Ethnic Autonomy*

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Abstract

This article explores the evolution of state infrastructural capacity by studying postal networks in early-modern Europe. Previous research indicates that the capacity to collect information and identify population underlies other abilities such as revenue extraction and public goods provision. I argue that early-modern European states invested in postal service not only to reduce information costs but also to facilitate policy. I document evidence by constructing a new data set on France and investigate how France addressed difficult-to-achieve policy goals. Exploiting the distribution of postal offices across cities, I compute costs of travel from Paris and varying levels of travel costs for cities without a post. Using draft-desertion rates in the First Republic and the persistence of non-French speakers in the Third Republic as my outcomes, I show that increases in travel cost lead to higher rates in both outcomes. I explore determinants of postal networks by considering the location of ethnic homelands and the preexisting infrastructure that could induce postal location.

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Introduction

A growing body of research underscores the state's ability to execute policy as an important source of economic development (Andrews, Pritchett, and Woolcock 2017; Besley and Persson 2009, 2010; Fukuyama 2011). That the state makes significant contributions to growth reflects the realization that today's wealthy states tend to have stronger capacity and enjoy tax revenues as greater proportions of their income than developing countries (Johnson and Koyama 2017). This scholarship is distinct from an influential literature in political economy which holds that the "right" set of institutions, most notably secure property rights, play a central role in growth (Acemoglu, Johnson, and Robinson 2005) and instead argues for cultivating a capability to bring about intended policies.

How states develop an infrastructure to permit information collection and policy implementation has not been widely studied (Soifer and vom Hau 2008). Classical works in the state-building literature describe how states gain control over land as the primary source of taxation (Ertman 1997; Poggi 1978; Tilly 1992). For the state, an infrastructural capacity constitutes a critical antecedent that enables it to identify its population, extract revenue more efficiently, and provide public goods, by "penetrat[ing] its territories and logistically implement decisions" (Mann 1993). Reliable information is key to win compliance or acquiescence from the underlying population especially when the state tries to enforce policy that requires mass consent, such as military recruitment and change in collective identity (Gorski 2003; Herbst 2000). Extant scholarship tends to focus on the modern context, in which states acquire more effective technologies of control, including direct income tax (Levi 1988, ch. 6), the passport (Torpey 2000), citizenship (Brubaker 1992), and compulsory primary education (Hobsbawm 1990, ch. 3) (See also Brambor et al. (2020) and Lee and Zhang (2017) for an empirical study). In pre-modern times, when these technologies were nonexistent or unreliable, the state conducted an indirect form of governance in which a small group of population had regular interactions with it. In polities with a limited degree of authority, geographical attributes hampered development, both politically and economically (Nunn and Puga 2012; Stasavage 2010).

In this paper, I provide a mechanism of the consolidation of state authority by exploring the development of postal service in early-modern Europe. Beginning in the mid-fifteenth century,

countries such as France, Germany, and England experimented with a new system in which they built relay stations at regular intervals across long distances. It proved to be an effective infrastructure and substantially reduced the cost of travel for European states that were at once the creators and the main beneficiaries. Although the initial system in England and France carried exclusively official mails, it eventually became open to the wider society and acquired the role of a public good that delivered money and merchandise. As post offices arrived at previously hard-to-reach locales in the countryside, they effectively brought the state closer the population. Thus postal expansion as an infrastructural capacity strengthened the state's ability to enforce rule .

I then investigate the evolution of postal service as an infrastructural capacity by drawing on a new data set of 214 cities aggregated in 88 departments in early-modern France. France offers an adequate test as it was a precocious state-builder that was able to amass a large territory, but like its European neighbors, it faced the challenge of centralizing authority due to institutional and fiscal fragmentation (Dincecco 2015). The data on the postal system consists of the distribution of relay stations in three periods—1553, 1690, and 1792—by tapping hitherto undigitized published sources. These allow me to compute the cost of travel from Paris to the rest of the country based on the known postal network in each period. Given that not all cities got a post, I exploit this variation to see how it affects policy undertaking. My empirical analysis tests two dimensions of state capacity. The first is the rate of desertion and draft-dodging during the First Republic. In 1798, France introduced mandatory conscription to amass a large army but the new law met with strong resistance. Conscription offers an adequate test as it involves tension between the state that seeks to administer a much-detested policy and the would-be conscripts who try to avoid the duty. This constitutes an empirical test in the short-run. The second analysis explores linguistic unification as a longer-run consequence of state-capacity building. Although Paris became interested in language use in the early-modern period, only in the wake of the Revolution did a wealth of non-French tongues become politically salient (Bell 2001, ch. 6). Similar to conscription, language change requires not just a state sanction but also an encouraging environment that gives an incentive for non-French speakers to switch. The language data comes from a rarely-used survey conducted in

1863 by the French government on the population, which is documented in Eugen Weber (1976). The date that the survey was taken is of importance, because France had achieved administrative centralization by then but did not yet initiate a universal curriculum that would require pupils to use French all the time.

One of the main findings of this study is that increases in travel cost from Paris lead to higher rates of desertion and non-French speakers. In the absence of the known record on the difference in the cost between post-ful cities and post-less cities, I let the cost vary to estimate its effects on the state's ability to enforce policy. Substantively, when the travel cost from Paris for post-less cities is 1.25 times higher than post-ful ones using the postal networks in 1972, a 20-percent increase in the cost is predicted to increase desertion rates by 0.17 percent and non-French-speaking population by 0.29 percent at the department level. When the difference in cost is 1.5 times greater, the estimates are a 0.16-percent increase and a 0.24-percent increase, respectively, for desertion and non-French speaking. This exercise indicates that while differential travel costs matter, effects seem attenuated as differences grow. I then explore heterogeneous effects of travel cost in a hypothesis where I investigate whether postal networks grew disproportionately in French majority areas over those of ethnic minority. I employ an interaction model to show that while estimates are positive, substantive effects are small so that ethnicity is unlikely to drive where postal networks grow. Finally, I address one endogeneity concern in which the development of postal networks, a proxy for state infrastructural capacity, is determined by the preexisting infrastructure that supplied routes, including precursors such as university-run messengers and Roman roads. These could induce the location of posts, but my statistical findings do not corroborate the supply-side hypothesis.

I make two contributions in this paper. First, I provide a mechanism of the consolidation of state authority by studying the expansion of postal service in early-modern Europe as a proxy for state infrastructural capacity. Postal service attracts increasing attention in the recent literature on social history, in which scholars seek to establish a connection between the early-modern post and the subsequent rise of what some call a "communications revolution" epitomized by the rise of the newspaper. This research highlights how the state-sponsored post constituted a critical

infrastructure—essentially a public good as it ultimately came to serve the population—which dramatically reduced the cost of disseminating information (Behringer 2006; Pettegree 2014; Raymond and Moxham 2016). In addition, there are recent empirical works that explore the impact of postal service on political and economic consequences in the modern period (Acemoglu, Moscona, and Robinson 2016; Rogowski et al. Forthcoming). This study is among the first, if not the first, to examine the linkage between the post as state capacity and political development in the early-modern context.

Second, I document evidence on this connection. In pre-modern Europe, states had to resort to indirect rule, because geographical distance made the cost of direct rule remained prohibitively high until the rise of the railway. Developing states face this challenge today: recent empirical research finds the degree of authority to be inversely proportional to the distance to the political center (Michalopoulos and Papaioannou 2013, 2014; Olsson and Hansson 2011). Drawing evidence from France, I quantify travel costs from the capital based on postal networks for three centuries to examine the ease with which Paris reaches its subjects across the country. In particular, I exploit two types of variation—varying costs between cities with postal service and those without it and varying levels of costs of reaching post-less cities—to not only compare the expected cost of governance between cities with and without the post but also explore effects of the potential determinants of travel costs such as ethnicity and geography. While previous scholarship finds strong associations between geographical attributes and diversity (Michalopoulos 2012), I describe how states seek to gain control over the population despite geographical challenges and open hostilities from the population.

Conceptual Framework

Pre-modern Europe was organized as "composite" states. They may possess a large swath of territory, but the authority structure was comprised of a mosaic of disparate subunits held together by treaties, allegiances, and marriages (Elliott 1992; Koenigsberger 1987; Nexon 2009). For the

ruler, direct rule over the entire domain was nearly unattainable, largely because the state did not possess a strong enough infrastructural capacity to do so. The state's rationale for acquiring such capacity is to render its subjects "legible." As propounded in Scott (1998, 183), the state seeks deep knowledge about them so that they can be "identified, observed, recorded, counted, aggregated, and monitored." Legibility was difficult to attain in pre-modern times. For the technologies of control over population, which underlie infrastructural capacity, were limited both in variety and in scope. Knowledge-generating tools such as census, map, and cadastral lists were yet to come or, when available, not as accurate as pre-modern rulers desired (Kertzer and Arel 2002). These constraints raise the administrative cost in key dimensions of governance, including revenue generation. In Europe, rulers faced *fiscal fragmentation*, the condition in which the monarch had to negotiate local powerholders to determine individual tax rates, which gave them a strong incentive to free-ride on their payments (Dincecco 2015, 902).

For the ruler, direct rule that begets legibility is an ideal form of rule as it is the least costly. Agency theory offers insights for this reasoning. In this setting, the ruler is the principal and the state officials are the agent, while the population is subject to the ruler's policy. The principal seeks to maximize revenue net the collection cost, while taxpayers want to skirt their obligations and seek to minimize interactions with the state agents who collect taxes. This theory holds that the ruler desires direct rule, because it generates larger net benefits than in indirect forms of rule such as feudalism. Yet it can also be inefficient when the state lacks an infrastructure, both physical and institutional, that enables legibility. Agency theory holds that the ruler is the residual claimant and bears the cost of noncompliance by the subjects (Kiser 1994, 290). Thus he would invest in his state's institutions that give the subjects an incentive to pledge loyalty to him and invest in the state infrastructural capacity that makes them comply with his policy. Under indirect rule, by contrast, the information asymmetry between the ruler and the subjects due partly to underdeveloped technologies of control raises the cost for the former and allows the latter an incentive to free-ride on tax obligations, resulting in conditions such as fiscal fragmentation (Dincecco 2009). Monarchs would prefer a stronger infrastructural capacity that not only helps deliver accurate information

about subjects but also promulgate state policies in a reliable manner.

