Trade Liberalization and Local Economic Activity: Evidence from the Savoy Great Free Zone

Lorena Keller* Ricardo Pique †

October 2024

Preliminary Draft

Abstract

We explore the effect of trade liberalization on long-run local economic activity using the historical case of the Savoy Great Free Zone (GFZ). Between the 1860 Savoyard annexation and WWI, the French customs line arbitrarily partitioned the department of Haute-Savoie, leaving the GFZ outside of the French customs area. Using a spatial regression discontinuity design and an original local-level dataset, we show that direct tax revenues, which were based on indicators of local economic activity and wealth, were significantly higher in the GFZ. This effect is persistent, lasts until the abolition of the zone, and is driven by greater land tax revenues. The effect appears to be driven by greater real income and capital accumulation due to access to cheaper consumer goods and inputs. Consistent with this explanation, while there are no major changes in land use and production of raw agricultural products, we find evidence of a greater relative number of agro-industrial and manufacturing establishments. Overall, our results point to sizable impacts of trade liberalization on long-run local economic activity.

Keywords: Trade liberalization, local economic activity, regression discontinuity, Great Free Zone, France.

JEL Codes: F14, N13, N33, N73, O12, O24.

*Assistant Professor, Finance Department, Wharton School, University of Pennsylvania, Philadelphia, PA, 19104, USA. Email: lorenak@wharton.upenn.edu

†Visiting Assistant Professor, Business Economics and Public Policy Department, Wharton School, University of Pennsylvania, Philadelphia, PA, 19104, USA. Email: rpique@wharton.upenn.edu

We thank seminar participants at the Midwest Macroeconomics Meeting, Southern Methodist University and the Wharton School for helpful comments and suggestions. We are very grateful to Maria Alejandra Cortes and Ninel Kosoyan for excellent assistance in the data collection and data entry process.

Introduction

In the era of globalization, trade liberalization is a hotly contested issue. While general tariffs have diminished over time, a return to a more protectionist economic world looms on the horizon. Free-trade advocates argue that maintaining low tariffs will foster development as countries leverage increased connectivity and lower transport costs. On the other hand, protectionist sentiments are on the rise in many developed economies, spurred by the erosion of their industrial base and national security concerns.

The empirical evidence on the impact of trade liberalization on economic activity is ambiguous (O'Rourke, 2000; Irwin, 2002; Clemens and Williamson, 2004; Lampe and Sharp, 2013). Most studies have relied on cross-country data as variation in trade policies within countries is uncommon. In this context, identifying causal impacts is hampered by selection bias and reverse causality. Estimating the effect on long-run economic activity is particularly cumbersome due to limited decades-long data on economic indicators.

In this paper, we fill this void by using a unique historical quasi-natural experiment and an original local-level database to study the effect of trade liberalization on local economic activity. Specifically, we explore the case of the "*Grande Zone Franche*" (Great Free Zone - GFZ) in the French department of Haute-Savoie. The GFZ was established immediately after the French annexation of Savoy in 1860. It was French sovereign territory with no particular autonomy located *outside the French customs border*. Hence, GFZ inhabitants could import foreign products, in particular neighboring Swiss goods, free of French duties. Being French land, they could still buy French-interior goods tariff-free just as those inside the customs border. The GFZ ceased to exist de-facto during WWI and was formally replaced by a much smaller border zone in 1932.

The GFZ had its origin in a miscalculation by Emperor Napoleon III, who initially looked to appease Swiss concerns regarding the annexation of Savoy by transferring Northern Savoy to Switzerland. This was an outrageous idea for the French establishment and was disregarded. As a compromise to help secure local support for French annexation, it was decided to expand the previous border zone and create the GFZ. While the customs line which run through Haute-Savoie appears to have been drawn up in a quick and arbitrary manner, this holds, in particular, for a large segment set at the Usses river. Its selection appears to be driven by the usefulness of having a

clearly-defined natural feature to partition the old Sardinian province of Genevois, now entirely part of Haute-Savoie, into a Northern (inside GFZ) and Southern (outside GFZ) areas.. We collect a wide array of pre-annexation outcomes and confirm that the border partitioned an otherwise homogeneous area in terms of its demographic, economic, and geographic characteristics.

We hypothesize that the GFZ may have impacted real incomes and wealth accumulation mainly through *lower living costs* and *cheaper inputs* due to access to cheaper duty-free foreign consumer and industrial goods, primarily from Switzerland. Consistent with these explanations, we find a positive, sizable and significant effect of the GFZ on per capita municipal revenues, local tax revenues, and local tax base. The estimates for the period between 1878 and 1914 are equivalent to 0.56, 1, and 0.35 standard deviations, respectively.

We delve into the drivers of these effects by analyzing total direct tax revenues at all government levels by tax contribution. As the French income tax was only introduced during WWI, direct tax revenues depended on collection from the four main post-French Revolution direct contributions. These were supposed to reflect wealth from various sources such as land properties and commercial and manufacturing establishments.

Just after annexation, we find no significant discontinuities in the total amount to be collected and land tax revenues, the main contribution. The GFZ impact gradually increases. In 1881 and 1891, we already observe a meaningful and statistically significant positive effect. The disaggregated results show that the overall impact is largely driven by revenues from the land contribution. This is to be expected as the land tax was the most important one revenue-wise.

We complement our findings by examining the effect of the GFZ on the structure of local economies, and on agricultural and industrial activity. We first check how the distribution of the workforce and their dependents changed. Using data from the 1891 census. we find a sizable and significant reallocation of the population from public administration towards other sectors. While other effects are not statistically significant, the workforce shifts towards the agricultural and industrial sectors, rather than to commercial activities.

We then explore the impact of the GFZ on agriculture which was, by a significant margin, the main economic activity on both sides of the border. Using data from pre-WWI local agricultural statistics, we find no sizable discontinuities in land use and production of raw animal goods. However, consistent with greater wealth accumulation and capital development, there is a significant

discontinuity in the relative number of agro-industrial establishments on the eve of WWI. Similarly, with respect to industrial activity, we find a positive and statistically significant effect on the relative number of manufacturing establishments twenty years after annexation.

Our results complement the literature on the long-run impact of trade liberalization on economic activity. This research shows ambiguous results regarding the historical relationship between tariffs and growth. Many argue high tariffs were associated with positive economic growth before WWII (O'Rourke, 2000; Vamvakidis, 2002; Clemens and Williamson, 2004), and slow growth afterwards (Clemens and Williamson, 2004). Others find opposite results, pointing to the difficulty in obtaining causal estimates to explain divergences (Irwin, 2002; Lampe and Sharp, 2013; Schularick and Solomou, 2011). More recent efforts have looked to identify the effect of tariffs on regional industrial development (Juhász, 2018). We contribute to this literature by exploiting a unique historical setting and constructing an original dataset to estimate the effect of trade liberalization on a broad set of local outcomes. Our context allows us to identify the effect trade liberalization on the long-run evolution of local direct tax revenues and various measures of agricultural and industrial activity.

More generally, we contribute to the literature on the relationship between trade and economic activity (Frankel and Romer, 1999; Rodríguez and Rodrik, 2000; Feyrer, 2019)Ẇork on this field includes more recent efforts to use variations in travel technology or infrastructure to identify the effect of market integration on development (Duranton et al., 2014; Faber, 2014; Flückiger et al., 2021; Pascali, 2017; Donaldson, 2018).

The rest of the paper is divided as follows. Section 1 describes how the GFZ was established, its economic regime and how it came to an end. Section 3 details our data sources and identification strategy. Section 4 presents our main results. Section 5 concludes.

1 Context

Following the War of Spanish Succession, the mainland European territories of the House of Savoy and the island of Sardinia formed a personal union known as the Kingdom of Sardinia. In 1847, the so-called "Perfect Fusion" led to a united kingdom. Almost a decade later, in exchange for French support for the Italian unification process, Sardinia promised to transfer the County of Nice

and the Duchy of Savoy to France. In March 1860, the Treaty of Turin was signed whereby France annexed the two areas. A month later, a plebiscite was carried out to showcase popular support for the process. Almost all voters cast ballots in favor of joining the Second French Empire. In June 1860, the annexation came into force. The territory of Savoy, which comprised the Sardinian provinces (formerly referred to divisions) of Annecy and Chambéry, became the current French departments of Haute-Savoie and Savoie.

Following annexation, the administrative division of the territory was changed to fit the standard French territorial structure. The Sardinian division of Annecy, which was divided into the provinces of Genevois, Chablais and Faucigny, became the department of Haute-Savoie. This was divided into four *arrondissements*: Annecy, Bonneville, Saint-Julien and Thonon-les-Bains. The Sardinian division of Chambery, composed by the provinces of Savoie Propre, Tarentaise, Haute-Savoie and Maurienne became the department of Savoie and was divided into four arrondissements: Albertville, Chambéry, Moûtiers (abolished in 1926) and Saint-Jean-de-Maurienne.

At the time of annexation, the economy of both departments was based on agriculture (Kinossian, 2014). Industrial activitiy was minimal and railroad infastructure almost non-existant.

1.1 Establishment of the GFZ

The prospect of the French annexation of Savoy led to fear and uncertainty among Swiss officials and, in particular, in the canton of Geneva. A first concern was that Geneva would be defenseless to an attack as it would be almost completely surrounded by France. Hence, the Treaty of Turin, maintained the neutralized zone of Savoy established in 1815, which meant that French could not garrison troops in the area. The zone covered the whole of Haute-Savoie as well as a small fraction of Savoie.

Most importantly, Genevans were concerned with the state of trade after annexation. The city depended on agricultural produce from Savoy. For this reason, in 1816, an initial free zone was established which encompassed the municipalities on the Swiss-Sardinian border.[1] When the issue of French annexation arose, there was unease on both sides regard future trade relations and the flow of goods.

[1]This free zone should be distinguished from that in the Pays de Gex, which also border Switzerland, in the Ain department.

As a response to Swiss concerns, the French Emperor initially flirted with the idea of transferring Northern Savoy to Switzerland (Paul-Dubois, 1912). This plan was quickly abandoned in favor of expanding the previous free zone into the "*Grande Zone Franche*" (Great Free Zone - GFZ). The enlarged zone appears to be the "*indirect consequence of an imprudent maneuver by the Emperor, of a political error that he wanted to repair, when there was till time, through a clever subterfuge*"(Paul-Dubois, 1912). The GFZ also helped appeased Savoyards who were in favor of incorporation into Switzerland. The decision on its creation was communicated to local authorities in the area so that they could inform the local population before the plebiscite.

The Emperor's compromise surprised French officials and led to a hastily drawn custom border. A decree of June 12th, 1860 set the points through which the line should pass. In March 1899, a second decree provided clarity on the border's course between those points and made minor adjustments on the parts of the municipalities of Thorens and Evires included in the GFZ (Kinossian, 2014). From West to East, the border run the course of the Usses river, a small tributary of the Rhone, until it meets the limit between the arrondissements of Annecy and Saint-Julien. Then, the custom border follows the limits of the arrondisement of Annecy, first with Saint-Julien and then with Bonneville. Afterwards, the customs line runs along the departmental limit of Haute-Savoie with Savoie, until it reaches the Italian border.

The section of the custom border which divides Haute-Savoie appears to split areas with similar demographic, economic, geographic and political characteristics.[2] This holds in particular for the part which follows the Usses. The Usses splits the former Sardinian province of Annecy and the previous province of Genevois (a sub-division of the division - later province - of Annecy). It also runs through the arrondissement of Saint-Julien. Its selection appears to be driven not by differences in local characteristics between both banks of the riven, but by the administrative usefulness of having the custom border follow a natural feature which splits Haute-Savoie.[3]

The rest of the border also did not follow policy-relevant boundaries. After the Usses, the

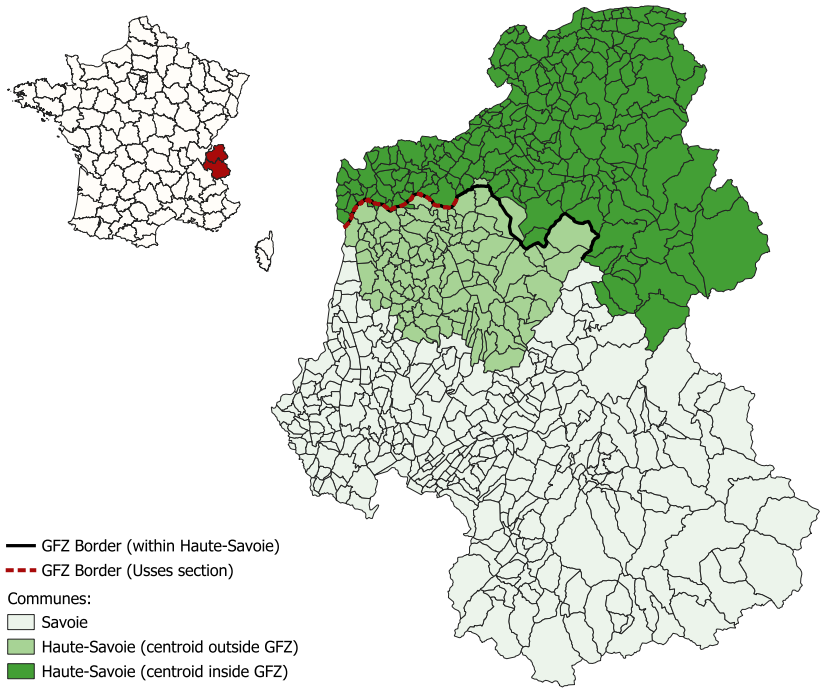
[2]In fact, municipalities left out of the GFZ still expressed support for joining it when the annexation plebiscite took place. Moreover, almost a decade after annexation, local merchants in the city of Annecy, which was left out of the zone, argued in favor of extending the zone by stating that "*the customs line of the Usses and the Aravis was a double error, a fiscal and political error*" (Ferrero, 1918).

[3]The course of the Usses was never used as an administrative boundary. Only a fraction of the Usses marked the boundary between the French revolutionary departments of Mont-Blanc and Leman, the latter created after the French annexation of Geneva. The department of Leman only lasted from 1800 until 1813, and appears to have had no particular relevance policywise.

customs line followed arrondissements limits. Arrondissements were, and still are, department administrative sub-divisions which implemented policies determined at the national and departmental level. They were so irrelevant that their supression was considered in 1871. They are not governed by elected officials but by Sub-prefect appointed by the national government. While the arrondisemment of Saint-Julien was created after annexation, the borders of Bonneville follow those of the Sardinian district of Faucigny. However, as with French arrondissements, Sardinian districts (known as provinces pre-1959) had limited authority and were administrative units in charge of implementing national policy.

The GFZ covered an area of 3,112 km^2, equivalent to two-thirds of Haute-Savoie and more than half of its population (Kinossian, 2014).

Figure 1: GFZ and Customs Line



Notes: The map shows the municipalities of the departments of Haute-Savoie and Savoie, and the location of the GFZ.The black, bold line is the GFZ border within Haute-Savoie based on the 1899 Decree. The dotted red line is the section of the border which follows the Usses river and serves as our treatment border. Dark green and light green locations are Haute-Savoie municipalities located within and outside (based on their centroids) of the GFZ, respectively. See Section 3 for details on our sample and empirical strategy.

1.2 GFZ Economic Policy

The defining characteristic of the GFZ is that it was French territory outside of the French customs area. Hence, foreign goods could enter the GFZ without paying French duties. This meant that Zonians, as GFZ inhabitants were referred, enjoyed lower prices for consumption goods. This was particularly so for non-European products like coffee, tea, chocolate and pepper which faced high import duties (Ferrero, 1918). Hence, Zonians were able to consume goods which were considered a luxury in other parts of France (Le Grix, 1905). The GFZ internal tax structure was similar to that of the rest of France. The only difference was the reduction or elimination of excise taxes for certain French consumption goods, such as beer, salt, sugar and tobacco, to allow them to compete with cheaper Swiss production (Ferrero, 1918).

As the GFZ was a unilateral initiative from the French Emperor, there was no reciprocity from the Swiss in terms of more favorable trading conditions (Paul-Dubois, 1912). It was only in June 1881 that a trade agreement, the Franco-Swiss Trade Convention, was signed between both parts. The convention, which came into force in January 1883, led to reduced or no duties for certain products, including butter, cereals, fruits, vegetables, wine and raw materials like firewood and charcoal (Kinossian, 2014). These benefits were expanded to other goods in 1895 and 1908. Still, by 1910, only a quarter of GFZ exports to Switzerland were covered by benefits idiosyncratic to the GFZ (Paul-Dubois, 1912). The lack of more advantageous conditions can be explained by the fact that while Geneva largely benefited from trade with the GFZ, farmers in other areas of Switzerland were against relaxing duties (Paul-Dubois, 1912).

Overall, free access for Swiss goods plus more advantageous conditions for GFZ produce led to significant trade between the GFZ and Switzerland. In 1901, it was estimated that the value of the exoneration for Swiss goods entering the GFZ and the free zone of Gex was greater than 2.2 million gold francs (Paul-Dubois, 1912). Before WWI, annual GFZ exports to Switzerland were valued at 22.6 million gold francs (Kinossian, 2014). Most of these were agricultural such as cereals, cheeses, fruits and wines. Imported Swiss goods, 90% of which were industrial and retail products, were valued at 10.7 million francs(Kinossian, 2014). Commercial exchange was drastically affected by WWI. By 1918, GFZ exports and imports were equal to 4.7 and 5.4 million francs, respectively.

Being outside of French customs meant that not all GFZ products could be freely exported to

the rest of France. In the first couple of years of the GFZ, only a few products entered the French interior duty free, the main being leathers, cheeses, and sawn wood (Conseil général de la Haute-Savoie, 1862). In May 1863, a decree homogenized trading policy across free zones and established that the Ministry of Finance determines " *the quantities of natural or manufactured products from the country of Gex or of neutralized Savoie which can be admitted exempt from customs duties for the internal consumption of the Empire* " (Kinossian, 2014). These goods had to be produced by French nationals[4] and need to be accompanied by a declaration of origin. In February 1893, duty exemptions were expanded to other agricultural products not included in the initial 1863 decree (Kinossian, 2014).

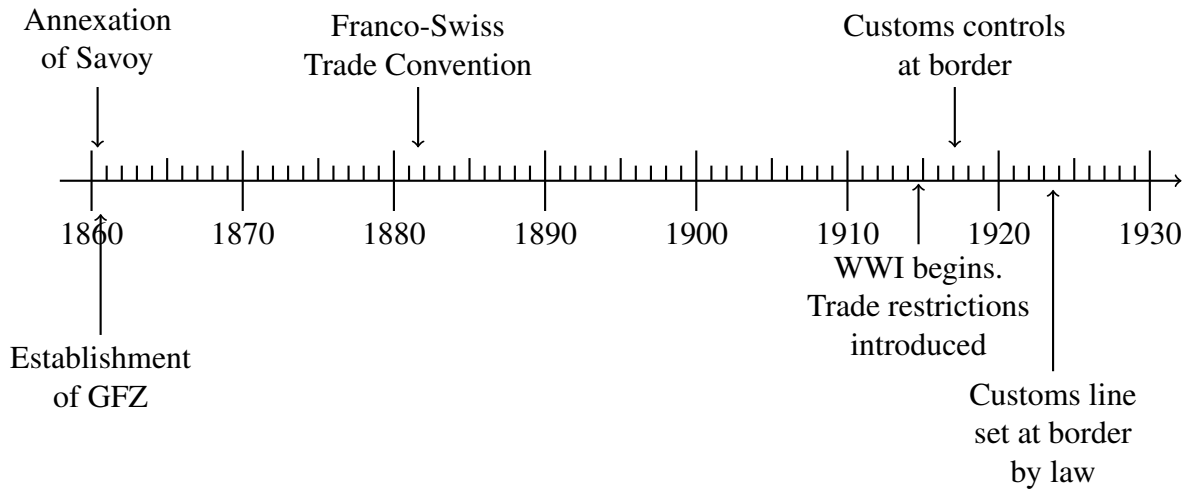
Trading conditions were, in general, less favorable for manufactured goods (Folliet and Duval, 1902). Amid industrialization, both France and Switzerland were more interested in protecting their manufacturing sectors. Exemptions were granted to certain product. Based on a July 1860 decree, these had to be made by factories established before annexation. As the May 1863 decree did not clearly restate this, this condition was not strictly enforced (Ferrero, 1918). In 1893, a ministerial decision settled the debate by granting exemptions to factories owned by French nationals which were in operation on January 1st 1893. Other manufacturing products were admitted at the minimum tariff (Folliet and Duval, 1902).

