest. Loans taken out for the construction, renovation and furnishing of elementary, secondary and high schools;

- "Expenditures for elementary and popular education in fiscal years 1910-11 to 1920-21" it's the total expenditure for education

Figure C.1: Expenditure of elementary and popular education



The chart represents the budget attached to Act 487 of 1911. The growth in national spending for the various expenditure chapters is expressed in thousands of contemporary Italian liras.

C.2 Data

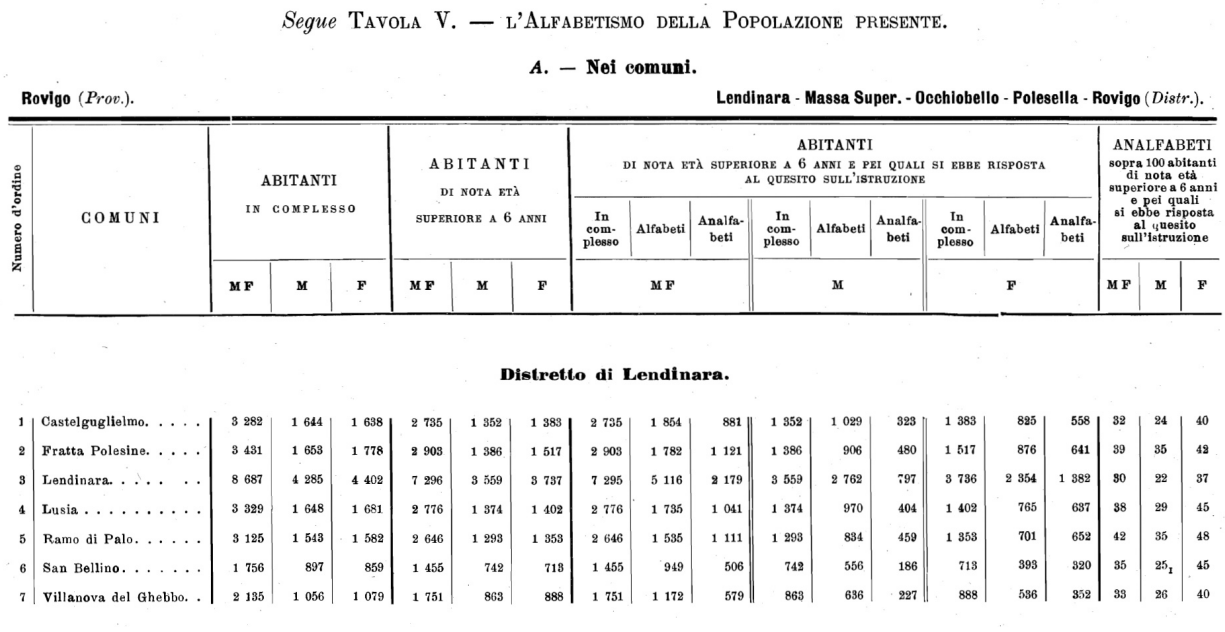
C.2.1 Literacy rate

We typed data from the population census of the kingdom of Italy for 1911 and 1921. The data for 1911 come from the census of the population of the kingdom as of June 10, 1911 from the Ministry of Agriculture, Industry and Commerce; Directorate General of Statistics and Labor. Data for 1921, on the other hand, come from the census of the population of the kingdom of Italy as of December 1, 1921 provided by Ministry of National Economy; General Directorate of Statistics.

The data for 1911 present for each municipality on the relevant date the number of inhabitants over the age of 6 who, when asked about their education, answered that they were literate. The statistics therefore report literate and illiterate males and females. As such, the total number of people refers to those over the age of 6. Similarly, for 1921, the

census reports the number of inhabitants over the age of 6 years overall and literate, divided by sex.

Between 1911 and 1921 nevertheless there were administrative changes. Some municipalities in fact as of 1921 had changed their names, province or district, some were assimilated by other municipalities or spun off, and some were extinguished. In order to harmonize the analysis the municipalities as of 1921 are United States to those of the previous decade taking into consideration the changes that occurred.