The state-sponsored postal service that arose in mid-fifteenth-century Europe played a critical role in enhancing infrastructural capacity and reducing information asymmetry for the rulers. While the institutionalized post was known to be operational since Roman Emperor Augustus (r. 27 BCE–14 CE), the service remained quite slow: It is estimated that couriers on horseback were able to travel for only 30–40 km a day given how the lodging was placed at such intervals on major Roman roads (Pettegree 2014, 21). The pace did not increase much throughout the Middle Ages: in the fall of 1215, it took approximately 30 days from Liège to Rome and 40 days in the return trip in following January (Behringer 1990, 10–11). By the mid-fifteenth century, mails traveled 20–30 km on average and 50–60 km if the news was particularly urgent (Behringer 1990, 11). In 1449, it needed seven weeks from Nuremberg to Vienna.

A historic innovation occurred at the turn of the sixteenth century when Germany introduced the imperial post (*Kaiserliche Reichspost*). It was pioneering in that it substantially improved the speed of operation. The German system grew efficient by allowing both postmen and horses to switch at relay stations placed at shorter (two- to three-mile) intervals than previously. Mails would now go for an estimated 161 km a day, a six-fold increase from the average of 25 km half a century earlier (Behringer 1990, 12). For instance, couriers in 1505 carried mails in a 765-km route from Mechelen, a town near Brussels, to Innsbruck for 131 hours (or five days and eleven hours) (Behringer 1990, 10–11); if they traveled at the pace of 25 km as before, it would have taken thirty days.[1] The pre-modern post was less a network of nodes than a collection of stations in which mailmen carried letters on horseback from one post to the next. The German system proved to be so effective as it constituted a model to which other European states turned to build their own.

Built on the increased speed, the post functions for early-modern European rulers as a means to strengthen state capacity and consolidate authority. By directly managing the flow of information, they can now bridge the information gap and begin to mold their subjects in his image. France

[1]The German imperial post is also innovative in that the German state outsourced the operation to the noble family of the Taxis who made the service *public*. It not only carried letters for royal and administrative purposes but also gave an access to other customers, including merchants and priests, to deliver not only letters and packages but also money, jewelry, and samples of textiles and spices (Behringer 2006, 342).

was an early adopter of the institution in the mid-fifteenth century following the German experiment prior to the imperial post. It built a number of permanent roadhouses, where officials were assigned as postmasters to take care of the horses and lodging (Allen 1972, ch. 1). Rulers' acute need for a more reliable and efficient method of communication drove expansion. In 1576, for instance, Henry III of France (r. 1551–1589) issued an act to establish a royal postal service. At the time he was embroiled in the Wars of Religion, in which foreign powers threw in support for rival factions, and was desperate to restore his authority within France (Pettegree 2010, 155–6). Henry's primary aim was to monopolize official communications so that he could take advantage of the flow of political information, which could aid his wartime strategy. Similarly, Emperor Rudolf II of Germany (r. 1576–1612) declared in 1597 postal transport to be an imperial prerogative. He also had the intention to monopolize communications by banning private courier services (Schobesgerger et al. 2016, 21–2). These decrees were designed to undercut—and ultimately do away with—the preexisting systems run by nongovernmental actors. French universities had established a network of messengers by the fourteenth century, in which faculty and students could circulate books and other study materials (Schobesgerger et al. 2016, 32). The monarchy used to sanction them with royal privileges, but the imperative for information made these privileges a political impediment. The 1576 act was unsuccessful at abolishing the university-run messenger services; it was not until 1643 when France was finally able to centralize the post by annulling them.

I examine the development of state infrastructural capacity on two dimensions. The first is mandatory conscription. It captures a conflicting interest between the state, which seeks to amass as many men as possible for its military goals, and the enlisted men, who have an incentive to free-ride on those goals without participation. In a modern context, a high degree of penetration is required to identify the potential enlistment and win compliance (Levi 1997). By contrast, rarely were rulers able to raise men in a satisfactory manner in pre-modern times when state capacity was more limited. Post-revolutionary France provides an adequate illustration. In September 1798 when the First Republic enacted mandatory conscription through the Jourdan Law for the able-bodied men aged between twenty and twenty-five, widespread resistance ensued. Although military

service was nothing new, the law was perceived as an unprecedented level of burden and "a tax in blood" (*corvée de sang*) (Forrest 1989, 4). A significant number of would-be enlisted men avoided it by various means, including desertion, disappearances, and even self-mutilating acts such as cutting off a toe and rubbing herbs into eyes to induce blindness (Levi 1997, 47; Forrest 1989, 10). Many of those draft-dodgers were peasants, who saw military service not just as another *corvée* but also as the encroachment of traditional life, because it would necessarily disrupt the regular cycle of harvest. The French state was well aware of the unpopularity but had the limited infrastructural power to overcome it, especially in the remote locales where residents had few regular interactions with the state (Forrest 1989, 13). At the turn of the nineteenth century, various enforcement tactics proved ineffective in curbing refractories, leaving the state with few options but to give up (Woloch 1994, 411–8).

The second dimension is the extent to which the state can shape identity at the societal level. Language serves as a standard proxy for social identity and it has become a major political goal for the state in modern times (Gellner 2006). The state would want a unitary language for efficiency in administration and commerce, but in multilingual society the switching cost may be high for its subjects. To lower it, they need to internalize benefits while the imperative to learn a new tongue is shared across one's own community (Laitin 1998). In France, only in the wake of the Revolution did language policy become politically salient (Bell 2001, ch. 6).[2] Yet limited infrastructural capacity did not permit the state to make it enforceable particularly in the countryside in much of the nineteenth century. In this period, travelers in remote locates were generally unwelcome due to the widespread suspicion that those strangers might be covert agents of the state coming in to extract revenue (Weber 1976, 44). A countrywide change had to wait until the Third Republic that began in 1870, when the state modernized its infrastructure by introducing the railway. At the same time, linguistic integration promoted a greater involvement among the new learners with state activities, such as the distribution of social benefits (Zhang and Lee 2020).

[2]There was a recognition of the absence of linguistic unity, which revolutionaries saw as a political liability. To illustrate, Henri Grégoire, a Catholic priest and a leading revolutionary, realized post-Revolution that "there is no patriotism in the countryside," and perceived that people's inability to communicate intelligibly to be an impediment to achieving political unity based on the revolutionary ideals (Weber 1976, 72, 98).

Empirical Strategy

This study investigates the evolution of state authority by focusing on the expansion of postal service as a proxy for infrastructural capacity in early-modern Europe. I draw evidence from French history for an empirical analysis. France is appropriate as it is a tough case. On the one hand, it is a precocious state-builder in Europe (Spruyt 1994; Strayer 1970). It amassed a large territory at the time of Carolingian rule and, despite the split, kept acquiring more throughout the early-modern period. The pace of centralization was relatively slow to come: France relied on a decentralized (i.e., inefficient) form of tax farming longer than its English neighbor (Johnson and Koyama 2014; Johnson 2006). In addition, Paris was an early starter in Europe of state-run post offices in the mid-fifteenth century. The attempt to gain control over the circulation of political information makes France an adequate candidate to understand the effect of the post as an instrument of political control. On the other hand, the state had difficulty achieving as much legibility as it desired in terms of conscription and linguistic homogeneity until at least in the late nineteenth century. First, the need to raise a large army was recognized in the National Assembly in the immediate wake of the Revolution in 1790. Jacobin advocates couched the imperative of large-scale military recruitment in terms of national unity. As Oudot, a Jacobin politician, said in 1795: conscription is "an indispensable institution of public instruction, the complement of a virile civic education ... a means to unify the different parts of the Republic into a single whole, indivisible in its spirit and its mores as it is in its system of government" (Woloch 1994, 389). Yet this goal proved too high an ideal to reach, because, as indicated above, the French state remained incapable of coercing a number of would-be conscripts who resisted the implementation to cooperate. It took until the Third Republic that began in 1870 when the norm of service became established (Levi 1997, 96). Second, a high degree of ethnolinguistic diversity persisted throughout the pre-modern period. France is well-known today for its strong government-led effort to make immigrants conform to its cultural and linguistic standard (e.g., the 2004 ban to wear conspicuous religious symbols, most notably the Islamic veil, in public schools). Yet it was not until the Third Republic did Paris begin to legislate a universal curriculum requiring French to be the language of instruction in public schools. Before then, language served

simply as an instrument of rule and the fluent speakers were limited to a fraction of the population, including government officials, literates, and local elites (Bell 2001, 171–2; Weber 1976, 71).[3] In short, France is an adequate case because of the contradiction between its early interest in investing in state infrastructural capacity and the unmatched enforcement capacity.

I initially assemble a new data set of 214 cities in France that covers ten minority ethnic groups on their attributes primarily of the early-modern period. It includes all cities in Nüssli (2011), which offers GIS (geographical information system)-based information on the location, administrative divisions, and political status for the subunits that existed at the final year of each century. These 214 cities are under French jurisdiction today to control for the shifting territory over time. The choice of the city as a proximate unit for ethnicity rests on observed patterns. Ethnic groups predominantly live in a clustered fashion and designate a hub city as their homeland "capital," around which economic activity flourishes and institutional development occurs. This empirical pattern allows me to examine city-level attributes as useful proxies for those of ethnic groups. I draw on Minahan (2000) to both identify the ethnic groups in today's French territory and specify the historical location of their homeland. I use this information to approximate the area of residence for these groups as displayed in Figure 1. Yet, as described below, since the two outcome variables are observed at the department level (*département* in French), I aggregate all city-level variables by using 88 départements in the nineteenth century.

[3] It is important to note that linguistic unity at the state level in France did not begin with the 1539 Ordinance of Villers-Cotterêts issued by François I. Still in the books today, its goal was not to make French a unitary language in the royal domain but to make it the language of the court over Latin (Weber 1976, 70).

Figure 1: The geographical distribution of ten ethnic groups and the 214 cities in France.

Notes: The gray dots indicate the cities; the red dot in the north indicates Paris. Ethnicity is color-coded individually, but the French-speaking groups (i.e., the Normans and Burgundians) get the same color.
Source: Minahan (2000), Nüssli (2011), Simons and Fennig (2018).