Trade between the GFZ and the French interior was also substantial, though not comparable to that with Switzerland. At the turn of the century, exports from the GFZ to the rest of France were between 8 and 10 million francs (Folliet and Duval, 1902). As with Swiss trade, most of these were agricultural products including livestock and cheeses.

GFZ trading conditions appear to have favored agricultural production at the detriment of industrial activity. A more favorable access to the Geneva market together with almost equal access to the French market relative to other French farmers meant that Zonians "*cleared land, hitherto unused, practiced intensive cultivation, reconstituted their vines and made new plantations*" (Le Grix, 1905).

[4]Later, Swiss nationals leaving in the GFZ will be regarded as French nationals for this matter.

Figure 2: Timeline of Events Related to the GFZ



1.3 End of the GFZ

While the GFZ had been a contentious issue for decades, its demise started in World War I. After discussion in previous years, in 1917, France implemented custom controls at the Swiss border to prevent GFZ goods from entering Germany via Switzerland (Kinossian, 2014). Shortly after the war, France started the process to formally dissolve the GFZ as part of the Paris Peace Conference. However, France and Switzerland had differing interpretations of Article 435 of the Treaty of Versailles, which was meant to address issues regarding the Savoy neutrality and GFZ (Kinossian, 2014). In 1923, the customs line is established by French law at the Franco-Swiss border. To appease the Zonian population, certain temporary measures are promised liked an exemption of exit duties for local produce and reduced tobacco prices. As the Swiss disagreed with French actions, both governments agreed to look for international arbitrage. In 1932, the Permanent Court of International Justice affirmed that the Treaty of Versailles did not abolish the initial small free zone of 1816. Following the ruling, the French settled the custom line at the Haute-Savoie small zone, marking the definitive end of the GFZ.

The GFZ trade regime appeared to have, on aggregate, benefited the municipalities inside it. Evidence of this is the plan to transfer funds to GFZ municipalities as compensation for the zone's abolishment. In addition, the border municipalities of Evires and Thorens, which were partitioned by both the initial and final customs line, expressed their desire to remain in the zone when asked

about it in 1896 (Kinossian, 2014).

2 Analytical Framework

How can the GFZ trade regime affect local economic activity and municipal revenues? While other mechanisms may be at play, we hypothesize that the GFZ municipalities may: (i) have lower *living costs*, resulting in higher property values and greater demand for public goods and services; (ii) have access to *cheaper inputs* which may derive into greater production and agricultural land value; (iii) experience *resource reallocation* from the industrial sector to agriculture due to easier access to the French internal market for the latter, and (iv) have increased income due to *preferential access* to the Swiss market after the Franco-Swiss Convention of 1881. In this section, we summarize the aforementioned potential transmission channels.

Lower living costs. Being outside of the French customs zone, GFZ consumers did not have to pay tariffs on goods coming from Switzerland. By the beginning of WWI, Swiss imports to the GFZ were valued at more than 10 million francs, 34% of which were retail products (Kinossian, 2014). Hence, even if the price of local produce, which may have benefited from cheaper inputs, did not change, GFZ consumers benefited from cheaper consumer imports. It is argued that, in the GFZ, purchasing power was between 15% and 20% higher than in the French interior (Kinossian, 2014).

Higher real incomes should translate into higher local tax revenues. Municipalities could invest in local roads, public spaces and health services, and while public education was subsidized, they could also allocation additional tax cents to improve its provision. As public goods and services are normal goods, an increase in real income should shift their demand rightwards and lead to higher revenues through the collection of additional tax cents. If public investment increases a later shift in production may be observed due to lower transportation costs, greater market access, and a more productive workforce, among other factors.

Cheaper inputs. Related to the previous mechanism, local economic activity and municipal revenues may increase due to access to cheaper inputs of production. The GFZ imported industrial goods from Switzerland (Kinossian, 2014). Access to these goods at a cheaper prices may have led

to faster development of mechanized agriculture in the GFZ and greater agricultural productivity. If this holds, we would expect greater revenues from non-built land property.

The effect on industrial activity is ambiguous. On the one hand, access to cheaper inputs may have led to greater industrial output. On the other hand, GFZ goods had to face competition from duty-free Swiss goods. Hence, while industrial establishments in the French interior could have developed due to the protection granted by the customs border, GFZ industrialists may have been unable to compete in a free trade environment.

Resource reallocation. Throughout the period, GFZ agricultural goods had an easier access to the French interior market than industrial products. In fact, as noted in Section 1, goods from industrial establishments created after annexation were not supposed to be granted duty-free access, though this rule was not enforced. This changed in the 1890s when a decree established that only does enterprises created before 1893 could access the interior duty-free. This has been presented as the basis for the argument among those against the GFZ that the trade regime led to a prosperous agricultural sector at the expense of manufacturing activity. A lower relative price of industrial vis-a-vis agricultural goods should result in productive resources shifting from manufacturing to agricultural production. Hence, we should expect lower (higher) levels of industrial (agricultural) activity in the GFZ

The effect on municipal revenues via resource reallocation is ambiguous. On the one hand, we should expect higher revenues from non-built land properties. On the other hand, there should be a drop in the patents contribution, which depends on the number and nature of commercial and manufacturing establishments.

Preferential access. In 1881, the Franco-Swiss Trade Convention gave preferential access to certain GFZ goods by granting more favorable tariffs. This advantage may have increased real income in the GFZ relative to bordering areas in the French custom zone. Hence, we may expect an increase in local tax revenue after the early 1880s. If this mechanism was the main driver behind GFZ impacts, then we would expect few effects before the 1880s and a significant discontinuity from then on.

3 Data and Method

3.1 Data

Our sample consists of the 598 municipalities (*communes*) which made up the departments of Haute-Savoie (294) and Savoie (304) in 2015. We build a time-consistent database by manually matching past municipalities to 2015 ones.[5] Given the nature of the context and research question, most of the data is derived from the digitization and processing of multiple archival folders from the Archives départementales de Haute-Savoie (ADHS) and Archives départementales de la Savoie (ADS). As the GFZ is located in Haute-Savoie, we focus our data-collection efforts in this department. This, together with differences in data availability across departmental archives, means that information for certain outcomes is available for Haute-Savoie only.

This section summarizes our main variables and their respective sources. Further details are provided in the Data Appendix (Section B).

GFZ Border. We geo-reference the customs line based on the *Loi modificant le décret-loi du 12 juin 1860 relatif au tracé de la frontière douanière de la France en Savoie* of 1899 which clearly details the customs line.[6]

Pre-treatment Outcomes. We digitize the 1848 Sardinian Census (Regno di Sardegna, 1852) to compute population density and growth (between 1838 and 1848), and dwelling density. We combine this with information on population in 1858 from local public accounts to calculate growth between 1848 and 1858.

We test for balance in pre-treatment agricultural outcomes by digitizing the data gathered in the 1860 Agricultural and Industrial Survey (ADHS, 1860) carried out in Haute-Savoie only. The survey collected information on cultivation area and production for main crops of the time, including wheat, rye, oats, and potatoes. While the information is available for most Haute-Savoie municipalities, records were not found for all units.

[5] We consider the creation, merger, and dissolution of municipalities, but we do not account for territorial transfer between existing units.

[6] See Data Appendix for a discussion on differences between this demarcation and the original 1860 one, and how there were no controversies regarding the Usses section of the border.

Unfortunately, data on pre-annexation local public accounts is scarce. We first check for balance in local public accounts by calculating the local imposition for 1857. This is the local tax municipalities could raise to cover the difference between local revenues and expenditures, and can serve as a proxy for local tax revenues. Section B provides details on this calculation. We complement our analysis by using local public accounts data for 1861. While this information is post-treatment, it can provide a good indicator of local conditions at the beginning of the GFZ period.[7]

Post-treatment Outcomes. We check for differences on local economic development by using information on local public accounts. The modern French national income tax system came into force in 1917 only. Before that, direct taxes depended mainly on four main contributions known as the "four old ones" (*quatre vieilles*): the land contribution (*contribution foncière*), the personal-movable contribution (*contribution personnelle mobilière*), the tax on doors and windows (*impôt des portes et fenêtres*), and the patents contribution (*contribution des patentes*. These were measures based on indicators of economic activity and wealth (see Section B.1 in the Appendix for a more detailed discussion on the matter). For example, the land contribution was based on revenues generated by urban and rural land holdings. Municipal revenues, which were based on the *quatre vieilles*, have been used as a proxy of departmental and local income before (Montalbo, 2022, 2023).

We obtain information on local public accounts (total municipal revenues, local tax revenues, and local tax base) by digitizing various annual editions of the the Financial Situation of the Communes (*La Situation Financière Des Communes*, SFC).[8] We complement this with SFC data for three years from Piketty and Cagé (2023). Our data covers all census years between 1881 and 1911, as well as 1878 (first SFC year), 1914 (last SFC year before WWII), 1920 and 1923 (last two editions of SFC with commune-level data). We also digitized information from a survey on the local financial situation in 1862. Finally, we digitized the tax roll amounts statements (*Etat du Montant des Roles Généraux*) for various years to have disaggregated information on local tax revenues by type of contribution.[9]

We check for structural changes in economic activity by digitizing information on workforce

[7]Further details on the specific sources used and a summary of the French tax system can be found in the Data Appendix.

[8]See Figure A1 for a sample page of the 1901 SFC.

[9]See Figure A2 for a sample page of the 1891 Etat du Montant des Roles Généraux.

distribution across sectors from the 1891 census. For that census, commune summary tables with data on the number of individuals (and their dependents) by economic activity (e.g., agriculture, commerce, industry) have been preserved by both departmental archives.[10]

We explore the effect on agricultural outcomes by digitizing data from the 1892 Decennial Agricultural Survey (ADHS, 1892).[11] The survey collected detailed information on municipal agricultural land use and production. From it, we extract data on land use, and production of main crops and animal products.

Finally, to test the effect on manufactured goods, we digitize information from the 1881 industrial survey (ADHS, 1881).[12] The survey appears to have been carried out in Haute-Savoie only as an initiative from the departmental prefect. The summary tables by arrondissements list businesses by industry and include firm location. From these, we obtain the number of industrial establishments by municipality, including blacksmiths (*forgers*), mills (*moulins*), and sawmills (*scieries*).

Other Covariates. We calculate average elevation and slope for each municipality using altitude data from Jarvis et al. (2008). We compute average municipal rainfall and temperature using information from Fick and Hijmans (2017), which aggregates data between 1970-2000.

Table 1 shows the descriptive statistics for our main pre and post-treatment outcomes.

3.2 Empirical Strategy

We estimate our treatment effect by using a sharp geographic regression discontinuity (RD) design. Our identification strategy relies on the assumption that the GFZ border partitions otherwise homogeneous areas. In Section 1, we note the plausibility of this assumption, particularly for the section of the custom line which followed the Usses River. In this section, we provide quantitative evidence to back our design.

In this setting, the RD estimand is:

$$\tau_{RD} = \lim_{d_i \downarrow 0} E\left[Y_{it} | d_i\right] - \lim_{d_i \uparrow 0} E\left[Y_{it} | d_i\right], \tag{1}$$

[10] See Figure A3 for a sample page of the 1891 census. Summary tables by commune for other census years have not been located and are, most likely, unavailable.

[11] See Figure A4 for a sample page of the 1892 agricultural survey.

[12] See Figure A5 for a sample page of the 1881 industrial survey.

where Y_{it} is the outcome in commune i in period t and d_i is the treatment assignment variable. d_i the minimum distance between municipality i's centroid and the treatment border for GFZ municipalities, and minus that distance for non-GFZ municipalities.

In our baseline analysis, the treatment border is the section of the custom lines which follows the Usses river and partitions the former province of Genevois. As a robustness check, we compute the distance to the whole section of the customs line which splits Haute-Savoie, based on the 1899 decree. In our baseline specification, we exclude those municipalities which are partitioned by both the 1860 original custom line and the 1899 line, and which have more than 20% of their territory in the opposite side of the border.[13] However, our results are robust to their inclusion.

We estimate τ_{RD} using Calonico et al. (2014b) robust bias-corrected estimator with a data-driven bandwidth selector. Our baseline results report the conventional estimate of τ^{RD} and standard errors, and the robust bias-corrected significance levels (Calonico et al., 2014a). Standard errors are computed using a nearest-neighbor-based variance estimator which is the standard option in Calonico et al. (2014b).

Our empirical strategy is valid if the expected outcomes based on treatment status, $E(Y_i(0)|d_i)$ and $E(Y_i(1)|d_i)$, are continuous in d_i. This may not hold if relevant municipal characteristics vary discontinuously at the GFZ border. We provide evidence on the validity of our design by checking for balance in pretreatment municipal demographic and economic characteristics, and geographic covariates.

Table 2 shows the results, which are illustrated graphically in Figures 3 and 4. Overall, we find no meaningful discontinuities in pretreatment outcomes at the GFZ border. This holds for both the Usses section of the customs line (Column 1 in Table 2), the treatment border for our main analysis, and for the section of the line which partitions the Haute-Savoie department (Column 2 in Table 2). Our analysis shows that there are no significant discontinuities in demographic characteristics such as population growth and population density in 1858 (Panel A of Table 2). This points towards balance in pretreatment economic conditions. There are also no meaningful differences in agricultural land use and per capita production of the main agricultural crops (wheat, oats, and potatoes) at the time of annexation (Panel B of Table 2). Finally, we find no significant meaningful discontinuities

[13] These are the 2015 municipalities of Evires, Frangy, Marlioz and Thorens-Glieres. We also exclude the municipality of Le Grand-Bornard which was not partitioned by the 1899 line but was split almost evenly by the original 1860 line.

in mean temperature, mean rainfall, mean altitude, and mean terrain slope (Panel C of Table 2).

We provide further evidence on the lack of meaningful pre-GFZ economic differences by using local public accounts data for 1861. In particular, we check for differences in the principal for the four main contributions, imposable revenues from land property, and tax roll entries. The information on the principal and entries should have been produced in the second half of 1860, after annexation. However, it should still serve as a relatively good proxy for local economic conditions when the GFZ was created. In 1861, municipal authorities could have charged additional taxes (*centimes*) over the principal of direct contributions in response to expectations of greater economic activity in the GFZ. Nonetheless, the principal itself is less likely to have been modified substantially to reflect economic changes produced by the GFZ. This reasoning can also be extended to the number of entries in the 1861 roll.

Table 3 shows the results for 1861 local public account data. We find no statistically significant discontinuities. There is no evidence of an effect on the per capita principal from direct contributions, on the natural logarithm of per capita imposable revenue from land properties, and on entries in the tax roll for each contribution. The lack of meaningful differences for the first two outcomes is illustrated graphically in Figure 5. This, together with the previous results, suggests similar levels of economic activity on both sides of the border.

4 Results

We first explore the effect of the GFZ on direct tax revenues. In particular, we estimate the impact on per capita municipal revenues, local tax revenues and the local tax base. As detailed in Section B.2 in the Appendix, these measures area based on the four main direct contributions of the pre-WWI French tax system. These, in turn, depend on indicators of local economic activity and wealth (see Section B.1 in the Appendix for details).

Figure 6 illustrates the effect of the GFZ on average per capita municipal revenues, local tax revenues, and the local tax base for the period between 1878 and 1914. For all three measures, we clearly identify a positive discontinuity at the GFZ border. The effect is particularly pronounce for local tax revenues. As aforementioned, following Piketty and Cagé (2023), these are the product of all local tax cents times their value. The calculation provides a close approximation of revenues

collected by the municipality for local use from their constituents' direct contributions. This revenue finances both ordinary and extraordinary local expenditures. Most of these have to do with the provision and maintenance of basic local public goods such as communal roads and public spaces (and the co-financing of public education). Local additional tax cents, which were still subject to approval by the departmental prefect, allowed local governments to translate more favorable economic conditions into more public goods. Hence, this measure serves as a good indicator for willingness to pay for public goods, which should be positively correlated with real income.

Table 4, 5 and 6 report estimates for the period between 1878 and 1914, as well as decade estimates for per capita municipal revenues, local tax revenues, and the local tax base, respectively. In addition, we report coefficients for 1862 (year in which a survey of municipal accounts was carried out) and 1878 (the first year the SFC was published).[14]

The results show a positive, significant effect of the GFZ on all three measures of direct tax revenues. Average per capita municipal revenues, local tax revenues, and local tax base increase by 0.56, 1, and 0.35 standard deviations, respectively. Regarding the pattern of the effects over time, we see a relatively consistent positive and significant effect from 1878 until the onset of WWI.

Decade estimates for per capita municipal revenues show strong positive effects for the late 1870s and 1880s, a decrease in magnitude in the 1890s and 1900s, and a more meaningful effect again in the years preceding WWI. This greater variance, relative to the pattern for local tax base and revenues, can be partly explained by the fact that this measure depends not only on the value of ordinary additional local tax cents, but also on other sources of municipal income.[15] The effect for 1920s (which includes data for 1920 and 1923), while positive and statistically significant should be interpreted with caution. As noted in Section B.2 in the Appendix, for various reasons including distortions generated by WWI, municipal revenues increased dramatically in the 1920s. Hence, the estimate, mean and standard deviation for that decade are not directly comparable to previous years.

The pattern for local tax revenues is more straightforward. We observe a relatively gradual increase in the impact of the GFZ, both in absolute and relative terms. The effect increases from 0.68 standard deviations in the 1880s to 1.2 standard deviations in the 1910s. In the 1920s, the

[14] As stated in Section B.2, we cannot compute local tax revenues for 1862.

[15] For example, they include revenues from municipal properties. See Section B.2 in the Appendix for further details.

effect is still positive, but less meaningful and statistically insignificant.

The effect on the local tax base, which reflects the principal of the direct contributions, is also positive until the onset of WWI. However, the effect appears to lag the other two measures. We see a gradual increase in absolute terms, particularly in the 1890s and 1900s. In relative terms, the effect peaks in the 1890s. This particular pattern may be explained by how the principal, which did not include additional tax cents, was computed by authorities. For those contributions which were distribution taxes (i.e., all except the patents one), the principal for the entire department was assigned by budget laws based on national funding needs. The department's principal was then split across municipalities by departmental authorities. This division was suppose to reflect local economic conditions and was based on calculations of taxable revenues from the tax rolls. However, these taxable revenues were based on average measures of production and prices, and may not adequately reflect current local conditions. Departmental authorities had a degree of discretion over the principal (e.g., there was no fixed tax rate for land revenues in the roll), which meant they could adjust the split based on local economic activity, albeit more imperfect information relative to municipal authorities.

Direct Tax Revenue by Contribution. What was the total revenue collected from all the four main direct contributions? From which source are the greater local revenues coming? We complement our previous findings by analyzing total direct tax revenues for all state levels - national, departmental, and local - by contribution. The amounts include the principal as well as additional departmental and local tax cents.

Table 7 shows the estimates for total contributions revenues and for the land tax by year. These results are illustrated graphically in Figures A9 and A10. A comparison of the effects shows a similar picture to the one for local accounts. In 1862, we find no significant discontinuities in the total amount to be collected and the land contribution revenues. The effect of the GFZ gradually increases such that in 1881 and 1891, we observe sizable and statistically significant differences in total contributions and land tax revenues.

The estimates for other contributions are reported in Table 8. These estimates are statistically insignificant and notably less sizable in terms of standard deviation. However, it is worth noting that we also observe a gradual increase in the effect of the GFZ on both the personal-movable and

the patents contribution revenues. For example, while the estimates are not statistically significant, the estimate for the personal-movable contribution increases from -0.13 to 0.41 standard deviations.

These disaggregated results the impact is largely driven by revenues from the land contribution. A larger effect in absolute terms is to be expected as the land tax was the most important one revenue-wise out of all four. Nonetheless, its corresponding relative effect is also the largest by a significant margin. The estimates for 1881 and 1891 are equivalent to 1.12 and 0.75 standard deviations. Within the land contribution, the effect is almost entirely driven by an increase in tax revenues from non-built properties.[16]

Overall, the introduction of the GFZ led to greater direct tax revenues for GFZ municipalities. This increase is driven by an increase in revenues from the land contribution.