Segue TAVOLA V. — L'ALFABETISMO DELLA POPOLAZIONE PRESENTE.

A. — Nei comuni.

Rovigo (*Prov.*). **Lendinara - Massa Super. - Occhiobello - Polesella - Rovigo** (*Distr.*).

Numero d'ordine	COMUNI	ABITANTI IN COMPLESSO			ABITANTI DI NOTA ETÀ SUPERIORE A 6 ANNI			ABITANTI DI NOTA ETÀ SUPERIORE A 6 ANNI E PEI QUALI SI EBBE RISPOSTA AL QUESITO SULL'ISTRUZIONE									ANALFABETI sopra 100 abitanti di nota età superiore a 6 anni e pei quali si ebbe risposta al quesito sull'istruzione		
								In complesso	Alfabeti	Analfabeti	In complesso	Alfabeti	Analfabeti	In complesso	Alfabeti	Analfabeti			
		M F	M	F	M F	M	F	M F			M			F			M F	M	F
	Distretto di Lendinara.																		
1	Castelguglielmo.	3 282	1 644	1 638	2 735	1 352	1 383	2 735	1 854	881	1 352	1 029	323	1 383	825	558	32	24	40
2	Fratta Polesine.	3 431	1 653	1 778	2 903	1 386	1 517	2 903	1 782	1 121	1 386	906	480	1 517	876	641	39	35	42
3	Lendinara.	8 687	4 285	4 402	7 296	3 559	3 737	7 295	5 116	2 179	3 559	2 762	797	3 736	2 354	1 382	30	22	37
4	Lusia	3 329	1 648	1 681	2 776	1 374	1 402	2 776	1 735	1 041	1 374	970	404	1 402	765	637	38	29	45
5	Ramo di Palo.	3 125	1 543	1 582	2 646	1 293	1 353	2 646	1 535	1 111	1 293	834	459	1 353	701	652	42	35	48
6	San Bellino.	1 756	897	859	1 455	742	713	1 455	949	506	742	556	186	713	393	320	35	25,	45
7	Villanova del Ghebbo. .	2 135	1 056	1 079	1 751	863	888	1 751	1 172	579	863	636	227	888	536	352	33	26	40

Figure C.2: Scanned census excerpt about the literacy of the population for 1911

Note The image presents an excerpt from the census about the population in 1911. The priva data scanned and then digitized presents several statistics including literacy for each municipality, in this case for the district of Lendinara in the province of Rovigo.

C.2.2 Land inequality

As mentioned in the DATA section, one of the key variables in our analysis is land inequality, i.e. the difference in the quantity and value of land that people can access and have rights to (citation). This dimension was constructed by Buonanno et al. [2020]. In fact, the authors obtained such data by digitising the Agrarian Cadastre. Unfortunately, the first agrarian

cadastre held in Italy dates back to 1929, which implies that there is no data contemporary to our period of study.

The original data collects for each municipality the numerosity of land according to classes of breadth, to which is added the area that category occupies. For example, a municipality with 59 owners in the width class between 3 and 5 hectares and a total area of 213 hectares, so on average, each owner will own 3.6 hectares of land. The authors then reconstruct a complete distribution of estates attributing to each farm the mean land size of the category (i.e. for estates from 0 to 0.5 hectares, we associate 0.25 to all farms in this category). For the largest categories, i.e. estates of 500 hectares or more, we assign 500 hectares to all farms in this category. With this information, they construct a Gini index of land inequality for each municipality.

C.2.3 Control Variables

Given the historical period we consider, it is very difficult to include the controls used in the literature. Nevertheless, we include time-variant control variables in our baseline. In fact, in 1911 and 1921 the population census reposed for each municipality several measures, namely: municipal area; number of households; population present and the one temporarily absent. In addition, the census gives us two important pieces of information, such as the resident population, with the division between center and scattered houses. In our case nevertheless we exploit only part of this information. The latter classification distinguishes the population living in downtowns as opposed to the population living in the countryside, indeed in scattered houses. The summary statistics of these variables are presented in table 4.1.