I take an "expansive" approach about which minority ethnic groups are included in France. If I count only those whose homeland city is located within today's French territory, the Basques, the Catalans, and the Flemish would be removed as their main homeland cities are located outside France (Vitoria, Barcelona, and Brussels, respectively). For the Basques and the Catalans, for instance, the area along the Pyrenées was historically contested and its nominal owners frequently shifted between Spanish and French monarchs. State boundaries were less rigid before the modern era and this territorial fluidity in part allowed these groups to retain strong cultural connections across the borders through French cities such as Bayonne, Perpignan, and Lille (respectively for the Basques, the Catalans, and the Flemish). The colors that denote the "territory" of ethnic groups in Figure 1 simply designate the areas where non-French tongues are spoken on the level of the department. It is important to note that these color-coded areas merely indicate where these minority individuals are expected to live. Neither do they serve as politically salient categories nor indicate that individuals of minority groups would recognize departmental boundaries as ethnic or

politically salient boundaries.

My data set is originally a time-series and cross-sectional one organized in fifty-year periods from 1400 to 1900 CE, but because the outcome variables are time-invariant, I limit statistical analysis to the cross-section.[4] For identification I construct a number of covariates which account for time and can determine the value of the outcome variables.

I employ two outcomes to test two effects of postal expansion as a proxy for infrastructural capacity. The first is the data on desertion rates during the First Republic. France enacted the first mandatory conscription law in September 1798 to meet the demand for soldiers fighting abroad. Men over the age of twenty would be drafted to serve until twenty-five years old. The law met with massive resistance through desertion and draft-avoidance (Arbellot and Lepetit 1987). I draw on Hargenvilliers (1937) to calculate the rate of deserters (*déserteurs*) and draft dodgers (*insoumis*) recorded at the département level, divided by the number of conscripts from 1798 through 1804, the last year of the First Republic.[5] It should be noted that the departments in the Vendée region resisted the revolution and thus the conscription. Figure 2 displays the geographical distribution of the data.

[4] I also collected the information on the cities in the adjacent states that were once under French rule over this period. There are at least 256 cities in the dataset. However, I have dropped those that eventually fell outside of French authority today for the theoretical and methodological reasons. The theoretical rationale is that these cities were nominally "French" and never developed long-term, institutional connections with Paris, such as a provincial estate. The methodological reason is that limitations of data availability due to the lack of institutional ties make systematic analysis difficult.

[5] I thank David Le Bris for alerting me to this source.

Figure 2: Outcome Variable 1: Deserters and Draft Dodgers during the First Republic.

Note: The data is from 1798–1804. The red dot indicates Paris. Darker colors indicate higher proportions: The darkest blue indicates the top quantile (75–100 percent), the next darkest, the second quantile (50–74 percent), and so on.
Source: Hargenvilliers (1937).

In Figure 2, dark blue indicates higher rates while light blue shows lower rates. It reports that while desertion occurred through much of France, the rates seem higher in the *midi* region in the south.

The second outcome variable is the linguistic dimension of ethnicity as operationalized by the use of non-French languages in mid-nineteenth-century France. In the literature on ethnicity and nationalism, language is one of the most important dimensions with which to define ethnicity for a couple of reasons. It is relatively straightforward to quantify. Moreover, ethnolinguistic diversity represents a longer-term consequence of state-capacity development. As the network of post offices expands over time, diversity is expected to decrease as it hinders taxation and the state's other efforts to consolidate authority. The persistence of non-French tongues may be considered a function of the limited reach of state capacity, which, in turn, gives non-French-speaking populations incentive to create their own institutions.

The data on linguistic diversity in nineteenth-century France draws from Weber's *Peasants into Frenchmen* (1976). While typically cited as evidence of transformation in the social identity of the peasants in the countryside from the local one to a broader—that is, French—one, it also contains a

wealth of untapped data before the change. The data is based on the 1863 survey conducted by the Ministry of Public Instruction and documents the extent to which French was spoken and taught as the language of instruction in each locality. It includes the number of French- and non-French-speakers at the level of commune, the administrative unit roughly equivalent of township or municipality, and are aggregated at the département level. According to the survey, of the 37,510 communes across 89 départements, 8,381 (22.3 percent) spoke little to no French (Weber 1976, 67). Similarly, of more than four million schoolchildren aged seven through thirteen in the survey, approximately 11.2 percent spoke no French and 37.1 percent could understand it but not write it. Weber notes government surveyors' incentive to highlight the "success" of the spread of the language over the *patois* such that the figures recorded therein are likely to be exaggerated (Weber 1976, 67). Thus these are probably conservative estimates. Still, the data in the survey is useful and was taken at an appropriate timing, because France under the Third Republic that arose in 1870 began to undertake the compulsory primary education policy aiming at standardizing the country's languages by French.

Figure 3 graphically displays the geographical distribution of non-French speakers on a map. It clearly shows that in each panel high percentages of them, represented in colors, are concentrated in provinces remote from Paris (the red dot). The data is shown in quantile, where a darker color indicates higher values in percentage. The darkest blue indicates the top quantile (75–100 percent); and the next darkest, the second quantile (50–74.9 percent). Since the median value is zero, the bottom two quantiles are omitted. The white area indicates the French-speaking region, suggesting that the use of French was better-established in it before the start of the Third Republic. The distribution of the data across the two panels looks similar, but it is crucial to distinguish them because of varying population size across the communes.

Figure 3: Outcome Variable 2: Non-French Speakers in the late Nineteenth Century.

Note: The data is from 1863. The red dot indicates Paris. Darker colors indicate higher proportions: The darkest blue indicates the top quantile (75–100 percent); and the next darkest, the second quantile (50–74 percent). Given that the median value is zero, the bottom two quantiles are dropped for readability.
Source: Weber (1976).

My main explanatory variable on the state's infrastructural capacity is the cost of travel from Paris via postal routes. It is constructed in three steps. The first involves the mapping of relay stations. I match the cities that bear a relay station with those in Nüssli (2011) by drawing on hitherto undigitized maps on postal networks. I then create a postal route between Paris (the starting city) and a given city (the destination), while identifying all intermediate post-bearing cities for all 214 observations (minus Paris). In the second step, I calculate the geographical distance of each route, including the distances between the observed relay stations. Finally, I take the ratio of the postal routes-based distance to the great-circle distance, which is deemed as the shortest route between two cities, to compute the "cost" of travel from Paris to a given locale.[6] When the value equal one, travel cost perfectly matches geographical distance. As the value increases, travel paths from Paris take a "detour" before reaching the destination. To account for over-time change in state capacity, I employ sources from multiple time periods: The 1559 data draws from Boissière (2016), the 1690

[6]This computation technique is modeled on similar ones developed in Daudin (2010).

data is from Jaillot (1690), and the 1792 data comes from Bertaud and Reichel (1987).[7] There are 99 cities with a post office by 1553, 114 cities by 1690, and 173 cities by 1792, as shown in Figure 4. The city-level travel cost is aggregated at the département level by taking the mean value of all cities in a département.

Figure 4: Location of post offices across three centuries.

(a) 99 Post Offices in 1553 **(b) 114 Post Offices in 1690** **(c) 173 Post Offices in 1792**

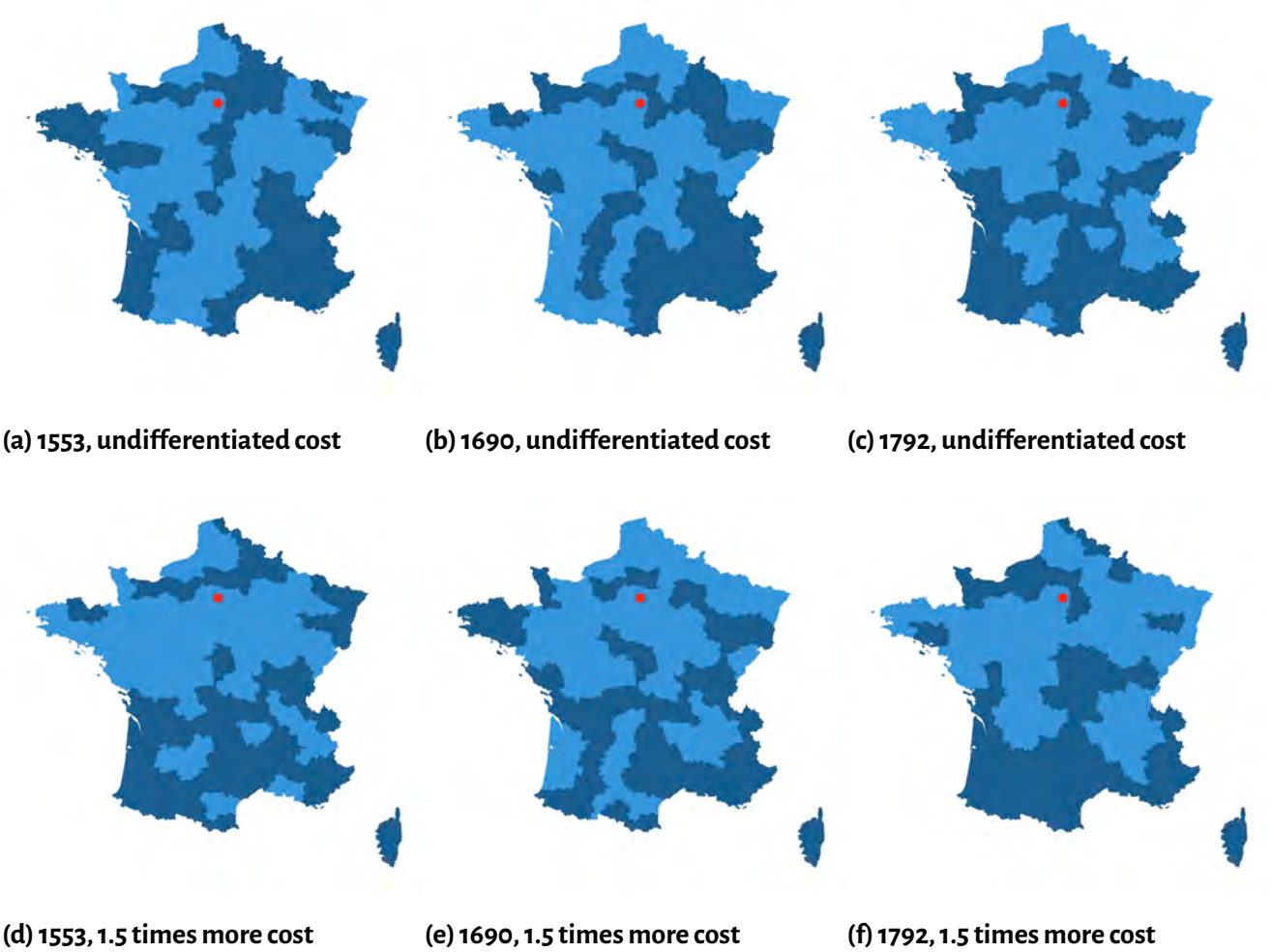
Note: The red dot indicates Paris.
Source: Boissière (2016) for 1553, Jaillot (1690) for 1690, and Arbellot and Lepetit (1987) for 1792.