Robustness Checks. We check for the robustness of our main estimates under various specifications. We include covariates, and vary the assignment variable polynomial and estimation bandwidth. The results reported in columns 2 to 5 of Table 9 show that our estimates are robust. In addition, we explore whether our results hold when including split municipalities taken away from our baseline sample, and when using extended segments of the treatment border. Regarding the latter, we repeat our analysis using the border sections which partition the former province of Genevois and the department of Haute-Savoie (i.e., the whole GFZ customs border which does not follow departmental boundaries). As similar, we observe similar results. The only difference is that, for the extended treatment boundaries, the estimate for municipal revenues is not statistically significant, though we still observe significant and sizable effects for local tax revenues and local tax base.

4.1 Agricultural and Industrial Activity

Did the GFZ regime led to greater direct tax revenues due to increased agricultural and industrial activity? Was there a change in the structure of local economies? In Section 2, we hypothesize that increased wealth due to *lower living costs* and *cheaper inputs* from the Switzerland may have contributed to the development of economic activity, though exposure to cheaper foreign goods may have displaced certain industries.

[16]The split between non-built and built properties was not reported in 1881 or before.

We provide quantitative evidence on these arguments by first checking the distribution of the workforce and their dependents across the main economic sectors according to the 1891 census. Table 10 shows the results, which are illustrated graphically in Figure 8. A key takeaway from these estimates is that there is a reallocation of population from public administration towards other sectors. Our results show a drastic drop of 9.2 percentage points in the population involved in public administration. The bottom-right graph of Figure 8 illustrates this result. Around the customs line, there is an expected increase in public servants on both sides of the border. This increase is higher in the non-GFZ side. This can be explained by French customs officials living in bordering municipalities. However, the estimate is not only capturing a negative effect around the border. Further away from the line, the pattern of results is similar. The percentage of the population involved in public administrative is lower in the GFZ relative to comparable municipalities outside it.

The workforce shifts not to commercial activities, but rather to the agricultural and industrial sectors. In particular, there is a sizable, though statistically insignificant increase in the industrial population of 4.8 percentage points. This is equivalent to 0.4 standard deviations.

Agriculture. Agriculture was, by far, the main economic activity during the period on both sides of the border. We provide evidence on the effect of GFZ on agricultural activity by exploring data from pre-WWI local agricultural statistics. Table 11 shows the estimates for land use by crop, cattle stocks and agro-industrial establishments. We find no major discontinuities in the percentage of municipal area allocated to major crops: wheat, oats and potatoes. In addition, there are no evidence of an effect on stocks of ox and cows. However, we do find a significant estimate on the number of agro-industrial establishments relative to the local population. The effect is sizable and equivalent to more than 1 standard deviation. If we examine the impact by type of industry, we find positive, though statistically insignificant effects, in the two most important components: mills, which includes flour mills and small water and wind mills, and milk industry.

We complement our previous findings by examining data from the 1892 agricultural census. The results in Table 12 show no major discontinuities. Regarding land use, while we do find a significant and positive effect in the area allocated to wheat, this discontinuity is not clear in the corresponding graph (top-left plot in Figure A11). With respect to per capita agricultural produc-

tion, we find no significant effects for main the main crops (wheat, oats, and potatoes), and main raw animal products. Figure A12 illustrates these results.

Industry. Information on industrial activity is relatively limited. We provide evidence on the GFZ effect on manufacturing by exploring the 1881 Haute-Savoie industrial survey. It lists of all manufacturing units by type of activity and includes information on location.

Table 13 shows the effect of the GFZ on per capita manufacturing establishments. We find a positive and statistically significant discontinuity in the total number of manufacturing units. The effect is driven partly by an increase in carpentry workshops. While we do not observe other statistically significant effects, we also obtain positive estimates for other important industrial establishments such as mills, which go beyond small mills for grain processing, and sawmills. Figure 9 clearly illustrates the discontinuity in per capita carpentry workshops.

4.2 Population Growth

Did the GFZ regime led to shifts in population growth? It is plausible that potential lower living costs may have motivated those living just outside the zone to move to it. Ex-ante, this seems unlikely. Most municipalities on both sides of the border were relatively rural with limited commercial and industrial activity compared to other French departments. Migration at the time usually implied moving from the countryside to large cities. Moreover, given the agricultural nature of the area, for most locals, moving from one side of the border to the other would have implied buying agricultural plots on the GFZ side. Liquidity constraints and local agricultural community attachment may have dissuaded potential movers.

Table 14 reports the effect of the GFZ on annal population growth rates for various periods. Figure A13 illustrates by census cycle. There is no effect for the period between the first post-annexation population count (1861) and the last pre-WWI census (1911). From 1891 on, there appears to be a marginally positive, though statistically insignificant, effect on population growth. In particular, there are a couple of census cycles for which we observe more meaningful positive jumps (1896 – 1901, 1906–1911). However, in general, we do not find significant discontinuities nor a consistent pattern.

5 Conclusion

This paper studies the long-run effects of trade liberalization on local economic activity. To identify these impacts, we leverage the quasi-random partition of the department of Haute-Savoie by the French customs line after its annexation to France in 1860. We collect a unique dataset with newly digitized information on municipal-level outcomes for the post-annexation era until the onset of WWI.

Our results show, that the GFZ had a positive effect on direct tax revenues. From the late 1870s until the onset of WWI, we find a positive and sizable impact on municipal revenues, local tax revenues, and the value of the local tax base. The increases in these measures point to greater real incomes leading to more wealth accumulation, as the French tax system was based on four main tax contributions which were meant to capture local economic prosperity. We explore the impact by type of contribution and show that the effect on tax revenues can be explained by greater land tax collection.

We then examine the effect of the GFZ on sectoral activity. We find that the GFZ led to a shift in the distribution of the workforce away from public administration into other sectors. Regarding agricultural activity, while there are no significant effects in land use, there is evidence of greater agro-industrial activity. This is consistent with our main finding on direct tax revenues and point to lower living costs and cheaper inputs leading to greater wealth and capital accumulation. With respect to manufacturing, there is evidence of greater activity as we find positive impacts on the relative number of manufacturing establishments.

These results illustrate the meaningful consequences of trade liberalization on long-run local economic activity. However, our research design has certain limitations. This should be considered when interpreting our findings and when extending them to other contexts. Historical regression discontinuity designs usually involve a lower number of observations relative to more modern settings with individual or census-tract data. Hence, our estimates will not be as precise. Moreover, the use historical data is more prone to measurement error due to mistakes at the collection and digitization stages. Nonetheless, we consider our results to be informative for the debate on trade policy.

References

ADHS (1857): "Tableau de l'imposition locale par commune," Archives Départementales de Haute-Savoie: 6 FS 33.

——— (1858): "Bilan d'après les budgets de 1858," Archives Départementales de Haute-Savoie: 6 FS 42.

——— (1860): "Questionnaire agricole et industriel par communes - Etats communaux," Archives Départementales de Haute-Savoie: 6 M 930 - 933.

——— (1862): "États de la situation financière des communes du département," Archives Départementales de Haute-Savoie: 6 M 985.

——— (1881): "Statistique industrielle de 1881 - Tableaux récapitulatifs par types d'établissements et par communes," Archives Départementales de Haute-Savoie: 6 M 678 - 6 M 681.

——— (1892): "Enquête de 1892 - Tableaux synoptiques des réponses par communes," Archives Départementales de Haute-Savoie: 6 M 665 - 6 M 668.

ADS (1868): "Situation financière: 1862-1868," Archives Départementales de la Savoie: 4 O 5.

BLANC, J. (1898): *Histoire des principes de la répartition et de la quotité dans l'impôt direct*, V. Rivière.

BLOCH, H.-S. (1940): "The Evolution of French Taxation—An Historical Sketch," *The Bulletin of the National Tax Association*, 25, 266–273.

BOUCHARD, L. (1871): "Les budgets du Second Empire et le régime financier en France," *Revue des Deux Mondes (1829-1971)*, 91, 212–242.

CALONICO, S., M. D. CATTANEO, AND R. TITIUNIK (2014a): "Robust Data-driven Inference in the Regression-Discontinuity Design," *Stata Journal*, 14, 909–946.

——— (2014b): "Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs," *Econometrica*, 82, 2295–2326.

CLEMENS, M. A. AND J. G. WILLIAMSON (2004): "Why did the tariff–growth correlation change after 1950?" *Journal of Economic Growth*, 9, 5–46.

CONSEIL GÉNÉRAL DE LA HAUTE-SAVOIE (1862): *Rapport du Prefet et PRoces-Verbal des Seances*, Annecy: Louis Thesio.

DONALDSON, D. (2018): "Railroads of the Raj: Estimating the Impact of Transportation Infrastructure," *American Economic Review*, 108, 899–934.

DURANTON, G., P. M. MORROW, AND M. A. TURNER (2014): "Roads and Trade: Evidence from the US," *The Review of Economic Studies*, 81, 681–724.

FABER, B. (2014): "Trade Integration, Market Size, and Industrialization: Evidence from China's National Trunk Highway System," *The Review of Economic Studies*, 81, 1046–1070.

FERRERO, M. (1918): *Genève, Gex et Savoie. Neutralité Douanière. Les Zones Franches*, L. Barnéoud.

FEYRER, J. (2019): "Trade and Income—Exploiting Time Series in Geography," 11, 1—-35.

FICK, S. AND R. HIJMANS (2017): "WorldClim 2: new 1km spatial resolution climate surfaces for global land areas," *International Journal of Climatology*, 37, 4302–4315.

FLÜCKIGER, M., E. HORNUNG, M. LARCH, M. LUDWIG, AND A. MEES (2021): "Roman Transport Network Connectivity and Economic Integration," *The Review of Economic Studies*, 89, 774–810.

FOLLIET, A. AND C. DUVAL (1902): *La Vérité sur la Zone Franche de la Haute-Savoie*, Raffin.

FRANKEL, J. A. AND D. ROMER (1999): "Does Trade Cause Growth?" 89, 379—-99.

IRWIN, D. A. (2002): "Interpreting the tariff–growth correlation of the late 19th century," *American Economic Review*, 92, 165–169.

JARVIS, A., H. REUTER, A. NELSON, AND A. GUEVARA (2008): *Hole-filled seamless SRTM data V4*, International Center for Tropical Agriculture, www.diva-gis.org/gData.

JUHÁSZ, R. (2018): "Temporary protection and technology adoption: Evidence from the napoleonic blockade," *American Economic Review*, 108, 3339–3376.

KINOSSIAN, Y. (2014): "Frontières à l'intérieur, frontières à l'extérieur: les portes lémanique et alpine, 1848–2013'," *Histoire économique et sociale de la Savoie de*, 23–80.

LAMPE, M. AND P. SHARP (2013): "Tariffs and income: a time series analysis for 24 countries," *Cliometrica*, 7, 207–235.

LE GRIX, H. (1905): *Les zones franches de la Haute-Savoie et du pays de Gex*, L. Larose & L. Tenin.

MONTALBO, A. (2022): "Primary education and economic growth in nineteenth-century France," *Cliometrica*, 16, 277–332.

——— (2023): "Landholding inequality and the consolidation of democracy: evidence from nineteenth-century France," *The Journal of Economic History*, 83, 203–241.

O'ROURKE, K. H. (2000): "Tariffs and growth in the late 19th century," *The economic journal*, 110, 456–483.

PASCALI, L. (2017): "The Wind of Change: Maritime Technology, Trade, and Economic Development," *American Economic Review*, 107, 2821–54.

PAUL-DUBOIS, L. (1912): "Suisse et Savoie: la zone franche de la Haute-Savoie," *Revue des Deux Mondes (1829-1971)*, 10, 794–819.

PIKETTY, T. AND J. CAGÉ (2023): *Une histoire du conflit politique: élections et inégalités sociales en France, 1789-2022*, Paris: Seuil.

REGNO DI SARDEGNA (1852): *Informazioni statistiche raccolte dalla Regia Commissione Superiore: Censimento della Popolazione per L'anno 1848*, Torino: Stamperia Reale.

RODRÍGUEZ, F. AND D. RODRIK (2000): "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence," *NBER Macroeconomics Annual*, 15, 261—325.

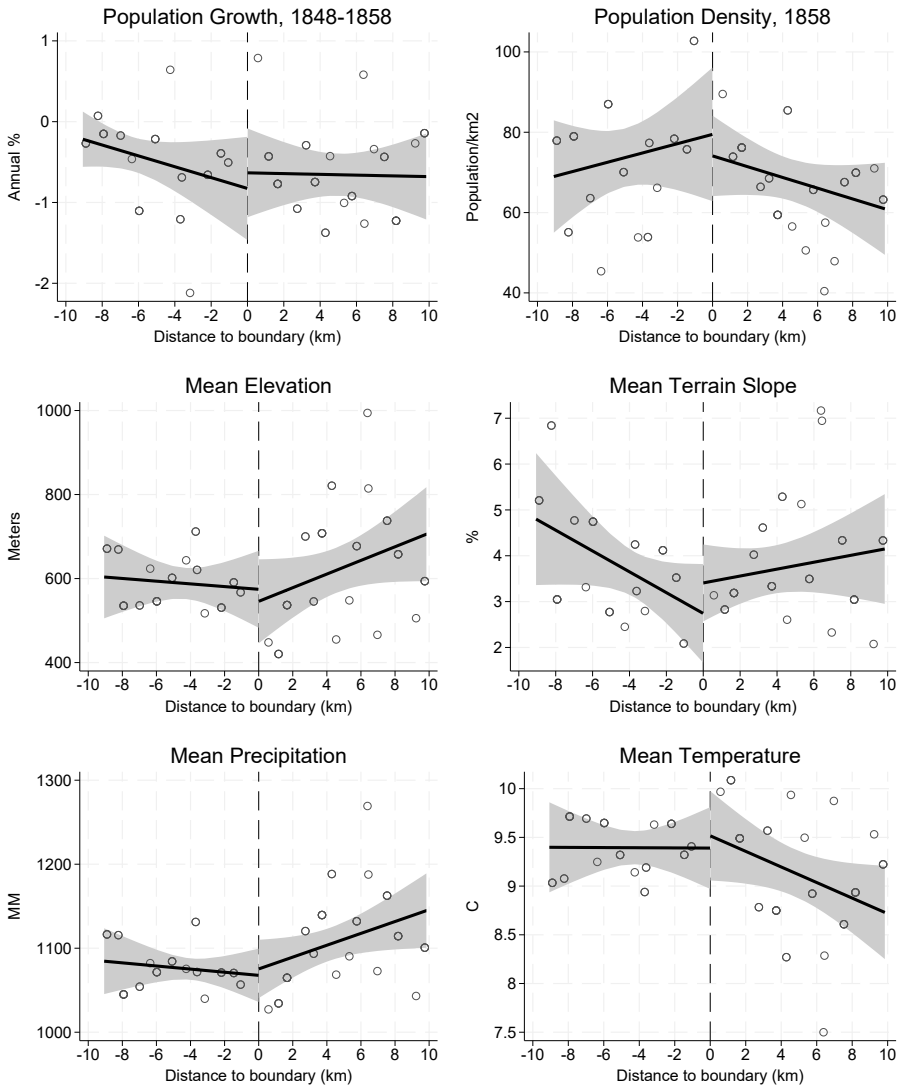
SCHULARICK, M. AND S. SOLOMOU (2011): "Tariffs and economic growth in the first era of globalization," *Journal of Economic Growth*.

TRUCHY, H. (1900): "Le système des impôts directs d'Etat en France," *Revue d'économie politique*, 937–964.

VAMVAKIDIS, A. (2002): "How Robust is the Growth-Openness Connection? Historical Evidence," *Journal of Economic Growth*.

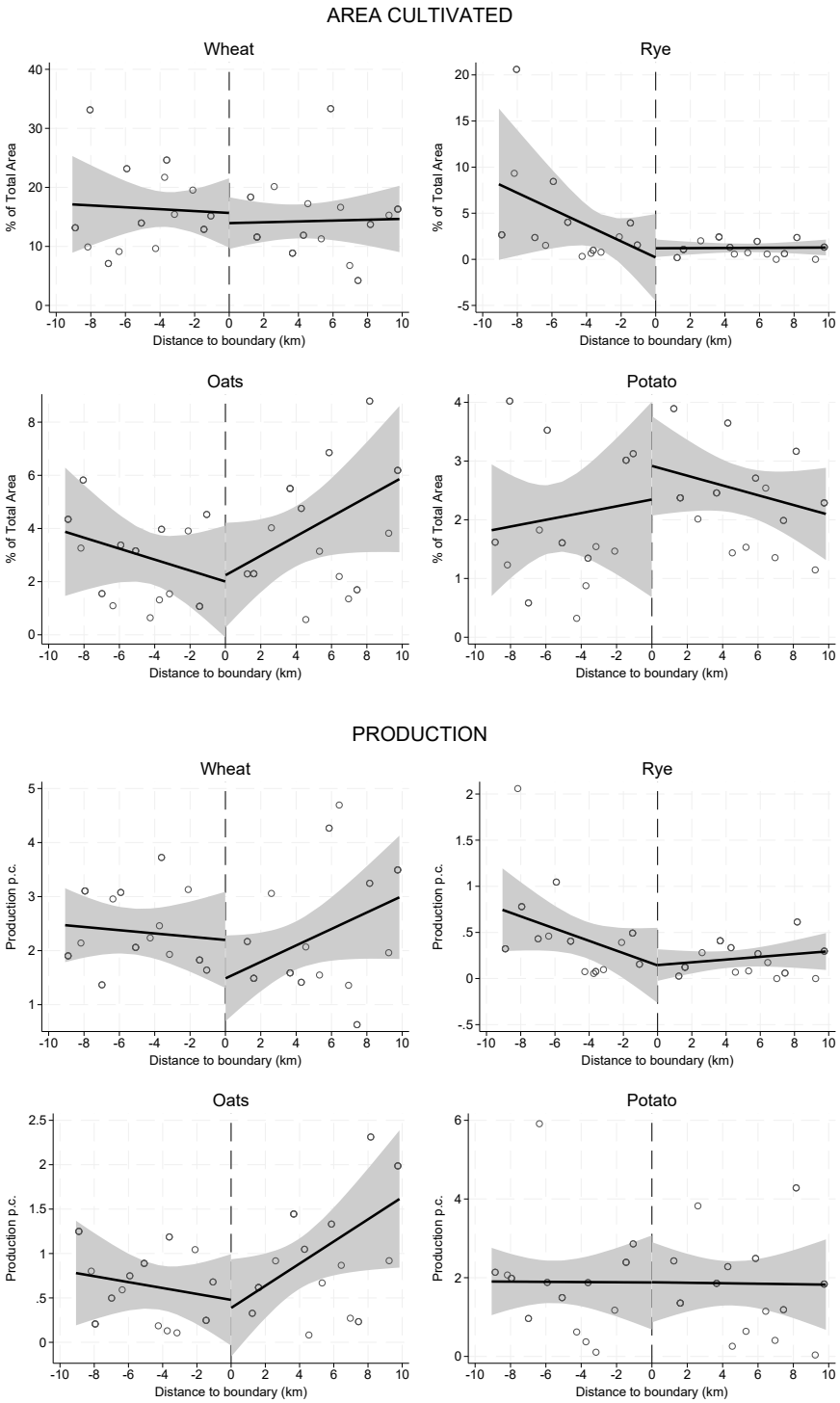
Figures and Tables

Figure 3: Balance on Pre-GFZ Demographic and Geographic Characteristics



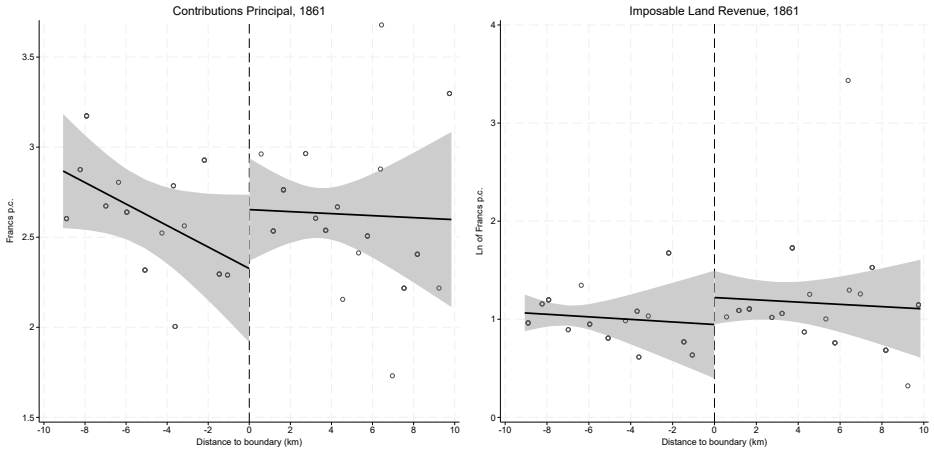
Notes: From the top, left to right, the graphs plot average annual population growth between 1848 and 1858, population density in 1858 (population in 1858 divided by current surface area), mean elevation, mean terrain slope, mean temperature, and mean precipitation. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure 4: Balance on Agricultural Outcomes (1860)