Image C.3 below shows the original document. We manually digitised the data, making it usable for our analysis. In this case, the image shows the case of several municipalities in the Bergamo district, located in the homonymous province. The detail of the census is such that it also encloses for each municipality the hamlets.

Figure C.3: Scanned census excerpt about the time-variant controls for 1921

Popolazione presente, temporaneamente assente e residente nei Comuni, nelle Frazioni di censimento, nei Circondari, nelle Provincie e nella Regione.

Superficie del territorio comunale.

Bergamo (*Circondario*).

COMUNI e Frazioni di censimento	Superficie del territorio comunale Ettari	Famiglie e Conviventi	Popolazione presente (di fatto)			Popolazione temporaneamente assente			Popolazione residente (legale)
			in complesso	con dimora		in complesso	che si trovava		
				abituale	occasionale		in altri Comuni del Regno	all'estero	
Provincia di Bergamo.									
CIRCONDARIO DI BERGAMO.									
Adrara San Martino	**1 266**	**479**	**2 232**	**2 207**	**25**	**337**	**333**	**4**	**2 544**
Adrara San Martino..		219	978	959	19	142	138	4	1 101
Villanova		58	216	214	2	68	68	—	282
Mascherpinga		111	521	520	1	94	94	—	614
Collepiano		56	338	336	2	15	15	—	351
Costa.....		35	179	178	1	18	18	—	196
Adrara San Rocco	**919**	**213**	**941**	**938**	**3**	**96**	**95**	**1**	**1 034**
Adrara San Rocco.....		97	425	422	3	51	50	1	473
Dumengoni		116	516	516	—	45	45	—	561
Albano Sant'Alessandro..	**534**	**244**	**1 340**	**1 327**	**13**	**39**	**16**	**23**	**1 366**
Albegno	**267**	**142**	**833**	**826**	**7**	**27**	**24**	**3**	**853**
Albino.....	**1 544**	**1 235**	**6 151**	**6 073**	**78**	**339**	**163**	**176**	**6 412**
Albino		960	4 607	4 529	78	197	113	84	4 726
Fiobbio		137	793	793	—	44	7	37	837
Abbazia		97	525	525	—	62	28	34	587
Casale		41	226	226	—	36	15	21	262

Note The image presents an excerpt from the *Population census of the kingdom of Italy* about the population in 1921. The priva data scanned and then digitized presents several statistics including the municipality surface, the number of families, the population present, the temporarily absent population and the resident population; in this case for the district of Bergamo.

C.2.4 Extended Data Sources and Summary Statistics

Data Sources

This section provides definition and sources for all variables in the paper: Table A1 focuses on literacy measures, Table A2 on land data, Table A3 describe all other outcomes of interest, Table A5 presents detail information on climatic variables, and Table A4 describe all other covariates in the analysis.

Table C.1: Variables' Description and Data Sources: Literacy rate

Literacy rate (1911). The share of illiterate people older than 6 years old by municipality in 1911. *Source*: Censimento della popolazione del regno al 10 giugno 1911 - Volume III. The census provides data on literate and illiterate people divided by gender.
Literacy rate (1921). The share of illiterate people older than 6 years old by municipality in 1921. *Source*: Censimento della popolazione del regno al 1 dicembre 1921. The census provides data on literate and illiterate people divided by gender.

