Taxes, Transfers, and Support for the State: Evidence from the French Revolution*

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Abstract — In this paper, we provide novel evidence on the fiscal determinants of citizens' support for the state. We focus on the French Revolution, and implement two separate geographic regression discontinuity designs. First, exploiting plausibly exogenous variation in the tax burden across French municipalities prior to 1789, we find that revolts to overturn the monarchy were stronger in areas with higher tax rates. Second, leveraging the unexpected change in administrative borders of French regions in 1791, we document that areas that received larger fiscal transfers were more likely to vote in favor of the new Republic in the 1793 referendum. Our results provide new insights on the relationship between taxation and citizens' support for the state, and have important implications for the change or the continuity of regimes.

Keywords: Social contract, taxation, regime change, state capacity.

JEL codes — D74, H20, H31, O23

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Quod omnes tangit, ab omnibus approbari debet [What touches all should be considered and approved by all].

— Justinian Code, 5.59.5.2

1 Introduction

A longstanding idea in political and moral psychology is that modern nation states operate on the basis of a "social contract" (Hobbes, 1651; Locke, 1690; Rousseau, 1792). According to this view, citizens consent to give up some of their freedoms in exchange for the provision of public goods from the state, such as protection and welfare. When the state violates the social contract, for instance by imposing high or unjust taxes, citizens withdraw their consent (Levi, 1997), possibly leading to the fall of the old regime and the rise of a new one. For the newly formed state, it is key to secure citizens' support. This can happen through propaganda (Assouad, 2020), investment in education (Alesina et al., 2020; Bazzi et al., 2020), or programs that promote individual participation in shared experiences (Depetris-Chauvin et al., 2020; Ronconi and Ramos-Toro, 2022). Another way for the state to get support of the citizens is to implement policies that are beneficial to them, such as generous fiscal transfers (Scheve and Stasavage, 2016; Caprettini and Voth, 2023).

In this paper, we engage with these ideas, studying the fiscal determinants of citizens' support for or opposition to the state during times of regime change. We focus on the French Revolution and implement a Geographic Regression Discontinuity Design (GRDD). Besides being a pivotal moment in modern history, the French Revolution is an ideal context to examine this question. Marking the transition from the *Ancien Régime* to the First French Republic, it prompted a profound transformation from long-standing inequitable and extractive institutions to a novel framework of fiscal policies, regulated under newly established fiscal jurisdictions. (Norberg, 1994; Touzery, 1997, 2023).

We begin by examining the link between unequal taxation and opposition to the monarchy. We consider the salt tax, also known as the *gabelle du sel* (Giommoni and Loumeau, 2022). This was an important tax for the royal treasury, which was introduced in the thirteenth century and remained in place for more than 500 years, until its

abrogation, during the French Revolution.[1] The salt tax was an extractive form of taxation, unrelated to the extent of local public goods provision.[2] As such, it was overwhelmingly unpopular. The tax rate was not spatially homogeneous: rather, it varied across regions, along 22 different tax borders. This created large and long-lasting discontinuities in tax rates, which constitute a unique setting to investigate the causal effect of unequal taxation on citizens' support for the monarchy.

Relying on the Digital Archives of the National Library of France, we exploit novel geo-localized fiscal data pre- and post-French Revolution, including all historical salt tax discontinuities. For each zones, we additionally hand-collected the tax rate in place in 1788. We combine these data with a novel dataset assembled by Chambru and Maneuvrier-Hervieu (2022) that provides a fine-grained localization of uprising events before, during, and after the French Revolution, also allowing to identify the reason of the revolt. Then, we deploy a non-parametric approach with optimal bandwidth and polynomial order selection following Calonico et al. (2014) around the salt tax borders. We show that municipalities burdened for centuries by a heavier salt tax rate exhibited larger support for the revolution, as proxied for by riots' intensity.[3] According to our estimates, crossing the border from a low to a high tax municipality, we observe 3.5 more riots in the latter (as compared to the former). While we observe the strongest effects of unequal taxation in the years leading up to the French Revolution, citizens' opposition to the monarchy is already apparent in the 1750s, when the first riots against the King started to take place.

Next, we study how the early fiscal policies of the First Republic shaped citizens' support for the new regime. We exploit the 1790-91 *Great Tax Remission* (Touzery, 2023) as a source of discontinuous spatial variation in the generosity of government transfers across municipalities. During the last 6 months of 1789, the newly elected assembly extended the fiscal system to include formerly exempted categories: mainly, the aristocrats and the clergy. This extension generated a massive tax surplus. Since the assembly opted for a system of pure revenue distribution (i.e., no saving possibility

[1] Between the thirteenth and the eighteenth century, this tax represented around 17% of royal revenues on average (Giommoni and Loumeau, 2022; Touzery, 2023).

[2] During the *Ancien Régime*, the provision of public goods provided was minimal and centered around royal prerogatives, such as national defense and justice (Touzery, 2023).

[3] Proximity to the border is derived using the optimal bandwidth selection strategy proposed in Calonico et al. (2014, 2020). The optimal bandwidth is generally around 10km.

over time for the state), the excess tax collected was redistributed equally across newly created departments. This implied that departments with a high density of previously tax exempted residents benefited from a larger direct fiscal transfer.[4] Crucially for our identification strategy, the department borders were newly created based on equal space partition principles (cf. Siéyès 1789 proposition in Figure A2), such that the location of many departmental borders was entirely new and unrelated to underlying departments' characteristics. We provide extensive balancing checks using observable historical outcomes (such as the historical road network, historical religious and administrative division), as well as extensive topographic outcomes (such as altitude and soil fertility measures).

We hand-collected and digitized data on the amount of the tax remission by department, which we combined with data on the pre-1789 administrative borders and with historical voting outcomes in France at the municipal level assembled by Cagé and Piketty (2023). Implementing a GRDD around the new department borders, we document that turnout in the 1793 referendum (held via universal male suffrage) was higher in municipalities that benefited more from the new fiscal system. Since the referendum asked voters to approve or not the constitution, these results indicate that more generous fiscal transfers increased support for the newly formed French Republic. Our estimates are quantitatively large: the share of the eligible population participating in the referendum (respectively, the share of votes "Yes") jumps by 33% (by 34%) when crossing the border towards the side with large transfers. The change in departmental borders has been shown to have important economic effects (Chambru et al., 2021; Loumeau, 2023). However, these effects took several decades to materialize. For this reason, our results are unlikely to capture these additional economic forces.

Interpreted through the lens of the "social contract," our results paint a coherent picture of the relationship between fiscal policies and citizens' support for the state and have important implications for the fall and the rise of regimes. The first part of the paper indicates that high and unjust taxes lower support for the state, and induce citizens to revolt. When citizens' discontent is sufficiently widespread, this may lead to the fall of the old regime and the rise of a new one. The second part of the paper showcases the

[4]For instance, in Bas-Rhin (Alsace's northern department) the tax remission reached a staggering 92%; whereas in the neighboring department of the Vosges (just West of Alsace) the remission only amounted to 15%.

relevance of fiscal transfers as a policy that increases support for the newly formed state. Together, our findings are consistent with the longstanding idea that "quod omnes tangit, ab omnibus approbari debet," i.e., What touches all should be considered and approved by all (Stasavage, 2016).

Our paper is related to different strands of the literature. First, we complement the literature on state capacity. Several papers have documented the importance of mass warfare for the rise of modern nation states and their ability to collect tax revenues (Tilly, 1990; Gennaioli and Voth, 2015; Stasavage, 2016). Others have shown that state capacity, measured as the state's ability to raise taxes, is conducive to economic growth and inclusive institutions (Besley and Persson, 2009, 2010; Cantoni et al., 2019; Chambru et al., 2021). We add to these papers by documenting that high taxes are not always associated with regime stability. In fact, our findings suggest that, when taxation is too high or is perceived as unjust, regimes may be overturned by dissatisfied citizens. This is also consistent with the literature showing that views over taxation and redistribution are often based on self-interest motives (Thalmann, 2004; Kallbekken and Sælen, 2011; Anderson et al., 2019; Douenne and Fabre, 2022).

Second, our results speak to the literature on nation building, recently reviewed in Rohner and Zhuravskaya (2023). Many papers have studied the effects of investment in schooling and education on national identity in diverse communities (Bandiera et al., 2019; Bazzi et al., 2020; Alesina et al., 2021). Others have examined additional forces, such as sport (Depetris-Chauvin et al., 2020; Lowe, 2021), wars (Alesina et al., 2020; Ronconi and Ramos-Toro, 2022), exposure to political campaigns (Assouad, 2020), and inter-group contact (Bazzi et al., 2019). We complement this literature by examining how fiscal transfers can shape citizens' support for the state and promote nation building. In this respect, we are closely related to Caprettini and Voth (2023), who show that the generosity of New Deal spending had a strong, positive effect on patriotism during World War II. We add to this work by considering the impact of fiscal policy in the context of a newly formed state—when obtaining citizens' support is vital for the survival of the new regime.

Third, we complement the literature on institutional change and regime transition. Acemoglu and Robinson (2000) argue that the elites extend the franchise as a commitment for redistribution, under the threat of a revolution. Other papers have linked the

emergence of democracy to broader trends in economic development (Lipset, 1959) as well as to negative economic shocks (Huntington, 1993; Gasiorowski, 1995; Brückner and Ciccone, 2011). We complement these papers by documenting that, consistent with Acemoglu and Robinson (2000), if the elites do not democratize when the revolution threat binds, the regime may be overturned by violent revolts. More broadly, our work provides evidence of the fiscal determinants of the fall and the rise of regimes.

Finally, our paper is related to the vast historical literature on the causes of the French Revolution (Tocqueville, 1856; Marion, 1921; Lefebvre et al., 1947). More recently, a number of papers within economics have provided evidence that weather shocks and the economic hardship they generated played an important role in affecting social conflicts in pre-industrial France as well as during the Revolution (Chambru, 2019; Waldinger, 2021; Furet, 1981). Jha and Wilkinson (2023) and Ottinger and Rosenberger (2023) have documented how the exposure to the American Revolution increased support for the French Revolution a decade later. Our findings complement these papers by focusing on a distinct mechanism. To the best of our knowledge, our paper is the first to provide support to the hypothesis proposed by Marcel Marion that "The Old Regime [...] perished because its tax system struck only the inferior classes" (Norberg, 1994).[5]

2 Historical background

2.1 Fiscal institutions of the Ancien Régime

The fiscal system in place before the French Revolution was complex, burdensome, and contributed to widespread social and economic inequality. It consisted of a variety of taxes, privileges, and exemptions that favored the nobility and clergy while placing a heavy tax burden on the common people. As tax privileges and exemptions were hereditary, the fiscal institutions in place contributed to social and economic inequality. A complete description of Ancien Régime fiscal functions is beyond the scope of this paper, but here we provide a brief summary building on the seminal work of Nordman et al. (1995) and Touzery (2023).

[5] A large literature has also examined the economic consequences of the French Revolution (Acemoglu et al., 2011; Squicciarini and Voigtländer, 2016; Chambru et al., 2021; Giommoni and Loumeau, 2022; Loumeau, 2023).

Two broad classes of taxes were levied in the Ancien Régime: direct (i.e., imposed on individuals) and indirect (i.e., imposed on goods and services) taxes. The taille and the capitation were the most important direct taxes and varied based on individuals' social status. Indirect taxes included the gabelle or salt tax (studied in NatExp1), the aides (i.e., excise taxes on various goods, including beverages and luxury items) and the octroi (i.e., city tax for goods entering and leaving urban areas).

