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Working Paper

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Working Paper, No. 424

Provided in Cooperation with:

Department of Economics, University of Zurich

Suggested Citation: Bagnato, Luca (2022) : Does historical fiscal capacity leave a long-lasting legacy? Evidence from TV tax evasion, Working Paper, No. 424, University of Zurich, Department of Economics, Zurich,
<https://doi.org/10.5167/uzh-224861>

This Version is available at:

<https://hdl.handle.net/10419/268476>

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**University of
Zurich**^{UZH}

University of Zurich
Department of Economics

Working Paper Series

ISSN 1664-7041 (print)
ISSN 1664-705X (online)

Working Paper No. 424

**Does Historical Fiscal Capacity Leave a Long-
Lasting Legacy?
Evidence from TV Tax Evasion**

Luca Bagnato

December 2022

Does Historical Fiscal Capacity Leave a Long-Lasting Legacy?

Evidence from TV Tax Evasion

Luca Bagnato*

Abstract

In this paper I study whether citizens' tax morale (and, more broadly, citizens' attitudes towards the state) can be affected by past institutions, focusing on the role of historical fiscal capacity. Exploiting the features of the tax collection system of a pre-unification state in XIX Century Italy I identify differences in local historical fiscal capacity (as proxied by geographical proximity to a tax collector) and map them into contemporary tax morale, as measured by evasion of the TV Tax in 2014. Exploiting only variation in historical fiscal capacity that arises within matched pairs of neighbouring towns on the border of tax districts, I find imprecisely estimated and arguably small differences in tax morale today between towns where fiscal capacity was different. Investigating the mechanisms of transmission, I provide evidence that phenomena associated with structural transformation are likely to have halted the persistence of the historical fiscal capacity effect.

Keywords: Fiscal capacity, Tax collection, Tax evasion, Tax morale, TV tax, Italy

JEL classification: D73; D91; N43; H26

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1 Introduction

For modern states, the capacity to collect taxes (that is, the *fiscal* capacity of the state) is fundamental to allow them to implement their policies effectively (Pomeranz and Vila-Belda, 2019). Together with legal capacity (the overall ability of a state to enforce its laws), fiscal capacity has historically been a fundamental driver of economic development: the ability of a country to tax is strongly (and positively) correlated with its financial development and its income per capita (Besley and Persson, 2013).

Tax enforcement of a country depends on several factors, including political incentives, quality of the administrative structure, enforcement technology, and cultural norms of its citizens. It follows that the success of a government in collecting taxes depends not only on the effectiveness of the extrinsic motivation it can impose on taxpayers, but also on the intrinsic motives to pay taxes they have, which depend on their cultural norms. From a policy perspective, if it is relatively straightforward to identify the institutions able to motivate a citizen to pay taxes extrinsically (like audits and pecuniary fines) it is still unclear what determines the intrinsic motivation of a taxpayer, i.e. her *tax morale*.

In this paper I investigate whether the historical capacity of a state to collect taxes can foster the emergence of norms of tax compliance able to persist in the long run, ending up affecting contemporary tax morale in Italy even decades after the disappearance of the institutional setting that supported the fiscal capacity of a pre-unification state.

I study contemporary tax morale using town-level data on evasion of the Italian TV tax in 2014. While usually tax evasion can be affected by several factors (primarily the harshness of tax enforcement and the income of the taxpayer), the Italian TV tax has several features that make it particularly suitable for the question under analysis. First, the tax is fixed for every household and it is relatively low in its amount, so that income motives are likely to be less important (compared e.g. to the income tax) in the decision to evade it or not. Second, and crucially, in 2014 the level of enforcement of the TV tax was extremely low, because of the absence of systematic controls and the complexity of them (Buonanno et al., 2019). Because of these features, at the time of measurement, the TV tax was extremely easy to evade, and paying the TV tax was basically a choice depending on the intrinsic motivation of the taxpayer. Analysing the effects of historical fiscal capacity on evasion of the TV tax is therefore informative of its effects on tax morale, and arguably of the attitudes of citizens towards the state.

I measure the historical capacity of a state to collect taxes from its territories focusing on in-

stitutions for tax collection of the Sardinia Kingdom, a pre-unification independent state in North-western Italy. Between 1814 and 1870, the mainland of the Kingdom was partitioned into a small number of (mutually exclusive) tax districts, and each one of them assigned to one tax collector. The tax collector was required to reside in the capital of the district, and to visit the other towns of the district regularly in order to collect taxes. Such a rule was not enforced: tax collectors were not as mobile as required by the law, and previous research in this setting provides evidence that towns farther away from a tax district capital were raising less taxes (Bagnato, 2022). Motivated by this evidence and following previous research, I proxy for the historical capacity of a government to collect taxes in a town with its distance from a former tax collector's residence.¹

As tax collector's residences were chosen as particularly relevant towns for the tax district (and may be relevant towns even nowadays) distance from a former tax district capital may proxy for several characteristics of a town which may in turn affect tax morale in the long run; this includes also distance from other state's offices, making the distance from a former tax district capital a proxy also for dimensions of state capacity other from (historical) fiscal capacity. In order to address these challenges, I follow the empirical strategy of Bagnato (2022) and focus only on quasi-exogenous variation in historical fiscal capacity that emerges within matched pairs of neighbouring towns located the two sides of a tax district border. I complement this estimation strategy with a sample restriction that excludes all the towns for which a former tax district capital also hosted other public offices that may influence tax morale, i.e. police stations and offices of the provincial government. Using the described strategy and sample restriction, I am indeed able to compare towns for which distance from a former tax collector's residence predicts no statistically significant differences in most of their observable characteristics. Former tax districts were also used as judicial districts, and tax collector's residence hosted also minor courts: consequently, the distance from tax collector's residences could proxy not only for historical fiscal capacity effects on tax morale in the long run, but also for some dimensions of legal capacity. In order to address this challenge, I exploit the fact that after the Italian unification the newly annexed Italian territories were also partitioned into districts similar to the ones of the Sardinia Kingdom; these districts, however, were used for judicial purposes but not for tax purposes. I therefore run a placebo analysis identical to the one conducted on towns previously belonging to the Sardinia Kingdom, and show that distance from former judicial district capitals does not predict any sizeable or statistically significant effect on evasion of the TV tax in 2014.

Results show that differential exposure to institutions for tax collection in the 1814-1870 period

¹Tax collection system in Italy was reformed after 1870, making this institutional setting irrelevant for tax collection.

does not predict significant differences in compliance with the TV tax in 2014. The estimated effect is positive (i.e., proximity to a tax collectors before 1870 is associated with less evasion of the TV tax in 2014) and robust to the inclusion of controls for pre-determined town characteristics;² however, on top of being imprecisely estimated, it is also small in size (a 1% increase in distance from a former tax collector's residence would be associated to an increase of 0.01 percentage points of the TV tax evasion rate). Comparing the size of this effect with distance from close TV antennas (a dimension which, intuitively, can affect the motivation to pay the TV tax through the quality of the TV signal) I find that the effect of historical fiscal capacity, while being clearly smaller than the effect of distance from antennas, is somewhat comparable to it in size. This result implies that historical fiscal capacity could have an effect on tax morale in the long run that is difficult to detect with the available data; however, even if present, the effect would be rather small in size.

I next study why historical fiscal capacity, which has been proven to affect compliance with the state's request in the medium run (Bagnato, 2022), fails to have clear and sizeable effects on tax morale in the very long run. First, in light of previous findings when analysing this setting, I test whether an evolution of the relationship between citizens and the state could be behind the observed patterns. I test for heterogeneous effects of historical fiscal capacity according to the presence of violent episodes during the Nazi occupation of Italy in World War II, when the state failed to provide a quintessential public good (i.e. defense against external wars) and could have lost legitimacy to ask something from citizens, by favouring foreign occupation. While results show that in towns that experienced Nazi violence the persistent effect of historical fiscal capacity is attenuated, estimates are not statistically significant, making the results from this test inconclusive.

Second, I ask whether major events that grandly affected the socio-economic characteristics of the population could have halted persistence in the long run. I focus on structural transformation, studying whether towns for which the transition out of the agricultural sector was stronger had different patterns of persistence compared to towns that remained more agricultural. I find evidence that the effect of distance from a former tax collector's residence on evasion of the TV tax in 2014 is significantly smaller for higher levels of structural transformation, confirming how transition out of agriculture is likely to have played a decisive role for patterns of persistence. As in the mainland of the Sardinia Kingdom (and especially in Turin) structural transformation was accompanied by exceptionally high levels of migration, evidence from this analysis suggests that the absence of results on persistence of the historical fiscal capacity effect may be due to the inability to detect

²Such controls include the distance from other relevant cities, geographical characteristics, and population in 1821, which was likely unaffected by exposure to tax collection for less than ten years.

persistence in norms of compliance when studying aggregate data of a town and when the resident population of such a town is composed by citizens whose ancestors may not be from that same town.