Table C.2: Variables' Description and Data Sources: Land Inequality

Land Inequality (1929). The Gini index of land inequality in the municipality. *Source*: The 1929 Census of Agriculture. The census provides data on the number of farms by size category. See Table A8 for information on the categories and their respective shares.
Land Inequality (1947). The Gini index of land inequality in the municipality. *Source*: The 1947 Census of Agriculture. The census provides data on the number of farms by size category. See Table A8 for information on the categories and their respective shares.
Small Landowners 1929. The share of land occupied by farms smaller than 10 hectares over the total share of land occupied by farms in the municipality. *Source*: The 1929 Census of Agriculture.
Medium Landowners 1929. The share of land occupied by farms larger than 10 hectares and smaller than 100 hectare over the total share of land occupied by farms in the municipality. Source: The 1929 Census of Agriculture.
Landmarks 1929. The share of land occupied by farms larger than 100 hectares over the total share of land occupied by farms in the municipality. *Source*: The 1929 Census of Agriculture.
Small Landowners 1947. The share of land occupied by farms smaller than 10 hectares over the total share of land occupied by farms in the municipality. *Source*: The 1947 Census of Agriculture.
Landmarks 1947. The share of land occupied by farms larger than 100 hectares over the total share of land occupied by farms in the municipality. Source: The 1947 Census of Agriculture.

Table C.3: Variables' Description and Data Sources: Time-Variant variables

pop_presente. Population present at the time of the census. *Source*: Censimento della popolazione del regno d'Italia (both available for 1911 and 1921)
pop_pres_abituale. Population usually present at the time of the census. *Source*: Censimento della popolazione del regno d'Italia (both available for 1911 and 1921)
pop_centro. Population residing in the center. *Source*: Censimento della popolazione del regno d'Italia (both available for 1911 and 1921)
pop_case_sparse. Population residing in scattered houses. *Source*: Censimento della popolazione del regno d'Italia (both available for 1911 and 1921)
superficie. Municipality surface. *Source*: Censimento della popolazione del regno d'Italia (both available for 1911 and 1921)

C.3 Additional Results and Extended Specifications

C.3.1 Conley Standard Errors - Alternative Threshold

Table C.4 replicates the baseline with Conley standars error computed with different cutoffs (50, 25, 10 and 5 kms).

C.3.2 Alternative measure for literacy rate

In table C.5 we give a different definition of elite. In the main regression we used the median as reference to define the presence of an latifundiar elite. In this case we use the mean, which is equal to 0.6. We can observe that results are consistent with the main analysis.

C.3.3 Alternative measure for land inequality

In table C.6 we perform the analysis with the original and continuous land inequality variable. In this case the interaction between the reform and the land inequality leads to a continuous variable for inequality in land distribution for the treated period. A unit increase in land inequality leads to a four percent increase in the population literacy rate. The statistical significance of the rest of the analysis is consistent with the baseline analysis.

Since the land inequality and the consequent elite definition are consequently an index and a dummy variable, in table C.7 we investigate the effect of land ownership according to a different measure of land dispersion. We interact the share of land with the reform variable, where the latter is the share of land occupied by farms according to dimension (in hectares) over the total share of land occupied by farms in the municipality. So in a municipality with a high level of land centralization there might be very few farms of big dimensions. At the same time, we expect to see a higher effect in this municipalities. The distribution of land in the municipalities concentrates mostly in the median/big farm. The smaller the share of land, for really small landowners, the more negative is the effect of the reform. This might be due that the owners are those to work the land. In the rural tradition, particularly for

small plots of land, it is the family members themselves who work the land. Looking at the results for small plots of land, the effect on education is very negative, as if to suggest that young people do not enter the local education system. As the share of land increases, particularly for medium-sized plots of land (between 50 and 100 hectares) the effect of the reform changes sign, becoming positive. Finally, for extremely large plots of land, over 100 hectares [1] there is no statistical significance. It is possible that in addition to the rarity of contexts in which this occurs, given the size of the land, it is also necessary to have a processing technology that requires the landowner himself to employ specialised machinery and workers.

C.3.4 Land inequality and literacy rate by gender

Finally, in table C.8 we investigate together with table C.9 the effect of the reform on gender. Our result are consistent with the baseline for gender. The literacy rate for males and females are both positive and statistically significant. Nominally the effect for females is likely higher. This is also in line with the reform. In fact, the reform does not question any gender discrimination; on the contrary, it encourages the schooling of the entire population, even the older population.