Among the various fiscal instruments in place before the Revolution, the design of the salt tax provides researchers with a unique natural experiment: its rate varied discontinuously in space by a multiplier of up to 30 (Giommoni and Loumeau, 2022). The large differences across areas, introduced over time for specific historical reasons, created wide discontinuities in tax rates over the French territory. In particular, the large region around Paris, known as the *pays de grandes gabelles*, was subject to a very high tax rate of around 60 pounds per *minot*.[6] Differently, there were special areas which benefited from a favorable tax rate: part of Normandy (*quart bouillon*) was subject to a reduced rate of 13 pounds, the south-western part of France (*pays rédimées*) benefited from a rate of 10 pounds and the regions of Alsace and Lorraine (*pays de salines*) faced a tax rate of 15 pounds. In Bretagne (extreme west), the rate dropped to 2 pounds per minot. Figure 1 illustrates the spatial variation in the tax rate.

A key anecdote illustrates how the spatial unequal burden of the salt tax may have fueled revolutionary fervor: abolishing the salt tax was one of the first decisions taken by the newly elected National Assembly in 1789.

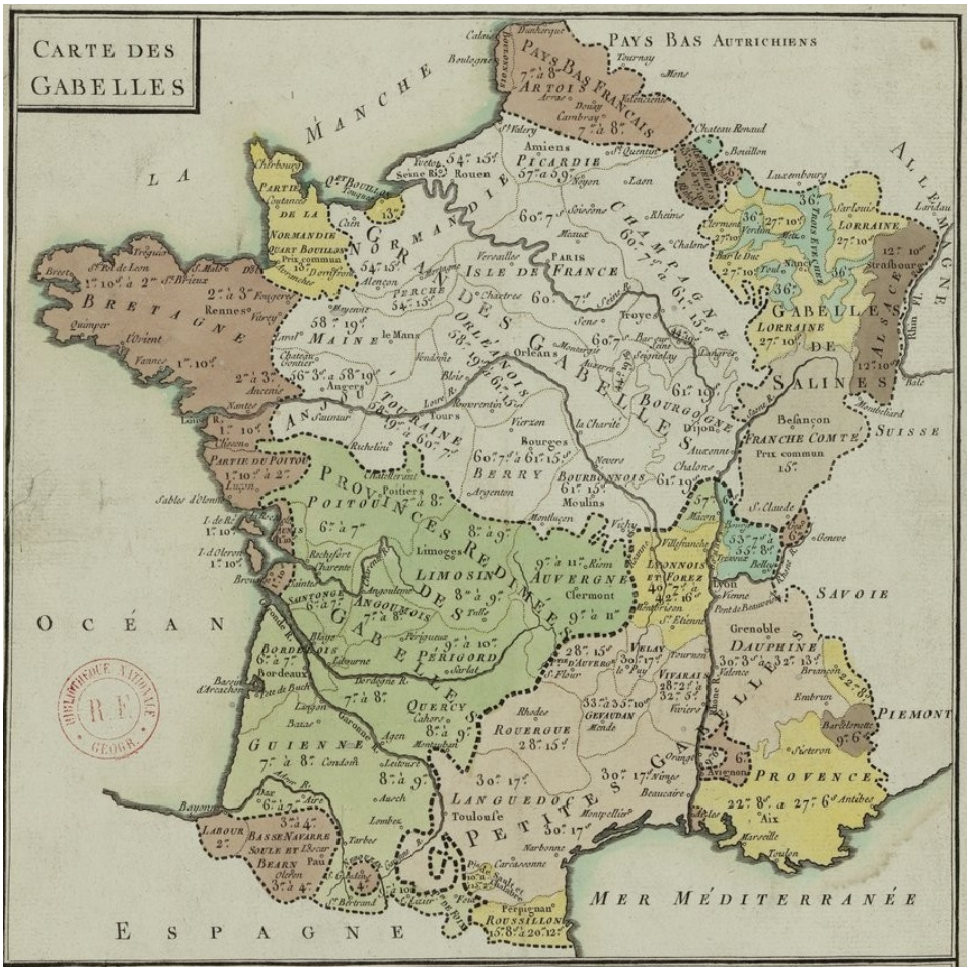
2.2 The French Revolution and the Constitution of the Year I

The French Revolution was a pivotal period of radical social and political upheaval in France that historian typically date between the fall of the Bastille in 1789 and the arrival of Napoleon in power in 1798. It brought about significant changes in the country's political structure, social order, and culture (Michelet, 1847; Biard and Dupuy, 2008; Beaurepaire and Marzagalli, 2016).

The revolution was primarily triggered by economic hardship, social inequality, and political discontent. In the late 1780s, France faced a severe financial crisis due to debt incurred from wars and extravagant spending by the monarchy. At the same time, a

[6] A *minot* is an old French measure of volume, corresponding to about 40 liters.

FIGURE 1 – SALT TAXATION DURING THE ANCIEN RÉGIME



Notes: The figure shows the map of the *gabelle* in 1788 and it highlights the areas marked by a different tax rate, that generate the 22 tax border in analysis. *Source:* National Library of France, BnF.

rapidly growing population had outpaced the food supply. A severe winter in 1788 resulted in famine and widespread starvation in the countryside. Rising prices in Paris brought bread riots. Widespread poverty and hunger, coupled with resentment against the privileged classes, fueled revolutionary sentiments.

In search for a solution, King Louis XVI convened the Estates-General, made up of the Roman Catholic clergy (the First Estate) the nobility (the Second Estate), and everyone else (The Third Estate). Yet, the discussion process escaped his control. On June 17, 1789, the Third Estate seceded and formed the National Assembly. The fall of the Bastille on July 14, 1789, marked the start of widespread popular uprisings. In its early days, the National assembly adopted a series of large-scale measures from the Declaration of the

Rights of Man and of the Citizen, proclaiming equality, liberty, and fraternity to the abolishment of most fiscal institutions of the Ancien Régime.

The monarchy was abolished in 1792, Louis XVI was executed, and France became a republic. Consequently, in 1793, a constitutional referendum known as the 1793 French Constitution, or the *Constitution of the Year I* (revolutionary calendar), was held to ratify a new Constitution proposed by the revolutionary government. The proposed Constitution aimed to create a more egalitarian and democratic system. The constitution established universal male suffrage, granting voting rights to all adult men regardless of property ownership, which was a significant departure from previous electoral systems. It proclaimed the sovereignty of the people and declared that the French Republic would be indivisible and secular. Economic and social rights, such as the right to work and public assistance, were introduced.

The 1793 constitutional referendum was the first popular vote in French history, and it was intended to ratify the new constitution. Voting was open to all male citizens aged 21 and older. The referendum took place on June 24, 1793. The ballot asked a simple question: "Do you approve of the Constitution of 1793?" Voter turnout was relatively low as mostly voters favoring the constitution did vote (Cagé and Piketty, 2023). As a consequence, the results were overwhelmingly in favor of the constitution. The Constitution was then officially adopted.

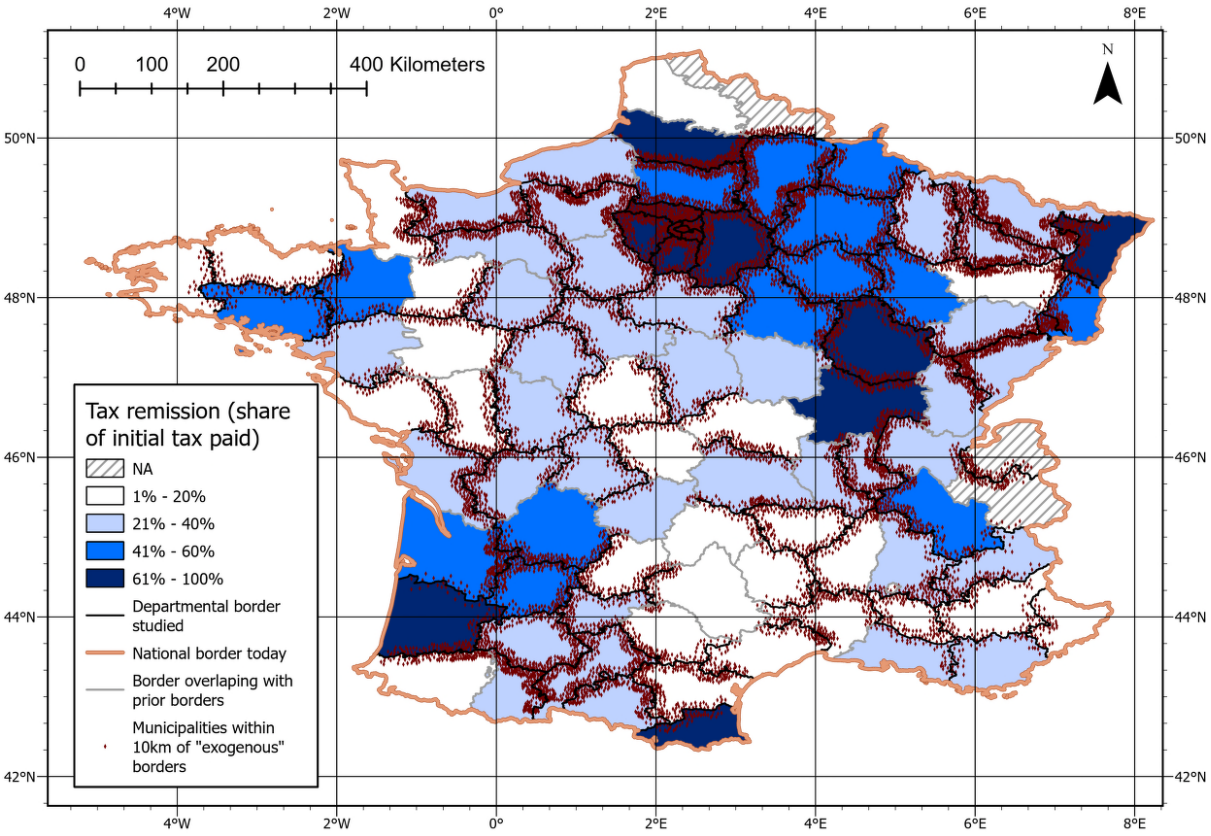
2.3 The Great Tax Remission (1790-91)

One of the first acts of the Revolution was to establish the equality of all citizens before taxation. As of September 1789, the traditional diverse exemptions due to social status were eliminated. Intuitively put, aristocrats and individuals that were tax exempt before the Revolution suddenly had to pay their portion of taxes. Yet, the new assembly (i.e., the *Constituante*) did not increase global spending envelope for 1790. Given a system of pure revenue distribution (i.e., no saving possibility for the State), a question arose for the new legislator. As Touzery (2023) puts it: *What to do with the sums collected, impromptu, in the last six months of 1789? They were not accounted for in any budget whatsoever.* The Assembly decided to lower taxes. As such the Revolution began by lowering direct tax by about 50%.

However, the tax reduction was unequally distributed. Instead of redistributing the

excess tax income equally per capita, the Assembly decided to send back the excess tax to each new created department based on the amount they raised. This made that citizens residing in departments with a high density of previously tax exempted residents benefits from a much larger tax remission. For instance, in Bas-Rhin (Alsace's northern department) the tax remission reached a staggering 92%; whereas in the neighboring department of the Vosges (just West of Alsace) the remission only amounted to 15%. Figure 2 illustrates the geography of the 1790-1791 tax remission.

FIGURE 2 – UNEQUAL SPATIAL DISTRIBUTION OF THE 1790-91 TAX REMISSION



Notes: This figure illustrates the geography of the 1790-1791 tax remission across the newly created departments (nowadays, NUTS2 EU regions).