The rest of this paper is organised as follows: section 2 discusses the contribution to the existing literature; section 3 presents an overview of the tax collection system of the Sardinia Kingdom and of the characteristics of the Italian TV tax; section 4 describes the data used in this paper; section 5 describes the identification strategy; section 6 presents summary statistics and balance exercises; section 7 presents results from the main analysis; section 8 studies mechanisms that halted persistence, and section 9 concludes.

2 Related literature

This paper contributes to several strands of literature. First, it contributes to the literature that has studied the determinants (Besley and Persson, 2009, 2010; Aidt and Jensen, 2009; Dincecco et al., 2011; Gennaioli and Voth, 2015; Cantoni et al., 2019) and the effects of state capacity. There exists substantial evidence that state capacity (understood as the capacity of a state to enforce laws and collect taxes efficiently) has played an important role in economic development of countries (Kaldor, 1963; Besley and Persson, 2013; Acemoglu et al., 2015; Dell et al., 2018; Dincecco et al., 2020). Furthermore, as shown by a growing strand of literature (Weber, 1976; Elias, 1994; Pinker, 2011; Johnson, 2015; Becker et al., 2016; Heldring, 2020), state capacity does not only affects the economic situation of the citizens it is imposed on, but may also have an impact on their cultural norms, such as norms of obedience to the state (Bagnato, 2022; Heldring, 2021; Lowes et al., 2017) or inclination to cooperation and civic engagement (Dell et al., 2018; Guiso et al., 2016). This paper contributes to this strand of literature by isolating the effect of one specific component of state capacity, i.e. fiscal capacity, and studying its effects on citizens' attitudes (as measured by compliance with an almost non-enforced tax) in the very long run.

Second, this paper contributes to the literature on the determinants of tax morale and of the willingness to pay taxes (Luttmer and Singhal, 2014; Dwenger et al., 2016), that has shown how fiscal compliance is a key outcome affected by attitudes towards the state, and by its legitimacy (Cullen et al., 2021; Weigel and Ngindu, 2021; Giacobasso et al., 2022). This paper contributes to these strands of literature studying the tax morale effect of historical shocks (i.e., looking at outcomes in the very long run measured after the removal of the institutions under study). By studying a potential determinant of evasion of the TV tax, this paper is also related to previous studies that investigated how such evasion is affected by tax rates (Berg and Dahlberg, 2016),

information provision (Fellner et al., 2013) or historical features of local institutions (Buonanno et al., 2019).

Third, this paper contributes to the literature on the effects of taxation on social unrest, political participation and citizens' motivation to pay taxes (Lax-Martinez et al., 2020; Besley et al., 2019; Weigel, 2020), by looking broadly at fiscal capacity effects in the long run, rather than at short run effects or the impact of specific policies changing the tax schedule.

Finally, by focusing on the Italian setting, this paper is also related to the literature that has analysed (focusing e.g. on the case of self-government in Italian cities) the effect that a historical shock to the culture of a community may have on citizens' attitudes towards the state and civic capital (Guiso et al., 2016; Buonanno et al., 2019), and in turn to tax evasion (Casaburi and Troiano, 2016). This paper contributes to this strand of literature by testing whether one specific historical institution can by itself shape tax morale in the long run, instead of a bundle of several institutions able to produce cultural effects.

3 Background

3.1 Tax collection in the Sardinia Kingdom, 1814-1870

The setting under analysis is the Sardinia Kingdom. This kingdom was one of the eight most relevant political units in Italy in the first half of the XIX century, i.e. after the Napoleonic wars and before unification. The territories of the kingdom mainly coincided with four contemporary Italian regions, namely Piedmont, Liguria, Aosta Valley and the island of Sardinia.

Before 1861 (when the Italian Kingdom was created) the Sardinia Kingdom was a long-living state ruled by the House of Savoy; the kingdom was an independent political unit, with the exception of the 1800-1814 period, when most of its territory was subject to the French domination.³ After re-gaining independence in 1814, Sardinia underwent several political and economic changes that eventually led it to the annexation of all the other Italian states and the creation of the Italian Kingdom.⁴

During the first half of the XIX century the kingdom had a complex geographical administrative structure, which it partially inherited from the laws in force during the French domination. In

³In particular, Piedmont was completely annexed to France between 1802 and 1814.

⁴The reform process also affected the tax system, both in terms of tax schedule and tax administration; for instance, Sardinia was the only Italian state to levy a non-land direct tax, following the establishment of an elective parliament in 1848 that voted in favour of it. Direct taxation accounted for about 19% of total tax revenues between 1825 and 1859. The imposition of the new wealth tax allowed to double per-capita revenues levied from direct taxes, which were however matched by a corresponding increase from other sources of taxation (Dincecco et al., 2011).

particular, similarly to the partition of France into *cantons*, in 1801 the territories of Piedmont were partitioned into small judicial districts;⁵ when the House of Savoy came back in power in 1814, the Sardinian rulers kept in place the judicial districts, and extended them to all the other territories of the Sardinia Kingdom that were not directly annexed to France before 1814.

The judicial districts were created following a French law⁶ which mandated for the presence of one judge for every 10.000 citizens (on average). In addition, the law designated some specific towns as district capitals, chosen according to their relevance and their centrality with respect to the other towns of the district, and required judges of the districts to live in the capitals. Starting 1814, the Piedmontese government used judicial districts also for the collection of direct taxes, assigning one collector of to each judicial/tax district, and requiring him to live in the same town as the judge. The task of tax collectors living in district capitals was to raise all direct taxes (both for central and local governments), and indirect taxes that town governments decided (at their discretion) to levy. The district (formally, *mandamento*) was an administrative division relevant only for tax and judicial purposes; the districts were not political units, they did not host a government representative, and there was no other public office located in the district capital on a systematic basis.

On top of being required to live in the district capital, the tax collector was also asked to visit each town of his district at least once a month. Despite such a requirement, transcripts from a debate of the Sardinian Parliament in 1854⁷ clarify this rule was hardly enforced: tax collectors' visits to the peripheral towns of the district were scarce, or completely absent; as a consequence, in order to pay their tax liabilities, citizens often needed to travel to the tax district capital and visit the collector in his residence. [Bagnato \(2022\)](#) provides evidence that governments of towns farther away from tax district capitals raised less local taxes.

While this tax collection system was homogeneously implemented in all the provinces of the mainland of the kingdom since 1814, the island of Sardinia kept a different tax regime and tax collection system almost until the Italian unification.⁸

This tax collection system was kept in place until 1870, that is, until the Italian unification

⁵Each district was assigned to one *juge de paix*.

⁶*Règles générales sur l'administration de la Justice et sur l'organisation des Tribunaux dans le Piémont (1801)*.

⁷*Camera dei Deputati (1870)*.

⁸The homogenization of the administrative structure of the Sardinian island to the rest of the kingdom was completed only by 1854 ([Felloni, 1956](#)). Before then, despite the presence of tax districts, Sardinia was subject to different laws, different taxation, and different organization of the tax collection system; for instance, feudalism (together with the role of the lords in tax collection) was abolished in the island of Sardinia only in 1840, and the creation of a land cadastre only started in 1851 ([Norsa and Da Pozzo, 1961](#)).

and on a temporary basis also in the first decade following it. Starting 1870, collection of direct taxes homogenised across Italy, and reorganised on a town-level basis: rights to collect taxes were assigned to private citizens with separate contests for each town, so that the pre-existing districts in Piedmont became irrelevant for tax collection purposes.⁹

3.2 Italian TV Tax

The collection of fees for the possession of TV or radio devices (or TV/radio taxes) is a widespread phenomenon across European and non-European countries (Buonanno et al., 2019); TV taxes are commonly used to fund public broadcasting services (Fellner et al., 2013).

While the Italian public broadcasting company (RAI - Radiotelevisione Italiana) started to provide TV services in 1954, the payment of a tax for radio (or TV) services has been mandatory in Italy since 1938. The tax is fixed for every household, regardless of its size; ranging between 93.8 euros in 2002 and 113.5 in 2014, it is relatively low if compared to taxes levied by other European countries (Chiandotto, 2020).