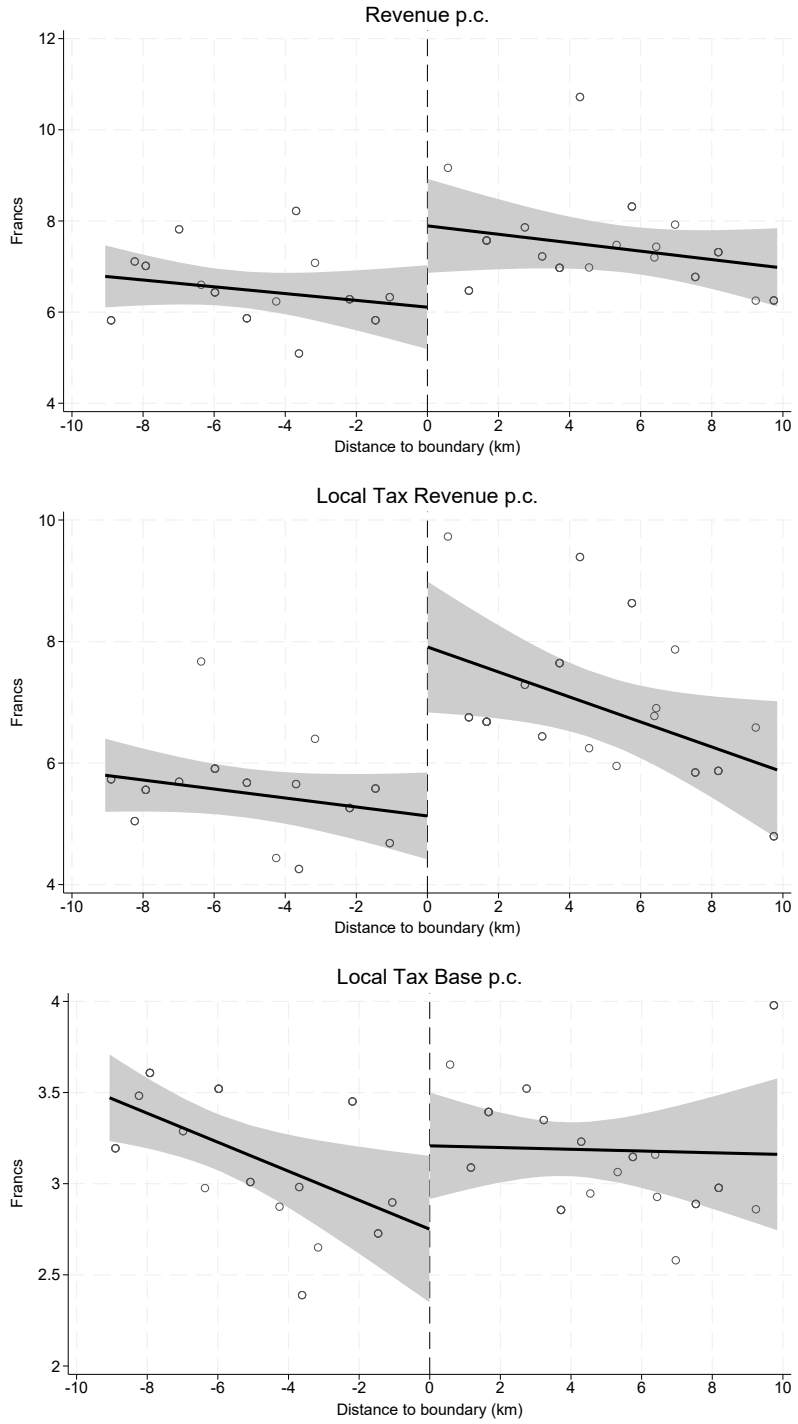
Notes: From the top, left to right, the graphs plot the area allocated to wheat, rye, oats, and potatoes in 1860, and the per capita production of wheat, rye, oats, and potatoes in 1860 measured in hectolitres. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure 5: Balance on Local Public Accounts (1861)



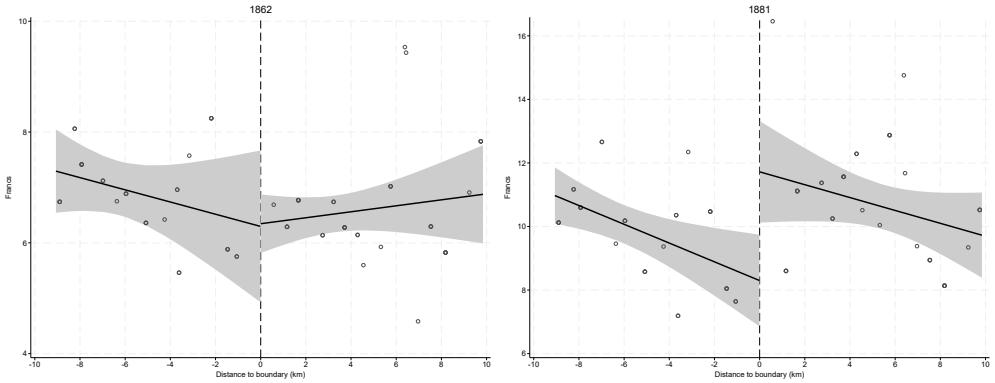
Notes: From left to right, the graphs plot the per capita contributions principal and the natural logarithm of the per capita imposable revenue from land properties. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure 6: Effect of the GFZ on Local Public Accounts (1878 - 1914)



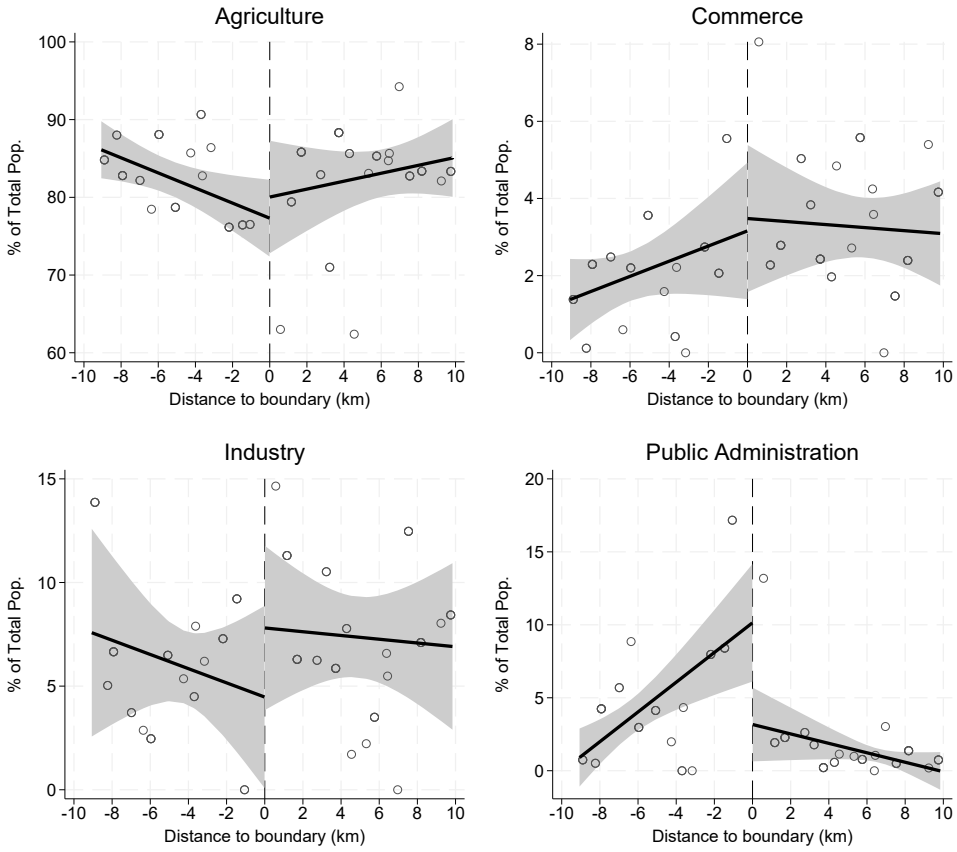
Notes: From the top, the graphs plot average per capita municipal revenues, per capita local tax revenues and per capita local tax base for the period 1878 to 1914. The average corresponds to the mean of values for 1878, 1914, and for all census years in between (1881, 1886, 1891, 1896, 1901, 1906 and 1911). The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure 7: Effect of the GFZ on Direct Contributions



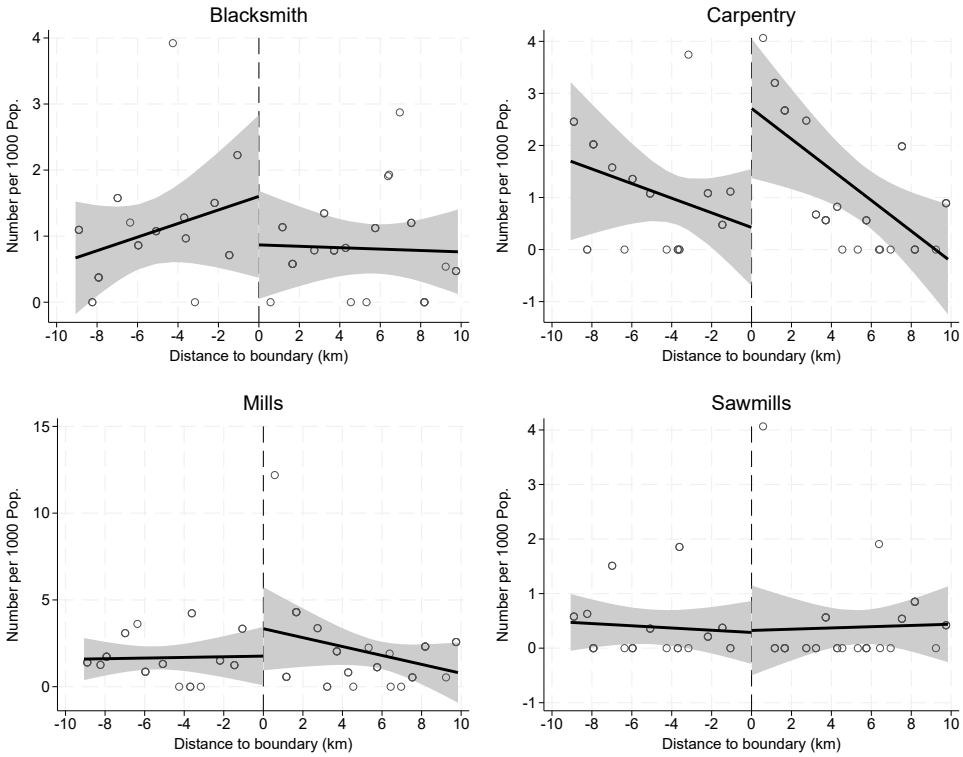
Notes: From left to right, the graphs plot the total amount collected from the four main direct contributions (land, personal-movable, doors and windows, and patents) in 1862 and 1881, respectively. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure 8: Effect of the GFZ on Workforce Distribution (1891)



Notes: From the top, left to right, the graphs plot the percentage of the population in agriculture, commerce, industry or manufacturing activities, and public administration in 1891. The percentages include the both workers and their families following the statistical summaries produced as part of the 1891 census. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure 9: Effect of the GFZ on Manufacturing Units (1881)



Notes: From the top, left to right, the graphs plot the number of blacksmiths, carpentry units, mills, and sawmills per capita in 1881. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Table 1: Summary Statistics for Main Variables

Variables	Obs.	Mean	S.D.	Min	Max
Commune in GFZ	593	0.32	0.47	0	1
Distance to Usses Section of GFZ border, km	593	40.0	23.9	0.58	107
Municipal Finances					
Municipal Revenues p.c., francs:					
1862	589	6.08	4.71	1.08	91.6
Avg. 1878 - 1914	593	7.75	3.20	2.65	40.5
Local Tax Revenues p.c., francs (Avg. 1878-1914)	593	5.39	2.33	0.29	16.7
Local Tax Base p.c., francs:					
1862	573	2.97	1.00	0.76	7.60
Avg. 1878 - 1914	593	3.73	1.82	1.30	29.6
Contributions p.c. (1862), francs:					
Land	285	5.34	1.97	1.10	17.1
Total	285	6.90	2.42	1.83	25.1
Contributions p.c. (1891), francs:					
Land	289	7.26	2.82	1.02	36.4
Total	289	11.1	3.61	3.47	40.2
Population by profession (1891), % of total pop.:					
Agriculture	284	79.0	17.9	1.64	99.1
Industry	284	9.97	13.0	0	90.3
Commerce	284	3.79	8.61	0	98.5
Public Administration	284	1.67	2.58	0	19.3
Agricultural production (1892), hectoliters p.c.:					
Wheat	287	12.3	9.96	0	50.5
Oats	286	4.03	3.77	0	30.4
Potatoes	287	4.16	3.20	0	20.7
Manufacturing units (1881), p.c.:					
All Manufacturing	289	11.0	8.69	0	50.7
Blacksmith	289	0.89	1.24	0	6.5
Carpentry	289	0.87	1.82	0	16.9
Mills	289	2.06	2.53	0	22.8
Sawmills	289	1.30	2.15	0	13.0
Pre-zone Demographic and Economic Characteristics					
Population Growth (1848–1858), annual %	285	-0.64	1.53	-5.04	19.4
Population Density (1858), per km2	285	81.5	60.8	8.79	648
Dwelling Density (1848), per km2	593	15.1	11.7	0.69	112
Local Imposition (1857), Sardinian Lira p.c.	211	2.90	1.90	0	16.2
Local Tax Roll (Jan 1861), entries p.c.:					
Land	285	0.47	0.23	0.12	2.37
Personal and Movable	285	0.36	0.06	0.20	0.52
Doors and Windows	285	0.20	0.03	0.07	0.37
Patents	285	0.02	0.01	0	0.09
Agricultural production (1860), hectoliters p.c.:					
Wheat	214	1.79	2.59	0	25.8
Oats	215	1.14	1.89	0	18.1
Potatoes	213	2.78	4.22	0	44.2
Geographic Characteristics					
Mean Elevation, m a.s.l.	593	903	517	249	2,706
Mean Slope	593	7.84	4.48	0.58	22.7
Mean Rainfall, mm	593	1,179	163	916	1,727
Mean Temperature, C	593	8.14	2.57	-1.44	11.6

Notes: See Section 3.1 for data description and sources.

Table 2: Balance on Prezone Demographic, Economic, and Geographic Characteristics

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(2)	(4)	(5)
A. Pre-zone Demographic Characteristics				
Population Growth, annual %:				
(1838–1848)	-0.219	593	0.42	0.84
	(0.369)			
(1848–1858)	0.310	285	-0.64	1.53
	(0.580)			
Population Density (1858), per km2	-7.520	285	81.5	60.8
	(13.144)			
Dwelling Density (1848), per km2	-0.588	593	15.1	11.7
	(1.586)			
B. Pre-zone Economic Characteristics				
Land use by crop (1860), % of total area:				
Wheat	-0.686	211	11.4	13.3
	(3.571)			
Oats	0.120	213	3.87	6.84
	(1.391)			
Potatoes	0.525	213	4.99	20.9
	(0.901)			
Agricultural production (1860), hectoliters p.c.:				
Wheat	-0.261	214	1.79	2.59
	(0.701)			
Oats	0.081	215	1.14	1.89
	(0.331)			
Potatoes	-0.142	213	2.78	4.22
	(0.824)			
Local Imposition (1857), Sardinian Lira p.c.	0.308	211	2.90	1.90
	(0.983)			
C. Geographic Characteristics				
Mean Altitude, m a.s.l.	-73.076	593	903	517
	(61.813)			
Mean Slope	-0.095	593	7.84	4.48
	(0.586)			
Mean Rainfall, mm	-13.484	593	1179	163
	(19.697)			
Mean Temperature, °C	0.351	593	8.14	2.57
	(0.299)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 3: Balance on 1861 Local Public Accounts

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(2)	(4)	(5)
Contribution Principal, francs p.c.	0.328	285	2.8	0.9
	(0.278)			
Imposable Land Revenue, ln of francs p.c.	0.082	285	1.27	0.97
	(0.281)			
Local Tax Roll, entries p.c.:				
Land	0.018	285	0.47	0.23
	(0.065)			
Personal and Movable	-0.015	285	0.36	0.06
	(0.032)			
Doors and Windows	0.014	285	0.20	0.03
	(0.010)			
Patents	-0.002	285	0.02	0.01
	(0.007)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 4: Effect of the GFZ on Municipal Revenues

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(2)	(4)	(5)
Municipal Revenues p.c., francs:				
Avg. 1878 - 1914	1.734**	593	7.7	3.2
	(0.668)			
1862	0.366	589	6.1	4.7
	(0.501)			
1878	2.553**	593	6.3	3.3
	(0.908)			
1880s	2.151**	593	6.7	3.3
	(0.748)			
1890s	1.161*	593	7.0	2.8
	(0.528)			
1900s	1.195	593	7.9	3.4
	(0.618)			
1910s	2.018**	593	10.2	4.5
	(0.841)			
1920s	21.455*	593	71.9	52.1
	(11.440)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. The average for the period 1878 to 1914 corresponds to the mean of values for 1878, 1914, and for all census years in between (1881, 1886, 1891, 1896, 1901, 1906 and 1911). Decade averages correspond to the mean of values for census years in the corresponding decade. In the case of the 1910s, we average the values for 1911 and 1914. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 5: Effect of the GFZ on Local Tax Revenues

	RD Estimate	N.	Dep. Var. Mean	Dep. Var. S.D.
	(1)	(2)	(4)	(5)
Local Tax Revenues p.c., francs:				
Avg. 1878 - 1914	2.301***	593	5.4	2.3
	(0.521)			
1878	1.456**	593	3.6	1.9
	(0.588)			
1880s	1.384**	593	4.4	2.1
	(0.532)			
1890s	1.659***	593	5.0	2.5
	(0.547)			
1900s	2.412***	593	6.0	2.9
	(0.621)			
1910s	4.163***	593	7.1	3.5
	(1.013)			
1920s	2.371	593	10.2	7.3
	(2.205)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. The average for the period 1878 to 1914 corresponds to the mean of values for 1878, 1914, and for all census years in between (1881, 1886, 1891, 1896, 1901, 1906 and 1911). Decade averages correspond to the mean of values for census years in the corresponding decade. In the case of the 1910s, we average the values for 1911 and 1914. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 6: Effect of the GFZ on Local Tax Base

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(2)	(4)	(5)
Local Tax Base p.c., francs:				
Avg. 1878 - 1914	0.558**	593	3.7	1.8
	(0.230)			
1862	0.333	573	3.0	1.0
	(0.227)			
1878	0.343*	593	3.2	1.2
	(0.191)			
1880s	0.395*	593	3.3	1.4
	(0.196)			
1890s	0.493**	593	3.5	1.5
	(0.208)			
1900s	0.693***	593	4.0	2.4
	(0.249)			
1910s	0.649**	593	4.5	2.8
	(0.278)			
1920s	-0.547	593	4.8	4.9
	(0.465)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. The average for the period 1878 to 1914 corresponds to the mean of values for 1878, 1914, and for all census years in between (1881, 1886, 1891, 1896, 1901, 1906 and 1911). Decade averages correspond to the mean of values for census years in the corresponding decade. In the case of the 1910s, we average the values for 1911 and 1914. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 7: Effect of the GFZ on Total Contributions and Land Contribution Revenues

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(2)	(3)	(4)
Contributions Revenue p.c., francs:				
1862	0.102	285	6.9	2.4
	(0.807)			
1871	0.550	289	8.3	3.0
	(1.664)			
1881	2.584	289	10.0	3.1
	(1.709)			
1891	2.626*	289	11.1	3.6
	(1.181)			
Land Contribution Revenue p.c., francs:				
1862	0.373	285	5.3	2.0
	(0.625)			
1871	1.027	289	5.8	2.3
	(1.016)			
1881	2.627**	289	6.7	2.3
	(1.070)			
1891	2.118*	289	7.3	2.8
	(0.895)			
Non-built Land	2.353***	289	6.2	2.9
	(0.688)			
Built Land	0.097	289	1.1	0.8
	(0.224)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 8: Effect of the GFZ on Personal-Movable, Doors and Windows, and Patents Contribution Revenues