C.3.5 Accounting for north-south differences

The north-south divide that occurs in Italy has very distant origins. The first differences are found as early as the 19th century[2]. For this reason, we divide our sample between northern regions (Valle d'Aosta, Liguria, Lombardy, Piedmont, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Tuscany, Umbria, Marche, Lazio) and southern regions

[1] Considering that a football field measures 0.7 hectares, a plot of 490 hectares would represent 700 football fields

[2] Pietro Righi uses provincial-level census data to understand why modern Italy has the most pronounced North-South economic disparity in Europe. He dates the geographical divergences and argues it was driven by reductions in transportation costs, market integration, and greater proximity of the North to European consumers.

(Abruzzo, Basilicata, Calabria, Campania, Molise, Puglia). The results are positive and statistically significant only for the northern part of the country. In the southern part of Italy, on the other hand, no significant results are presented. This could be synonymous with a potential mechanism as a result of the reform, it is the demand for education that has increased the level of literacy. In fact, in the north of the country in those years, the foundations for the industrial revolution were being laid, unlike the south, which experienced industrialisation many years later. Thus, faced with the demand for literate and educated employees who could understand the tasks in the industrial context, people who aspired to improve their condition by leaving the countryside for the urban centres could now educate themselves adequately.

Table C.4: Elite presence and Literacy rate - Conley Standar Errors

	Literacy rate				
	(1)	(2)	(3)	(4)	(5)
		50km	25kms	10kms	5kms
Reform	7.65***	7.65***	7.65***	7.65***	7.65***
	(0.122)	(0.846)	(0.538)	(0.260)	(0.156)
Elite in Reform	1.22***	1.22*	1.22**	1.22***	1.22***
	(0.169)	(0.520)	(0.434)	(0.249)	(0.172)
Constant	65.17***	65.17***	65.17***	65.17***	65.17***
	(0.042)	(0.340)	(0.200)	(0.093)	(0.055)
Observations	16,607	16,607	16,607	16,607	16,607
R-squared	0.539	0.539	0.539	0.539	0.539
Number of municipalities	8,321	8,321	8,321	8,321	8,321
Municipality FE	✓	✓	✓	✓	✓
RegionTime FE	x	x	x	x	x
Controls	x	x	x	x	x
Reform	4.14***	4.14***	4.14***	14.14***	4.14***
	(0.167)	(2.012)	(1.874)	(1.109)	(0.823)
Elite in Reform	1.09***	1.09***	1.09***	1.09***	1.09***
	(0.163)	(0.282)	(0.246)	(0.167)	(0.133)
Constant	65.90***	65.90***	65.90***	65.90***	65.90***
	(0.168)	(0.121)	(0.090)	(0.050)	(0.035)
Observations	14,638	14,638	14,638	14,638	14,638
R-squared	0.660	0.660	0.660	0.660	0.660
Number of n_istat_1911	7,757	7,757	7,757	7,757	7,757
Municipality FE	✓	✓	✓	✓	✓
RegionTime FE	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓

Panel OLS estimated with different cutoff for Conley standard Errors. The unit of observation is the municipality. The dependent variable is the population literacy rate based on the 1911 and 1921 population census. Reform is a dummy variable equal to one in 1921, and zero in 1911. Elite in reform is the interaction between the passing of the reform and the elite variable. The analysis contains districts and provinces by time F.E. Standard errors clustered are in round parentheses: columns (1) is Robust s.e.; columns (2)-(5) report conley standard errors respectively at the 50, 25, 10 and 5 kms cutoff. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table C.5: Elite (mean) presence and Literacy rate

VARIABLES	(1) Literacy rate	(2) Literacy rate - Region FE	(3) Literacy rate in Urban	(4) Literacy rate in Rural
Reform	7.76***	4.17***	9.82***	7.65***
	(0.130)	(0.166)	(0.541)	(0.132)
Elite (mean) in Reform	1.21***	1.02***	-0.94	1.27***
	(0.185)	(0.164)	(0.743)	(0.190)
Constant	65.25***	65.90***	55.87***	65.27***
	(0.198)	(0.168)	(1.023)	(0.368)
Observations	14,638	14,633	1,026	13,612
R-squared	0.544	0.660	0.591	0.548
Number of municipalities	7,757	7,754	584	7,278
Municipality FE	✓	✓	✓	✓
RegionTime FE	x	✓	x	x
Controls	✓	✓	✓	✓