The Italian TV tax is due by every household owning a device able to receive radio or TV signals; hence, it is likely to affect almost every Italian household.¹⁰

While the payment of the TV tax is mandatory, programs from the Italian public broadcasting company are freely receivable even without paying the tax. Additionally, detecting evaders of the Italian TV tax in 2014 was difficult, as evasion can only be ascertained by entering private homes and verifying the presence of media devices; this made enforcement costs are extremely high compared to the amount of the tax, and the threat of enforcement not credible (Buonanno et al., 2019). These two factors together make the TV tax particularly prone to evasion.¹¹ In 2014, on average, 30.91% of households in Italian towns evaded the TV tax.

The payment of the TV tax is a purely private act; this implies that evasion of such a tax cannot be observed by other citizens, and the risk of social sanctions following evasion most likely absent.

⁹The Italian territory was also partitioned, after 1861, into judicial districts similar to those already existing in Piedmont; their number and composition changed across time, especially following a reform under the Fascist regime, and they were finally abolished in 2000.

¹⁰in the context of Italy, an household needs to pay the TV tax only once, despite the number of houses/devices they own; they are registered as taxpayers only in their town of residence.

¹¹Since 2016 the payment of the TV tax is included in the electricity bill, under the presumption that every household using electricity also owns a device able to receive TV or radio shows; however, in this paper I focus on data from 2014, when the TV tax needed to be actively paid by households.

4 Data

4.1 Fiscal capacity

Following [Bagnato \(2022\)](#), as a proxy of the fiscal capacity I use the logarithm of the walking distance of a town from the residence of its tax collector (that is, the capital of its tax district) during the 1814-1870 period. The list of all the towns of the Sardinia Kingdom and their assignment to tax districts is derived from [Stefani \(1855\)](#).

The walking distance is computed as the length (in meters) of the least-cost path between the centroid of a town and the centroid of its tax district capital when the Sardinia Kingdom still existed. Following [Özak \(2010\)](#), I determine the cost of moving in space according to elevation, weather patterns and soil conditions.

Several studies in economics and political science point out how distance from the location of public offices are valid proxies of their enforcement capacity or, more generally, the effectiveness of central state institutions on the areas under their jurisdiction ([Almeida and Carneiro, 2012](#); [Michalopoulos and Papaioannou, 2014](#); [Restrepo, 2015](#); [Henn, 2020](#)).

4.2 Evasion of the TV tax

I obtain data on the share of evaders of the TV tax in each town from [INTWIG \(2019\)](#). The TV tax evasion rate is obtained comparing the number of payments of the TV tax to the number of resident households in a town.¹²

I also obtain from Rai Way (the company that owns and manages the broadcasting infrastructure of Rai) information on the location of Rai's TV antennas operating in 2008, and use it to compute distances of towns from close antennas.¹³

4.3 Violent episodes from Germans during WWII

I use information from [ANPI-INSMLI \(2022\)](#) to build variables for the presence of (and proximity to) violent episodes from German troops during the German occupation of Italy, i.e. between the second half of 1943 and May 1945.

¹²The exact formula for the estimation of the TV tax gap is described in [dell'Economia e Delle Finanze \(2017\)](#).

¹³I thank Eng. Federico Fabbri, head of Broadcast Services in Rai Way, for kindly providing information on Rai's antennas.

4.4 Geographical and town-level variables

I collect information on the population of Piedmontese towns in 1821 from [Regno di Sardegna \(1824\)](#) and in 1848 from [Stefani \(1855\)](#).¹⁴

From [Santi \(1902\)](#) I collect information on the presence of police stations in 1901, which I use as a proxy for presence of a police station before the Italian unification. I also calculate towns' distances from Turin, Genoa, their province capitals, their division capitals, the closest police station and two international borders (with France and Switzerland).

I measure towns' land suitability for nine crops (including wheat, rice, maize and potato) using data from FAO-GAEZ ([FAO, 2015](#)). I obtain measures on towns' elevation, standard deviation of elevation, latitude, longitude and land area from ISTAT. From ISTAT I also obtain town-level sectoral labor shares in 1951 and 2011.

5 Identification Strategy

I estimate the causal effect of historical fiscal capacity on tax evasion in 2014 using the identification strategy proposed by [Bagnato \(2022\)](#), who studies the same setting looking at draft evasion in 1917.

By using distance of a town in 2014 from the residence of its tax collector in the 1814-1870 period as a proxy for the historical fiscal capacity of the state in that town, I face two important empirical challenges. First, as the tax collector used to live in a large or relevant town, the distance of another town from such a residence is likely to capture not only the effect of the enforcement power of the taxman, but also other phenomena able to affect the culture and attitudes of a community, like differences in wealth, the integration of a town in economic markets or connectedness to transportation networks. Second, as tax collector's residences were capitals of an administrative division, they may host (potentially still in 2014) public offices other than the ones involved in tax collection; as a consequence, the distance from a former tax collector's residence could potentially proxy also for other components of state capacity and state presence, both historical and contemporary (e.g. distance from important courts or police, which could proxy for historical and contemporary components of *legal* capacity).

In order to address these challenges, I use a matched-pairs identification strategy and exclude from my sample all the towns for which the former tax collector's residence also hosted other rel-

¹⁴I use population in 1821 as a control variable, as it is measured only few years before the system under analysis was introduced, and data on town's population right before the creation of districts is not available. For the few towns for which information on population in 1821 is not available, I proxy for it with its population in 1848.

evant public offices. In the following sections I provide more details on my identification strategy.

5.1 Town-Pairs fixed effects

My identification strategy exploits quasi-exogenous variation in historical fiscal capacity that arises within matched pairs of neighboring towns located on the two sides of a border between two former tax districts. The intuition for this strategy comes from the observation that two neighbouring towns, because of their geographical proximity, are likely to be very similar to each other in their characteristics; however, because of the guidelines that steered the creation of the districts in the XIX century, they can differ substantially in their distance from a former tax collection office.

Figure 2 provides an example of the type of variation my identification strategy exploits. The figure presents the towns formerly belonging to the Domodossola and Bannio Anzino tax districts (with red dots indicating the centroids of the towns of the districts). The two towns with red borders (Antrona Schieranco and Calasca-Castiglione) are neighbours but belonging (in the 1814-1870 period) to two different tax districts: while being likely comparable in their observable characteristics, they differ substantially in the distance from their tax collector's residence (6.3 vs. 18.2 kilometers).

I implement this strategy performing a geographical matching between towns on former tax districts' borders, matching each town on the one side of the district to all the other towns on the other side of the district with which the first town shares a border with. I then use town-pairs fixed effects p and estimate equations of the form:

$$TV\ Tax\ Evasion_{tp} = \gamma_p + \beta \log Dist. Tax Collector_t + \delta \mathbf{V}_t + \varepsilon_{tp}^{15} \quad (5.2)$$

where I regress evasion of the TV tax in 2014 in town t and pair p on $\log Dist. Tax Collector_t$ (the logarithm of the walking distance of the town from the former residence of its tax collector), and a full set of town-pairs fixed effects γ_p , on top of town-level controls V_t for some specifications.¹⁶

Towns appear in multiple pairs and multiple borders of the estimation sample, as they share

¹⁵When looking at other outcomes, I estimate the equation:

$$Outcome_{tp} = \gamma_p + \beta \log Dist. Tax Collector_t + \delta \mathbf{V}_t + \varepsilon_{tp}, \quad (5.2)$$

¹⁶I also include fixed effects for contemporary provinces in every specification, so to focus on variation between towns differing only in their distance from a former tax collector's residence, and not only differences in the policies of their province.

borders with many surrounding other towns. Following [Dube et al. \(2010\)](#), [Cantoni \(2020\)](#) and [Bagnato \(2022\)](#), I cluster standard errors at both border and tax district level to deal with the mechanical correlation arising from having in the sample multiple observations for the same town.

5.2 Other public offices

While in the period between 1870 and 2014 Italy greatly simplified its administrative infrastructure (including the dismissal of tax and judicial districts), former tax collector's residence could still host (or, clearly, have hosted in the past) other public offices whose presence could affect the tax morale of citizens: this would make estimates from 5.1 able to identify the overall effect of state capacity, but not to isolate the historical fiscal capacity effect.

In the same spirit of [Bagnato \(2022\)](#), I address this challenge imposing sample restrictions that allow me to partial out the historical fiscal capacity effect.