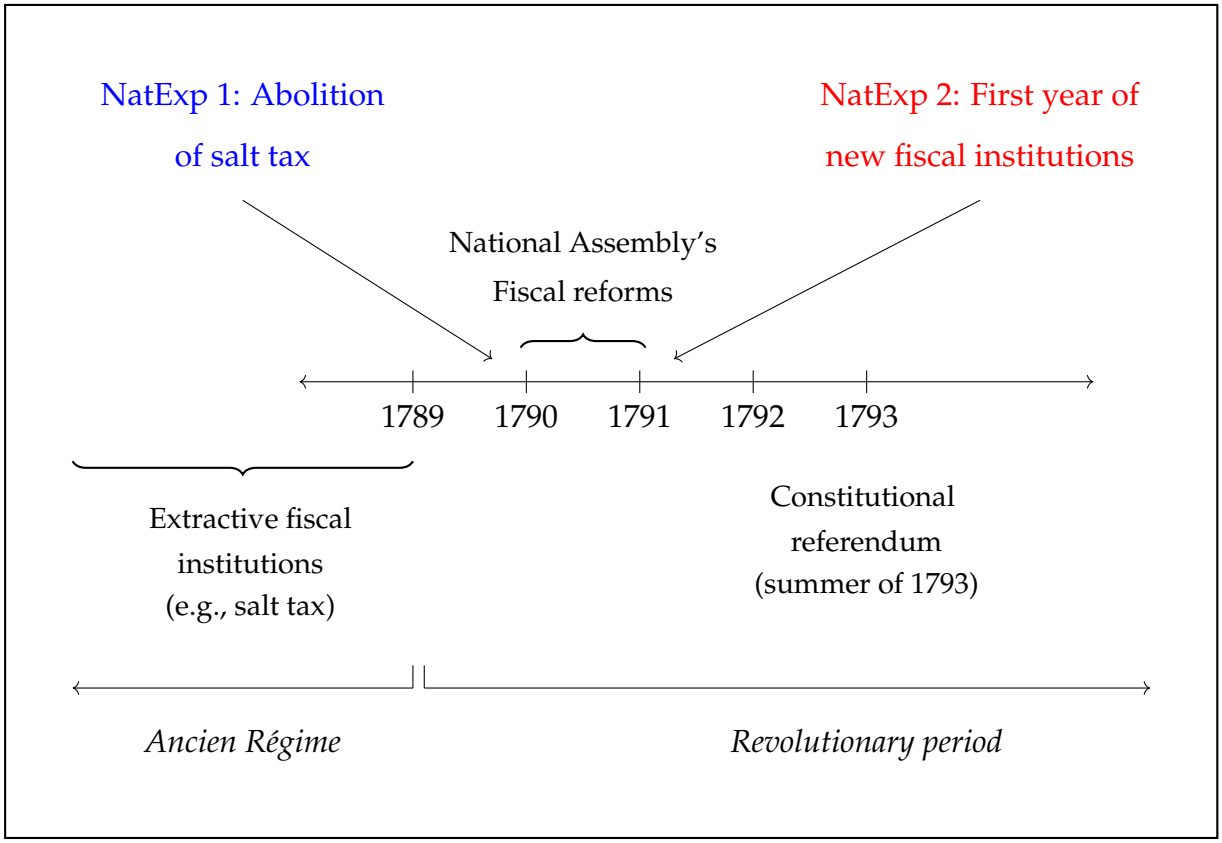
Importantly for identification purposes, the tax were collected in 1789 based on the old *ancien régime* borders, but the tax remission followed the newly created departmental borders. The departmental borders had little overlap with other historical borders as the Revolutionary Assembly's goal was to redesign local jurisdictions of roughly equal size (and equal population given that the population was mostly rural; hence, more evenly distributed in space than today). The inspiration for the chosen departmental

borders is a geometric division illustrated in Figure A2 and discussed in Loumeau (2023).

2.4 *Historical timeline and overview of the approach*

To summarize how the two natural experiments exploited in this paper fit in the context of the French Revolution, we present a timeline of the evolution of French fiscal institutions in the late 18th century in Figure 3. In the first natural experiment, we study how the rise of revolutionary movements (measured by various rioting metrics) was determined by the extractive fiscal institutions (namely, the salt tax) until the abolition of the tax in 1790. In the second natural experiment, we study how the support for the new regime (measured using the 1793 constitutional referendum) is impacted by the characteristics of the new fiscal regime which started in year 1792.

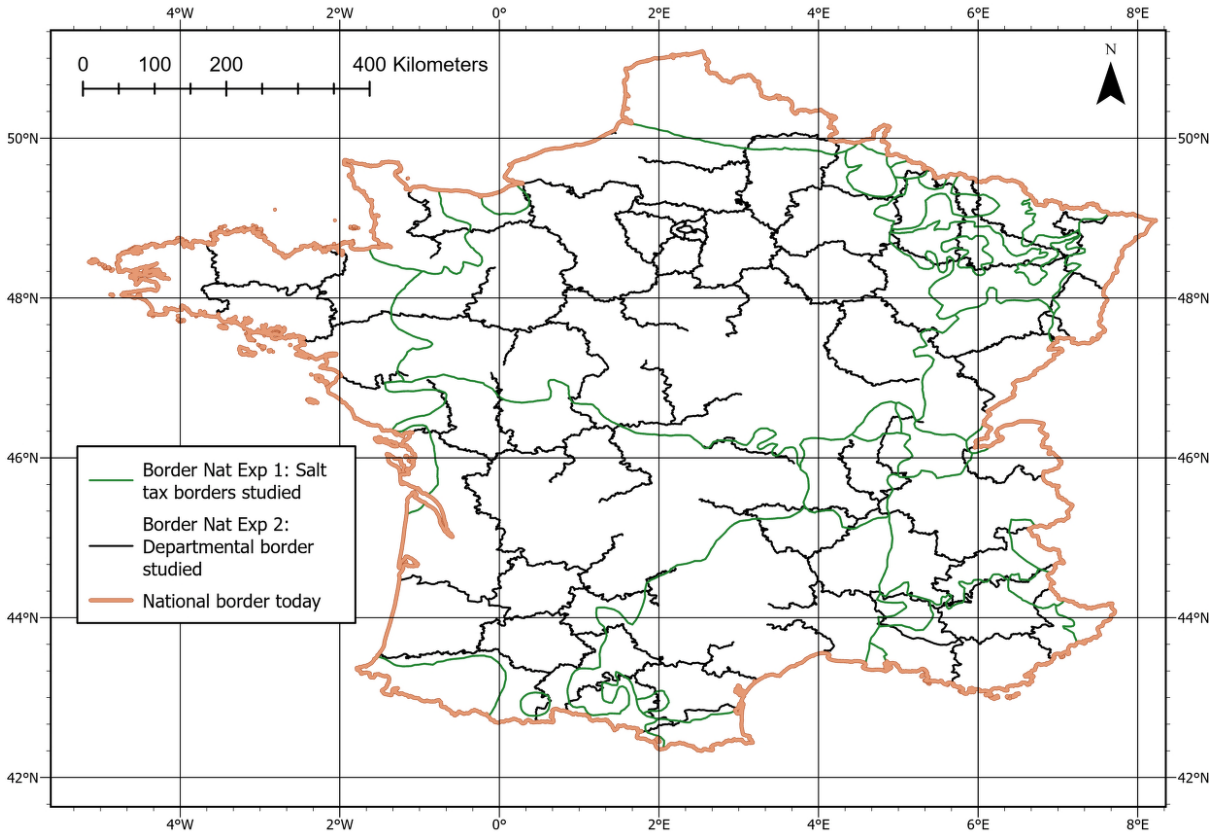
FIGURE 3 – TIMELINE OF FRENCH FISCAL INSTITUTIONS AND THE TWO NATURAL EXPERIMENTS
(*Late 18th Century*)



Importantly for the identification and interpretation of the results, Figure 4 shows that the salt tax borders (used in the first natural experiment) and the post-1789 novel

departmental borders (used in the second natural experiment) have very limited spatial overlap – if at all. This is not surprising, considering that the new departmental boundaries were established using a *tabula rasa* approach with the aim of evenly dividing the French territory. Nevertheless, it is reassuring to confirm this observation empirically.

FIGURE 4 – LIMITED OVERLAP BETWEEN THE BORDERS STUDIED IN THE TWO NATURAL EXPERIMENTS



Notes: This figure illustrates the placement of the main borders studied in the two natural experiments.

3 Data

We draw on various novel sources of data. Summary statistics of the key variables – including the mean, the standard deviation and the number of observations – are provided in Tables A1.

Geo-localized historical fiscal data. We exploit newly hand-collected information on the evolution of the fiscal institutions before and after the French Revolution. We relied

on the Archives of the National Library of France for historical maps.[7] For NatExp1, we geo-referenced the map of the historical salt tax discontinuities. For each zones, we additionally hand-collected the tax rate in place in 1788. For NatExp2, we geo-localized the area of the land possessions of the German Princes before the French Revolution, as well as the historical administrative borders in place before 1789 and the historical language border in northeastern France. The department border map is taken from Eurostat official map of NUTS regions.[8]

Riots. We draw on the database by Chambru and Maneuvrier-Hervieu (2022) to collect detailed information on riots over time. This dataset covers more than 20,000 episodes of revolt from the year 1,000 AD, altought the coverage of the data greatly improves from the seventieth century onward. Importantly, several details on each riot event are recorded such as the exact date, the source, the location (aggregated at the municipal level) and, if available, the number of participants. Moreover, also the reason for the uprising is collected. Specifically, we classify these events in four groups: political, feudal, taxation-related and salt-smuggling related riots.

18th and 19th century voting outcomes. We rely on the novel dataset on historical voting outcomes at the municipal level produced by Cagé and Piketty (2023). For the 1793 referendum, we extract the share of Yes votes and the turnout at the local level. We complement the referendum data with municipal records of the results of the 1848 and 1849 French parliamentary elections (Cagé and Piketty, 2023).

Military registers of Napoléon's army (1802-1815). We exploit the digital repository provided by Geneanet.org, which comprises military records of Napoleon's army. This extensive database encompasses 850,000 individual records spanning the years 1802 to 1815. Each registration card contains the surnames, first names, date and place of birth of each soldier as well as information on their military career.

We complement these key datasets with a series of local demographic and economic control variables using standard official public sources.

[7] Online access to historical map archives can be found here: https://gallica.bnf.fr/html/und/cartes/cartes?mode=desktop.

[8] Link to the official border map: https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/nuts.

4 NatExp 1: Extractive fiscal institutions and revolutionary movements

In this section we study the effects of old fiscal institutions, i.e. the salt tax, on the support for the revolution. With this aim, we focus on the numerous borders of the salt tax and compare the areas historically subject to a more onerous taxation, our treatment areas, with those that took advantage of a more convenient tax rate over the centuries, our control group.

4.1 Identification strategy

Regression Discontinuity (RD) design. The estimation strategy in NatExp 1 relies on the comparison of similar and spatially close municipalities which have been subject to a different (salt) tax regime for several centuries, with the estimation of a Regression-Discontinuity-Design model. Consider $i \in I$ local areas, each is spatially defined by its centroid, $\boldsymbol{c}_i = (c_i^x, c_i^y)$. In the present setting, area represents a municipality. Further, consider $\overline{\boldsymbol{B}}$ as the infinite set of border points constituting the salt tax borders. Let us then define the subset $\boldsymbol{B} \in \overline{\boldsymbol{B}}$ of border points $\boldsymbol{b}_i = (b_i^x, b_i^y)$, such that the euclidean distance to the salt tax border $d_i = ||\boldsymbol{c}_i - \boldsymbol{b}_i||$ is minimized. Finally, define two zones $\mathscr{A}^+$ and $\mathscr{A}^-$ as the treatment (i.e., the area with a higher tax rate, compared to the nearest tax border) and the control (i.e., the area with a lower tax rate, compared to the nearest tax border) areas, respectively. A location is assigned to one and only one tax border; namely, the nearest.