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(2)	(3)	(4)
Personal-Movable Contribution Revenue p.c., francs:				
1862	-0.147	285	0.9	0.4
	(0.148)			
1871	-0.059	289	1.1	0.5
	(0.216)			
1881	0.244	289	1.4	0.6
	(0.220)			
1891	0.323	289	1.8	0.8
	(0.203)			
Doors and Windows Contribution Revenue p.c., francs:				
1862	-0.013	285	0.4	0.2
	(0.030)			
1871	-0.048	289	0.7	0.3
	(0.128)			
1881	0.022	289	0.9	0.4
	(0.118)			
1891	0.086	289	1.0	0.4
	(0.140)			
Patents Contribution Revenue p.c., francs:				
1862	-0.072	285	0.3	0.5
	(0.124)			
1871	-0.036	289	0.7	1.0
	(0.316)			
1881	0.169	289	1.0	1.3
	(0.374)			
1891	0.162	289	1.0	1.4
	(0.320)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 9: Effect of GFZ on Local Public Accounts Under Different Specifications

	RD Estimates								N.	Dep. Var.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Mean (10)	SD (11)
Municipal Revenues p.c. (1878 - 1914), francs	1.734**	2.060***	1.683*	1.558	1.758	1.850***	1.148	0.931	593	7.75	3.20
	(0.668)	(0.586)	(0.889)	(0.717)	(0.614)	(0.605)	(0.696)	(0.619)			
Local Tax Revenues p.c. (1878 - 1914), francs	2.301***	2.078***	2.308**	2.316**	2.305***	2.270***	1.563**	1.634**	593	5.39	2.33
	(0.521)	(0.517)	(0.766)	(0.608)	(0.534)	(0.494)	(0.591)	(0.697)			
Local Tax Base p.c. (1878 - 1914), francs	0.558**	0.741***	0.724**	0.562*	0.423***	0.723***	0.587**	0.690*	593	3.73	1.82
	(0.230)	(0.213)	(0.286)	(0.230)	(0.191)	(0.236)	(0.244)	(0.340)			
Contributions p.c. (1891), francs:											
Total	2.626*	2.946**	3.020*	2.493**	2.324**	2.846***	2.273*	2.834**	289	11.1	3.61
	(1.181)	(1.199)	(1.442)	(0.847)	(0.710)	(0.916)	(1.110)	(1.162)			
Land	2.118*	2.613**	2.182	2.269**	2.187***	1.899*	2.303***	2.474**	289	7.26	2.82
	(0.895)	(0.832)	(1.269)	(0.631)	(0.535)	(0.784)	(0.710)	(0.895)			
Non-built Land	2.353***	2.657***	1.677	2.149***	2.069***	2.023***	2.292***	2.378***	289	6.16	2.88
	(0.688)	(0.660)	(1.348)	(0.596)	(0.518)	(0.641)	(0.654)	(0.848)			
Personal-Furniture	0.323	0.053	0.452*	0.139	0.194	0.434**	0.161	0.190	289	1.84	0.80
	(0.203)	(0.168)	(0.260)	(0.167)	(0.150)	(0.176)	(0.207)	(0.259)			
Doors and Windows	0.086	-0.007	0.134	0.052	0.020	0.099	0.005	-0.084	289	1.01	0.37
	(0.140)	(0.101)	(0.173)	(0.114)	(0.100)	(0.122)	(0.124)	(0.152)			
Patents	0.162	0.081	0.307	0.033	-0.076	0.460	-0.090	0.236	289	0.99	1.40
	(0.320)	(0.294)	(0.402)	(0.300)	(0.250)	(0.374)	(0.324)	(0.328)			
Polynomial Order	1st	1st	2nd	1st	1st	1st	1st	1st			
Baseline Covariates	No	Yes	No	No	No	No	No	No			
Bandwidth (km)	CCT	CCT	CCT	15km	20km	CCT	CCT	CCT			
Standard Errors					NN						
Customs Border				Usses			Genevois	H. Savoie			
Sample			Base			Incl. Splits	Base				

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 1 reports our baseline RD estimates and standard errors for the treatment effect using a first-order polynomial and no covariates. Columns 2 to 8 show our estimates under different specifications: (2) controls for a broad set of covariates (latitude, longitude, mean altitude, rainfall and temperature); (3) uses a second-order polynomial, (4) uses a 15km bandwidth; (5) uses a 20km bandwidth; (6) includes border municipalities which are significantly split by the border (at least 20% of their area is in the opposite zone); (7) calculates distance to border based on an extended section of customs border which partitions the former province of Genevois; and (8) calculates distance to border based on an the whole customs border which partitions the department of Haute-Savoie. Columns 9 shows the number of observations available. Columns 10 and 11 present the mean and standard deviation for the corresponding variable as in Table 1. $^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 10: Effect of the GFZ on Workforce Distribution (1891)

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(3)	(4)	(5)
Population by profession, % of total pop.:				
Agriculture+Industry	8.646*	285	88.8	11.9
	(4.410)			
Agriculture	3.207	285	79.2	17.7
	(5.523)			
Industry	4.821	285	9.6	12.1
	(2.954)			
Commerce	-0.117	285	3.4	6.5
	(2.223)			
Public Administration	-9.260**	285	1.7	2.6
	(3.784)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 11: Effect of the GFZ on Agricultural Activity (1910)

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(3)	(4)	(5)
Land Use by Crop, % of total area:				
Wheat	-0.020	272	10.0	7.9
	(2.684)			
Oats	-2.272	272	3.9	3.2
	(1.453)			
Potatoes	0.179	272	4.3	2.9
	(1.428)			
Farm Animals, heads p.c.:				
Ox	0.020	272	0.04	0.05
	(0.019)			
Cows	-0.031	272	0.46	0.21
	(0.111)			
Agricultural Industry, establishments per 1000 pop.:				
Total	6.307**	289	4.51	6.1
	(2.751)			
Mills	1.779	289	1.0	1.6
	(1.173)			
Milk Industry	1.078	289	2.2	1.9
	(0.842)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 12: Effect of the GFZ on Agricultural Land Use and Production (1892)

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(3)	(4)	(5)
Land use by crop (1892), % of total area:				
Cultivated Area	4.266	288	86.4	14.9
	(7.875)			
Wheat	11.945**	288	12.3	9.9
	(4.843)			
Oats	0.387	287	4.0	3.8
	(1.474)			
Potatoes	0.135	288	4.2	3.2
	(1.187)			
Agricultural production (1892), hectoliters p.c.:				
Wheat	1.748	289	2.8	3.6
	(1.166)			
Oats	-0.105	288	1.4	1.5
	(0.567)			
Potatoes	1.168	289	6.4	13.2
	(1.878)			
Beef	-3.923	289	5.8	8.9
	(3.798)			
Milk	5.364	289	541	413
	(162.075)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 13: Effect of the GFZ on Manufacturing Units (1881)

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(3)	(4)	(5)
Manufacturing establishments, p.c.:				
Total	10.657*	289	11.0	8.7
	(5.627)			
Blacksmith	-0.643	289	0.9	1.2
	(0.783)			
Carpentry	3.225***	289	0.9	1.8
	(1.082)			
Mills	1.749	289	2.1	2.5
	(1.620)			
Sawmills	0.921	289	1.3	2.1
	(1.013)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Table 14: Effect of the GFZ on Population Growth

	RD	N.	Dep. Var.	
	Estimate		Mean	S.D.
	(1)	(2)	(4)	(5)
Population Growth, annual %:				
1861 - 1911	0.029	593	-0.4	0.7
	(0.156)			
1861 - 1811	-0.095	593	-0.2	1.2
	(0.254)			
1881 - 1891	-0.257	593	-0.4	1.1
	(0.371)			
1891 - 1901	0.181	593	-0.5	1.4
	(0.258)			
1901 - 1911	0.336	593	-0.6	1.0
	(0.318)			
1911 - 1921	0.140	593	-1.1	0.9
	(0.336)			

Notes: Standard errors are estimated using a heteroskedasticity–robust nearest-neighbor variance estimator with the minimum number of neighbors equal to three. Column 1 reports the conventional RD estimates and standard errors for the treatment effect. Baseline estimates are obtained using a first-order polynomial and no covariates. The dependant variable is annual population growth rates for various periods. Significance levels are based on the bias-corrected confidence intervals following Calonico et al. (2014b). Column 2 shows the number of observations available. Columns 3 and 4 present the mean and standard deviation for the corresponding variable as in Table 1. * denotes significance at 10%, ** significance at 5% and *** significance at 1%.

Online Appendix for "Trade Liberalization and Long-Run Local Economic Development: Evidence from the Savoy Great Free Zone"

Table of Contents

A Additional Figures and Tables **2**

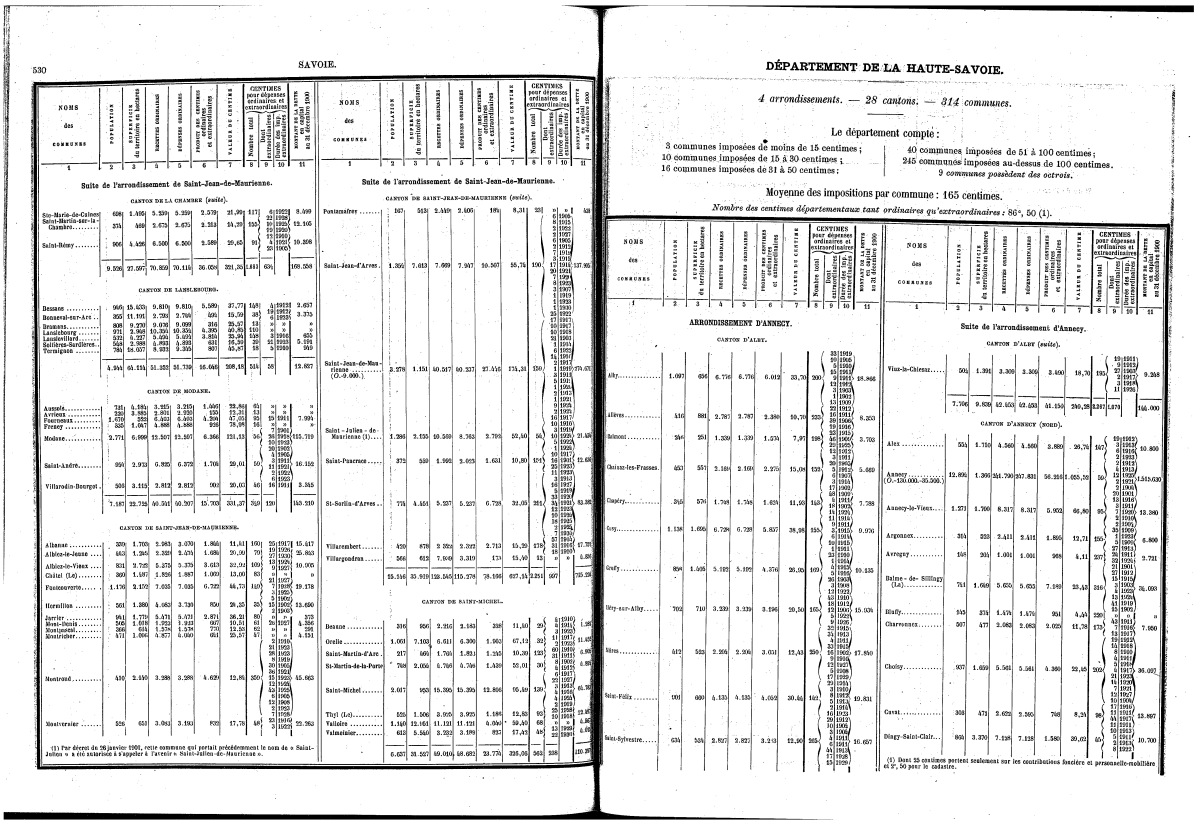
B Data Appendix **15**

B.1 French Tax System 15

B.2 Post-GFZ Local Public Accounts 17

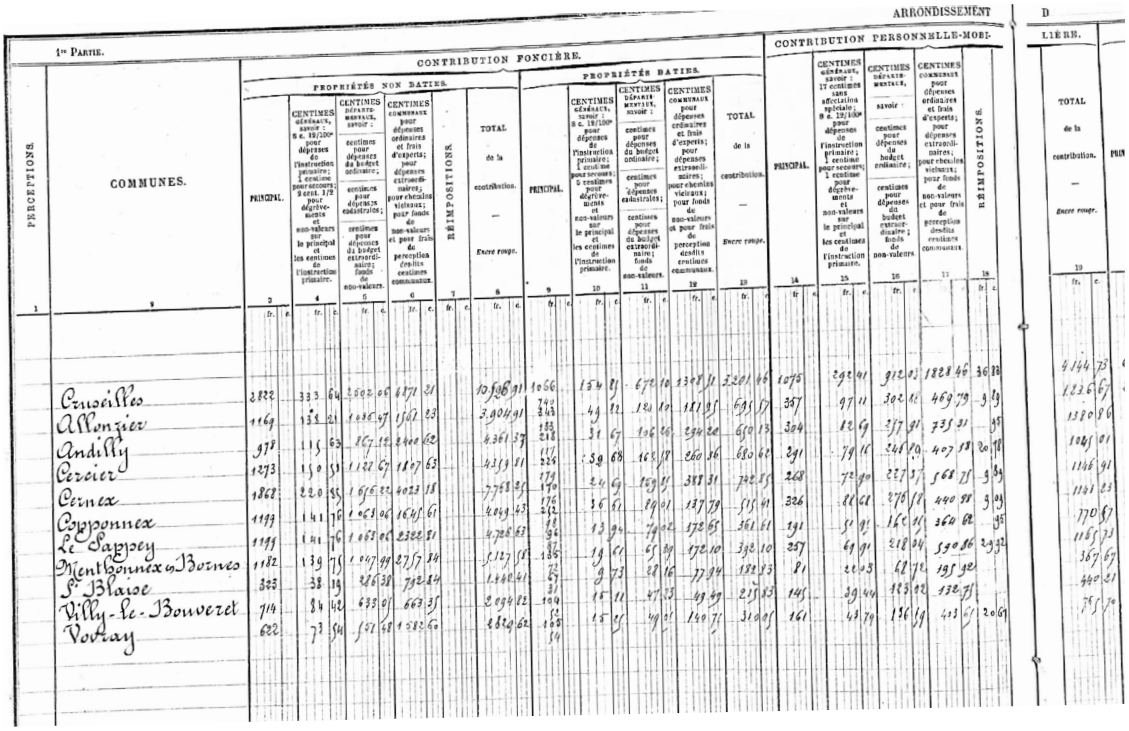
A Additional Figures and Tables

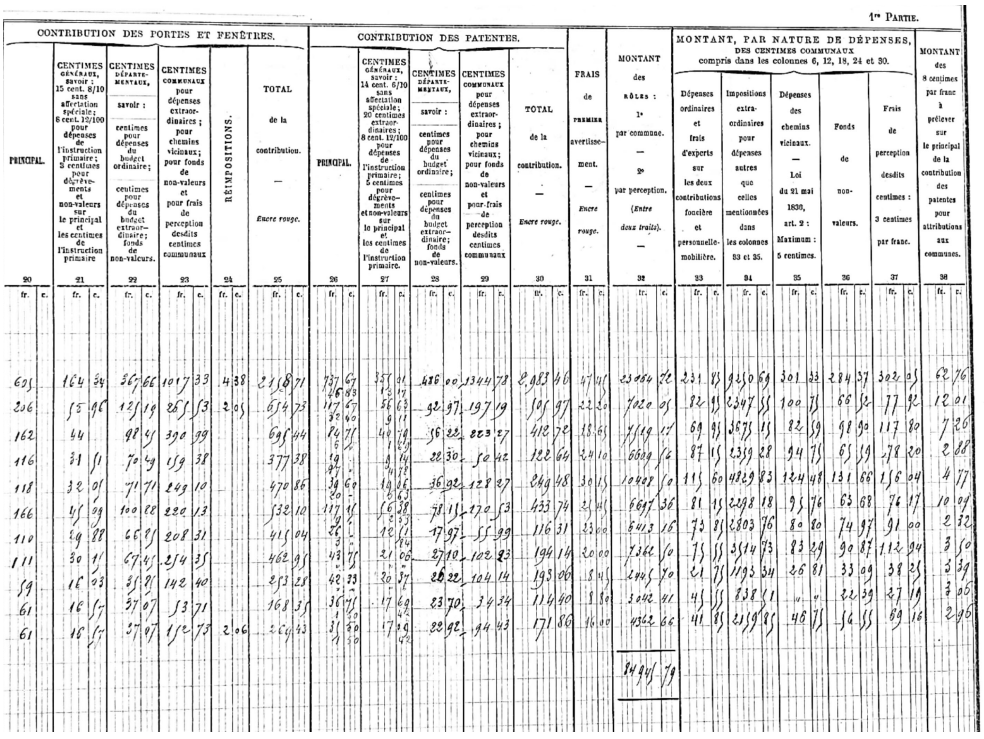
Figure A1: Sample Page from the 1901 Situation Financiere des Communes



Source: BnF Gallica (https://gallica.bnf.fr/ark:/12148/cb412872434/date).

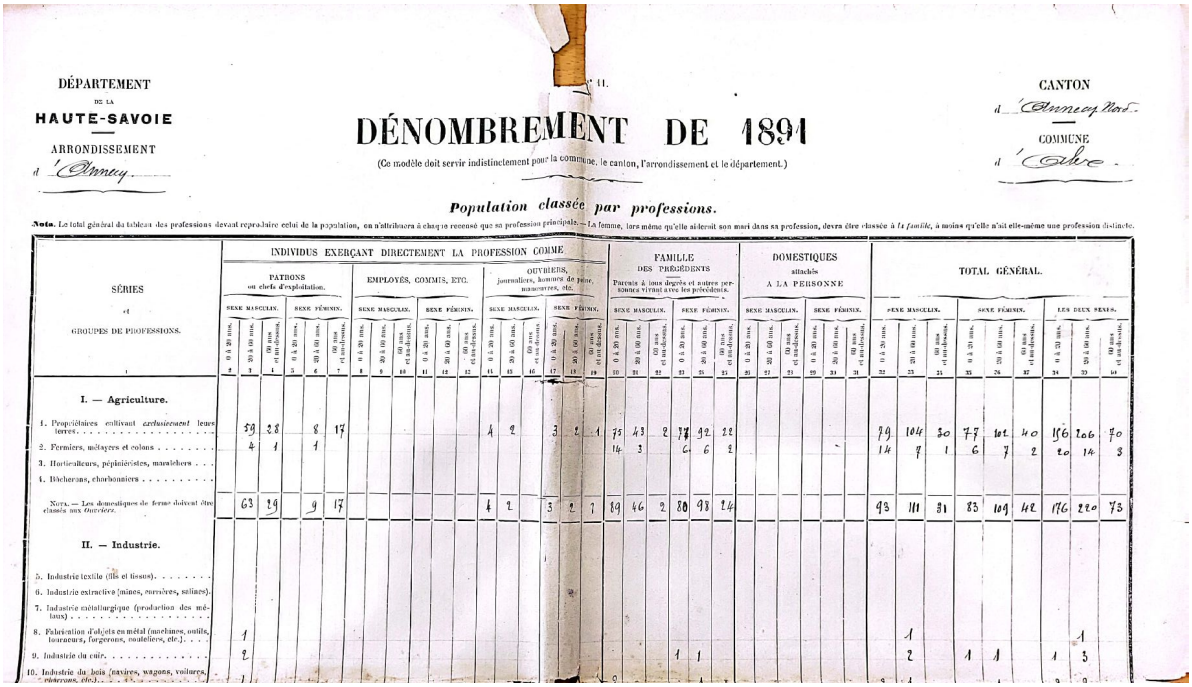
Figure A2: Sample Page from the 1891 Etat du Montant des Roles Generaux





Source: Archives Departamentales de Haute-Savoie.