In particular, I first exclude from the sample towns of the mainland of the Sardinia Kingdom for which the former tax collector's residence also hosted the closest police station to the town: in this way, I isolate the effect of historical fiscal capacity on tax morale from the effect of police enforcement.¹⁷ I then exclude from my sample towns for which the former tax collector's residence also hosts a province capital, to isolate the effect of historical fiscal capacity from the one of distance from other public offices, such as the office of the government's representative, or major courts.¹⁸ Finally, I exclude former tax district capitals from the sample.¹⁹

Once imposing these restrictions, I am able to estimate the effect of distance from a tax collector's residence only, with the exception of presence of minor courts. Indeed, as explained in section 3, tax districts were originally created for judicial purposes, allocating in every district capital one judge, in charge of handling only minor cases. Despite the little relevance of the local judges for the Italian judicial system, the perfect overlap between the allocation of minor courts and of former tax collector's residences does not allow me to disentangle the effects of historical fiscal and legal

¹⁷As explained in section 4, I use information on police stations in 1901 as a proxy for police stations before 1870; aggregate numbers on the number of stations in the areas under study in the two periods suggest such the proxy should be a valid one. This restriction helps disentangling the effect of historical fiscal capacity from the one of the *historical* police enforcement capacity of the state; as the number of police stations in 2014 was substantially larger compared to 1901, distance from a police station in 1901 is instead unlikely to be a good proxy for police enforcement in 2014.

¹⁸In the spirit of [Bagnato \(2022\)](#) and exclude towns for which the province capital (and region capital) in 2014 was also the former residence of a tax collector, as province capitals were the relevant cities that, at the time of the measurement of the outcome, could signal state's presence. In Table A.2 I use the same sample restriction as in [Bagnato \(2022\)](#), and show that results are qualitatively consistent with the main ones, although smaller in size and noisier.

¹⁹I impose this restriction, on the one side, as differences between capitals other towns of the district may be too large to be controlled for by the matching-pairs identification strategy; on the other side, because of the small size of the districts of the mainland of the Sardinia Kingdom, former tax district capitals were often located on the border of their districts, so they would appear in multiple couples and potentially contaminate the results of the analysis.

capacity in the context of Piedmont. However, taking advantage of the Italian unification process, I exploit the fact that judicial districts (but not tax districts) were created in the newly annexed Italian territories after the Unification, and perform a placebo test on the towns of Lombardy to study the effects of proximity to a former minor court's location on TV tax evasion.

6 Summary statistics and balance of observables

In Table 1 I summarize the observable characteristics of the towns previously belonging to the Sardinia Kingdom. Out of 1653 towns and 330 tax districts in the mainland of the Sardinia Kingdom for which I have complete data, I end up with 396 towns in the regression sample. Looking at every town or village of the area, towns are on average small (around 1300 citizens per town in 1821). The tax districts were also small (112 squared kilometers), with less than six towns per district; as a consequence, towns in the sample are on average not majorly far from their former tax district capitals (7.6 kilometers on average).

Towns have, on average, slightly less than a third of their population evading the TV tax; however, as shown in Figure 3, there exists substantial variation in towns' evasion, which ranges between 10.2% and 84.1% in the regression sample.²⁰ Towns in the full sample and in the regression sample tend to be remarkably similar in terms of TV tax evasion; on average, TV tax evasion tends to be slightly higher in Piedmontese towns than in the rest of Italy.²¹

In Table 2 I present results from a balance exercise, reporting estimates of β estimated through equation 5.2, using the sample restrictions described in section 5.2 and looking at standardised town-level characteristics as outcomes. The results show that, by using the identification strategy and the sample restriction described in section 5.2, towns farther or closer to a former tax district capital are very comparable to each other: pre-determined characteristics such as population in 1821, geographical features of the town, and distances from relevant administrative centers, are on average not statistically different between towns of the same pair. The only exception is distance from a former division capital, as towns farther away from a former tax collector's residence are also significantly farther from it.²²

²⁰5.6% and 91.3% in the full sample.

²¹Average evasion is only 1 percentage point larger in the regression sample than in the full sample, a 3% increase.

²²While controlling for distance from a former division capital by itself changes the magnitude of the coefficient of interest, including it in the regression together with other town characteristics does not affect greatly the estimated effect of my proxy for historical fiscal capacity.

7 Results

7.1 Historical fiscal capacity and TV tax evasion in 2014

In Table 3 I test for the effect of historical fiscal capacity on tax morale in contemporary days, estimating through 5.1 the relationship between a town's distance from a former tax collector's residence and its level of TV tax evasion in 2014. In column (1) I present results including only town-pairs and province fixed effects, while in columns (2) and (3) I include controls related to towns' geographical characteristics, distance from relevant cities and population in 1821.

The results show that, while being farther away from a former tax collector's residence is associated to higher evasion of the TV tax, the effects are not statistically significant. The result is stable across specifications including different sets of controls. In my preferred specification (i.e. column (3), which controls for the whole set of geographical or pre-determined characteristics), the magnitude of the coefficient implies that a 1% increase in distance from a former tax collector's residence would be associated to an increase of 0.01 percentage points of the TV tax evasion rate; for the town in my regression sample with median distance from a former tax district capital, this implies that a 1 kilometer increase in distance would lead to 0.15 percentage points higher evasion, a 0.44% increase compared to the mean.²³

7.2 Assessing the magnitude of the historical fiscal capacity effect

The non-significant, positive results from Table 3 appear small in size, suggesting the effect of historical state capacity did not persist from 1870 until the beginning of the XXI century. To get a sense of the magnitude of the coefficient, it is useful to compare it to the effect of other phenomena that are likely to affect the evasion of the TV tax.

In Table 4 I present regressions comparable to the ones in Table 3, augmenting them with distance from TV antennas transmitting for the Italian public broadcasting company.²⁴ Intuitively, the distance from a TV antenna is likely to be (negatively) correlated with the quality of the TV signal, despite the effect that also geomorphological characteristics of the terrain (for a given distance from an antenna) have on quality of the signal (see e.g. Olken, 2009; Yanagizawa-Drott, 2014; Durante et al., 2019). As the TV tax is explicitly linked to the provision of a specific public good (i.e. TV public service), citizens in areas farther from TV antennas (and therefore, arguably, with

²³Similarly, I do not find any significant effect when using the same sample of towns of Bagnato (2022) (Table A.2), or applying its identical sample selection's criteria to the whole set of towns of the mainland of the Sardinia Kingdom (Table A.1).

²⁴As for distance from the former residence of a tax collector, I use a logarithmic transformation of distance from antennas because of the skewed distribution of such distances for towns in my sample.

lower quality of the TV signal) may be less willing to pay a fixed tax for a low-quality good.²⁵

The results from Table 4 show that, within matched pairs of neighbouring towns, TV tax evasion is indeed higher in places where quality of the TV signal was likely to be worse. Estimated coefficients imply that a 1% increase in distance from the antennas²⁶ is associated to 0.058-0.071 percentage points increase in evasion of the TV tax; for the town with median distance from a TV antenna in my sample, this implies that a 1km increase in distance from close antennas is associated with 0.56 percentage points higher evasion, a 1.7% increase compared to mean TV tax evasion. Such a effect is around four times larger than the estimated historical fiscal capacity effect; while larger, it is therefore arguably comparable to it in size. This suggests that, in the context of Northwestern Italy, historical fiscal capacity may have a small long run effect on tax morale, but the available data do not allow to estimate it precisely.

7.3 Placebo test: legal capacity and TV tax

I replicate the analysis on the determinants of TV tax evasion looking at towns from Lombardy, applying the same sample restrictions of the main sample and described in section 5.2. As mentioned in section 5.2, towns in Lombardy (as every Italian town after the unification) were also partitioned into districts; however, these districts were only used (until 1989) for judicial purposes (with the district capital hosting a court in charge of handling minor cases), but not for tax collection purposes. As a consequence, the analysis of this section provides evidence on the effect that legal capacity (or arguably also distance from a very relevant center) has on evasion of the TV tax, using as a proxy the walking distance from a local court.

Table 5 presents estimates from the placebo analysis. Results from the towns in Lombardy show that distance from a judicial district capital does not seem to have an effect on TV tax evasion: coefficient's estimates are arguably small, negative, and never significant. The effect is also very different from the one (very imprecisely) estimated in the sample from Turin, which could potentially conflate the effects of historical fiscal capacity and (historical) legal capacity, or even

²⁵It is important to notice that the number and allocation of TV antennas is unlikely to be random; as the Italian public broadcasting company has to provide its service to the whole population, one should expect antennas to be allocated in specific locations, and in higher number in areas where signal transmission is more difficult (like in mountainous areas). Nonetheless, within matched pairs, distance from a former tax district capital does not predict significant differences in distance from TV antennas.