Panel OLS estimation with fixed effects. The unit of observation is the municipality. The dependent variable is the population literacy rate based on the 1911 and 1921 population census. Reform is a dummy variable equal to one in 1921, and zero in 1911. Elite (mean) in reform is the interaction between the passing of the reform and the elite variable. Elite (mean) is equal to 1 if the land inequality value is higher than its mean, 0 otherwise. Robust standard errors clustered are in round parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table C.6: Land inequality (continuous) on Literacy rate

VARIABLES	(1) Literacy rate	(2) Literacy rate - Region FE	(3) Literacy rate in Urban	(4) Literacy rate in Rural
Reform	5.36***	2.68***	11.32***	5.15***
	(0.354)	(0.322)	(1.598)	(0.361)
Land inequality in Reform	5.04***	3.36***	-3.26	5.27***
	(0.573)	(0.512)	(2.611)	(0.586)
Constant	65.24***	65.90***	55.81***	65.28***
	(0.200)	(0.170)	(1.020)	(0.363)
Observations	14,421	14,421	1,015	13,406
R-squared	0.545	0.660	0.589	0.550
Number of municipalities	7,638	7,638	577	7,164
Municipality FE	✓	✓	✓	✓
RegionTime FE	x	✓	x	x
Controls	✓	✓	✓	✓

Panel OLS estimation with fixed effects. The unit of observation is the municipality. The dependent variable is the population literacy rate based on the 1911 and 1921 population census. Reform is a dummy variable equal to one in 1921, and zero in 1911. Land inequality in reform is the interaction between the continuous variable of land dispersion together with the reform variable. Robust standard errors clustered are in round parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table C.7: Share of land on Literacy rate

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Reform	8.82***	8.78***	9.70***	10.30***	8.30***	6.67***	7.46***	8.30***	8.27***	8.26***
	(0.114)	(0.115)	(0.126)	(0.168)	(0.183)	(0.155)	(0.139)	(0.111)	(0.106)	(0.100)
Share of land 0-0.5ha in Reform	-134.79***									
	(19.938)									
Share of land 0.5-1ha in Reform		-111.09***								
		(18.846)								
Share of land 1-3ha in Reform			-8.35***							
			(0.507)							
Share of land 3-5ha in Reform				-11.96***						
				(0.881)						
Share of land 5-10ha in Reform					0.35					
					(0.813)					
Share of land 10-20ha in Reform						10.69***				
						(0.781)				
Share of land 20-50ha in Reform							7.74***			
							(0.792)			
Share of land 50-100ha in Reform								0.96		
								(0.724)		
Share of land 100-500ha in Reform									1.40*	
									(0.697)	
Share of land ¿500ha in Reform										1.81**
										(0.622)
Constant	65.24***	65.20***	65.28***	65.37***	65.21***	65.38***	65.28***	65.21***	65.21***	65.21***
	(0.204)	(0.201)	(0.201)	(0.195)	(0.199)	(0.193)	(0.199)	(0.199)	(0.199)	(0.200)
Observations	14,419	14,419	14,419	14,419	14,419	14,419	14,419	14,419	14,419	14,419
R-squared	0.546	0.543	0.554	0.553	0.541	0.554	0.547	0.541	0.541	0.542
Number of municipalities	7,637	7,637	7,637	7,637	7,637	7,637	7,637	7,637	7,637	7,637
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
RegionTime FE	×	×	×	×	×	×	×	×	×	×
Clustered Errors	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Panel OLS estimation with fixed effects. The unit of observation is the municipality. The dependent variable is the population literacy rate based on the 1911 and 1921 population census. Reform is a dummy variable equal to one in 1921, and zero in 1911. The share of land occupied by farms according to dimension (in hectares) over the total share of land occupied by farms in the municipality. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table C.8: Elite presence on Male Literacy rate