Location, relative to the nearest salt tax border, acts as the forcing variable. Assignment into treatment is then a function of a municipality's location relative to the border. Formally, treatment status T_i of municipality i is defined as $T_i = 1\big[\boldsymbol{c}_i \in \mathscr{A}^+\big]$. Denote the outcome vector by $\boldsymbol{Y}$. We then focus on the discontinuity of the expected outcomes at the geographical border:

$$\tau(\boldsymbol{d}) \equiv \mathbb{E}[\boldsymbol{Y}_1 - \boldsymbol{Y}_0 | d_i = 0] = \lim_{\boldsymbol{d} \to 0}[\boldsymbol{Y} | \boldsymbol{c} \in \mathscr{A}^+] - \lim_{\boldsymbol{d} \to 0}[\boldsymbol{Y} | \boldsymbol{c} \in \mathscr{A}^-]. \tag{1}$$

We then estimate the following empirical model:

$$Y_i = \beta_0 + \beta_1 T_i + f(d_i) + \boldsymbol{\eta}_{b_i} + \boldsymbol{X_i'}\boldsymbol{\gamma} + \varepsilon_i, \qquad \text{if } -h \leq d_i \leq h. \tag{2}$$

where Y_i is the outcome of interest in i, T_i is the treatment variable defined above, $f(d_i)$ are different polynomial orders of the distance to the border d_i (in the baseline, we use second-order polynomials), $\boldsymbol{\eta}_{b_i}$ are salt tax border fixed effects, $\boldsymbol{X_i'}$ includes additional covariates (department fixed effects, border fixed effects, population in 1780, surface and a dummy capturing if the municipality is reported in the Cassini map), and ε_i is the error term, clustered at the department level.[9] Lastly, h is the bandwidth. Standard local polynomial estimators may be sensitive to the specific bandwidth employed. Hence, we employ mean squared error optimal bandwidths, which are valid given the robust approach in Calonico et al. (2014). When including covariates, we follow the approach in Calonico et al. (2019). Importantly, given the presence of many extremely small municipalities in France we focus, in the main specification, on those that experienced at least one riot in the broad period in analysis, 1740-1809. This focus allows us to concentrate on the cities where people actually gathered to protest.

Using the hand-collected data on local salt tax rates prior to the French Revolution, we estimate the discontinuity in the rates around the borders studied. The results are presented in the form of a standard RD plot in Figure 5. Polling all borders together, a sharp and highly significant average gap in salt tax rate is observed at the border.[10]

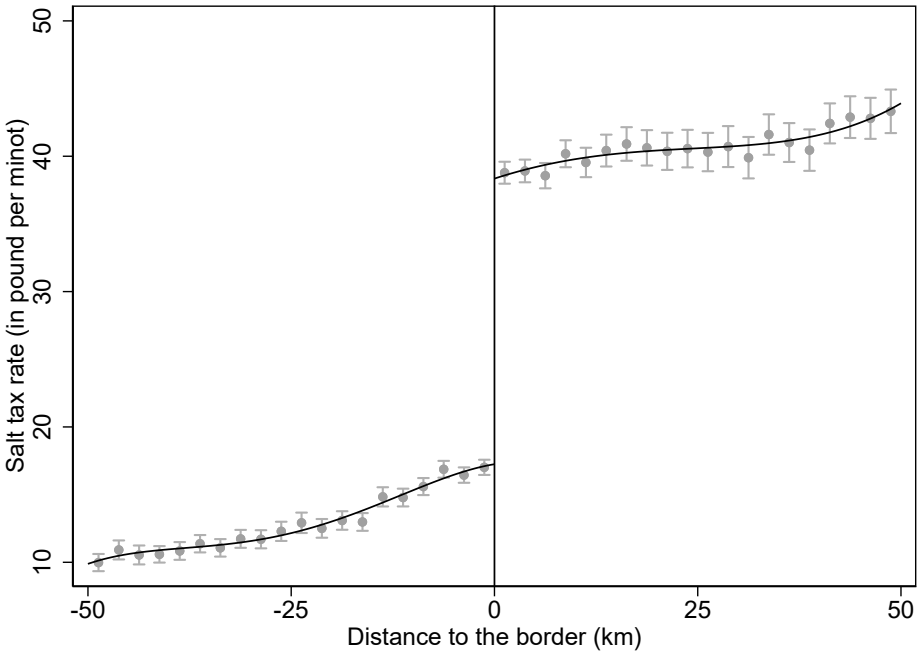
4.2 Validity

To validate the main results of this analysis we follow the standard approach and rely on balance checks. Nevertheless, the natural experiment in analysis deviates from a typical RD setting, given that the salt tax borders have been in force for centuries, making it highly probable that various socio-economic features have evolved differently around these boundaries. Specifically, Giommoni and Loumeau (2022) document large effect of this tax on economic geography and development. Therefore, given the peculiarity of

[9] It is important to note that in the main specification we adopt a weighting of the estimation procedure based on municipal population in 1780. This allows us to take into account the key role played by city size in the probability of hosting a protest event. However, we will provide a robustness check where the estimates are not weighted.

[10] A similar gap is observed for each of the 22 salt tax borders in the data. Border specific RD plots are available upon request.

FIGURE 5 – SALT TAX RATE AROUND THE BORDER



Notes: The plot shows non-parametric RD estimates following Calonico et al. (2014). The dependent variable is the salt tax rate (expressed in pound per minot) around the 22 tax borders according to Figure 1. The treatment area (i.e., the area with a higher tax rate, compared to the nearest tax border) is coded positively.

this setting, we only focus on pre-salt tax characteristics and on geographic features.

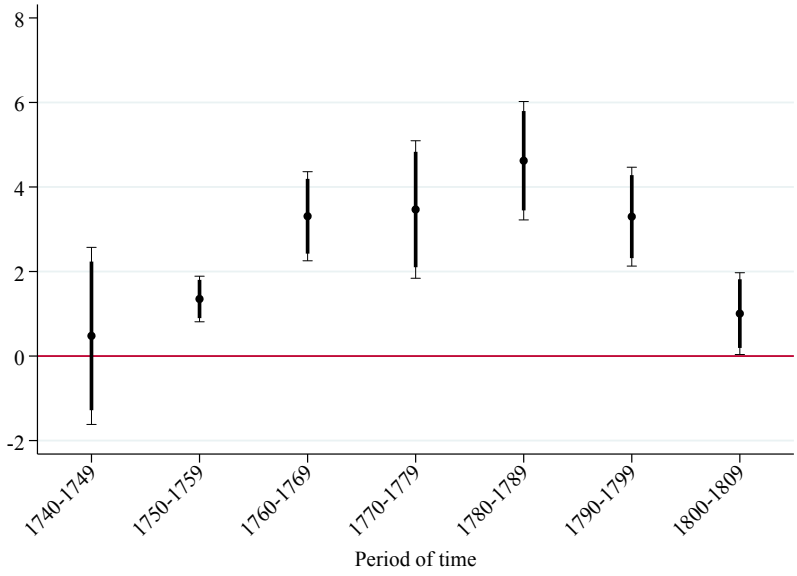
Figure A3 reports the main findings. First, panels a and b show that important pre-tax features are balanced around the borders such as the presence in the municipality of a road, as documented by the Cassini map, as well as of a Diocese and an Archidiocese border. Moreover, there is evidence that also the municipal surface, altitude and soil fertility are balanced around the boundary in analysis. Finally, panels g-k focus on a series of soil characteristics. Overall, all these features are balanced around the salt tax border.

Importantly, it is worth mentioning that, the dynamic nature of the riot data allows us to estimate the effect at various points in time and a null effect emerges in the periods before the revolution, as we will show in the results section (Figure 6). This result suggests the absence of pre-trends in this setting, thus providing additional support for our empirical strategy.

4.3 Main results on riots around the salt tax border

To examine the link between the salt tax and popular revolts over time we rely on the data by Chambru and Maneuvrier-Hervieu (2022), which we regroup by decennial bins from 1740 to 1809. Dating exactly the Revolution itself remains a debate among historians; yet, the decade between 1780 and 1789 is generally considered as the last years of the *ancien régime*. Importantly, we begin with a very general definition of riots, including political end economic revolts, and we focus later on each specific category of riots.

FIGURE 6 – RIOTS AROUND THE SALT TAX BORDER OVER TIME



Notes: The plots show non-parametric RD estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection, according to model 2. The dependent variable is political and economic riots, for different periods of time (bins of 10 years), and it is standardized. The treatment captures the municipalities in the area with a higher rate, compared to the control group. The specification includes border and department fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The estimates are weighted on 1780 population. The sample includes all municipalities that host at least one riot in the period 1740-1809.

Figure 6 shows the main results and it reports 7 distinct RD analysis for each period. A positive and significant effect emerges during in the 1750s to gradually increase until the last decade of the *ancien régime* (1780-1789). In this period the municipalities subject to a heavier taxation witness significantly more revolts, compared to the control group. Table 1 shows that more riots took place on the border side with a higher salt

tax rate, with a focus on the last decade of the *ancien régime*. The main effect, displayed in column 1 of Table 1, is large in magnitude, as it amounts to 4.6 standard deviations of the dependent variable. This estimate suggests that the municipalities subject to a heavier salt tax rate experienced, on average, around 3.6 extra riots between 1780 and 1789, compared to the cities located on the other side of the border. Finally, columns 2-5 of Table 1 show that the effect emerges in several robustness checks where the reference sample or the specification is modified.

TABLE 1 – RIOTS AROUND THE SALT TAX BORDER (1780-1789)

	(1)	(2)	(3)	(4)	(5)
Dep. var.	Riots				
	Main sample	Full sample	Without population weights	Riots (log)	Excluding big cities
High tax area	4.621***	0.784*	0.631**	1.033*	1.668***
	(0.715)	(0.425)	(0.252)	(0.534)	(0.414)
N	590	6,375	683	503	758
Bandwidth	7.65	9.09	9.07	6.56	10.67

Notes: The table show non-parametric RD estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection, according to model 2. The dependent variable captures the number of political and economic riots, it covers the period 1780-1789 and it is standardized. The dependent variable is expressed in logarithm in column 4. The treatment captures the municipalities in the area with a higher rate, compared to the control group. The specification includes border and department fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The estimates are weighted on 1780 population in columns 1, 2, 4 and 5. The sample includes all municipalities that host at least one riot in the period 1740-1809 in columns 1, 3, 4 and 5 and the all municipalities in column 2. Big cities are excluded from the sample in column 5: those are cities that belong to the top 2.5 percentile (with population above 51,517 inhabitants).

This result can further be decomposed by types of riots. Table 2 reveals that the high salt tax area has experience significantly more tax related riots (panel a), salt smuggle (panel b), riots against the authority (panel c), as well as against feudal institutions and related to labour conditions (columns 4 and 5).

This finding is intuitively illustrated in Figure 7 which shows the location and intensity of riots around the salt tax borders between 1750 and 1789. For visibility reasons, we focus on the *Bretagne/Grande gabelle* border – which is also the border with the largest spatial discontinuity in the salt tax rate. We clearly observe that more riots (both in terms of location and intensity of rioting) took place in the high tax area.