One of the advantages of this measure is that it offers a greater variability in quantifying the state's ability to project authority across the territory. It advances pre-modern-era state capacity measures by incorporating the existing infrastructure and tracing the known major postal routes. Another advantage is that this measure can be compared to the geographical distance between the capital and a locale, a standard proxy of state capacity in the literature. In my construction, higher costs mean inefficiency in terms of reaching out to the countryside for the Parisian officials. To put these advantages into practice, I exploit the differences in the travel cost at the département level. Départements have a varying number of cities without a post office, but my measure provides no *a priori* information about how costlier it would be for Paris to get to post-less cities than ones with a post. Given that it is reasonable to think that there is some difference, I compute varying costs for

[7] The Appendix presents the maps from which the data on the postal networks is generated.

cities without a post: 1.25 times more, 1.5 times more, and 2 times more travel costs for post-less cities. Figure 5 presents this exercise that compares 1.5 times more costs and undifferentiated costs for no-post cities. This comparison shows which départements lack a post and face greater difficulty to reach.

Figure 5: Varying costs of travel from Paris based on the location of post offices across three centuries.



(a) 1553, undifferentiated cost **(b) 1690, undifferentiated cost** **(c) 1792, undifferentiated cost**

(d) 1553, 1.5 times more cost **(e) 1690, 1.5 times more cost** **(f) 1792, 1.5 times more cost**

Note: The top row displays travel costs that are undifferentiated between cities with and without a post office. The bottom row presents travel costs computed to have 1.5 times more costs for no-post cities. The dark color indicates the above-median values across the 88 départements and, the light color, the below-median values. The red dot indicates Paris.

A host of controls could mediate the relationship between state capacity and local autonomy. The first is a set of political institutions. Besides infrastructural capacity, I include the frequency of

local parliament meetings and the indicator of the *pays d'élection* administrative unit. Parts of today's French territory were incorporated at different times, and this historical process was a reason for the relatively late centralization of authorities (Johnson and Koyama 2017). One institutional solution to maintain territorial integrity was to delegate authority to the local level in exchange for the regular stream of revenue. Throughout the ancien régime, Paris established and relied upon the regional assemblies or provincial estates. These bodies represent the fragmented nature of French political development, which could, in turn, capture the autonomy of local cultural practices. I measure the impacts of institutional incorporation by counting the number of years that provincial estates were held up to the French Revolution when all ancien-régime institutions were abolished. The data comes primarily from Kiser and Linton (2002) and is supplemented by Blockmans (1976) and Swann (2012). Not all départements had an assembly, but some had as many as almost 400 years of experience between 1400 and 1789. The *pays d'élection* is one of the three designations for the pre-revolutionary French provinces and constitutes the geographical center through the southwest. It is the longest-held domain of the crown and it is this province where the king reigned in more directly on fiscal matters (Mousnier 1979). It is plausible to imagine that the French postal networks expanded first through the areas where the state knew better and would expect the least resistance.

The second set of controls are geographical determinants. These include the distances to the nearest border and to the nearest coast. They represent the ease with which people in the peripheral parts of France are exposed to outside influence. Both are available for each century from 1400 through 1800 given the border changes. The next two are land elevation above the sea level and terrain ruggedness, both of which are drawn from the GLOBE (Global Land One-kilometer Base Elevation project) database (GLOBE Task Team and others 1999).[8] It is a 1 km-by-1 km gridded data on land terrain that covers the entire world. Each of the four variables is initially recorded at the city level and the average is taken at the département.

The third set of controls are economic variables. The conventional proxy for growth in economic history is population growth whose standard source on the city level is Bairoch, Batou, and Chévre

[8]The terrain ruggedness index (TRI) is originally proposed by Riley, DeGloria, and Elliot (1999).

(1988). I follow Bosker, Buringh, and van Zanden (2013) which updates the Bairoch et al. data. Given that the two outcome variables are from different periods, I use the year of population size closest to the observed year for each outcome: 1750 for the rate of desertion and draft-dodging during the First Republic and 1850 for the rate of non-French speakers in 1863. Another proxy is the printing press. I consider it to be primarily an economic measure, since the profit motive is a main rationale for the technology's initial diffusion across Europe in the late fifteenth century. Printers were willing to bring a press to any city that is perceived to have a strong potential to recoup the fixed cost of setup and raise quick cash (Febvre and Martin 1976; Pettegree 2010). I record the first date of print in each city and count the number of presses by 1700 at the *département* level.[9] A third economic measure is access to commercial fairs. These annual events started in medieval times and served as a major contributor to the "Commercial Revolution" in Europe (Epstein 2000). They attracted armies of merchants who traded textiles, spices, and books. In France, the Champagne trade fairs were well-known and, once they declined in significance in the fourteenth century, Lyon took over as a hub in France. To account for this dimension of economic activity, I identify the location of eleven commercial fairs in France based on Raj (2018).[10] I then calculate the geographical distance between each of them and 214 cities and count the number of fairs-holding cities within 50 km.[11] Similarly, access to canals is included. Canals have historically played an important role in France by facilitating the transportation of goods for the traders located inland. I draw on a public report compiled in Becquey (1820) to identify the canals that were in service or about to be constructed by the early nineteenth century. I then georeference 37 of them and count the number of canals within the 50 km for each city. Finally, I include access to the navigable river. Each variable is recorded at the city level whose mean values are used for analysis. Table 1 provides the summary statistics of these variables in my data set.

[9]Data sources include Burke (2004), Clair (1976), Pettegree (2007), Conner (2001), Walsby (2011a,b), Bouchot (1890), and Reske (2007).

[10]The eleven cities that hold commercial fairs are Angers, Bordeaux, Caen, Lille, Lyon, Orleans, Paris, Rennes, Rouen, Toulouse, and Tours.

[11]I use 50 km as a reasonable cutoff as overland transportation in Europe remained unreliable throughout the pre-modern period.

Table 1: Summary statistics.

	N	mean	median	sd	min	max
*Outcome variables**						
Proportion of deserters and draft dodgers	88	0.015	0.16	0.1	0.02	0.48
Proportion of non-French-speaking populations	88	0.23	0	0.34	0	1
Political institutions variables						
Travel cost from Paris via postal routes*						
in 1553	88	1.11	1.11	0.09	1	1.34
in 1690	88	1.13	1.10	0.12	1	1.62
in 1792	88	1.09	1.10	0.08	1	1.39
Years of provincial estates held	88	120	40	140	0	389
Pays d'élection	88	0.57	1	0.5	0	1
Geography variables						
Distance to nearest coast, averaged between 1400 and 1800 (km)	88	159	135	117	4	451
Distance to nearest border (km) averaged between 1400 and 1800 (km)	88	148	122	103	4	467
Elevation (m)*	88	188	115	186	16	1,088
Terrain ruggedness (m)*	88	42	65	72	2	408
Economic variables						
Population size in 1750 (in thousands)*	88	1.49	1.28	1.09	0	6.35
Population size in 1850 (in thousands)*	88	29.4	12.32	113	0	1,053
Number of printing presses by 1700*	88	0.76	0.82	0.52	0	3
Number of cities holding commercial fairs within 50km*	88	0.15	0	0.31	0	1
Number of canals within 50km*	88	0.5	0	0.79	0	3.67
Access to navigable river*	88	0.74	1	0.32	0	1
Other control variables						
Ethnicity	88	0.63	1	0.49	0	1
Number of German imperial posts within 50 km*	88	0.07	0	0.35	0	2.25
Number of universities within 50km*	88	0.45	0	0.7	0	3.33
Distance from Wittenberg (km)*	88	957	981	211	507	1,379
Distance from Zürich (km)*	88	517	520	191	108	955
Hub Roman road*	88	0.31	0.25	0.34	0	1
Roman road*	88	0.71	0.92	0.34	0	1

Notes: * placed at the end of variable description denotes that data is observed at the city level whose mean value at the *département* level is used for analysis.

Source: See the Empirical Strategy section.

Estimation Results

Baseline estimates

To begin, I conduct a bivariate analysis between the cost of travel from Paris (the main explanatory variable) and each of the two outcome variables, the proportion of desertion and draft-dodging and of non-French speakers. As discussed above, the former is observed in three time periods: 1553, 1690, and 1792. To explore the differences in travel cost between cities with a post office and those without one, I provide four scenarios of varying costs: undifferentiated costs between the two groups, 1.25 times more cost, 1.5 times more, and 2 times more for the latter category. I run a bivariate linear regression in four scenarios for three periods, which yields twelve results in each outcome. Table 2 documents these results.

Table 2: Bivariate relations between rates of desertion and of non-French speakers and varying costs of travel from Paris, 1553–1792.