²⁶The Euclidean distance from the closest TV antenna could be a misleading proxy for quality of the TV signal, as because of geomorphological characteristics of the area under analysis a town could receive a bad signal from the closest antenna, but remarkably better signal from the second closest one. In order to mitigate these concerns, I use as a proxy of signal the mean distance from the two closest antennas. The two proximity measures are similar: a town of the regression sample is on average 9.05 kilometers far from the closest antenna, and 10.5 kilometers far on average from the closest two antennas. In Table A.3 I present results using the distance from the closest antenna: the effect is still positive, although imprecisely estimated; the magnitude of the effect, however, is remarkably smaller, and in the end comparable to the estimated size of the historical fiscal capacity effect.

proximity to a relevant town.

The very low relevance of these courts and their abolition 25 years before the measurement of the outcome make easy to rationalise the results from this section; while legal capacity may well have an effect on citizens' compliance (including spontaneous compliance with the TV tax), in the Italian setting distance from a local court is not an accurate proxy of legal capacity. The results presented in Table 5 are therefore mostly useful to confirm that the patterns observed in the main analysis pertain to the effects of historical fiscal capacity, and not of legal capacity.

8 Mechanisms: what undermines persistence in the long run?

Results from the previous section suggest the effect of historical fiscal capacity on TV tax evasion in the long run is, at most, small and very imprecisely estimated, if not absent. Previous research has found how the effects of historical institutions may persist for centuries even in the presence of different governments, rulers and political regimes (Becker et al., 2016; Lowes et al., 2017; Dell et al., 2018), also in the Italian context (Guiso et al., 2016). Why, then, persistence failed when looking at the effects of institutions for tax collection of the Sardinia Kingdom? In this section I study two possible phenomena that may have halted persistence.

8.1 Evolution of interaction with the state: Nazi occupation

Studying the persistent effects of exposure to institutions for tax collections of the mainland of the Sardinia Kingdom, Bagnato (2022) finds that citizens born in towns farther away from a former tax collector's residence were more likely to comply with the law, as measured by evasion of the Italian military draft during World War I; it also finds that the effect transmits through a change in the cultural norms of towns, and claims that the most likely mechanism of transmission is the emergence of norms of rule-following in towns where the fiscal capacity of the state was stronger. In light of this result, I ask whether the absence of large and significant effects of historical fiscal capacity on tax morale in the long run can be caused by an evolution of the relationship with the state, and more specifically to events that may have undermined the norms of rule-following that the state established before the Italian unification.

In this section I test for this hypothesis looking at an event that may have dramatically changed citizens' attitude towards and interactions with the state: the occupation of the Italian territory by Nazi troops at the end of World War I. Between September 1943 and the April 1945, Northern Italy was occupied by the German armed forces, while formally being under the dominance of the *Repubblica Sociale Italiana*, a puppet state led by a fascist regime completely dependent upon

Germany (Fontana et al., 2017).

While the German occupation was a reaction to the decision of the official Italian government to sign an Armistice with the Allies, Benito Mussolini (who had led a dictatorial regime for more than twenty years before the Nazi occupation) was appointed as head of the new puppet regime in Northern Italy, and allowed for the (heavily extractive and violent) Nazi presence in the territories formally under his control.

In such a context, the presence of Nazi forces on the Italian territory may have negatively affected the attitudes of citizens towards the state (and weakened the norms or rule-following in front of the state's authority) in two ways. First, observing a regime (like the fascist one) allowing for the occupation and the violence of a foreign army may have broken the compact between citizens and the state, compromising the legitimacy of the state to impose laws (and taxes). Second, exposure to foreign occupation may have weakened the tax morale of citizens not because of betrayal from the state, but simply because observing a state unable to provide protection against the risk of war (a fundamental public good provided by the state) makes them skeptical of the usefulness of taxation.

While in principle foreign attacks may induce citizens to "rally 'round the flag", or in general increase support for the state (Dell and Querubin, 2018), several studies emphasized how Nazi occupation and annexation had strong and persistent effects on the political attitudes of Italian citizens (Fontana et al., 2017) and decreased trust in the state (Cannella et al., 2021). On the other side, the literature on the origins of state capacity has emphasized the importance of warfare in building states and increasing fiscal capacity of the state (Besley and Persson, 2009; Gennaioli and Voth, 2015; Dincecco et al., 2020), also in the Italian context (Dincecco et al., 2011); as raising revenues to fund wars (and to defend from external threats) is a fundamental justification for taxation, failure to provide protection from foreign occupation may weaken the willingness of citizen to pay taxes.

In Table 6 I test whether experiencing episodes of violence from Nazi troops in the 1943-1945 period generates heterogeneous effects of historical fiscal capacity on TV tax evasion in 2014. In columns (1) and (2) I test whether experiencing at least one episode of violence from Nazi troops in the town led to different effects of historical fiscal capacity on tax morale in the long run. As only a minority of towns in the regression sample (18.2%) experienced a Nazi killing in columns (3) and (4) I look at distance from the closest Nazi killing, and test whether towns closer or further from it interacts with the effects of historical fiscal capacity.²⁷ Results show that,

²⁷While Nazi killings are unlikely to be randomly allocated across the territory of the Sardinia Kingdom, proximity to a former tax

for towns that plausibly experienced worse consequences from the Nazi occupation, the effect of historical fiscal capacity on tax morale in the long run is remarkably smaller in magnitude; however, estimated heterogeneous effects are not statistically significant, as well as the effect of historical fiscal capacity for towns less affected by Nazi violence.²⁸

Results from Table 6 suggest the changes in the relationship between citizens and the state induced by major historical events can play a role in arresting the persistent effects of historical fiscal capacity in attitudes towards the state, even in the Sardinia Kingdom. However, the data available to measure events that could induce such changes do not allow to precisely estimate the role of such historical events in hampering (or fostering) the persistent effect of institutions on citizens' attitudes.

8.2 Evolution of populations' characteristics: structural transformation

While extensive research in the economic literature finds that effects of institutions can persist for remarkably long periods and be detected also in modern days, several studies in this strand of literature have looked at settings and time periods where people's mobility could be low. While norms of rule-following (and cultural norms in general) may persist even just through transmission via schooling or peer effects (Guiso et al., 2008; Becker et al., 2016), for norms that are not usually taught in schools and affecting behaviours that are not observable (as it may be the case of cultural norms of tax compliance that were established at the town level) effects persist may only through intergenerational transmission.

Therefore, in a setting affected by large migration waves, the persistent effects of past institutions may not be detectable when looking at town-level outcomes regarding resident population: while migrants often exhibit behaviour consistent with the norms of their community of origin (see e.g. Giuliano, 2007 and Fernández and Fogli, 2009), towns with a population heavily affected by migration flows may not display, in the aggregate, the characteristics of the native households (that could be affected by the historical institutions of that town through intergenerational transmission), because the behaviour of migrants would contaminate the effect.

A phenomenon that may have heavily favoured migration and change in the culture of residents' population is structural transformation (Voigtländer and Voth, 2012), intended as the transition of people out of agriculture and into employment in the industrial and service sectors (Bustos et al., 2016). In the context of the Northwestern Italy, transition out of agriculture was associated

collector's residence is not significant associated to them, as shown in Table A.4.

²⁸In Table A.5 I show that results are qualitatively similar when interacting every control variable with binary variables for presence of (or proximity to) Nazi killings.

to both migration from rural to urban areas and extraordinary migration of workers from Southern Italy, which naturally changed the composition of the population of the towns that were transforming more. In Table 7 I study heterogeneous effects of historical fiscal capacity according to the degree of structural transformation experienced by a town's population between 1951 and 2011.²⁹ The results show that, while in towns with median distance from a former tax collector's residence there is a positive (although, once again, small and very imprecisely estimated) effect of historical fiscal capacity on compliance of the TV tax in the long run, for towns that experienced higher levels of structural transformation the effect is significantly weaker, and structural transformation (which seems to be negatively correlated with TV tax compliance) almost completely offsets the effect of historical fiscal capacity.³⁰

The results from this section provide a potential (and partial) explanation to the failure of persistence of historical fiscal capacity in affected towns, which may be due to both structural transformation affecting the culture of citizens (weakening their links with previous generations' values and norms) and to the difficulty to detect effects in settings where large shares of a population migrated in their towns of residence after the removal of the institutions under study.

9 Conclusion

In this paper I studied the long run effects of historical fiscal capacity on TV tax evasion in present days. Studying the Italian context (where TV tax evasion is arguably valid proxy for tax morale and attitudes towards the state) and institutions for tax collection of the mainland of the Sardinia Kingdom in the XIX century, I provide evidence that the effect of historical fiscal capacity is either absent, or small and difficult to detect.