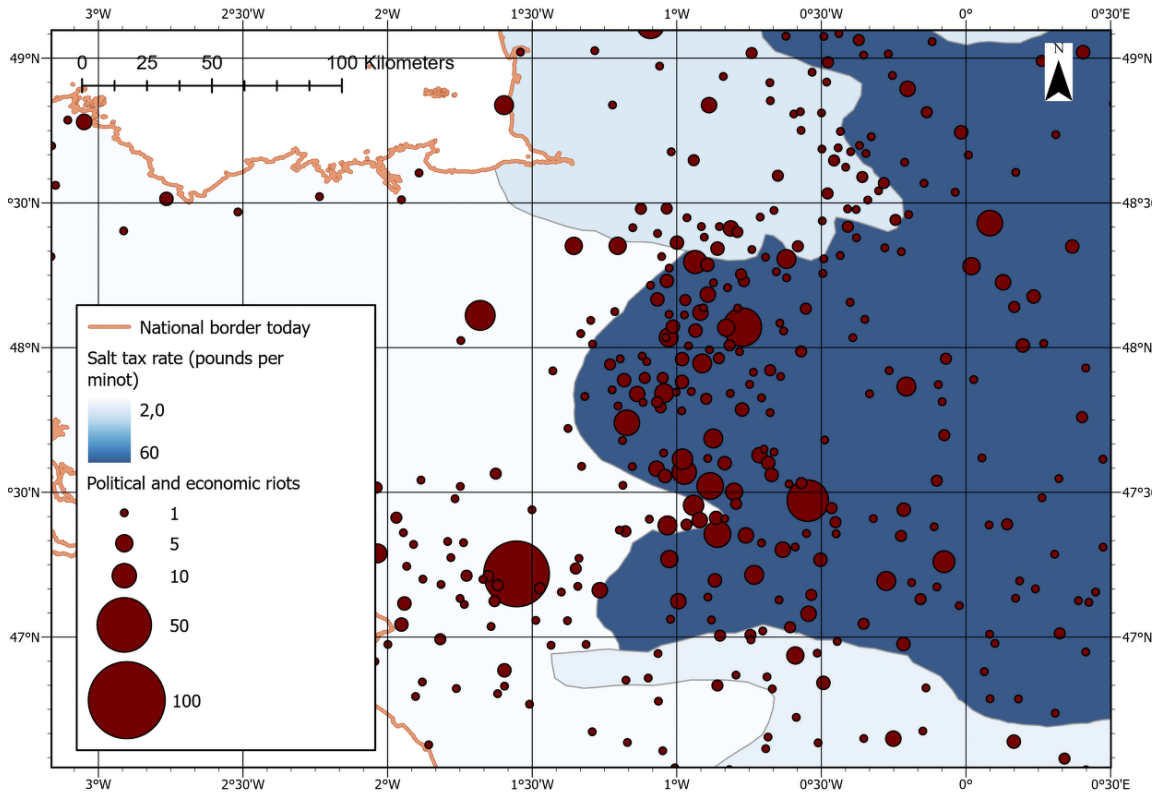
Finally, Figure A4 shows the sensitivity analysis in which we arbitrarily modify the optimal bandwidth of the RD analysis, focusing on the period of the revolution. The coefficient always remain significant and sizeable in magnitude.

TABLE 2 – RIOTS AROUND THE SALT TAX BORDER (1780-1789): DIFFERENT RIOT TYPES

	(1)	(2)	(3)	(4)	(5)
Dep. var.	Riots				
	Tax related	Salt smuggle	Against the authority	Related to feudal institutions	Related to labour
High tax rate	2.403***	3.203***	5.783***	1.055**	5.620***
	(0.683)	(0.778)	(0.820)	(0.535)	(0.880)
N	538	744	686	444	524
Bandwidth	6.97	9.96	9.13	5.87	6.77

Notes: The table show non-parametric RD estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection, according to model 2. The dependent variable covers the period 1780-1789 and it is standardized. The treatment captures the municipalities in the area with a higher rate, compared to the control group. The specification includes border and department fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The estimates are weighted on 1780 population. The sample includes all municipalities that host at least one riot in the period 1740-1809.

FIGURE 7 – ILLUSTRATION OF RIOTS LOCATION AROUND THE SALT TAX BORDER (*Example from the Bretagne/Grande gabelle border*)



Notes: The map shows the location of the political and economic riots that occured between 1750 and 1789 around the salt tax border of *Bretagne/Grande gabelle*. This border is chosen as it is the largest spatial discontinuity in the tax rate.

5 NatExp 2: Convenient fiscal institutions and support for the new regime

In this second experiment we explore whether the constitution of new fiscal institutions could trigger the support for the state (Scheve and Stasavage, 2016; Caprettini and Voth, 2023). To address this research question we examine the effect of the *great tax remission* (Touzery, 2023) and exploit the creation of a set of new fiscal borders –department borders– in the aftermath of the revolution. The treatment group consists of municipalities located in departments that benefited more from the post-revolution fiscal system, compared to their neighboring municipalities on the other side of the border, our control group. To measure support for the new regime, we make use of novel local data on the outcome of the referendum on the new constitution in 1793.

5.1 Identification strategy

This second empirical exercise focuses on the discontinuity in voting outcomes around the new departmental borders. To avoid double treatment concerns, we focus on the set of new departmental borders that *did not overlap with ancien régime borders* (cf. Figure A6, about 60% of all internal km of departmental borders). We also control for ancien regime province fixed effects as the initial tax (which was then redistributed by the tax remission) was collected at this administrative level. Hence, we compare municipalities across non-overlaping borders within the same administrative entity prior to the Revolution. Formally, we estimate the following empirical model:

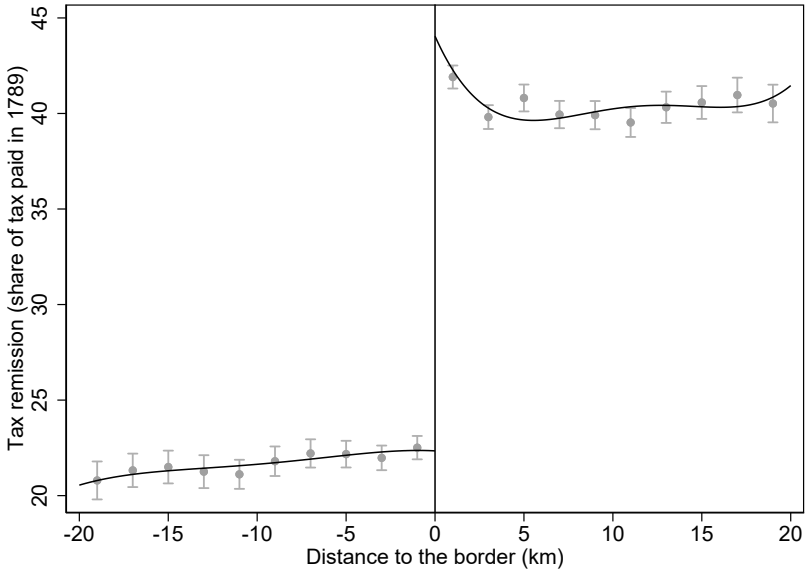
$$Y_i = \beta_0 + \beta_1 T_i + f(d_i) + \boldsymbol{\mu}_{b_i} + \boldsymbol{\nu}_{p_i} + \boldsymbol{X_i'\gamma} + \varepsilon_i, \qquad \text{if } -h \leq d_i \leq h, \tag{3}$$

where T_i is an indicator variable equal to 1 if a municipality is located on the border side with the large tax remission, d_i now refers to distance to the nearest departmental border, $\boldsymbol{\mu}_{b_i}$ are border-segment-specific fixed effects, $\boldsymbol{\nu}_{p_i}$ are old province fixed effects, $\boldsymbol{X_i'}$ includes additional covariates (population in 1780 and coordinates), and ε_i is the error term, clustered at the border segment level.

Figure 8 shows the gap in the 1790-91 tax remission at the new departmental borders. The dependent variable is the share of the 1789 tax bill paid that was sent back thanks

to the 1790-91 tax remission. We observe a gap of about 20 percentage points at the threshold. The average tax remission on the treatment side represents 43% of the taxes paid in 1789, whereas it is "only" 23% in the control group.

FIGURE 8 – AVERAGE SPATIAL GAP IN THE GREAT TAX REMISSION



Notes: The plot shows non-parametric RD estimates following Calonico et al. (2014). The dependent variable is the share of the 1789 tax bill paid that was sent back thanks to the 1790-91 tax remission.

5.2 *Validity.*

We rely on balance checks to assess the validity of the empirical strategy. As already discussed in Section 5.1, the departmental borders were created during the revolution in substitution of pre-existing regional boundaries, as shown in Figure A6. The design of the departmental borders originated from a Revolutionary idea to divide the country in equal sized jurisdictions – given that the population was mostly rural at the time, this implied an almost equal per capita delineation. Figure A2 presents the delineation proposal by Siéyès in September 1789, three weeks before the final delineation was adopted (Chambru et al., 2021; Loumeau, 2023). As such, we expect very limited pre-existing differences around the new administrative border. Yet, to verify this expectation, we conduct a complete balance check exercise.

Figure A7 reports the results of the balancing exercise. First, we focus on pre-revolution variables including municipal population before and during the revolution (1780 and

1789, respectively), the presence of an important historical border, such as those of diocese and archdiocese, the presence of 18th roads (from the Cassini map). Overall, all these outcomes are balanced around the border. Second, we consider a set of geographical variables such as municipal surface and altitude, and a series of soil characteristics (i.e. overall soil fertility, oxygen availability, soil pH, as well as organic, sand and nitrate content in the soil). Also in this case, no significant difference emerges around the border for the variables in analysis.

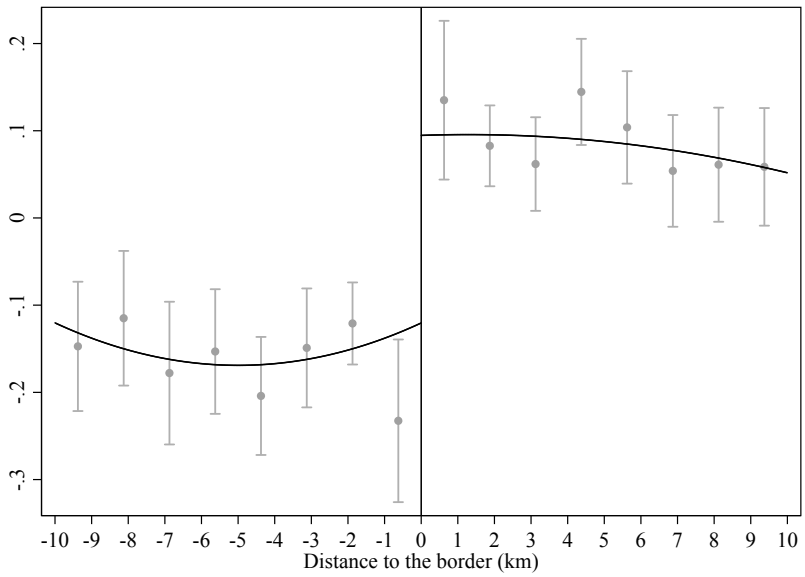
5.3 Main results on the Great Tax Remission

Figure 9 reports the rd-plot derived following eq. (3). It shows the gap in the support for the new constitution as a function of the 1790-91 tax remission. The figure reveals that the municipalities which received back a larger amount of tax money, due to the great tax remission, show a significantly higher support to the new constitution in the 1793 referendum.