Dependent variable	Proportion of deserters and draft dodgers in the First Republic			
Additional costs for cities without post	Undifferentiated	1.25× more	1.5× more	2.0× more
	(1)	(2)	(3)	(4)
Travel cost from Paris via postal routes	0.005	0.099	0.076*	0.047**
in 1553	(0.116)	(0.064)	(0.039)	(0.022)
in 1690	0.128	0.103**	0.072**	0.043**
	(0.086)	(0.048)	(0.031)	(0.018)
in 1792	0.384***	0.332***	0.216***	0.116***
	(0.125)	(0.079)	(0.052)	(0.030)
Dependent variable	Proportion of non-French-speaking population in 1863			
Additional costs for cities without post	Undifferentiated	1.25× more	1.5× more	2.0× more
	(5)	(6)	(7)	(8)
Travel cost from Paris via postal routes	0.306	0.437**	0.303**	0.175**
in 1553	(0.397)	(0.217)	(0.135)	(0.074)
in 1690	0.283	0.260	0.187*	0.114*
	(0.299)	(0.167)	(0.109)	(0.064)
in 1792	1.101**	1.063***	0.715***	0.395***
	(0.438)	(0.275)	(0.180)	(0.103)
Observations	88	88	88	88

Notes: The table summarizes twelve separate bivariate regressions. "Undifferentiated" indicates undifferentiated costs of travel from Paris between cities with a post office and those without one whose values are averaged at the *département* level; "1.25× more cost" means that travel cost is computed 1.25 times more for no-post cities, and so on. Intercept is omitted for brevity. *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

This exercise makes two points across the outcome variables. First, the positive coefficients mean that higher costs of travel from Paris mean greater rates of people avoiding conscription and of people speaking non-French languages. This is theoretically expected: if the capital has a lower cost of access, its aim to secure as many conscripts or convert as many non-French speakers as possible should be easier to achieve. Second, the magnitude increases from 1553 to 1792 in each scenario of the costs, despite the fact that the number of post offices increased by 1.7 times during this period. These changes suggest that the state has to pay a higher price in persuading those who resist rule enforcement, such as draft-dodgers and non-French speakers. Although no specific information about the cost differential between cities with a post and post-less ones is available in my data sources, it is reasonable to assume that there is a difference and that twice as much or higher costs may be unlikely. In the rest of the analysis, I focus on the values in the middle range as more "realistic" scenarios, i.e., 1.25 times and 1.5 times more costs.

Next, I investigate the development of state capacity more systematically, using the following reduced form:

$$\text{Autonomy}_i = \alpha + \beta \text{Travel cost via postal routes}_i + \gamma X_i + \epsilon_i. \quad (1)$$

Autonomy$_i$ here refers to the two outcome variables at the département unit *i*, β is a set of the cost of travel from Paris based on postal routes in 1553, 1690, and 1792 and my main parameter of interest, and γ represents a vector of observables X that include political institutions, geographical determinants, and economic factors.

Table 3: Relations between state capacity as proxied by travel costs from Paris via postal routes and rates of deserters and draft dodgers during First-Republic France, 1798–1804 and rates of non-French speakers in 1863.

Dependent variable	Proportion of deserters and draft dodgers					
Additional costs for cities without post	1.25× more			1.5× more		
	(1)	(2)	(3)	(4)	(5)	(6)
Travel cost from Paris via postal routes	0.010					
in 1553	(0.064)					
in 1690		0.038				
		(0.047)				
in 1792			0.206**			
			(0.088)			
Travel cost from Paris via postal routes				0.013		
in 1553				(0.040)		
in 1690					0.023	
					(0.031)	
in 1792						0.144**
						(0.058)

Dependent variable	Proportion of non-French-speaking population in 1863					
Additional costs for cities without post	1.25× more			1.5× more		
	(7)	(8)	(9)	(10)	(11)	(12)
Travel cost from Paris via postal routes	0.116					
in 1553	(0.244)					
in 1690		0.057				
		(0.178)				
in 1792			0.937***			
			(0.340)			
Travel cost from Paris via postal routes				0.096		
in 1553				(0.151)		
in 1690					0.042	
					(0.119)	
in 1792						0.680***
						(0.222)
Pays d'élection	✓	✓	✓	✓	✓	✓
Ethnicity	✓	✓	✓	✓	✓	✓
Additional controls	✓	✓	✓	✓	✓	✓
Observations	88	88	88	88	88	88

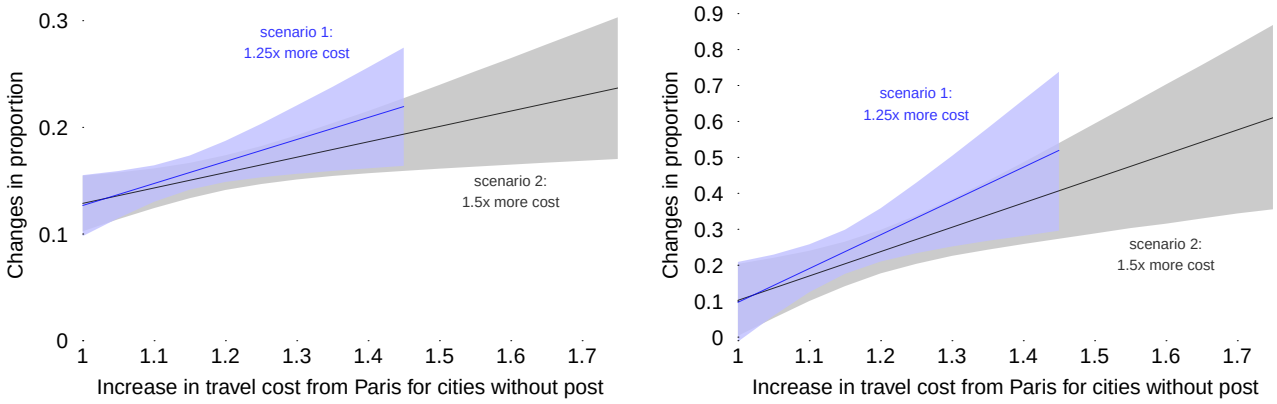
Notes: The year 1750 is used for population size as a proxy for economic growth in Models 1–6 and the year 1850 is used for the same in Models 7–12. *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Table 3 documents the evolution of pre-revolutionary state infrastructural capacity on two post-revolutionary outcomes. The top panel reports the impact of state capacity on the consequences of conscription. The bottom panel explores a longer-term impact on the extent to which non-French

languages were spoken by the start of the Third Republic. In each outcome, I consider two scenarios of additional travel costs for post-less cities: 1.25 times and 1.5 times more costs. Table 3 reveals a pattern, in which state infrastructural capacity by 1792 has positive and significant effects when a host of economic and geographical observables and ethnicity and administrative indicators are included.[12] The direction of coefficients in the previous periods is the same but has limited effects, suggesting that the capacity of the French state based on postal networks was underdeveloped at the time. These results provide support for my hypothesis that the state requires a long-term investment in developing capacity to enforce rule effectively. Given the evidence, I focus on the year 1792 as a preferred explanatory variable in the subsequent analyses.

To facilitate substantive interpretations of the results in Table 3, I turn to a simulations approach through which to estimate expected changes in the outcome variables over a range of travel cost. Figure 6 reports these outcomes.

Figure 6: Simulated effects of travel costs from Paris by 1792 for cities without post office.



(a) Prop. desertion and draft-dodging **(b) Prop. non-French speaking**

Note: The point estimates are in solid lines and 95 percent confidence intervals are in shaded regions. The blue plot is the scenario where the differential cost is 1.25 times more for cities without a post and, the gray plot, 1.5 times more. The plots differ in the range of travel cost in each scenario.
Source: See the Empirical Strategy section.

[12] Full results are available in the Appendix. In addition to the proportion of non-French-speaking population, Weber (1976) offers similar data on non-French-speaking communes at the département level, where there is varying population size. The correlation between the two is approximately 0.98, so an analysis using the communes as an outcome is not reported.

Panel (a) on the left displays the output on the rate of deserters and draft-dodgers and, Panel (b) on the right, the rate of non-French speakers. Each panel compares substantive effects of two different travel costs for cities without postal service. In Panel (a), for example, when travel cost is set at 1.25 times more for post-less cities, a 20-percent increase in cost would raise the proportions of desertion and draft-dodging by about 0.17 (a blue plot); when the scenario is 1.5 times more cost, the same increase in travel cost would lead to higher rates of desertion by about 0.16 (a gray plot). Similarly, in Panel (b), in the two scenarios of 1.25 and 1.5 times more cost, a 20-percent increase would see greater proportion of non-French speakers by 0.29 and by 0.24, respectively. These are substantial effects and suggest that postal networks play a crucial role in strengthening state infrastructural capacity and assisting enforcement of rule for the capital.

Within-country variation

The previous section establishes that the development of pre-revolutionary state capacity based on postal networks in France is positively correlated with the extent to which post-revolutionary conscripts skirt the duty and people speak non-French tongues. In this section, I explore within-country variation with a focus on ethnicity. One can imagine that in a period when overland transportation was costly and unreliable, Paris followed an "easy" path in determining where to place new relay stations, in locales where it expected to face the least resistance. Ethnicity plays a crucial role in making a decision, because Parisian officials were quickly shunned especially in the non-French-speaking countryside. These interactions prove costly to the ruler who may prefer to expand postal networks in predominantly French-speaking areas where rule enforcement is easier.

To examine heterogeneous effects of ethnicity on state infrastructural capacity across the country, I employ an interaction model. First, I present preliminary evidence on the relationship between ethnicity and state capacity. For each of the ten ethnic minorities in Figure 1, I identify the primary homeland or "capital" city and record the département that houses it. Then in Table 4, I provide the geographical distance between Paris and the homelands and the cost of travel from Paris to the départements in a scenario where there is no difference between cities with a post and those without

one.

Table 4: Difference between the average travel cost from Paris and the Départements housing the homeland city of the ten minority ethnic groups.

Name	City	Département	Distance from Paris (km)	Undifferentiated travel cost	Difference from the mean cost
Basques	Bayonne	Pyrénées-Atlantiques	665.11	1.180	2.274
Corsicans	Ajaccio	Corsica	917.43	1.163	2.257
Catalans	Perpignan	Pyrénées-Orientales	687.01	1.160	2.254
Savoyards	Chambéry	Mont-Blanc	455.16	1.141	2.235
Occitans	Toulouse	Haute-Garonne	588.84	1.113	2.206
Bretons	Brest	Finistere	505.13	1.063	2.156
Flemish	Lille	Nord	203.76	1.060	2.153
Normans	Rouen	Seine-Inférieure	111.46	1.050	2.144
Burgundians	Dijon	Côte-d'Or	263.09	1.047	2.141
Alsatians	Strasbourg	Bas-Rhin	397.34	1.018	2.111

Notes: The data is sorted by the second column from the right in the descending order. The mean distance to Paris at the city level is 373 km. The mean cost of travel from Paris, when there is no difference between cities with post and those without one, is 1.094.
Source: See the Empirical Strategy section.