Focusing on events that may have interacted with historical fiscal capacity, I provide evidence that structural transformation (and its consequences on populations' characteristics of towns) is likely to have halted persistence, or at least made difficult to detect effects when looking at town-level outcomes based on the behaviour of the resident population of towns. While individuals may still exhibit the effects of long-established cultural norms even after structural transformation, such effects may be hidden in aggregate data by migration-driven reshuffling in the composition of a

²⁹I build an index for structural transformation as the change in the percentage of resident citizens working in industrial and service sector between 1951 and 2011. 2011 is the year of the last Census before the measurement of the outcome, while 1951 is the first year for which sectoral employment shares at the town level have been digitised by ISTAT. Especially for the industrial center of Turin, the years between 1951 and 1971 were the ones with the largest increases in population size (more than 62%), that was likely influenced by the migration flows from southern Italy.

³⁰In Table A.6 I show that, within matched town-pairs, structural transformation is not significantly affected by distance from a former tax collector's residence; in Table A.7 I present similar results interacting every control variable with the index for structural transformation.

town's population.

Understanding whether cultural norms may stay in place and resist even through dramatic economic and social changes (like structural transformation) will prove useful to policymakers to understand, *ex ante*, whether historical cultural traits of a community living in a given area may affect the behaviour of the population currently living in that area, and the way they may react to specific policies to be introduced.

My results confirm patterns observed in previous studies on the persistence of cultural norms (Voigtländer and Voth, 2012), and raise the question of whether the long run effects of historical institutions observed in settings like sub-Saharan Africa or Southeast Asia (Lowes et al., 2017; Dell et al., 2018; Heldring, 2021) will still persist after low- and middle-income countries from these areas will go on in their structural transformation processes.

Finally, this paper suggests that, in settings where historical institutions can display their effects even after the completion of their structural transformation process (as in Italy in the XXI century), institutions imposed from above by a central state is likely to produce different effects from local institutions that emerged from below through the coordination of citizens of a town (as in the case of self-government of Italian communes described by Guiso et al., 2008), and face different patterns of persistence.

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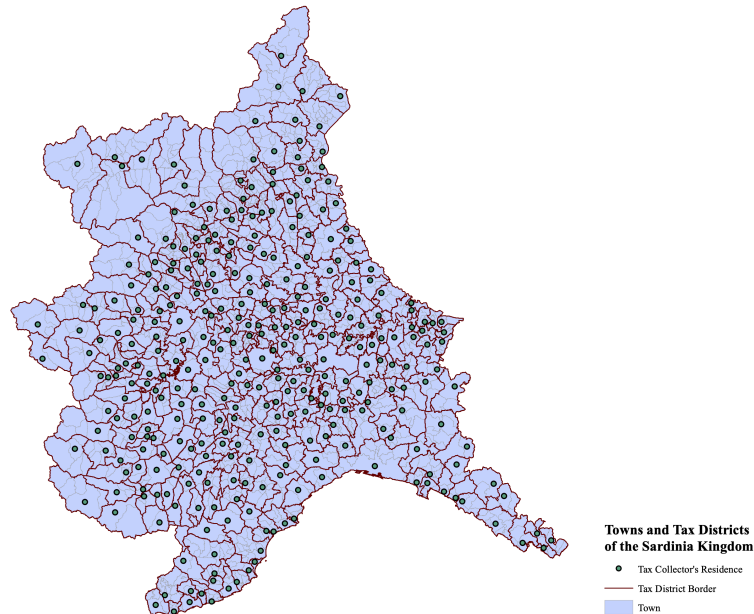
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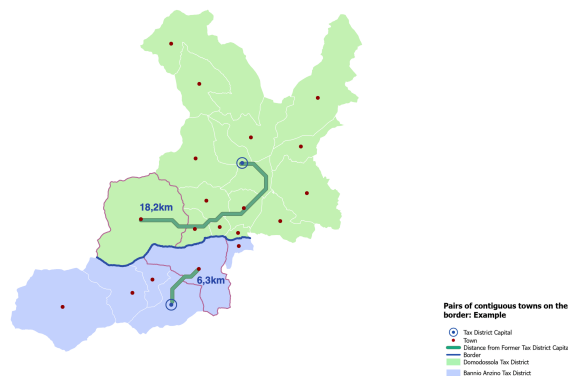
Figures

Figure 1: Towns, tax districts and capitals of the Sardinia Kingdom



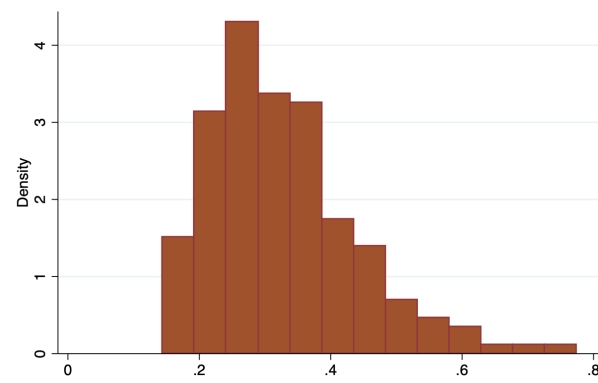
Notes: The map presents the mainland of the Sardinia Kingdom with its towns (the blue polygons), its tax districts (delimited by red borders), and its tax districts' capitals (green dots). The shapefile of towns is constructed using data from ISTAT; the assignment of towns to tax districts follows [Stefani \(1855\)](#).

Figure 2: Town-pairs fixed effects and walking distances from former tax collectors' residences: example



Notes: The map illustrates the identification strategy, showing two tax districts and highlighting one of the town-pairs used for identification. Blue circles indicate former tax collector's residences (Domodossola and Bannio Anzino); red dots represent the centroids of the other towns of the districts; the two green lines show the walking path between two towns and their former tax district capitals. With red borders I highlight two towns (Antrona Schieranco and Calasca-Castiglione) of a matched pair of neighbour towns on the border. The shapefile of towns is constructed using data from ISTAT; the assignment of towns to tax districts follows [Stefani \(1855\)](#).

Figure 3: Evasion of the TV tax: distribution across towns, regression sample



Notes: The histogram displays the density of towns of the regression sample for different levels of evasion of the TV tax in 2014.

Tables

Table 1: Summary statistics

	Regression sample			Full sample		
	(1)	(2)	(3)	(4)	(5)	(6)
	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
<i>Panel A: town-level variables</i>						
TV tax evasion	396	0.33	0.12	1650	0.32	0.12
Walking dist. from former tax collector's residence (km)	396	7.55	3.86	1645	5.09	3.93
log Elevation	396	5.98	0.89	1652	5.96	0.86
log Area	396	2.62	0.82	1652	2.71	0.85
Longitude	396	8.14	0.56	1651	8.18	0.60
Latitude	396	45.07	0.48	1651	45.00	0.54
Dist. from former Division Capital (km)	396	19.59	11.87	1653	18.95	11.81
Dist. from Province Capital (km)	396	45.34	25.14	1653	44.77	26.62
Distance from police station (km)	396	4.82	3.15	1645	4.10	3.07
Dist. from Turin (km)	396	86.36	49.69	1653	99.36	60.67
Dist. from Genoa (km)	396	136.63	53.65	1653	135.68	53.99
Dist. from French border (km)	396	72.95	38.53	1651	74.23	41.86
Dist. from Swiss border (km)	396	94.94	49.94	1651	102.65	55.44
Town on country border	396	0.05	0.22	1652	0.08	0.26
Population in 1821	396	1318.13	1090.25	1653	1900.16	4785.66
Dist. from closest TV antenna	396	9.05	7.94	1655	9.05	8.08
Mean Dist. from two closest TV antennas	396	10.50	8.20	1655	10.53	8.27
<i>Panel B: tax district-level variables</i>						
Number of towns	207	5.60	2.56	330	5.05	2.56
Total population (1821)	207	8514.90	3658.38	330	9375.64	11068.57
Area (km ²)	207	112.54	92.19	330	111.05	91.38

Notes: The table presents summary statistics of the variables used in the main analysis, both for the regression sample (as defined in section 5.2, in columns (1) to (3)) and all the towns of the mainland of the Sardinia Kingdom (in columns (4) to (6)). Panel A contains characteristics of the town-level variables used in the analysis, Panel B reports characteristics of the former tax districts of the mainland of the Sardinia Kingdom.