Figure A3: Sample Page from the 1891 Census



DÉPARTEMENT DE LA HAUTE-SAVOIE — ARRONDISSEMENT d'Annecy — CANTON d'Annecy Nord — COMMUNE d'Give

N° 41.

DÉNOMBREMENT DE 1891

(Ce modèle doit servir indistinctement pour la commune, le canton, l'arrondissement et le département.)

Population classée par professions.

Nota. Le total général du tableau des professions devant reproduire celui de la population, on n'attribuera à chaque recensé que sa profession principale. — La femme, lors même qu'elle aiderait son mari dans sa profession, devra être classée à *la famille*, à moins qu'elle n'ait elle-même une profession distincte.

SÉRIES et GROUPES DE PROFESSIONS.	INDIVIDUS EXERÇANT DIRECTEMENT LA PROFESSION COMME — PATRONS ou chefs d'exploitation. — SEXE MASCULIN. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.	SEXE FÉMININ. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.
1	2	3	4	5	6	7
I. — Agriculture.						
1. Propriétaires cultivant *exclusivement* leurs terres		59	28		8	17
2. Fermiers, métayers et colons		4	1		1	
3. Horticulteurs, pépiniéristes, maraîchers						
4. Bûcherons, charbonniers						
Nota. — Les domestiques de ferme doivent être classés aux *Ouvriers*.		63	29		9	17
II. — Industrie.						
5. Industrie textile (fils et tissus)						
6. Industrie extractive (mines, carrières, salines)						
7. Industrie métallurgique (production des métaux)						
8. Fabrication d'objets en métal (machines, outils, tourneurs, forgerons, coutelliers, etc.)		1				
9. Industrie du cuir		2				
10. Industrie du bois (navires, wagons, voitures, charrons, etc.)		1				

SÉRIES et GROUPES DE PROFESSIONS.	EMPLOYÉS, COMMIS, ETC. — SEXE MASCULIN. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.	SEXE FÉMININ. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.
1	8	9	10	11	12	13
I. — Agriculture.						
1. Propriétaires cultivant *exclusivement* leurs terres						
2. Fermiers, métayers et colons						
3. Horticulteurs, pépiniéristes, maraîchers						
4. Bûcherons, charbonniers						
Nota. — Les domestiques de ferme doivent être classés aux *Ouvriers*.						
II. — Industrie.						
5. Industrie textile (fils et tissus)						
6. Industrie extractive (mines, carrières, salines)						
7. Industrie métallurgique (production des métaux)						
8. Fabrication d'objets en métal (machines, outils, tourneurs, forgerons, coutelliers, etc.)						
9. Industrie du cuir						
10. Industrie du bois (navires, wagons, voitures, charrons, etc.)						

SÉRIES et GROUPES DE PROFESSIONS.	OUVRIERS, journaliers, hommes de peine, manœuvres, etc. — SEXE MASCULIN. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.	SEXE FÉMININ. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.
1	14	15	16	17	18	19
I. — Agriculture.						
1. Propriétaires cultivant *exclusivement* leurs terres		4	2		3	2	1
2. Fermiers, métayers et colons							
3. Horticulteurs, pépiniéristes, maraîchers							
4. Bûcherons, charbonniers							
Nota. — Les domestiques de ferme doivent être classés aux *Ouvriers*.		4	2		3	2	1
II. — Industrie.							
5. Industrie textile (fils et tissus)							
6. Industrie extractive (mines, carrières, salines)							
7. Industrie métallurgique (production des métaux)							
8. Fabrication d'objets en métal (machines, outils, tourneurs, forgerons, coutelliers, etc.)							
9. Industrie du cuir							
10. Industrie du bois (navires, wagons, voitures, charrons, etc.)							

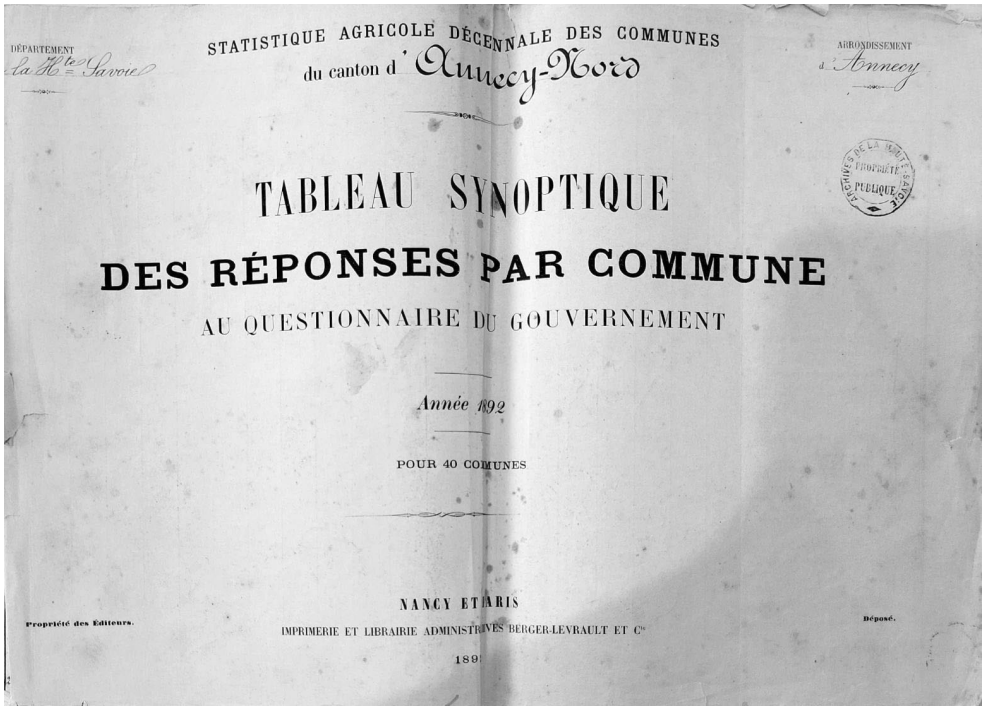
SÉRIES et GROUPES DE PROFESSIONS.	FAMILLE DES PRÉCÉDENTS — Parents à tous degrés et autres personnes vivant avec les précédents. — SEXE MASCULIN. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.	SEXE FÉMININ. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.
1	20	21	22	23	24	25
I. — Agriculture.						
1. Propriétaires cultivant *exclusivement* leurs terres	75	43	2	74	92	22
2. Fermiers, métayers et colons	14	3		6	6	2
3. Horticulteurs, pépiniéristes, maraîchers						
4. Bûcherons, charbonniers						
Nota. — Les domestiques de ferme doivent être classés aux *Ouvriers*.	89	46	2	80	98	24
II. — Industrie.						
5. Industrie textile (fils et tissus)						
6. Industrie extractive (mines, carrières, salines)						
7. Industrie métallurgique (production des métaux)						
8. Fabrication d'objets en métal (machines, outils, tourneurs, forgerons, coutelliers, etc.)						
9. Industrie du cuir				1	1	
10. Industrie du bois (navires, wagons, voitures, charrons, etc.)						

SÉRIES et GROUPES DE PROFESSIONS.	DOMESTIQUES attachés À LA PERSONNE — SEXE MASCULIN. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.	SEXE FÉMININ. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.
1	26	27	28	29	30	31
I. — Agriculture.						
1. Propriétaires cultivant *exclusivement* leurs terres						
2. Fermiers, métayers et colons						
3. Horticulteurs, pépiniéristes, maraîchers						
4. Bûcherons, charbonniers						
Nota. — Les domestiques de ferme doivent être classés aux *Ouvriers*.						
II. — Industrie.						
5. Industrie textile (fils et tissus)						
6. Industrie extractive (mines, carrières, salines)						
7. Industrie métallurgique (production des métaux)						
8. Fabrication d'objets en métal (machines, outils, tourneurs, forgerons, coutelliers, etc.)						
9. Industrie du cuir						
10. Industrie du bois (navires, wagons, voitures, charrons, etc.)						

SÉRIES et GROUPES DE PROFESSIONS.	TOTAL GÉNÉRAL. — SEXE MASCULIN. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.	SEXE FÉMININ. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.	LES DEUX SEXES. — 0 à 20 ans	20 à 60 ans	60 ans et au-dessus.
1	32	33	34	35	36	37	38	39	40
I. — Agriculture.									
1. Propriétaires cultivant *exclusivement* leurs terres	79	104	30	77	101	40	156	206	70
2. Fermiers, métayers et colons	14	9	1	6	7	2	20	14	3
3. Horticulteurs, pépiniéristes, maraîchers									
4. Bûcherons, charbonniers									
Nota. — Les domestiques de ferme doivent être classés aux *Ouvriers*.	93	111	31	83	109	42	176	220	73
II. — Industrie.									
5. Industrie textile (fils et tissus)									
6. Industrie extractive (mines, carrières, salines)									
7. Industrie métallurgique (production des métaux)									
8. Fabrication d'objets en métal (machines, outils, tourneurs, forgerons, coutelliers, etc.)		1						1	
9. Industrie du cuir		2		1	1		1	3	
10. Industrie du bois (navires, wagons, voitures, charrons, etc.)		1						1	

Source: Archives Departamentales de Haute-Savoie.

Figure A4: Sample Page from the 1892 Agricultural Census



DÉPARTEMENT
de la Haute-Savoie

STATISTIQUE AGRICOLE DÉCENNALE DES COMMUNES
du canton d' Annecy-Nord

ARRONDISSEMENT
d' Annecy

ARCHIVES DE LA HAUTE-SAVOIE
PROPRIÉTÉ PUBLIQUE

TABLEAU SYNOPTIQUE
DES RÉPONSES PAR COMMUNE
AU QUESTIONNAIRE DU GOUVERNEMENT

Année 1892

POUR 40 COMMUNES

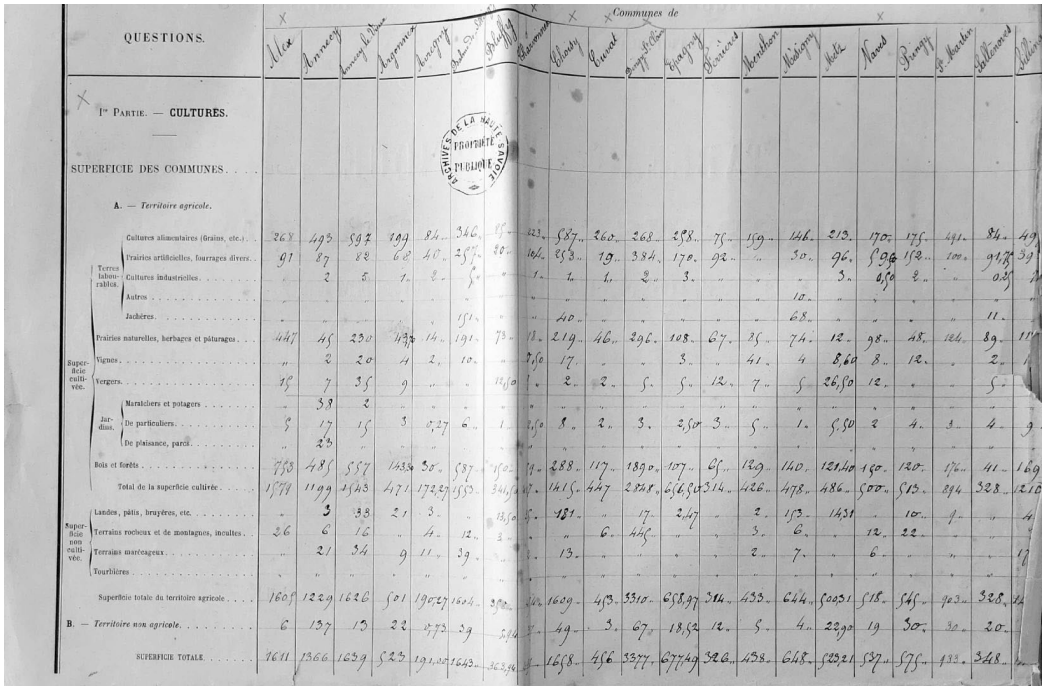
NANCY ET PARIS
IMPRIMERIE ET LIBRAIRIE ADMINISTRATIVES BERGER-LEVRAULT ET Cie
189

Propriété des Editeurs.

Déposé.

Scanné avec CamScanner

Scanné avec CamScanner



QUESTIONS.

Communes de

Mex | Annecy | Annecy-le-Vieux | Argonnaz | Arnaguy | Bassy | Bluffy | Bluenmont | Chainy | Cuvat | Groisy-Dessus | Epagny | Faverges | Meythet | Metz-Tessy | Nâves | Pringy | Ste-Marie | Sallenôves | Villaz

1re PARTIE. — CULTURES.

SUPERFICIE DES COMMUNES . . . .

A. — *Territoire agricole.*

Superficie cultivée — Terres labourables — Cultures alimentaires (Grains, etc.) . . 268 | 493 | 597 | 199 | 84 | 346 | 85 | 323 | 587 | 260 | 268 | 258 | 75 | 159 | 146 | 213 | 170 | 175 | 491 | 84 | 49

Prairies artificielles, fourrages divers . . 91 | 87 | 82 | 62 | 40 | 257 | 80 | 165 | 253 | 19 | 384 | 170 | 92 | " | 30 | 96 | 596 | 158 | 100 | 91,75 | 39

Cultures industrielles . . 1 | 2 | 5 | 1 | 2 | 5 | " | 1 | 1 | 1 | 2 | 3 | " | " | " | 3 | 0,50 | 2 | " | 0,25 | 1

Autres . . " | " | " | " | " | " | " | " | " | " | " | " | " | " | 10 | " | " | " | " | " | "

Jachères . . " | " | " | " | " | 151 | " | " | 40 | " | " | " | " | " | 68 | " | " | " | " | 11 | "

Prairies naturelles, herbages et pâturages . . 447 | 45 | 230 | 139 | 14 | 191 | 73 | 13 | 219 | 46 | 296 | 108 | 67 | 35 | 74 | 12 | 98 | 48 | 124 | 89 | 17

Superficie cultivée — Vignes . . " | 2 | 20 | 4 | 2 | 10 | " | 7,50 | 17 | " | " | 3 | " | 41 | 4 | 8,60 | 8 | 12 | " | 2 | "

Vergers . . 18 | 7 | 35 | 9 | " | " | " | 1,50 | 1 | 2 | 2 | 5 | 5 | 12 | 7 | 5 | 26,80 | 12 | " | " | 5 | "

Jardins — Maraîchers et potagers . . " | 38 | 2 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | "

Jardins — De particuliers . . 9 | 17 | 15 | 3 | 5,27 | 6 | 1 | 2,50 | 8 | 2 | 3 | 2,50 | 3 | 5 | 1 | 5,50 | 2 | 4 | 3 | 4 | 3

Jardins — De plaisance, parcs . . " | 25 | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | "

Bois et forêts . . 753 | 485 | 557 | 1433 | 38 | 587 | 150 | 14 | 288 | 117 | 1890 | 107 | 65 | 129 | 140 | 1214,40 | 150 | 120 | 176 | 41 | 169

Total de la superficie cultivée . . 1579 | 1199 | 1143 | 471 | 1727 | 1555 | 341,50 | 547 | 1415 | 447 | 2848 | 656,80 | 314 | 426 | 478 | 486 | 500 | 513 | 894 | 328 | 1210

Superficie non cultivée — Landes, pâtis, bruyères, etc. . . " | 3 | 38 | 21 | 3 | " | 13,50 | 5 | 181 | " | 17 | 2,47 | " | 2 | 153 | 1431 | " | 10 | 4 | " | 4

Terrains rocheux et de montagnes, incultes . . 26 | 6 | 16 | " | 4 | 12 | 3 | " | " | 6 | 445 | " | " | 3 | 6 | " | 12 | 22 | " | " | "

Terrains marécageux . . " | 21 | 34 | 9 | 11 | 39 | " | 1 | 13 | " | " | " | " | 2 | 7 | " | 6 | " | " | " | 17

Tourbières . . " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | " | "

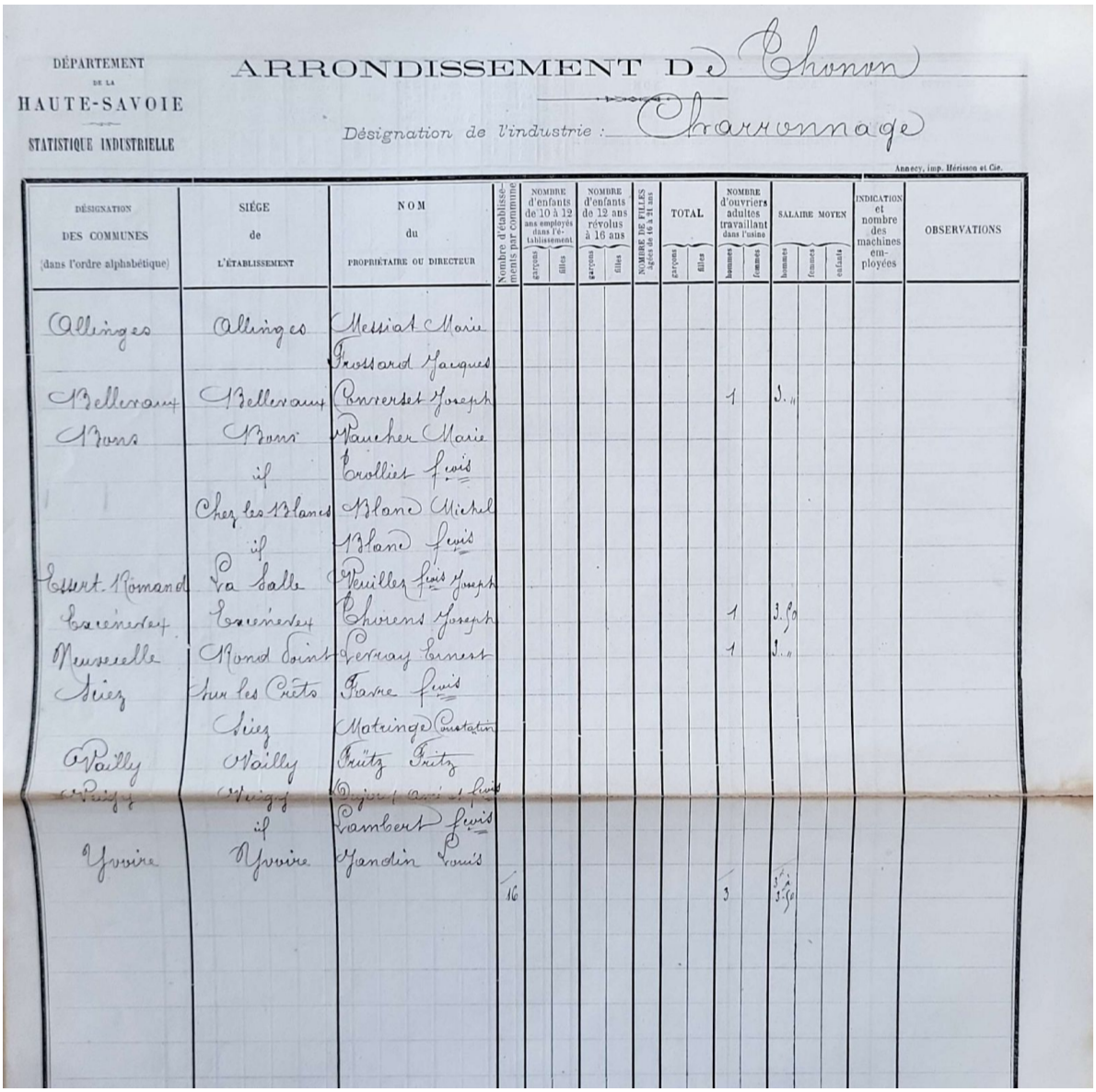
Superficie totale du territoire agricole . . 1605 | 1229 | 1626 | 501 | 1907 | 1604 | 358 | 552 | 1609 | 453 | 3310 | 658,97 | 314 | 433 | 644 | 5031 | 518 | 545 | 923 | 328 | 12

B. — *Territoire non agricole* . . 6 | 137 | 13 | 22 | 235 | 39 | 54 | 7 | 49 | 3 | 67 | 18,52 | 12 | 5 | 4 | 2290 | 19 | 30 | 30 | 20 | "

SUPERFICIE TOTALE . . 1611 | 1366 | 1639 | 523 | 1911,00 | 1643 | 362,50 | 559 | 1658 | 456 | 3377 | 677,49 | 326 | 438 | 648 | 5321 | 537 | 575 | 953 | 348 | "

Source: Archives Departamentales de Haute-Savoie.