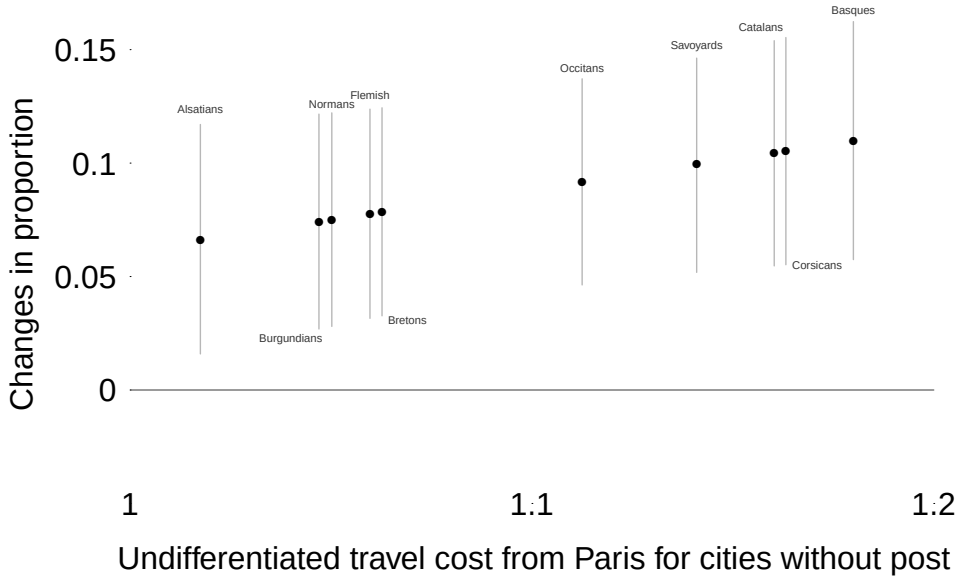
I focus on the undifferentiated costs to investigate the extent to which the location of minority ethnic groups determines the expansion of postal networks. In this context where Paris can reach post-less cities at the same cost as cities with a post, if ethnicity is the main driver, it should avoid locales with a heavy minority population in favor of French-speaking areas if he finds the cost of mounting a relay station in minority regions to be unbearably high. If correct, travel cost should be high in these areas.

Table 4 provides preliminary evidence against the hypothesis. For one, the German-speaking Alsatians have the least travel cost among the ten minority groups although the distance to their homeland city, Strasbourg, from Paris (397 km) is greater than the average at the city level (373 km). Similarly, the travel cost for the Bretons is not much different from that of the now-French-speaking Normans, even though the difference in geographical distance between their homelands is nearly 400 km. To explore these heterogeneous effects of ethnicity more systematically, I use the first-differences approach with an interaction model:

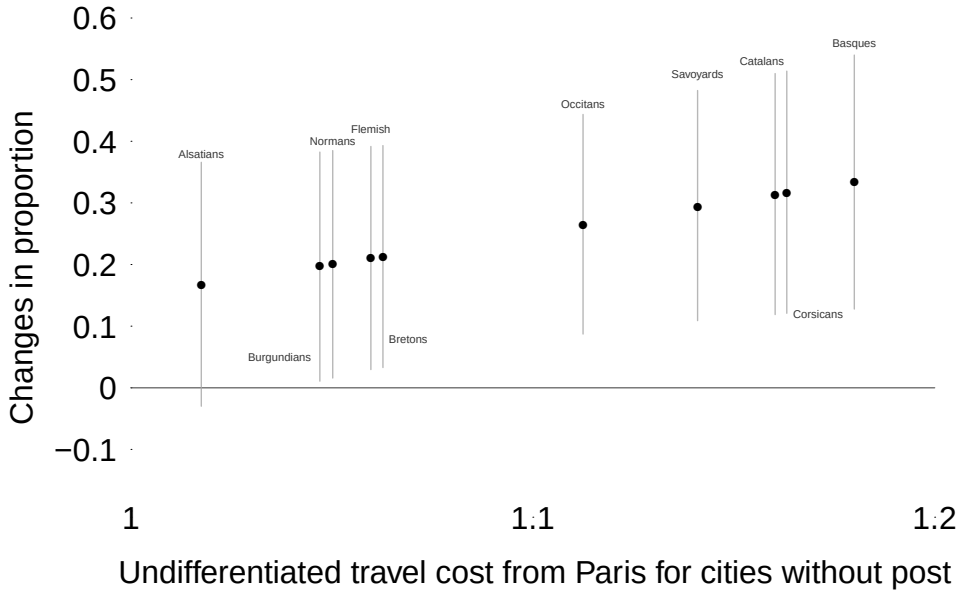
$$\text{Autonomy}_i = \alpha + \beta \text{Travel cost via postal routes by 1792}_i \times \text{Ethnicity}_i + \gamma X_i + \epsilon_i. \quad (2)$$

To begin, I compute first differences for the ten départements of the ethnic minorities by adding the mean travel cost of all observations to the travel cost of each départements as shown in the rightmost column of Table 4. It intends to capture an extra cost under the hypothesis that Paris systematically shuns the ethnic minority. I then use the interaction model to estimate ethnicity's effects on the outcome variables in relation to state capacity.

Figure 7: Effects of ethnicity interacted with travel cost from Paris.



(a) Prop. desertion and draft-dodging



(b) Prop. non-French speaking

Note: The solid circles indicate point estimates and the vertical bars indicate 95 percent confidence intervals. The proportion of deserters and draft-dodgers is the outcome in the top panel and that of non-French speakers is in the bottom.

Source: See the Empirical Strategy section.

Figure 7 documents the output of state capacity interacted with ethnicity.[13] In both outcome variables, ethnicity's effects seem limited at best. In Panel (a), substantive effects of state capacity on the desertion rate are quite small and close to zero, especially for the five ethnic groups with the travel cost less than 1.1. Similar results obtain for the other ethnic groups whose homeland is located far from Paris. The uncertainties shown in the vertical bars are greater in Panel (b). Ethnicity's substantive impact is virtually statistically indistinguishable from zero for the ethnic groups with less than 1.1 travel cost. In both cases, overall estimated effects for these ethnic groups are smaller than the estimated effects of travel cost for all observations reported in Figure 6. Evidence from this exercise suggests that the location of ethnic homelands is unlikely to drive the postal networks.

Robustness

The findings have thus far supported my argument that the expansion of postal networks as a proxy for state capacity influences conscription and linguistic homogeneity in post-revolutionary France. My empirical analysis provides evidence that the infrastructural capacity developed incrementally over the early-modern period and that Paris had to pay high costs to administer policy in locales without a relay station. Cost differentials between cities with a post and those without one have substantive effects on both a short-term outcome (i.e., desertion in the First Republic) and a long-term one (i.e., extent of non-French speaking in the Third Republic). These effects are robust to the inclusion of a host of political, geographical, and economic observables, and my analysis suggests that ethnicity is unlikely to drive how the French postal service grew. Still, there is an additional reason that unobserved factors may confound these findings. More specifically, some object that the infrastructure built prior to the establishment of relay stations may determine the post's location. The argument is that French state preferred to build posts where well-trodden roads had already been available over new paths that would require a greater investment. If true, the effects of the post may be endogenous to this infrastructure. The postal network that developed may thus be considered a function of the preexisting supply.

[13] The regression outputs are available in the Appendix.

To address this concern, I introduce several potential confounders. First, I examine direct precursors to the state-sponsored post. As discussed above, European universities ran a messenger system from medieval times, where France enjoyed one of the most expansive networks. At the same time, the French post was inspired by Germany's pioneering experiment that eventually led to the system of the imperial post. These precedents yield a hypothesis which states that the presence of a university or the proximity to the German imperial post provide the French state with ready-made networks on which to expand its own. I use Frijhoff (1996), Rüegg (2011), and Darby and Fullard (1970) to obtain the foundation date of universities and their locations until 1643, when the French state successfully annulled all university-based messenger services. I then calculate the city-level geographical distance to all universities, count the number within a 50-km range, and take the mean value at the département level. As for the German imperial post, I draw on Behringer (1990), Pettegree (2014), and Schobesgerger et al. (2016) to identify the location of all cities that opened the service at the turn of the seventeenth century and take the same approach to constructing a measure on the number of the German post within 50 km.[14] The second supply-side determinant is the Protestant Reformation. It is well-known in the scholarship that Luther and his followers advocated lay readership of the Bible (Dittmar and Meisenzahl Forthcoming): Luther was interested not only in using German over Latin for proselytization but also in modernizing the German language (Burke 2004, 68, 102). One consequence of this historic movement is the hypothesis that the persistence of non-French tongues may have to do with the exposure to this idea. To account for the Reformation's impact, I follow Pfaff and Corcoran (2012) to calculate the shorter distance to either Wittenberg or Zürich, two major epicenters of the movement, where proximity indicates a greater impact. Finally, I consider the impact of preexisting infrastructure in the longer run, in this case Rome. European states that experienced Roman rule inherited and expanded on roads built by the Romans. One can predict that the French postal networks were founded on the preexisting Roman ones. To account for this channel, I draw on various sources including Talbert (2000), Hammond (1981), Åhlfeldt (2015), and *Pleiades* (2015) to identify the cities reached by the Romans that had

[14]The French cities known to receive the service at the time include Paris, Strasbourg, and Ensisheim (located near Strasbourg and Zürich).

access to roads. I then create an indicator taking the value of one if a city had major or minor Roman roads.[15]

Table 5: Preexisting infrastructure and historical precedents as endogenous determinants of state capacity.