VARIABLES	(1) Male Literacy rate	(2) Male Literacy rate - Region FE	(3) Male Literacy rate in Urban	(4) Male Literacy rate in Rural
Reform	6.16***	3.15***	8.61***	5.95***
	(0.123)	(0.184)	(0.467)	(0.129)
Elite in Reform	1.12***	0.91***	-0.51	1.17***
	(0.175)	(0.160)	(0.668)	(0.182)
Constant	70.48***	71.02***	61.97***	70.10***
	(0.209)	(0.174)	(1.037)	(0.444)
Observations	14,638	14,633	1,026	13,612
R-squared	0.464	0.544	0.570	0.454
Number of municipalities	7,757	7,754	584	7,278
Municipality FE	✓	✓	✓	✓
RegionTime FE	x	✓	x	x
Controls	✓	✓	✓	✓

Panel OLS estimation with fixed effects. The unit of observation is the municipality. The dependent variable is the literacy rate for males based on the 1911 and 1921 population census. Reform is a dummy variable equal to one in 1921, and zero in 1911. Elite in reform is the interaction between the passing of the reform and the elite variable. Elite is equal to 1 if the land inequality value is higher than its median, 0 otherwise. Robust standard errors clustered are in round parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table C.9: Elite presence on Female Literacy rate

VARIABLES	(1) Female Literacy rate	(2) Female Literacy rate - Region FE	(3) Female Literacy rate in Urban	(4) Female Literacy rate in Rural
Reform	8.94***	5.09***	10.34***	8.93***
	(0.164)	(0.195)	(0.726)	(0.165)
Elite in Reform	1.53***	1.24***	-0.22	1.52***
	(0.231)	(0.207)	(1.043)	(0.232)
Constant	60.60***	61.33***	50.08***	61.04***
	(0.233)	(0.214)	(1.209)	(0.417)
Observations	14,638	14,633	1,026	13,612
R-squared	0.509	0.636	0.467	0.524
Number of municipalities	7,757	7,754	584	7,278
Municipality FE	✓	✓	✓	✓
RegionTime FE	x	✓	x	x
Controls	✓	✓	✓	✓

Panel OLS estimation with fixed effects. The unit of observation is the municipality. The dependent variable is the literacy rate for females based on the 1911 and 1921 population census. Reform is a dummy variable equal to one in 1921, and zero in 1911. Elite in reform is the interaction between the passing of the reform and the elite variable. Elite is equal to 1 if the land inequality value is higher than its median, 0 otherwise. Robust standard errors clustered are in round parentheses. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

Table C.10: Analysis by sub-sample: North and South

Elite presence on Literacy rate - North/South Italy				
	NORTH		SOUTH	
	(1)	(2)	(3)	(4)
VARIABLES	Literacy rate	Literacy rate - Region FE	Literacy rate	Literacy rate - Region FE
Reform	6.57***	4.09***	12.00***	13.05***
	(0.139)	(0.168)	(0.287)	(0.535)
Elite in Reform	0.98***	1.26***	0.06	0.52
	(0.202)	(0.172)	(0.372)	(0.409)
Constant	76.17***	76.78***	36.96***	36.82***
	(0.222)	(0.195)	(0.394)	(0.346)
Observations	10,650	10,650	4,009	4,004
R-squared	0.490	0.611	0.706	0.731
Number of n_istat_1911	5,584	5,584	2,174	2,171
Panel FE	✓	✓	✓	✓
Region FE	x	✓	x	✓
Clustered Errors	✓	✓	✓	✓

Panel OLS estimation. The unit of observation is the municipality. The dependent variable is the population literacy rate based on the 1911 and 1921 population census. Reform is a dummy variable equal to one in 1921, and zero in 1911. Elite in reform is the interaction between the passing of the reform and the elite variable. The analysis contains region by time F.E. and time-variant controls. Columns (1) and (2) show results for the north of Italy; columns (3) and (4) the south. In round parenthesis robust standard errors clustered. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

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