Table 3 studies how the voting pattern in the 1793 referendum varies around the newly created departmental borders. A positive and significant effect emerges in the treatment area for each variable in analysis: municipalities located in the treatment area, significantly favored by the new fiscal system, are more likely to turnout (column 1), to vote in favor of the new constitution (column 2), and their turnout is larger than the national average (column 3). The magnitude of these effects is very large: the impact on the share of votes "Yes" of 34% is large. It amounts to 90% of the average share of votes "Yes". These large local effects are clearly visible in the RD plots reported in Figure 9. Importantly, these results are robust to many bandwidth specifications and the magnitude of the coefficient is very stable, as documented in Figure A8.[11] In Figure A9, we depart from the RD specification and conduct a binscatter analysis to retrieve the intensive margin effects. We show that a 10 percentage points increase in the remission leads to a 0.1 standard deviation increase in the voter turnout.

[11] Also in this case it is important to mention that similar results emerge if we conduct this analysis aggregating the referendum results at the canton level. These analysis is reported in Table A2.

FIGURE 9 – SUPPORT FOR THE NEW CONSTITUTION IN THE 1793 REFERENDUM - RD PLOT



Notes: The plots show non-parametric RD estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection, according to model 3. The dependent variable is municipal turnout (expressed in share and standardized). The treatment captures, for every departmental border, the department which received back the larger amount of tax credit in 1790-91, compared to the neighboring department – according to the great tax remission. The specification includes border and region fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The sample only includes the borders which do not overlap with previous province boundaries.

TABLE 3 – IMPACT OF TAX REMISSION ON 1793 REFERENDUM

	(1)	(2)	(3)
	Referendum 1793		
Dep. var.	Municipal turnout (share)	Votes "Yes" (share)	Turnout compared to national mean
Treatment	0.338***	0.344***	0.338***
	(0.094)	(0.094)	(0.094)
N	2,994	3,044	2,994
Bandwidth	6.06	6.17	6.06

Notes: The table show non-parametric RD estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection, according to model X. The dependent variable is always standardized and it is expressed in share in columns 1 and 2. The treatment captures, for every departmental border, the department which received back the larger amount of tax credit in 1790-91, compared to the neighboring department – according to the great tax remission. The specification includes border and region fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The sample only includes the borders which do not overlap with previous province boundaries.

6 Conclusion

In this paper we show that fiscal institution may have a key role in triggering revolutionary changes, focusing on the case of the French Revolution. As a first analysis, we show that areas that have been subject to the *old* unequal fiscal institutions for centuries are more likely to contribute actively to the Revolution. In fact, in those areas the intensity of political and taxation riots is remarkably higher during the years of the revolution, than in the control group. Secondly, we show that municipalities which benefited the most from the *new* fiscal system show larger support for the new post-revolutionary government, with a remarkably higher support to the new constitution.

These findings suggest that fiscal institutions are key determinants of support for the state, both igniting revolts as well as building support for the new political regime. By delving into the pivotal relationship between taxes and social contract, our research not only enhances our comprehension of historical events but also provides invaluable insights for understanding contemporary policy.

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Online appendix for

"Taxes, Transfers, and Support for the State: Evidence from the French Revolution"

T. Giommoni, G. Loumeau and M. Tabellini

A Supporting material

A.1 Tables

A.2 Figures

A Supporting material

A.1 Tables

TABLE A1 – DESCRIPTIVE STATISTICS

	Average value	Median	Standard deviation	Minimum	Maximum	No. obs.
Panel A: Analysis on salt tax						
All riots (1740-1809)	.090	0	.798	0	33	144935
Tax riots (1740-1809)	.022	0	.356	0	17	144935
Salt smuggle riots (1740-1809)	.009	0	.166	0	13	144935
Riot against authority (1740-1809)	.019	0	.194	0	5	144935
Riots against feudal institutions (1740-1809)	.005	0	.079	0	3	144935
Labour riots (1740-1809)	.015	0	.258	0	12	144935
Food riots (1740-1809)	.024	0	.329	0	21	144935
All riots (1780-1789)	.187	0	1.13	0	29	20705
Tax riots (1780-1789)	.035	0	.413	0	10	20705
Salt smuggle riots (1780-1789)	.028	0	.224	0	6	20705
Riot against authority (1780-1789)	.024	0	.232	0	4	20705
Riots against feudal institutions (1780-1789)	.020	0	.166	0	2	20705
Labour riots (1780-1789)	.037	0	.398	0	9	20705
Food riots (1780-1789)	.065	0	.529	0	17	20705
Mun. population 1780	91811.52	82903	75867.26	17	202729	144935
Municipal surface (km^2)	16.18	10.23	24.09	.2	757.76	144935
City in Cassini map (dummy)	.184	0	.387	0	1	144935
Panel B: Analysis on Remise						
Referendum 1793 - Turnout (share)	.385	.358	.172	0	.875	8759
Referendum 1793 - Votes "Yes" (share)	.384	.357	.173	0	.8	9139
Referendum 1793 - Turnout vs national mean	1.04	.974	.468	0	2.37	8759
Mun. population 1780	4911.46	540	33907.43	39	927453	9077
Municipal surface (km^2)	16.00	11.79	14.76	.408	236.46	9469
City in Cassini map (dummy)	.132	0	.338	0	1	9195

Notes: This table reports descriptive statistics. The sample in analysis are the municipalities located around the 22 salt tax borders according to Figure 1in panel A and the municipalities located around Remise borders according to Figure 2 (excluding the "endogenous" borders) in panel B. The used bandwidth is 50 km. Referendum and electoral results are expressed in share (with the exception of the variable *Referendum 1793 - Turnout vs national mean* which is a ratio). The statistics of panel A are weighted according to 1780 population.

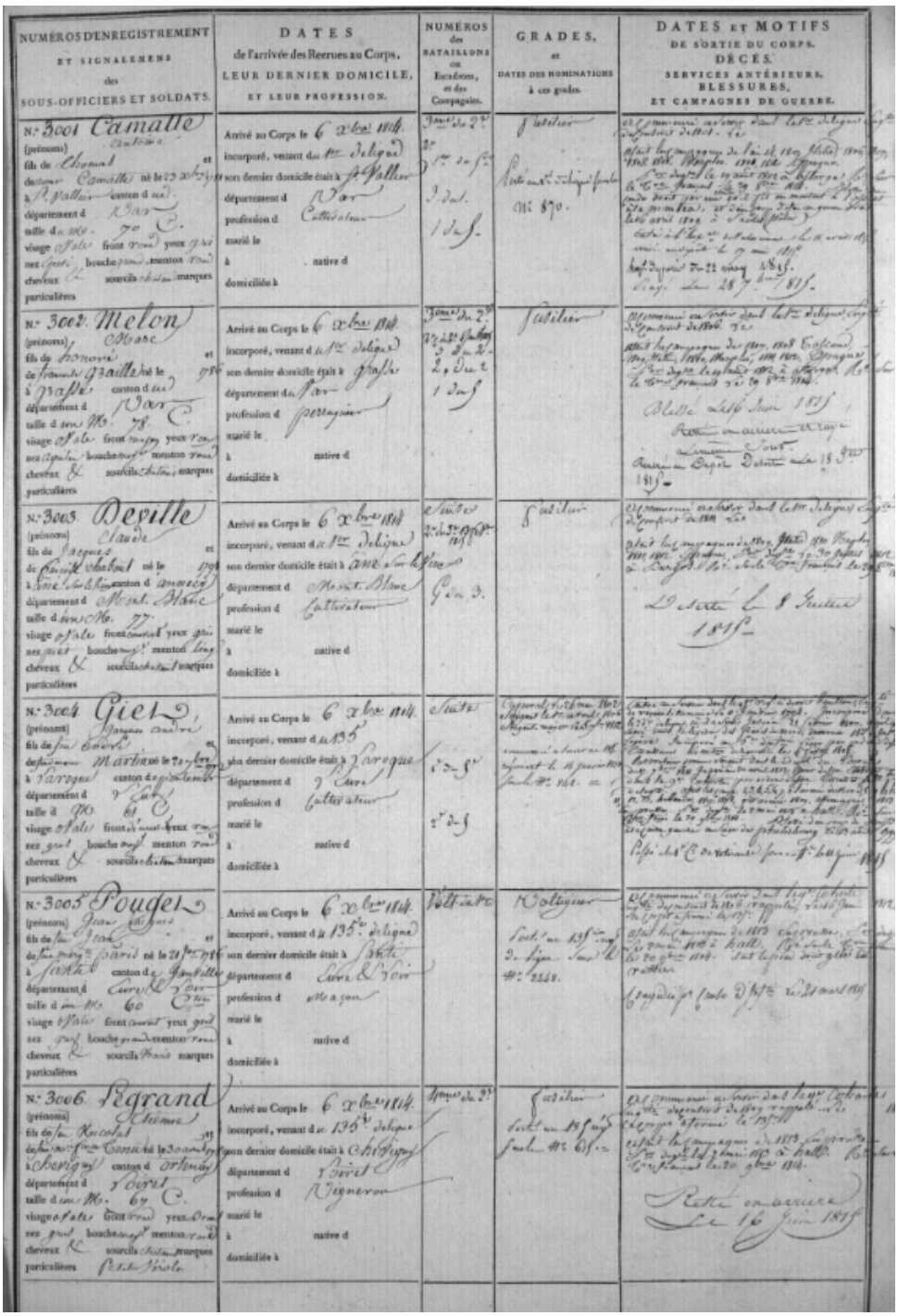
TABLE A2 – IMPACT OF TAX REMISSION ON 1793 REFERENDUM – CANTON AGGREGATION

	(1)	(2)	(3)
	Referendum 1793		
Dep. var.	Municipal turnout (share)	Votes "Yes" (share)	Turnout compared to national mean
Treatment	0.343***	0.353***	0.343***
	(0.095)	(0.097)	(0.095)
N	3,046	3,051	3,046
Bandwidth	6.18	6.18	6.18

Notes: The table show non-parametric RD estimates following Calonico et al. (2014) under optimal bandwidth and polynomial order selection, according to model X. The dependent variable is always standardized, it varies at the cantonal level, and it is expressed in share in columns 1 and 2. The treatment captures, for every departmental border, the department which received back the larger amount of tax credit in 1790-91, compared to the neighboring department – according to the great tax remission - and it varies at the canton level. The specification includes border and region fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The sample only includes the borders which do not overlap with previous province boundaries.