Dependent variable	Prop. deserters and draft dodgers during First Republic, 1798–1804		Prop. non-French-speaking population in 1863	
Additional costs for cities without post	1.25× more	1.5× more	1.25× more	1.5× more
	(1)	(2)	(3)	(4)
Travel cost from Paris via postal routes in 1792	0.202**		1.042***	
	(0.090)		(0.324)	
		0.137**		0.732***
		(0.060)		(0.214)
Number of universities within 50km	−0.015	−0.015	−0.105**	−0.108**
	(0.015)	(0.015)	(0.052)	(0.052)
Number of German imperial post within 50km	0.005	0.004	0.336***	0.331***
	(0.029)	(0.029)	(0.104)	(0.103)
Log distance to Wittenberg or Zürich	0.074*	0.069*	0.401***	0.376***
	(0.040)	(0.040)	(0.139)	(0.139)
Hub Roman road	0.055	0.053	−0.006	−0.014
	(0.036)	(0.036)	(0.129)	(0.128)
Roman road	−0.020	−0.024	0.058	0.038
	(0.034)	(0.034)	(0.115)	(0.114)
All other controls	✓	✓	✓	✓
Observations	88	88	88	88

Notes: The value for 1750 is used as a proxy for economic growth when the outcome variable is the proportion of deserters and draft dodgers and the value for 1850 is used when the outcome variable is the proportion of non-French-speaking population. *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Table 5 documents the impact of precursors to postal networks. Consistent with the previous analysis, the travel cost variable remains positive and significant. Its magnitude is also largely stable, which is reassuring in that substantive effects of the state-capacity channel are unlikely to be endogenous to the preexisting infrastructure or influence from neighboring countries. Findings from the statistical analyses indicate that differences in the cost of travel from Paris between cities with postal service and those without it are substantively meaningful. The ruler would have to incur additional costs to interact with the population of post-less towns and these costs constrain his ability

[15] Following Bosker, Buringh, and van Zanden (2013), those cities with two or more major roads are coded "Roman hub" and those with one major road or one or more minor roads are coded cities with "Roman roads."

to achieve goals, such as drafting as many eligible men and coaxing as many non-French-speaking populations to change their mind as possible. Moreover, these differential costs have long-term consequences, even though the state invested for a few centuries in strengthening its infrastructural capacity to facilitate rule.

Conclusion

This paper explores the development of the postal system as a proxy for state infrastructural capacity in early-modern Europe, in particular France. The postal institution was designed not only to facilitate communication between the political center and far-flung areas within country but also to bring about political order. Taking advantage of the power of the post to relay information and administer rule, the French state monopolized the channel and consolidated authority by expanding the networks. My empirical analysis finds that postal service has positive effects on the rate of desertion under mandatory conscription at the turn of the nineteenth century and the rate of non-French speakers in the late nineteenth century. Where the service was in place, those rates tend to be lower than areas without it. My findings also suggests that the location of minority ethnic groups is unlikely to drive the direction of the networks. The evidence holds when I include indicators of the infrastructure prior to the postal system.

These empirical findings yield two broader implications. First, investigations into the evolution of state infrastructural capacity reveal the incremental pace of capacity-building. While Scott (1998) vividly warns of the catastrophic and unintended consequence of the modern state's attempts to make the population "legible," my paper illustrates both the strengths and the limitations of state-capacity building in early-modern times. It shows that although France was an early state-builder among other European states, its infrastructural capacity in the nineteenth century came short of realizing its goals on military service and linguistic unity. My paper thus suggests that even for "ideal type" European states, legibility was a *longue-durée* process. Second, authority consolidation is conditional on mass consent. Mine is a statist perspective that explores the extent to which the

expansion of postal service in the early-modern period was effective in making population abide by state-led obligations such as military recruitment. Provision of public goods has been a standard method over time to induce participation, especially in ethnically and linguistically diverse societies (Wimmer 2016, 2018). Contemporary states are on average endowed with greater resources and means to offer protection and benefits. Policy tools that bridge state capacity and participation remain a key challenge in political and economic development.

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Appendix for "Ethnic Autonomy"

December 3, 2020

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1 Original Maps of Post Offices in France Used for the Main Explanatory Variable

1.1 1553

Figure A1 shows the distribution of the post offices in France in 1553. It is drawn by cartographer Aurélie Boissière and documented in *Atlas de l'histoire de France, 481–2005* (2016).

Figure A1: Location of post offices in France in 1553.

1.2 1690

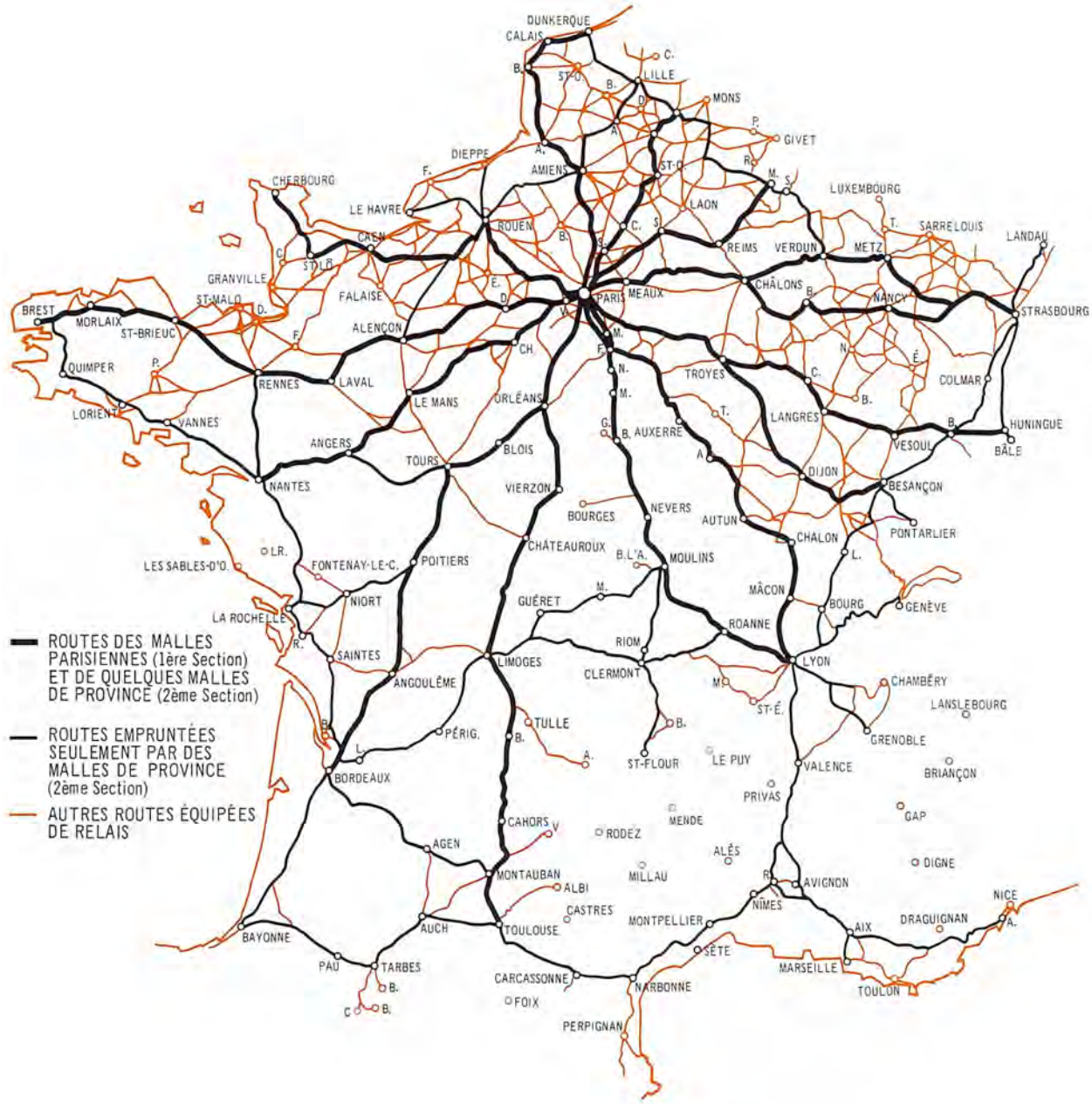
Figure A2 exhibits the location of the relay stations of the French post in 1690. Titled "Carte particulière des postes de France," it is drawn by Alexis-Hubert Jaillot. It supersedes the more famous 1632 "Carte géographique des Postes qui traversent la France" drawn by Nicolas Sanson. The map is available online as part of the World Digital Library project of the U.S. Library of Congress.

Figure A2: Location of post offices in France in 1690.

1.3 1792

Figure A3 presents the distribution of France's post offices in 1792. It comes from Guy Arbellot and Bernard Lepetit in *Atlas de la Révolution française*, vol. 1: *Routes et communications* (1987). It is part of a 11-volume series on the French Revolution published by the *École des Hautes Études en Sciences Sociales*.

Figure A3: Location of post offices in France in 1792.



2 Estimation Results

2.1 Bivariate Relations

Table A1: Bivariate relations between desertion rates and varying costs of travel from Paris, 1553–1792.

Dependent variable	Proportion of deserters and draft dodgers in the First Republic			
Additional costs for cities without post	Undifferentiated	1.25× more	1.5× more	2.0× more
	(1)	(2)	(3)	(4)
Travel cost from Paris via postal routes	0.005	0.099	0.076*	0.047**
in 1553	(0.116)	(0.064)	(0.039)	(0.022)
in 1690	0.128	0.103**	0.072**	0.043**
	(0.086)	(0.048)	(0.031)	(0.018)
in 1792	0.384***	0.332***	0.216***	0.116***
	(0.125)	(0.079)	(0.052)	(0.030)
Observations	88	88	88	88

Notes: Table summarizes twelve different bivariate regressions. "Undifferentiated" indicates undifferentiated costs of travel from Paris between cities with a post office and those without one whose values are averaged at the *departement* level; "1.25× more cost" means that travel cost is computed 1.25 times more for no-post cities, and so on. Intercept is omitted for brevity. *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Table A2: Bivariate relations between proportion of non-French-speaking population and varying costs of travel from Paris, 1553–1792.