Figure A5: Sample Page from the 1881 Industrial Survey



DÉPARTEMENT DE LA HAUTE-SAVOIE

STATISTIQUE INDUSTRIELLE

ARRONDISSEMENT DE Bonneville

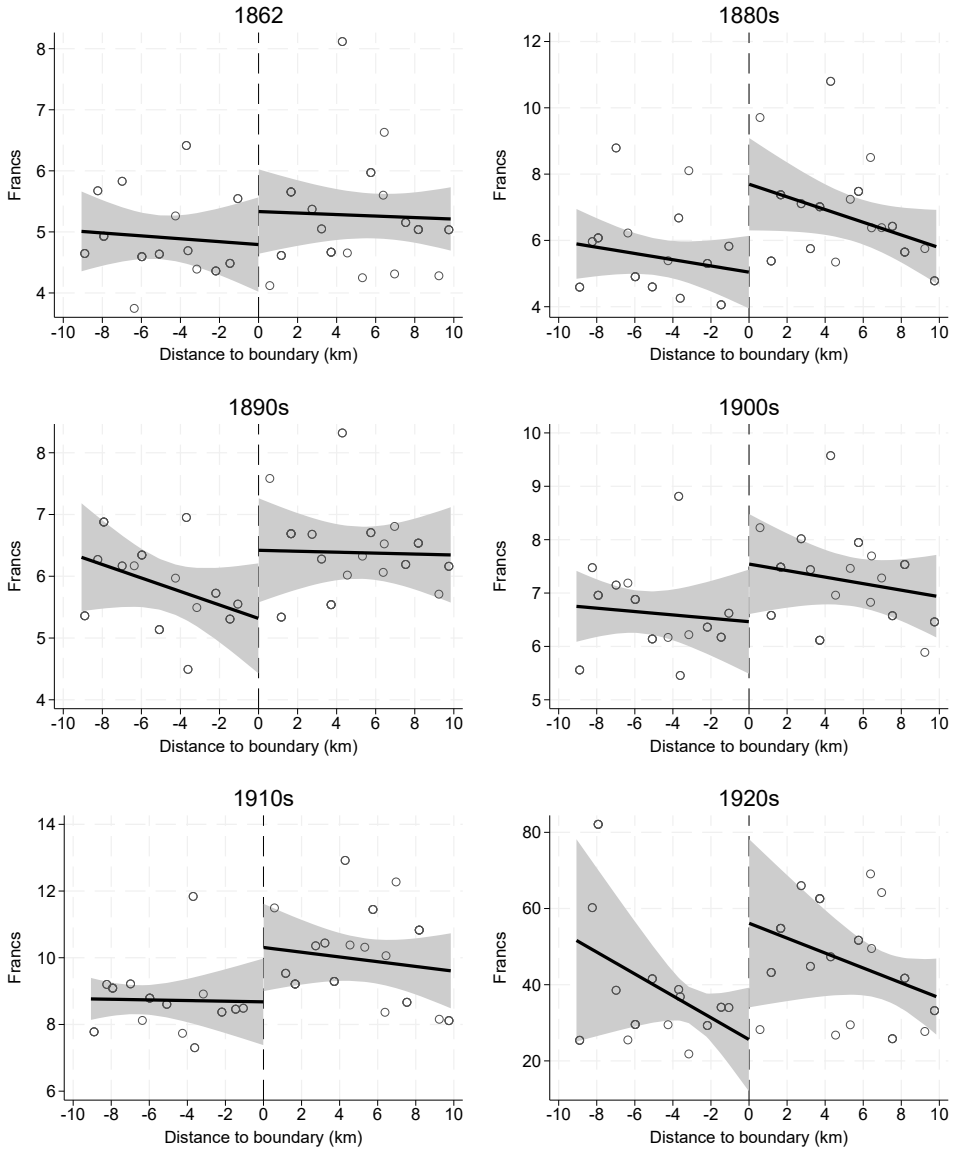
Désignation de l'industrie : Charronnage

Annecy, imp. Hérisson et Cie.

DÉSIGNATION DES COMMUNES (dans l'ordre alphabétique)	SIÉGE de L'ÉTABLISSEMENT	NOM du PROPRIÉTAIRE OU DIRECTEUR	Nombre d'établissements par commune	NOMBRE d'enfants de 10 à 12 ans employés dans l'établissement : garçons	NOMBRE d'enfants de 10 à 12 ans employés dans l'établissement : filles	NOMBRE d'enfants de 12 ans révolus à 16 ans : garçons	NOMBRE d'enfants de 12 ans révolus à 16 ans : filles	NOMBRE DE FILLES âgées de 16 à 21 ans	TOTAL : garçons	TOTAL : filles	NOMBRE d'ouvriers adultes travaillant dans l'usine : hommes	NOMBRE d'ouvriers adultes travaillant dans l'usine : femmes	SALAIRE MOYEN : hommes	SALAIRE MOYEN : femmes	SALAIRE MOYEN : enfants	INDICATION et nombre des machines employées	OBSERVATIONS
Allinges	Allinges	Messiat Marie															
		Frossard Jacques															
Bellevaux	Bellevaux	Converset Joseph									1		3..				
Bons	Bons	Pacher Marie															
	id	Excoffier frères															
	Chez les Blancs	Blanc Michel															
	id	Blanc frères															
Cluses Romand	La Salle	Peuillex frères Joseph															
Cracuerdaz	Cracuerdaz	Chorens Joseph									1		3.50				
Mieussolle	Mont Saint	Gervais Ernest									1		3..				
Scez	Sur les Crêts	Favre frères															
	Scez	Matringe Constantin															
Vailly	Vailly	Crütz Crütz															
Vaugy	Vaugy	Dujon Jean et frères															
	id	Lambert frères															
Yvoire	Yvoire	Yandin Louis	16								3		3..	3.50			

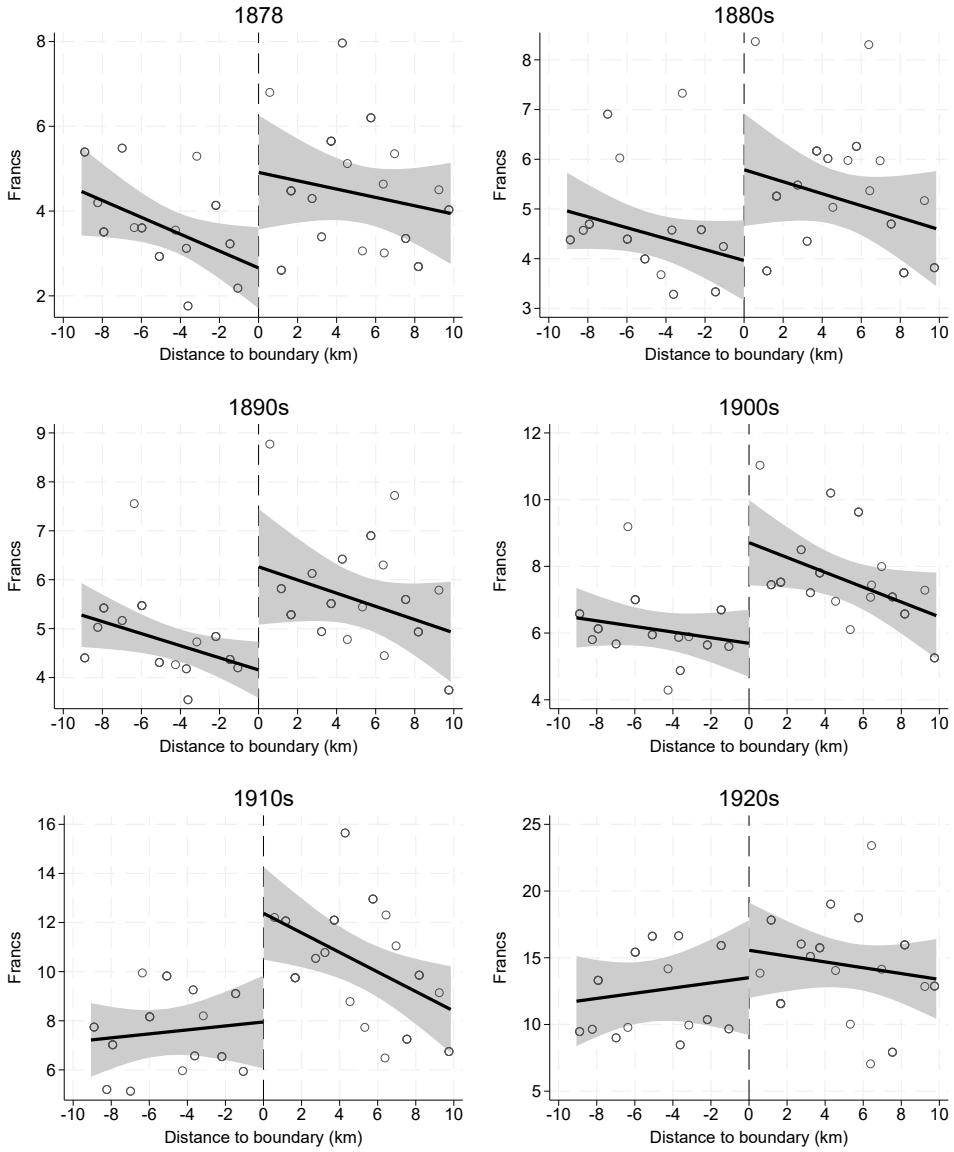
Source: Archives Departamentales de Haute-Savoie.

Figure A6: Effect of the GFZ on Municipal Revenue p.c.



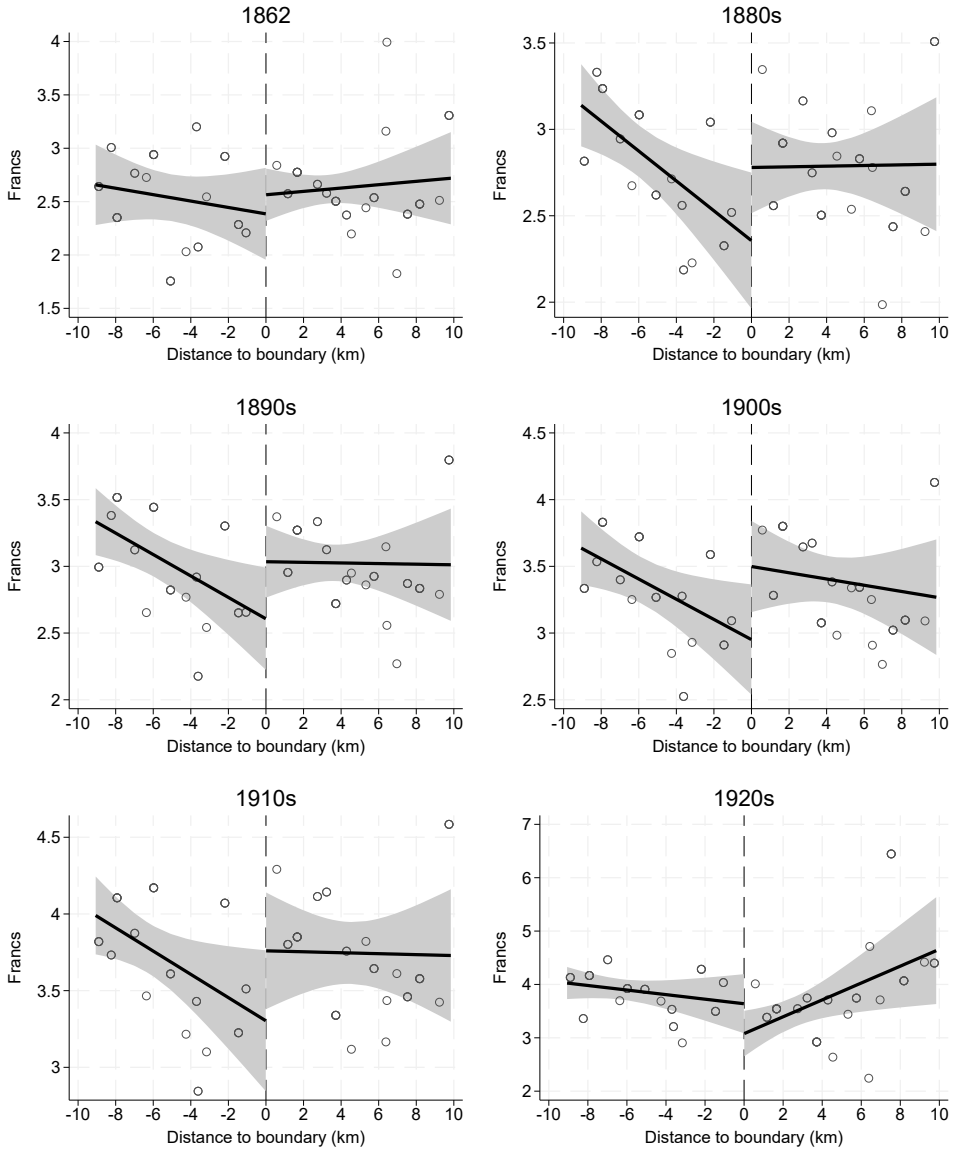
Notes: From the top, left to right, the graphs plot per capita municipal revenues for 1862 and average per capita municipal revenues for the 1880s (1881 and 1886), 1890s (1891 and 1896), 1900s (1901 and 1906), 1910s (1911 and 1914) and 1920s (1920 and 1923). The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure A7: Effect of the GFZ on Local Tax Revenue p.c.



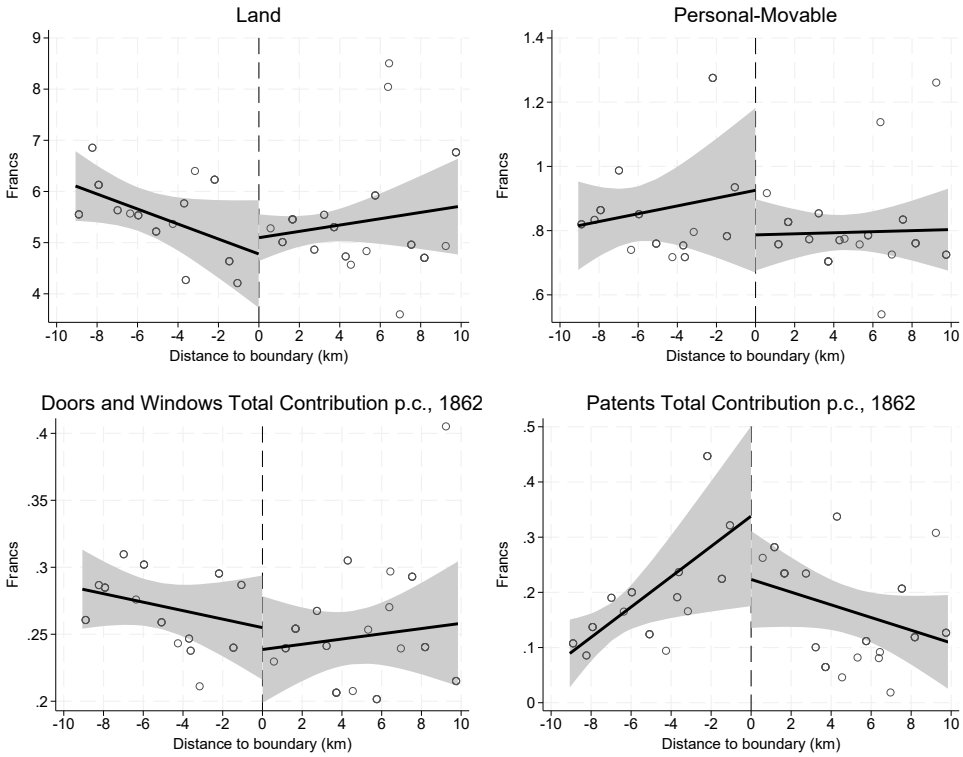
Notes: From the top, left to right, the graphs plot per capita local tax revenues for 1878 and average per capita local tax revenues for the 1880s (1881 and 1886), 1890s (1891 and 1896), 1900s (1901 and 1906), 1910s (1911 and 1914) and 1920s (1920 and 1923). The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure A8: Effect of the GFZ on Local Tax Base p.c.



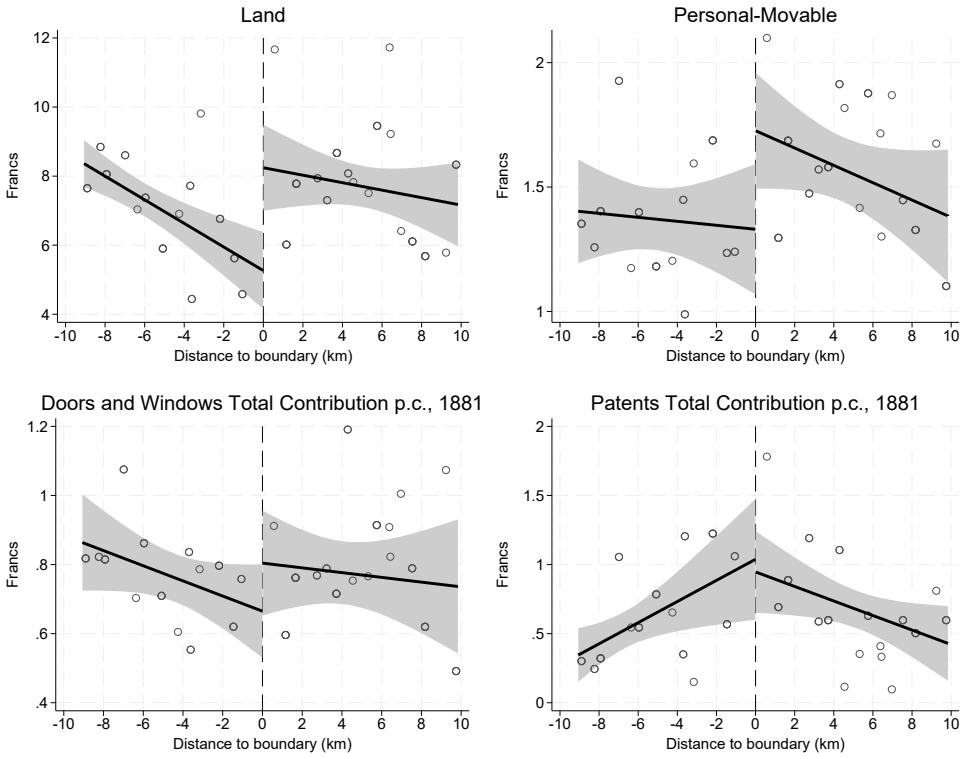
Notes: From the top, left to right, the graphs plot per capita local tax base for 1862 and average per capita local tax base for the 1880s (1881 and 1886), 1890s (1891 and 1896), 1900s (1901 and 1906), 1910s (1911 and 1914) and 1920s (1920 and 1923). The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure A9: Effect of the GFZ on Contributions (1862)



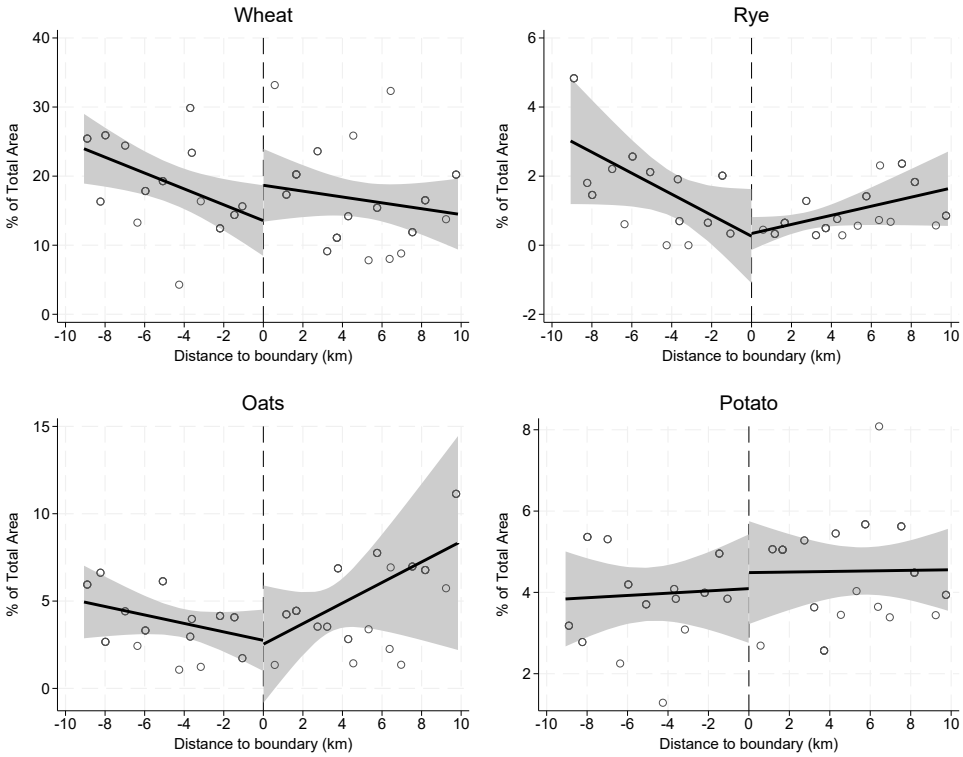
Notes: From the top, left to right, the graphs plot per capita tax collection for the land, personal-movable, doors and windows, and patents contributions in 1862. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure A10: Effect of the GFZ on Contributions (1881)