Table 3: Distance from former tax district capitals and TV tax evasion

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)
(log) Walking Dist. from Tax Collector	0.012 (0.021)	0.012 (0.013)	0.010 (0.014)
DV Mean	0.332	0.332	0.332
Town-pair FE	yes	yes	yes
Province FE	yes	yes	yes
No district capitals	yes	yes	yes
Geographical controls	no	yes	yes
Town-level characteristics	no	no	yes
Towns in Sample	396	396	396
Observations	704	704	704
R-squared	0.747	0.836	0.838

Notes: The table reports β coefficients from Equation 5.1. Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes all the towns of the mainland of the Sardinia Kingdom selected as explained in section 5.2. The main explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period. Geographical controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders. Town-level characteristics include distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 2: Balance of observable characteristics

	Pop. 1821 (1)	(log) Elevation (2)	Dist. France (3)	Dist. Switzerland (4)	Dist. Turin (5)	Dist. Former Division Cap. (6)	Dist. Province Cap. (7)
(log) Walking Dist. from Tax Collector	0.093 (0.131)	0.041 (0.046)	0.019 (0.029)	0.006 (0.022)	-0.011 (0.027)	0.367*** (0.111)	0.004 (0.049)
DV Mean	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Town-pair FE	yes	yes	yes	yes	yes	yes	yes
Province FE	yes	yes	yes	yes	yes	yes	yes
No district capitals	yes	yes	yes	yes	yes	yes	yes
Towns in Sample	396	396	396	396	396	396	396
Observations	704	704	704	704	704	704	704
R-squared	0.607	0.964	0.980	0.978	0.979	0.809	0.940

Notes: The table reports β coefficients from Equation 5.2 using several town-level characteristics as dependent variables. Units of observation are towns \times town-pair. The sample includes all the towns of the mainland of the Sardinia Kingdom selected as explained in section 5.2. The main explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period. Dependent variables in columns (1) to (7) are: population of the town in 1821; the logarithm of elevation of the town; distances from international borders with France and Switzerland; distance from Turin; distance from former division capital; distance from province capital. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Distance from former tax district capitals, distance from TV antennas and TV tax evasion

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)	TV Tax Evasion (4)
(log) Walking Dist. from Tax Collector	0.012 (0.021)		0.011 (0.019)	0.007 (0.013)
(log) Dist. from TV Antennas		0.059** (0.026)	0.058** (0.027)	0.071*** (0.019)
DV Mean	0.332	0.332	0.332	0.332
Town-pair FE	yes	yes	yes	yes
Province FE	yes	yes	yes	yes
No district capitals	yes	yes	yes	yes
Controls	no	yes	no	yes
Towns in sample	396	396	396	396
Observations	704	704	704	704
R-squared	0.747	0.754	0.755	0.846

Notes: The table reports β coefficients from Equation 5.1. Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes all the towns of the mainland of the Sardinia Kingdom selected as explained in section 5.2. In column (1) the explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period; in column (2) the explanatory variable is logarithm of the mean Euclidean distance of a town from the location of the two closest TV antennas broadcasting programs of the Italian public TV, and regressions in columns (3) and (4) include both explanatory variables. Controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders, distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Placebo: Distance from former judicial district capitals and TV tax evasion

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)
(log) Walking Dist. from District Capital	-0.004 (0.008)	-0.002 (0.009)	-0.008 (0.009)
DV Mean	0.260	0.260	0.260
Town-pair FE	yes	yes	yes
Province FE	yes	yes	yes
No district capitals	yes	yes	yes
Geographical controls	no	yes	yes
Town-level Controls	no	no	yes
Towns in Sample	590	590	590
Observations	2,152	2,152	2,152
R-squared	0.732	0.765	0.771

Notes: The table reports β coefficients from Equation 5.1. Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes the towns of Lombardy selected as explained in section 5.2. The main explanatory variable is the logarithm of the walking distance between a town and the capital of its judicial district after the Italian unification. Geographical controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders. Town-level characteristics include distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6: Heterogeneous effects: distance from former tax district capitals, Nazi violence and TV tax evasion

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)	TV Tax Evasion (4)
(log) Walking Distance from Tax Collector	0.015 (0.020)	0.014 (0.016)	0.035* (0.020)	0.016 (0.016)
(log)Distance \times $\mathbb{1}$ (Nazi Killing)	-0.011 (0.023)	-0.011 (0.016)		
$\mathbb{1}$ (Presence of Nazi Killing)	-0.016 (0.013)	-0.022** (0.010)		
(log)Distance \times $\mathbb{1}$ (Closer to Nazi Killing)			-0.041 (0.027)	-0.011 (0.018)
$\mathbb{1}$ (Closer to Nazi Killing)			-0.012 (0.015)	-0.032*** (0.011)
DV Mean	0.332	0.332	0.332	0.332
Town-pair FE	yes	yes	yes	yes
Province FE	yes	yes	yes	yes
No district capitals	yes	yes	yes	yes
Controls	no	yes	no	yes
Towns in Sample	396	396	396	396
Observations	704	704	704	704
R-squared	0.749	0.841	0.751	0.843

Notes: The table reports estimates of heterogeneous effects of distance from a former tax district capital on TV tax evasion. Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes all the towns of the mainland of the Sardinia Kingdom selected as explained in section 5.2. The first explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period, centered around the median. In columns (1) and (2) the other explanatory variables are a binary variable for the presence of at least one killing from Nazi troops in the town, and the interaction between such a binary variable and (log) walking distance from a former tax district capital. In columns (3) and (4) the other explanatory variables are a binary indicator for whether the town is closer or farther from a Nazi killing (relative to median distance from a killing), and the interaction between such a binary variable and (log) walking distance from a former tax district capital. Controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders, distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** p<0.01, ** p<0.05, * p<0.1.

Table 7: Heterogeneous effects: distance from former tax district capitals, structural transformation and TV tax evasion

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)
(log) Walking Distance from Tax Collector	0.012 (0.021)	0.015 (0.012)	0.014 (0.013)
Structural Transformation	0.016*** (0.003)	0.012*** (0.003)	0.012*** (0.003)
(log)Distance \times Structural Transformation	-0.011** (0.005)	-0.014*** (0.004)	-0.013*** (0.004)
DV Mean	0.332	0.332	0.332
Town-pair FE	yes	yes	yes
Province FE	yes	yes	yes
No district capitals	yes	yes	yes
Geographical controls	no	yes	yes
Town-level controls	no	no	yes
Towns in Sample	396	396	396
Observations	704	704	704
R-squared	0.778	0.852	0.854

Notes: The table reports estimates of heterogeneous effects of distance from a former tax district capital on TV tax evasion. Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes all the towns of the mainland of the Sardinia Kingdom selected as explained in section 5.2. The first explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period, centered around the median. The second explanatory variables is the change in the share of workers in a town employed in manufacturing or service sector between 1951 and 2011, centered around the median. The third explanatory variable is the interaction between such an index variable and (log) walking distance from a former tax district capital. Geographical controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders. Town-level characteristics include distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** p<0.01, ** p<0.05, * p<0.1.

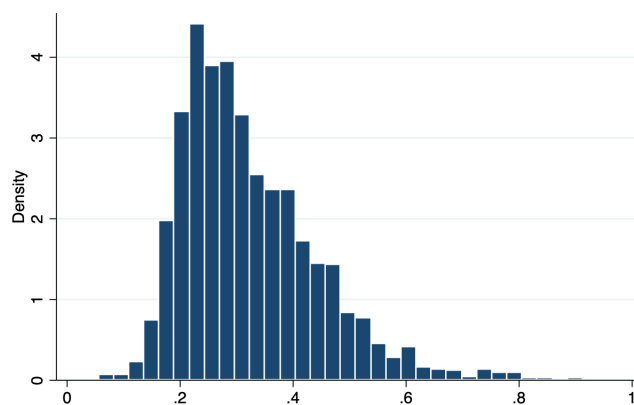
A Additional Figures and Tables

Figure A.1: Italy and Sardinia Kingdom



Notes: The map presents Italy and the territories of the Sardinia Kingdom (in dark blue) as a part of Italy.

Figure A.2: Evasion of the TV tax: distribution across towns of the Sardinia Kingdom



Notes: The histogram displays the density of towns of the whole Sardinia Kingdom for different levels of evasion of the TV tax in 2014.