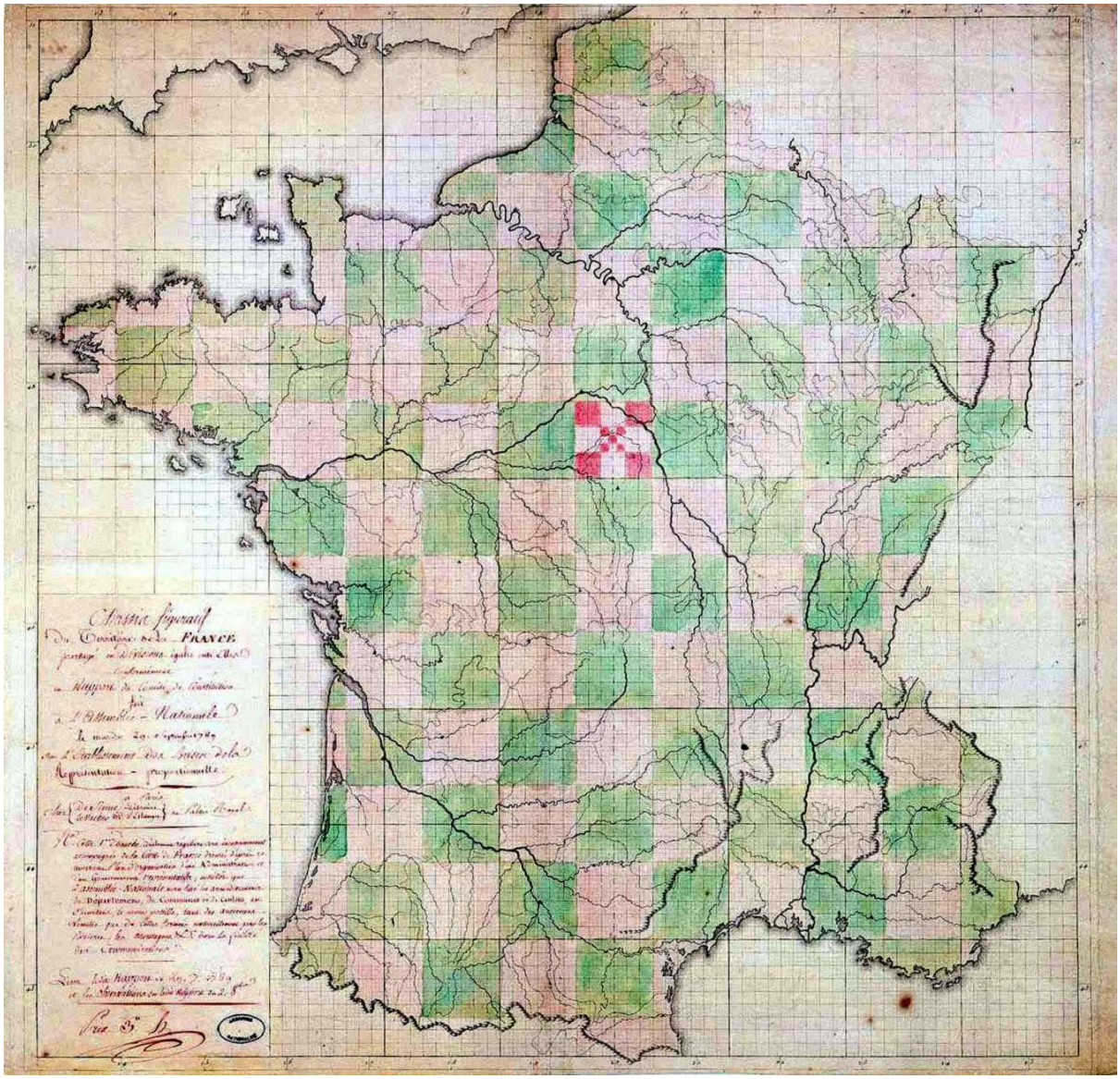
A.2 Figures

FIGURE A1 – EXAMPLE OF THE MILITARY REGISTERS OF NAPOLÉON'S ARMY



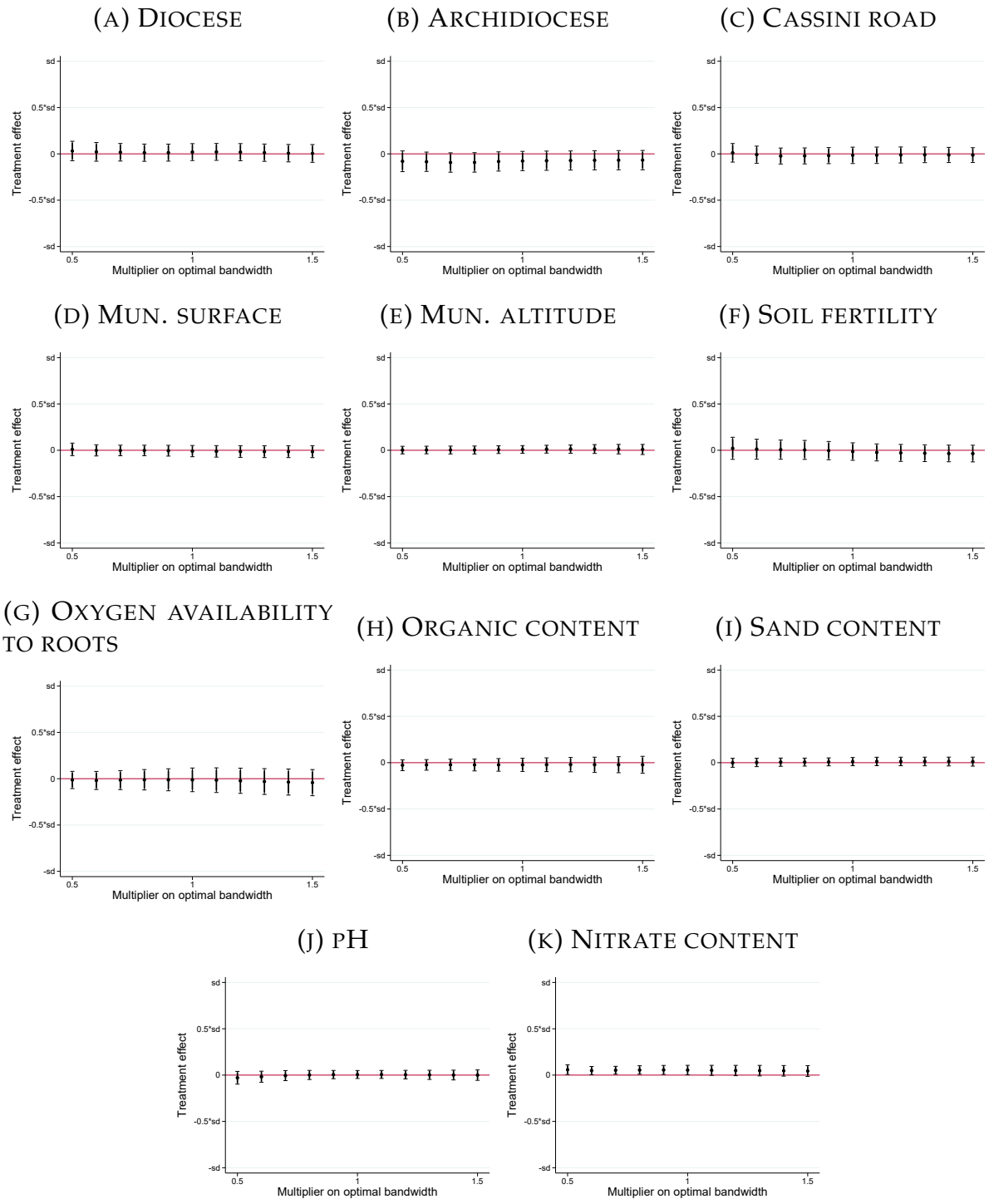
Notes: This figure reproduces the list of regimental numbers 3,001 to 4,386 from the 1st regiment of line infantry, known as the King's regiment, December 6, 1814-July 3, 1815.

FIGURE A2 – DEPARTMENT BORDER PROPOSAL BY THE SIEYES COMMITTEE



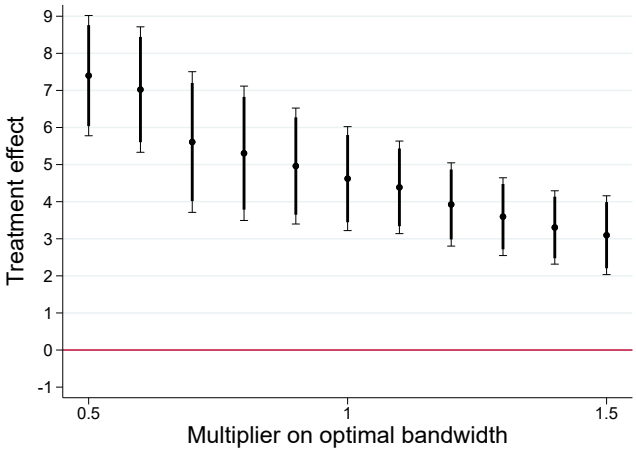
Notes: The figure shows the map of the department borders proposed by the Siéyès committee in September 1789. *Source:* National Library of France, BnF.

FIGURE A3 – BALANCE CHECKS - NATEXP 1



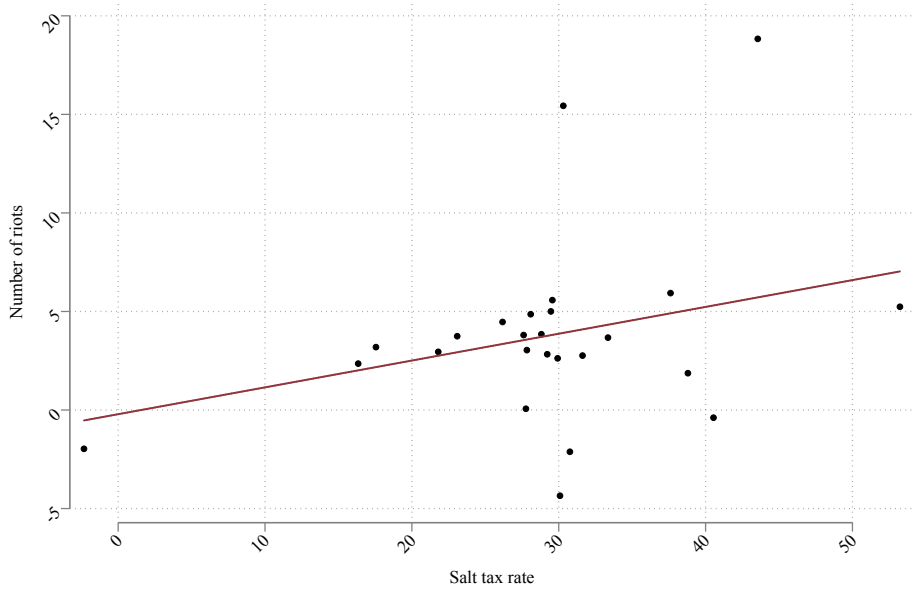
Notes: The plot report non-parametric RD estimates following Calonico et al. (2014), estimated with different bandwidths (value 1 corresponds to the optimal bandwidth, values different from 1 correspond to multiples of the optimal bandwidth). The coefficients of the analysis are expressed in standard deviations of the dependent variable. *Organic content (av.)* refers to the organic matter available in the soil at a depth of 30-60cm; *Sand content (av.)* refers to the sand content in the soil at a depth of 30-60cm; *Nitrate content (av.)* refers to the sand content in the soil at a depth of 30-60cm. The specification includes border and department fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map).