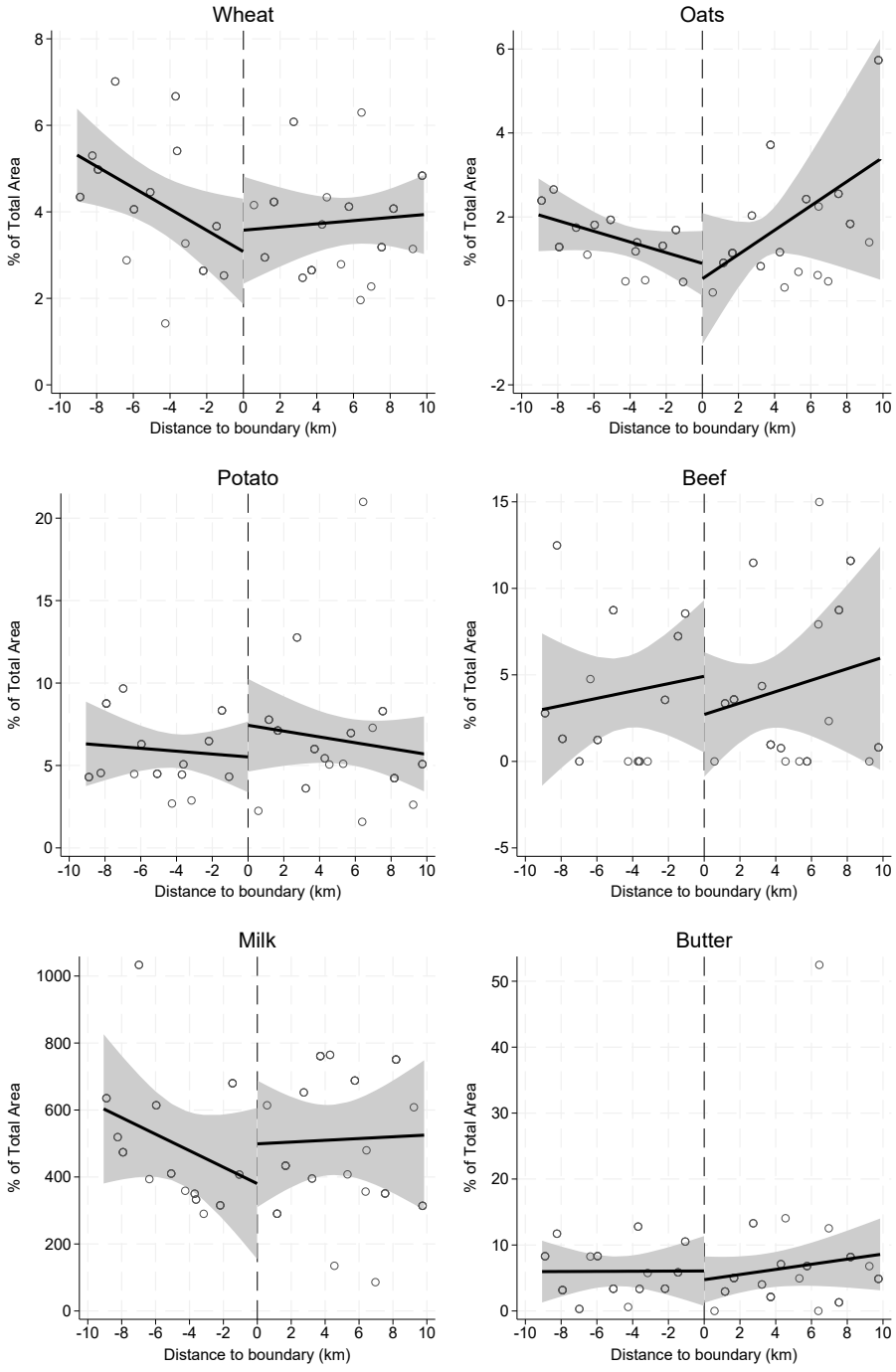
Notes: From the top, left to right, the graphs plot per capita tax collection for the land, personal-movable, doors and windows, and patents contributions in 1881. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure A11: Effect of the GFZ on Agricultural Land Use (1892)



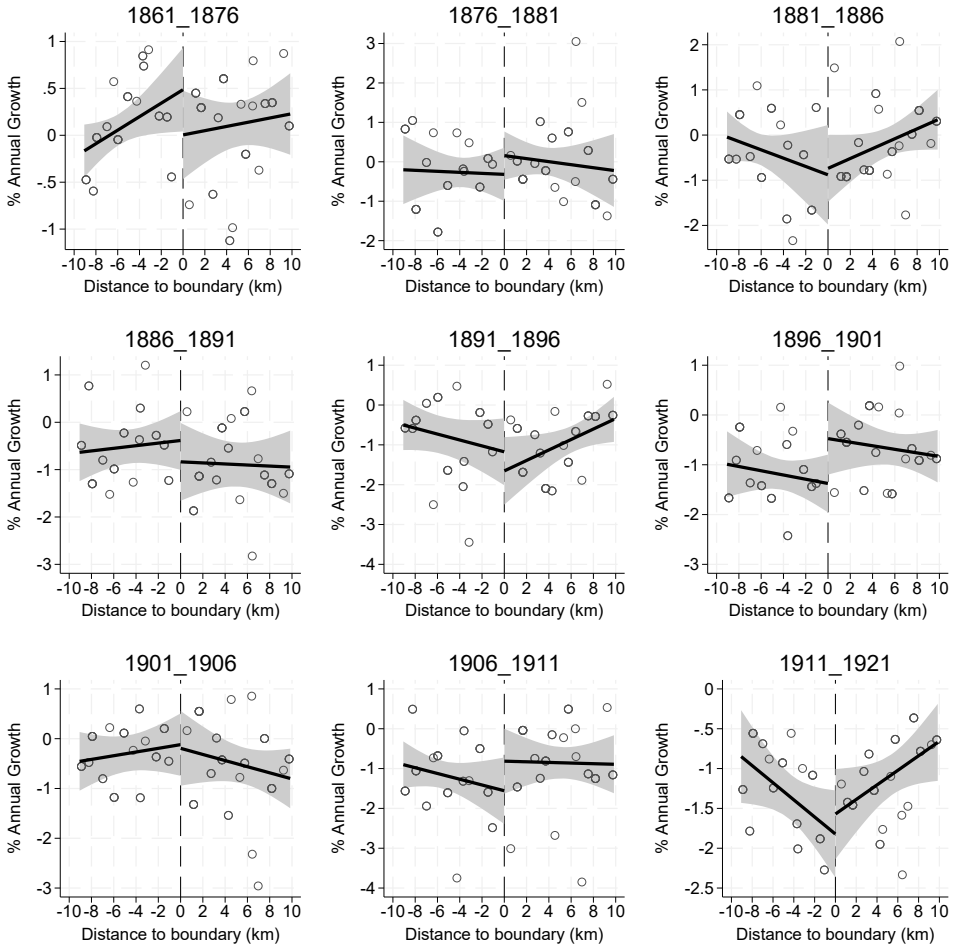
Notes: From the top, left to right, the graphs plot the area allocated to wheat, rye, oats, and potatoes in 1892. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure A12: Effect of the GFZ on Agricultural Production (1892)



Notes: From the top, left to right, the graphs plot per capita production of wheat, oats, potatoes, beef, milk and butter in 1892. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

Figure A13: Effect of the GFZ on Population Growth



Notes: From the top, left to right, the graphs plot annual population growth rates between census years. The plots include a linear fit on each side of the treatment cutoff, and 95% confidence intervals (in grey) estimated using robust standard errors.

B Data Appendix

GFZ Border. We compute distance to the treatment border following the demarcation detailed in the *Loi modificant le décret-loi du 12 juin 1860 relatif au tracé de la frontière douanière de la France en Savoie* of March 30th 1899. The law was issued to provide clarity and precision to the initial demarcation established by the *décret-loi* of June 12th 1860. The latter provided only specific points through which the customs border was to run. This was not an issue for the Usses segment of the border (and for our main analysis) as it was clear that the river constituted the customs border from the Rhone eastwards until around Duret, where the Usses ceases to be the limit between the arrondissements of Annecy and Saint-Julien. This is clear from the exposition of motives in the 1896 bill *Projet de Loi modificant le décret-loi du 12 juin 1860 relatif au tracé de la frontière douanière de la France en Savoie*, which serves as the bases for the 1899 law. There, it is stated that the 1860 decree establishes the GFZ in the old provinces of Chablais and Faucigny, and the part of Genevois north of the Usses. The bill argues that the only clarification needed with respect to the Usses section is that the border follows the right bank of the river rather than the course itself.

Pre-GFZ Local Public Accounts. Local public accounts data similar to that used for our main analysis is not available for 1860 and for the years preceding annexation. We provide a proxy of municipal local tax revenues by computing the local imposition (*imposta communale* or *imposition locale*). This was the local tax the commune could raise to cover a positive difference between local expenditures (*spese comunali* or *passivo*) and local revenues (*entrate comunali* or *attivo*). From ADHS (1857), we have the 1857 local imposition for the communes of Faucigny. From ADHS (1858), we have information on revenues/assets and expenditures/liabilities for 1858 for the communes of Genevois. The same source provides the total local imposition for Genevois in 1857. We approximate the 1857 local imposition for the communes of Genevois by (i) calculating the difference between assets and liabilities for 1858 (i.e., the 1858 local imposition for each commune) and (ii) prorating the 1857 local imposition for the entire province using our values for 1858. For this calculation, we assume that those few municipalities with more assets than liabilities in 1858 (i.e., no local imposition) also had no local imposition in 1857.

We complement our balance tests on local public accounts by using data from the *Etat Général du Sous-Répartement entre les Communes* for direct contributions and the second part of the *Etat du Montant des Roles Généraux* for 1861.[17] The first provides data on the principal for the land, personal-movable, and doors and windows contributions. The second details the number of entries (*cotes*) in the tax rolls for each contribution, as well as the patents prinicipal and the imposable revenue from land property.

B.1 French Tax System

The tax system in existence during the GFZ period until the start of WWI dated back to the French Revolution. The Revolutionary government aimed to create a universal tax code based on the

[17] Unfortunately, we have not been able to locate the first part of the document in the Departmental Archives. Hence, we do not have information on the total amount to be collected from each contribution.

proportional taxation of wealth (Bloch, 1940). Four main direct contributions, known colloquially as the "four old ones" (*quatre vieilles*) were established.

First, the land contribution (*contribution foncière*) was based on revenues from urban and rural land properties. This tax was later split in 1890 to differentiate between improved and unimproved land (Bloch, 1940). The first component was to capture real estate revenue, while the second was based on agricultural revenues. This contribution lasted as a separate tax until 1917, when it was integrated into the income tax system (Bloch, 1940). Second, the personal-movable contribution (*contribution personnelle mobilière*) was divided into two parts. The personal component (*cote personnelle*) was a flat tax per individual who could afford to pay a minimum rent, while the movable component (*cote mobilière*) was based on the rent paid for the individual's residence (Bloch, 1940). This contribution ceased to be a national tax in 1917, but remained as a local tax. Third, the tax on doors and windows (*impôt des portes et fenêtres*) was based, as it name states, on the number of doors and windows of residential buildings. Due to its controversial natural (it was perceived as a tax on air and sunlight and rich owners found ways to hide their building openings), the tax was abolished in 1917, though communes could still charge a local tax on this contribution until 1926 (Bloch, 1940). Finally, the patents contribution (*contribution des patentes* was a tax on commercial and industrial activity. It was divided into a fixed and a variable component. The first was a lump sum on the commercial or industrial unit based on the number of employees, local population and type of activity (Bloch, 1940). The second depended mainly on the rental value of the business' premises.

The first three contributions were distribution taxes (*impôts de rèpartition* or "apportioned taxes" as defined by Bloch (1940)), while the patents contribution was a quota tax (*impôt de quotité*).[18] For distribution taxes, the yearly budget law established the total contribution to be collected throughout the country and split it across departments. Departmental authorities would then, in turn, split or "repart" the departmental contribution or *contingent* across communes (Bouchard, 1871; Blanc, 1898). This was done based on the local tax roll entries for that contribution. The communal amount became the local contribution "principal" for the budget year. National, departmental and local governments could then charge additional tax cents (*centimes*) per franc of principal. On the other hand, for the patents contribution, the budget law set the structure of the fixed and variable components of the tax, but not the amount to be collected. Using this tax structure and the information on the patents tax roll, the contribution's principal was calculated. As with the other direct contributions, additional tax cents could be collected on top of the principal. Hence, in all cases, the total amount levied across all government levels for a given contribution would be the principal plus the amount collected from the additional national, departmental and local tax cents.

The "four old ones" were the basis of the French direct contribution system until the introduction of an income tax in 1914, which was only established in a form similar to the one of modern tax systems in 1917 (Bloch, 1940). In the 1900 national budget, their revenue represented more than 80% of direct contributions revenue (Truchy, 1900). Other income sources included minor taxes on other wealth indicators like horses and vehicles (e.g., *taxe sur les chevaux et voitures*) and the tax on securities (*taxe sur le revenu des valeurs mobilières*). The national government collected a significant fraction of its revenues from alternative sources such as customs duties and indirect

[18] When the land contribution was split in two parts, the improved land tax ceased to be a distribution tax (Bloch, 1940).

contributions, including revenue from the state monopolies on tobacco, matches and fire powder (Truchy, 1900). However, the four contributions were the basis of local revenues.

B.2 Post-GFZ Local Public Accounts

Data on post-GFZ local public accounts is drawn from two main sources: (i) the Financial Situation of the Communes (*La Situation Financière Des Communes*, SFC), and (ii) the tax roll amounts statements (*Etat du Montant des Roles Généraux*). We provide details on these and other related sources below.

The SFC were annual publications which were produced between 1878 and 1914, and in 1920 and 1923.[19]. While the information produced varied slightly across years, these detailed the population, surface area, ordinary revenues, ordinary expenses, value of an additional tax cent (*valeur du centime*) and number of additional local tax cents. We have digitized the information for 1878, 1891, 1901 for both Haute-Savoie and Savoie, and for 1886, 1896, 1906, 1914 and 1923 for Haute-Savoie. We complement this with SFC data from Piketty and Cagé (2023) for 1881, 1911, and 1920. Hence, we have information for the first and last year of publication, and all census years in between. Finally, we digitized the 1862 statements of the financial situation of the communes (*Etat de la Situation Financière Des Communes*) produced as part of a nationwide report on local public accounts (ADHS, 1862; ADS, 1868).[20]

Revenues per capita. From the SFC, we extract ordinary revenues to compute municipal revenues per capita. Ordinary revenues include the value of ordinary and special local tax cents established in the yearly national budget laws, such as the 5 ordinary tax cents over the land and personal-movable contribution and the 5 special tax cents over all four contributions for local roads, and the additional tax cents to cover insufficient revenues (i.e., to cover ordinary expenditures).[21] The latter needed to be authorised by the departmental prefect. Ordinary revenues also covered what was categorized by pre-1891 SFCs as "annual revenues" (*revenus annuels*), which included, among other concepts, income from municipal buildings and movable properties, revenue from public lands, and a fraction of indirect taxes distributed by the national government. The *octroi* - a local tax on goods which entered the city - was also considered an ordinary revenue. However, this only existed in large urban communes.

It is important to note that pre-1891, the column which reported revenues in the SFC reported "annual revenues" and not total ordinary revenues. This meant that for most communes, the value reported was low. It is only in large urban communes, which collected the *octroi*, that we see a relatively high value. Hence, to increase the degree of comparability between pre and post-1891 revenues, we follow Piketty and Cagé (2023) and add local tax revenues to "annual revenues" to obtain total revenues. A caveat with this approach is that local tax revenues are calculated based on the total number of additional local tax cents, which include cents for both ordinary and extraordinary expenditures. Hence, this approach overestimates total ordinary revenues.

[19] Additional documents were produced for 1929 and 1938 which do not contain communal-level data.

[20] A similar survey was carried out in 1868 but we have been unable to find the respective statement for Haute-Savoie in the Departmental Archives.

[21] Article 133 of the Municipal Law of 1884 (*Loi Municipale du 5 Avril de 1884*) clarifies what accounts as ordinary revenues.

It should also be noted that the post-WWI total revenue data (1920 and 1923) is not directly comparable to pre-WWI values. As stated in the 2020 SFC edition, post WWI, revenue data includes resources for various extraordinary expenditures, several of which are related to the war effort and the country's reconstruction. Moreover, revenues increased to reflect the changes in prices of factors of production due to war disruptions. In addition, as aforementioned in this section, the French tax system experienced a complete overhaul during WWI, with the introduction of a modern income tax structure. Hence, the municipal revenue figures for 1920 and 1930 are an order of magnitude greater than those for the pre-WWI period.

Finally, for 1862, we calculate a comparable measure of revenue by adding all revenues listed. We exclude remaining funds from previous years (*reliquat* to maintain homogeneity across departments. For 1862, these are not included as revenues for Savoie but appear to be included for Haute-Savoie.

Local tax base and local tax revenue per capita. SFC data allows us to calculate to additional indicators correlated to local economic development and wealth: the local tax base and the local tax revenue. We follow Piketty and Cagé (2023) and calculate the local tax base and local tax revenue by multiplying the value of the tax cent times 100 and times the total number of additional local tax cents, respectively. The value of an additional tax cent reported in the SFC should be equal (or at least be almost equal) to one-hundredth of the sum of the principals of the four direct contributions. Hence, the local tax base reflects the value of the principals.[22]

Our local tax revenue indicator approximates the amount collected from all additional local tax cents, both ordinary and extraordinary.[23] It is not the exact amount as a few additional tax cents are levied on certain contributions only. For example, there are 5 ordinary tax cents included in ordinary revenues which are only applied on the principal of the land and personal-movable contribution. Starting in 1891, the SFC reported the *produit des centimes ordinaires et extraordinares*, which should equal the amount collected by all additional local tax cents. However, to have a common indicator throughout the SFC publication period, we adhere to the calculation in Piketty and Cagé (2023).

The statements which served as the basis for the 1862 report on local financial accounts did not include the value of the additional tax cent. Hence, we compute the local tax base by calculating the value of an additional tax cent from the imposition for primary education, which, at the time, was equal to 3 additional tax cents. Regarding local tax revenues, the statements do not report the total number of additional tax cents.[24] Hence, we cannot calculate local tax revenues for 1862.

The first part of the tax roll amounts statements report total tax collection from the four direct contributions. While the format of these statements may differ across departments and across time,[25] for Haute-Savoie, these detail the principal and the tax to be collected from additional

[22]When comparing the local tax base to the principal reported in the tax roll amounts statements, there are some minor differences. This may be due to adjustments carried out between the date when the tax roll statements were completed and the date when the information was sent to national authorities for reporting in the SFC.

[23]Extraordinary tax cents help cover extraordinary expenditures which are, according to the 1884 municipal law, accidental and temporary expenses that require approval from the department prefect. This could include the development of specific local infrastructure projects.

[24]The statements include the additional tax cents for extraordinary expenditures and additional tax cents for several types of ordinary expenditures. However, several ordinary expenditures do not have their corresponding number of additional tax cents.

[25]The statements available for Haute-Savoie are more detailed than those for Savoie.

national, departmental, and local tax cents for each contribution. We have digitized the information for budget years 1862, 1877, and 1881.