**Table A.1: Distance from former tax district capitals and TV tax evasion:
excluding division capitals**

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)
(log) Walking Dist. from Tax Collector	0.003 (0.021)	0.005 (0.013)	-0.002 (0.013)
DV Mean	0.334	0.334	0.334
Town-pair FE	yes	yes	yes
Province FE	yes	yes	yes
No district capitals	yes	yes	yes
Geographical controls	no	yes	yes
Town-level Controls	no	no	yes
Towns in Sample	359	359	359
Observations	634	634	634
R-squared	0.741	0.837	0.842

Notes: The table reports β coefficients from Equation 5.1. Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes all the towns of the Sardinia Kingdom selected as explained in section 5.2, excluding also towns for which the tax district capital was hosting a division capital until 1927. The main explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period. Geographical controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders. Town-level characteristics include distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

**Table A.2: Distance from former tax district capitals and TV tax evasion:
sample from Bagnato (2022)**

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)
(log) Walking Dist. from Tax Collector	-0.001 (0.031)	0.002 (0.009)	-0.003 (0.011)
DV Mean	0.339	0.339	0.339
Town-pair FE	yes	yes	yes
Province FE	yes	yes	yes
No district capitals	yes	yes	yes
Geographical controls	no	yes	yes
Town-level Controls	no	no	yes
Towns in Sample	131	131	131
Observations	224	224	224
R-squared	0.753	0.930	0.936

Notes: The table reports β coefficients from Equation 5.1. Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes the towns of the Sardinia Kingdom of the estimation sample of Bagnato (2021). The main explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period. Geographical controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders. Town-level characteristics include distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.3: Distance from former tax district capitals, distance from closest TV antenna and TV tax evasion

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)	TV Tax Evasion (4)
(log) Walking Dist. from Tax Collector	0.012 (0.021)		0.011 (0.020)	0.008 (0.014)
(log) Dist. from Closest TV Antenna		0.019 (0.013)	0.019 (0.014)	0.014 (0.010)
DV Mean	0.332	0.332	0.332	0.332
Town-pair FE	yes	yes	yes	yes
Province FE	yes	yes	yes	yes
No district capitals	yes	yes	yes	yes
Controls	no	yes	no	yes
Towns in sample	396	396	396	396
Observations	704	704	704	704
R-squared	0.747	0.749	0.750	0.839

Notes: The table reports β coefficients from Equation 5.1. Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes all the towns of the Sardinia Kingdom selected as explained in section 5.2. In column (1) the explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period; in column (2) the explanatory variable is logarithm of the Euclidean distance of a town from the location of the closest TV antenna broadcasting programs of the Italian public TV, and regressions in columns (3) and (4) include both explanatory variables. Controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders, distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.4: Distance from former tax district capitals and Nazi violence

	$\mathbb{1}(\text{Presence of}$ Nazi Killing)	$\mathbb{1}(\text{Presence of}$ Nazi Killing)	$\mathbb{1}(\text{Closer to}$ Nazi Killing)	$\mathbb{1}(\text{Closer to}$ Nazi Killing)
	(1)	(2)	(3)	(4)
(log) Walking Dist. from Tax Collector	-0.073 (0.075)	-0.027 (0.077)	-0.092 (0.084)	0.006 (0.070)
DV Mean	0.19	0.19	0.50	0.50
Town-pair FE	yes	yes	yes	yes
Province FE	yes	yes	yes	yes
No district capitals	yes	yes	yes	yes
Controls	no	yes	no	yes
Towns in Sample	396	396	396	396
Observations	704	704	704	704
R-squared	0.540	0.605	0.715	0.757

Notes: The table reports β coefficients from Equation 5.2 using indicators for Nazi killings as outcome variables. Units of observation are towns \times town-pair. The sample includes all the towns of the Sardinia Kingdom selected as explained in section 5.2. The main explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period. In columns (1) and (2) the outcome variable is a binary variable for the presence of at least one killing from Nazi troops in the town; in columns (3) and (4) the outcome variable is a binary variable for whether the town is closer or farther from a Nazi killing (relative to median distance from a killing). Controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders, distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.5: Distance from former tax district capitals, Nazi violence and TV tax evasion: full interaction

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)	TV Tax Evasion (4)
(log) Walking Distance from Tax Collector	0.015 (0.020)	0.009 (0.018)	0.035* (0.020)	-0.003 (0.022)
(log)Distance \times \mathbb{I} (Nazi Killing)	-0.011 (0.023)	0.003 (0.019)		
\mathbb{I} (Presence of Nazi Killing)	-0.016 (0.013)	-0.016 (0.013)		
(log)Distance \times \mathbb{I} (Closer to Nazi Killing)			-0.041 (0.027)	0.020 (0.025)
\mathbb{I} (Closer to Nazi Killing)			-0.012 (0.015)	15.002 (11.774)
DV Mean	0.332	0.332	0.332	0.332
Town-pair FE	yes	yes	yes	yes
Province FE	yes	yes	yes	yes
No district capitals	yes	yes	yes	yes
Controls	no	yes	no	yes
Towns in Sample	396	396	396	396
Observations	704	704	704	704
R-squared	0.749	0.852	0.751	0.852

Notes: The table reports estimates of heterogeneous effects of distance from a former tax district capital on TV tax evasion, interacting every control variable with binary variables for presence of, or proximity to, Nazi killings. The estimating equation controls for town-pair fixed effects and province fixed effects (not interacted). Units of observation are towns \times town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes all the towns of the Sardinia Kingdom selected as explained in section 5.2. The first explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period, centered around the median. In columns (1) and (2) the other explanatory variables are a binary variable for the presence of at least one killing from Nazi troops in the town, and the interaction between such a binary variable and (log) walking distance from a former tax district capital. In columns (3) and (4) the other explanatory variables are a binary indicator for whether the town is closer or farther from a Nazi killing (relative to median distance from a killing), and the interaction between such a binary variable and (log) walking distance from a former tax district capital. Controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders, distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** p<0.01, ** p<0.05, * p<0.1.

Table A.6: Distance from former tax district capitals and structural transformation

	Structural Transformation (1)	Structural Transformation (2)	Structural Transformation (3)
(log) Walking Dist. from Tax Collector	0.219 (0.242)	0.245 (0.271)	0.234 (0.288)
DV Mean	2.28	2.28	2.28
Town-pair FE	yes	yes	yes
Province FE	yes	yes	yes
No district capitals	yes	yes	yes
Geographical controls	no	yes	yes
Town-level controls	no	no	yes
Towns in Sample	396	396	396
Observations	704	704	704
R-squared	0.716	0.770	0.773

Notes: The table reports β coefficients from Equation 5.2 using the change in employment in manufacturing and services between 1951 and 2011 as outcome variable. Units of observation are towns \times town-pair. The sample includes all the towns of the Sardinia Kingdom selected as explained in section 5.2. The main explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period. Geographical controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders. Town-level characteristics include distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. Standard errors in parentheses are clustered at the tax district and district-border level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.7: Distance from former tax district capitals, structural transformation and TV tax evasion: full interaction

	TV Tax Evasion (1)	TV Tax Evasion (2)	TV Tax Evasion (3)
(log) Walking Distance from Tax Collector	0.012 (0.021)	0.010 (0.012)	0.007 (0.013)
Structural Transformation	0.016*** (0.003)	-0.429 (2.643)	-3.084 (2.937)
(log)Distance × Structural Transformation	-0.011** (0.005)	-0.013** (0.005)	-0.011* (0.006)
DV Mean	0.332	0.332	0.332
Town-pair FE	yes	yes	yes
Province FE	yes	yes	yes
No district capitals	yes	yes	yes
Geographical controls	no	yes	yes
Town-level controls	no	no	yes
Towns in Sample	396	396	396
Observations	704	704	704
R-squared	0.778	0.868	0.872

Notes: The table reports estimates of heterogeneous effects of distance from a former tax district capital on TV tax evasion, interacting every control variable with an index for structural change. The estimating equation controls for town-pair fixed effects and province fixed effects (not interacted). Units of observation are towns × town-pair. In every column the dependent variable is evasion of the TV tax in the town. The sample includes all the towns of the Sardinia Kingdom selected as explained in section 5.2. The first explanatory variable is the logarithm of the walking distance between a town and the capital of its tax district in the 1814-1870 period, centered around the median. The second explanatory variables is the change in the share of workers in a town employed in manufacturing or service sector, between 1951 and 2011. The third explanatory variable is the interaction between such an index variable and (log) walking distance from a former tax district capital. Geographical controls include the logarithm of elevation of the town, standard deviation of elevation in the town, area of the town, measures of land suitability for nine crops, latitude and longitude, distances from country borders. Town-level characteristics include distance from province capital, distance from former division capital, distance from Turin, distance from Genoa. Standard errors in parentheses are clustered at the tax district and district-border level. *** p<0.01, ** p<0.05, * p<0.1.