FIGURE A4 – RIOTS AROUND THE TAX BORDER (1790-1799) - SENSITIVITY ANALYSIS



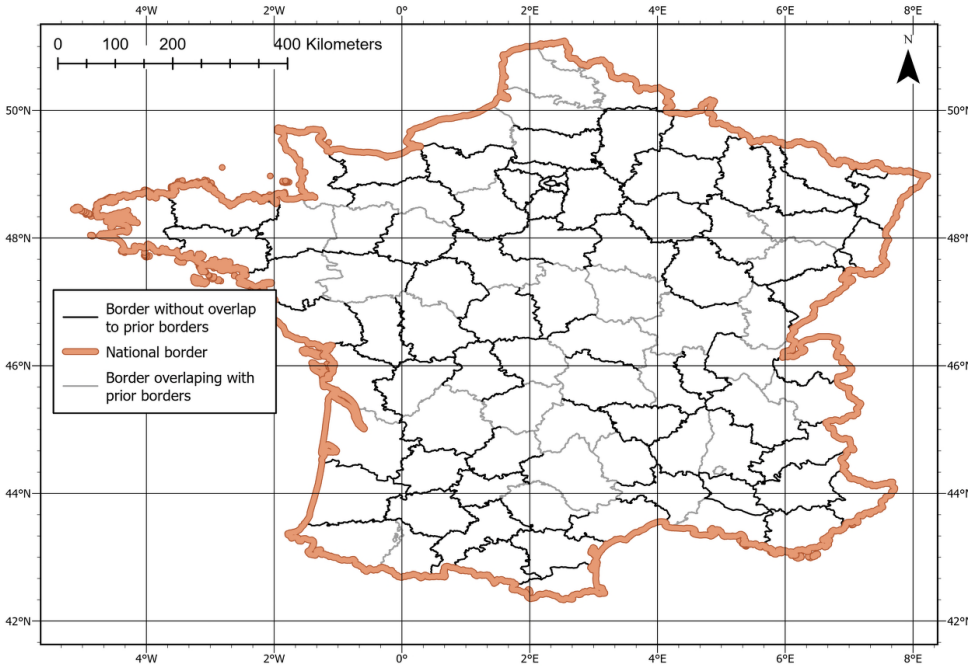
Notes: The plots show non-parametric RD estimates following Calonico et al. (2014) under optimal polynomial order selection, according to model 2. The bandwidth of the analysis are arbitrarily modified between 0.5 and 1.5 of the optimal bandwidth. The dependent variable is political and economic riots , for the period 1780-1789, and it is standardized. The treatment captures the municipalities in the area with a higher rate, compared to the control group. The specification includes border and department fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The estimates are weighted on 1780 population. The sample includes all municipalities that host at least one riot in the period 1740-1809.

FIGURE A5 – IMPACT OF SALT TAX RATE ON RIOTS (1780-1789)



Notes: The figures show binscatter analysis. The dependent variable captures the number of political and economic riots, it covers the period 1780-1789 and it is standardized. The treatment is the salt tax rate applied to each municipality. The specification includes border and department fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The coefficient is .136 (with a standard error of .047).

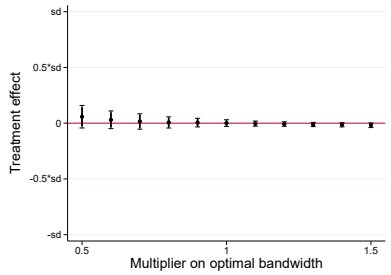
FIGURE A6 – OVERLAPING AND NON-OVERLAPING DEPARTMENT BORDERS



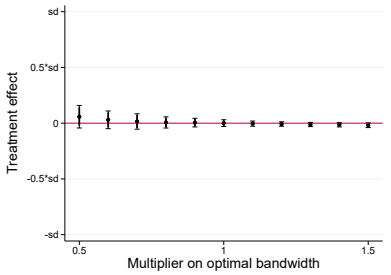
Notes: The figures shows the set of departmental borders that did and did not overlap with ancien regime provincial borders.

FIGURE A7 – BALANCE CHECKS - NATEXP 2

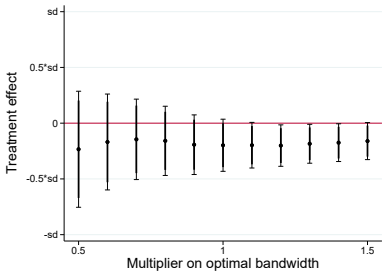
(A) POPULATION 1780



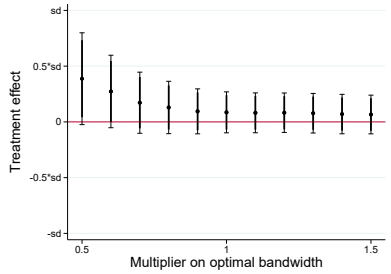
(B) POPULATION 1789



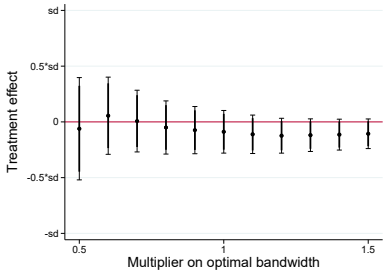
(C) DIOCESE



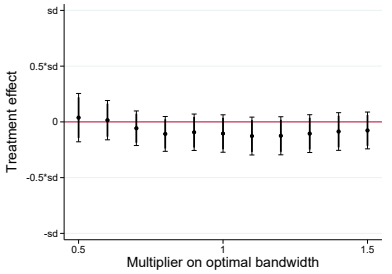
(D) ARCHIDIOCESE



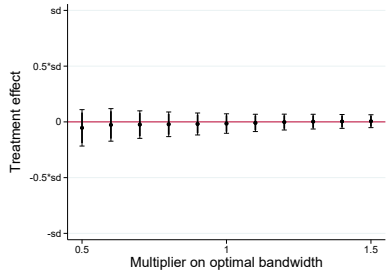
(E) CASSINI ROAD



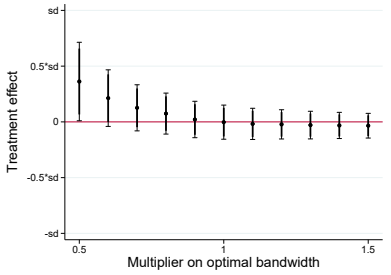
(F) MUN. SURFACE



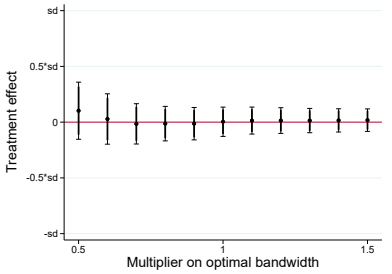
(G) MUN. ALTITUDE



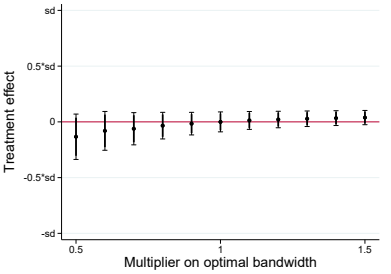
(H) SOIL FERTILITY



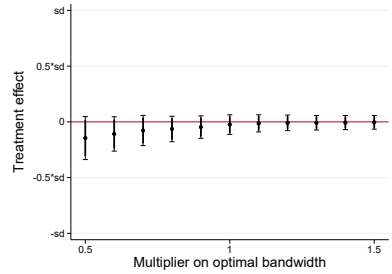
(I) OXYGEN AVAILABILITY TO ROOTS



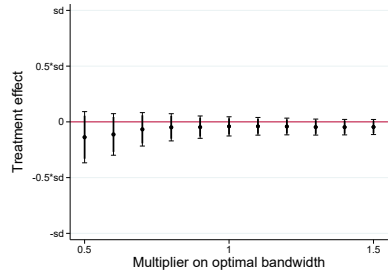
(J) ORGANIC CONTENT



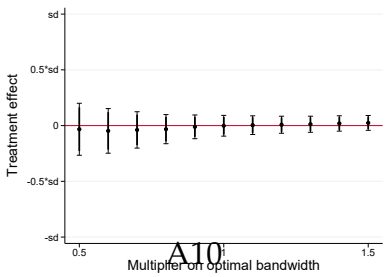
(K) SAND CONTENT



(L) PH

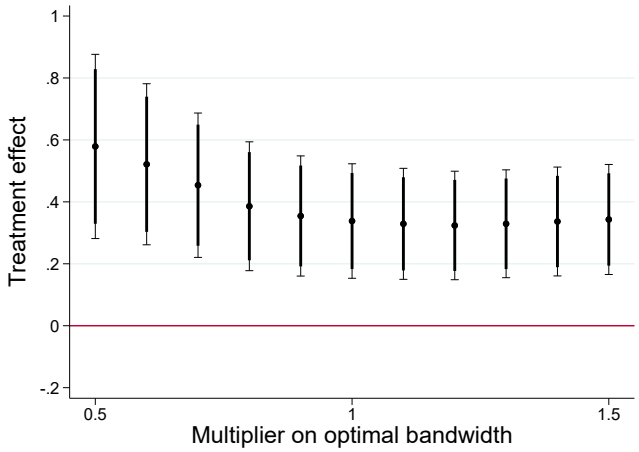


(M) NITRATE CONTENT



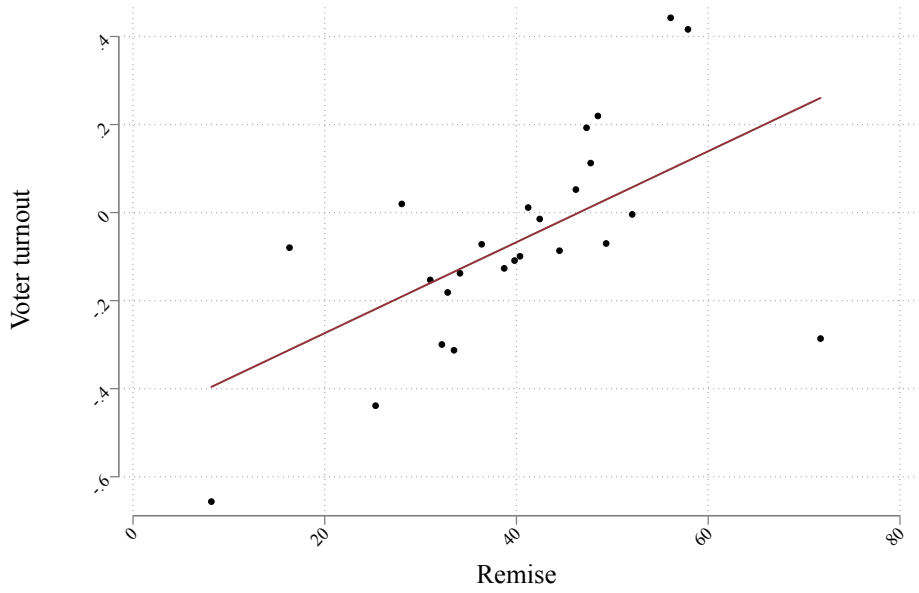
Notes: The plot report non-parametric RD estimates following Calonico et al. (2014), estimated with different bandwidths (value 1 corresponds to the optimal bandwidth, values different from 1 correspond to multiples of the optimal bandwidth). The coefficients of the analysis are expressed in standard deviations of the dependent variable. *Organic content (av.)* refers to the organic matter available in the soil at a depth of 30-60cm; *Sand content (av.)* refers to the sand content in the soil at a depth of 30-60cm;

FIGURE A8 – IMPACT OF TAX REMISSION ON 1793 REFERENDUM - SENSITIVITY ANALYSIS



Notes: The plots show non-parametric RD estimates following Calonico et al. (2014) under optimal polynomial order selection, according to model X. The bandwidth of the analysis are arbitrarily modified between 0.5 and 2 of the optimal bandwidth. The dependent variable is municipal turnout (expressed in share) and standardized. The treatment captures, for every departmental border, the department which received back the larger amount of tax credit in 1790-91, compared to the neighboring department – according to the great tax remission. The sample only includes the borders which do not overlap with previous province boundaries. The specification includes border and region fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The sample only includes the borders which do not overlap with previous province boundaries.

FIGURE A9 – IMPACT OF TAX REMISSION ON 1793 REFERENDUM (1780-1789)



Notes: The figures show binscatter analysis. The dependent variable captures the voter turnout in 1793 referendum and it is standardized. The treatment is the remise received by the department where a municipality is located. The specification includes border and region fixed effects as well as a set of municipal controls (population in 1780, surface and a dummy capturing if the municipality is reported in Cassini map). The coefficient is .010 (with a standard error of .007).

Appendix B Data