Dependent variable	Proportion of non-French-speaking population in 1863			
Additional costs for cities without post	Undifferentiated	1.25× more	1.5× more	2.0× more
	(1)	(2)	(3)	(4)
Travel cost from Paris via postal routes	0.306	0.437**	0.303**	0.175**
in 1553	(0.397)	(0.217)	(0.135)	(0.074)
in 1690	0.283	0.260	0.187*	0.114*
	(0.299)	(0.167)	(0.109)	(0.064)
in 1792	1.101**	1.063***	0.715***	0.395***
	(0.438)	(0.275)	(0.180)	(0.103)
Observations	88	88	88	88

Notes: Table summarizes twelve different bivariate regressions. "Undifferentiated" indicates undifferentiated costs of travel from Paris between cities with a post office and those without one whose values are averaged at the *departement* level; "1.25× more cost" means that travel cost is computed 1.25 times more for no-post cities, and so on. Intercept is omitted for brevity. *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

2.2 Controls added

Table A3: Effects of travel cost from Paris based on postal networks on rates of desertion and draft-dodging in First-Republic France, 1798–1804.

Dependent variable	Proportion of deserters and draft dodgers					
Additional costs for cities without post	1.25× more			1.5× more		
	(1)	(2)	(3)	(4)	(5)	(6)
Travel cost from Paris via postal routes in 1553	0.010					
	(0.064)					
Travel cost from Paris via postal routes in 1690		0.038				
		(0.047)				
Travel cost from Paris via postal routes in 1792			0.206**			
			(0.088)			
Travel cost from Paris via postal routes in 1553				0.013		
				(0.040)		
Travel cost from Paris via postal routes in 1690					0.023	
					(0.031)	
Travel cost from Paris via postal routes in 1792						0.144**
						(0.058)
Pays d'élection	0.089***	0.087***	0.078***	0.089***	0.087***	0.079***
	(0.023)	(0.023)	(0.022)	(0.023)	(0.023)	(0.022)
Ethnicity	0.087***	0.087***	0.085***	0.086***	0.087***	0.085***
	(0.024)	(0.024)	(0.023)	(0.024)	(0.024)	(0.023)
Log population growth in 1750	−0.010	−0.008	−0.007	−0.009	−0.008	−0.007
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)
Number of printing presses by 1700	−0.038**	−0.038**	−0.033*	−0.038**	−0.039**	−0.034*
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)	(0.017)
Number of commercial fairs within 50km	0.026	0.028	0.028	0.026	0.028	0.027
	(0.033)	(0.033)	(0.032)	(0.033)	(0.033)	(0.032)
Number of canals within 50km	−0.006	−0.005	−0.008	−0.006	−0.006	−0.009
	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)	(0.011)
Access to river	0.033	0.032	0.044	0.033	0.031	0.046
	(0.031)	(0.030)	(0.030)	(0.031)	(0.030)	(0.030)
Years provincial estates held	−0.0001	−0.0001	−0.0001*	−0.0001	−0.0001	−0.0001*
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Elevation	0.0001*	0.0001	0.0001	0.0001*	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Terrain ruggedness	−0.0001	−0.0001	−0.0002	−0.0001	−0.0001	−0.0002
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Log distance to nearest border averaged, 1400–1800	−0.022**	−0.022*	−0.015	−0.022*	−0.022*	−0.014
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Log distance to nearest coast averaged, 1400–1800	−0.024**	−0.023**	−0.017*	−0.024**	−0.022**	−0.017*
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Intercept	0.260**	0.217**	−0.024	0.251**	0.235***	0.036
	(0.124)	(0.098)	(0.143)	(0.101)	(0.087)	(0.116)
Observations	88	88	88	88	88	88

Notes: *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

Table A4: Effects of travel cost from Paris based on postal networks on rates of non-French-speaking population in 1863.

Dependent variable	Proportion of non-French-speaking population					
Additional costs for cities without post	1.25× more			1.5× more		
	(1)	(2)	(3)	(4)	(5)	(6)
Travel cost from Paris via postal routes in 1553	0.116					
	(0.244)					
Travel cost from Paris via postal routes in 1690		0.057				
		(0.178)				
Travel cost from Paris via postal routes in 1792			0.937***			
			(0.340)			
Travel cost from Paris via postal routes in 1553				0.096		
				(0.151)		
Travel cost from Paris via postal routes in 1690					0.042	
					(0.119)	
Travel cost from Paris via postal routes in 1792						0.680***
						(0.222)
Pays d'élection	0.019	0.013	−0.028	0.018	0.012	−0.025
	(0.087)	(0.087)	(0.084)	(0.087)	(0.088)	(0.083)
Ethnicity	0.245***	0.244***	0.241***	0.240**	0.242***	0.239***
	(0.091)	(0.091)	(0.087)	(0.091)	(0.091)	(0.086)
Log population growth in 1850	−0.052	−0.056	−0.032	−0.050	−0.055	−0.031
	(0.041)	(0.040)	(0.038)	(0.041)	(0.040)	(0.038)
Number of printing presses by 1700	−0.030	−0.038	−0.015	−0.030	−0.039	−0.017
	(0.070)	(0.068)	(0.065)	(0.069)	(0.068)	(0.064)
Number of commercial fairs	−0.076	−0.070	−0.081	−0.075	−0.069	−0.083
within 50km	(0.127)	(0.128)	(0.121)	(0.127)	(0.128)	(0.120)
Number of canals within 50km	−0.067	−0.065	−0.076*	−0.068	−0.065	−0.082*
	(0.045)	(0.045)	(0.043)	(0.045)	(0.045)	(0.043)
Access to river	0.111	0.104	0.143	0.110	0.103	0.153
	(0.121)	(0.120)	(0.115)	(0.120)	(0.120)	(0.114)
Years provincial estates held	0.0002	0.0002	0.0001	0.0002	0.0002	0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Elevation	0.0001	0.0001	−0.0001	0.0001	0.0001	−0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Terrain ruggedness	−0.001*	−0.001*	−0.001*	−0.001*	−0.001*	−0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log distance to nearest border	−0.039	−0.041	−0.008	−0.037	−0.041	−0.002
averaged, 1400–1800	(0.043)	(0.043)	(0.042)	(0.043)	(0.043)	(0.042)
Log distance to nearest coast	−0.033	−0.033	−0.001	−0.034	−0.033	0.0001
averaged, 1400–1800	(0.037)	(0.038)	(0.038)	(0.037)	(0.038)	(0.037)
Intercept	0.370	0.474	−0.830	0.376	0.488	−0.595
	(0.484)	(0.379)	(0.562)	(0.393)	(0.336)	(0.451)
Observations	88	88	88	88	88	88

Notes: *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

2.3 Robustness checks 1: Ethnicity

Table A5: Interaction model between travel cost from Paris and ethnicity on two outcome variables.

Dependent variable	Prop. deserters and draft dodgers during First Republic, 1798–1804	Prop. non-French-speaking population in 1863
Additional costs for cities without post	Undifferentiated	
	(1)	(2)
Travel cost from Paris via postal routes in 1792	−0.046	−0.178
	(0.197)	(0.755)
Pays d'élection	0.081***	−0.013
	(0.023)	(0.088)
Ethnicity	−0.260	−1.080
	(0.278)	(1.064)
Ethnicity × Travel cost from Paris via postal routes in 1792	0.317	1.211
	(0.253)	(0.971)
Log population growth in 1750	−0.009	
	(0.010)	
Log population growth in 1850		−0.047
		(0.039)
Number of printing presses by 1700	−0.041**	−0.047
	(0.018)	(0.069)
Number of commercial fairs within 50km	0.029	−0.073
	(0.033)	(0.126)
Number of canals within 50km	−0.009	−0.078*
	(0.012)	(0.046)
Access to river	0.020	0.050
	(0.033)	(0.128)
Years provincial estates held	−0.0001	0.0002
	(0.0001)	(0.0003)
Elevation	0.0001	−0.00003
	(0.0001)	(0.0003)
Terrain ruggedness	−0.0001	−0.001
	(0.0002)	(0.001)
Log distance to nearest border averaged, 1400–1800	−0.022*	−0.039
	(0.011)	(0.042)
Log distance to nearest coast averaged, 1400–1800	−0.019*	−0.015
	(0.010)	(0.039)
Intercept	0.318	0.710
	(0.245)	(0.946)
Observations	88	88

Notes: The value for 1750 is used as a proxy for economic growth when the outcome variable is the proportion of deserters and draft dodgers and the value for 1850 is used when the outcome variable is the proportion of non-French-speaking population. *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.

2.4 Robustness checks 2: Preexisting infrastructure

Table A6: Effects of preexisting infrastructure on two outcome variables.

Dependent variable	Prop. deserters and draft dodgers during First Republic, 1798–1804		Prop. non-French-speaking population in 1863	
Additional costs for cities without post	1.25× more	1.5× more	1.25× more	1.5× more
	(1)	(2)	(3)	(4)
Travel cost from Paris via postal routes in 1792	0.202**		1.042***	
	(0.090)		(0.324)	
Travel cost from Paris via postal routes in 1792		0.137**		0.732***
		(0.060)		(0.214)
Pays d'élection	0.041	0.044	−0.182*	−0.166*
	(0.028)	(0.027)	(0.098)	(0.096)
Ethnicity	0.070***	0.070***	0.180**	0.181**
	(0.025)	(0.025)	(0.089)	(0.089)
Log population growth in 1750	−0.005	−0.005		
	(0.011)	(0.011)		
Log population growth in 1850			−0.044	−0.042
			(0.039)	(0.039)
Number of printing presses by 1700	−0.034*	−0.035**	−0.040	−0.046
	(0.018)	(0.018)	(0.062)	(0.061)
Number of commercial fairs within 50km	0.026	0.026	−0.093	−0.094
	(0.032)	(0.032)	(0.113)	(0.112)
Number of canals within 50km	−0.004	−0.005	−0.054	−0.059
	(0.012)	(0.012)	(0.044)	(0.043)
Access to river	0.004	0.008	0.124	0.145
	(0.036)	(0.036)	(0.129)	(0.129)
Years provincial estates held	−0.0002*	−0.0002*	0.0001	0.0001
	(0.0001)	(0.0001)	(0.0003)	(0.0003)
Elevation	0.0001	0.0001	−0.0003	−0.0002
	(0.0001)	(0.0001)	(0.0003)	(0.0003)
Terrain ruggedness	−0.0001	−0.0001	−0.001	−0.001
	(0.0002)	(0.0002)	(0.001)	(0.001)
Log distance to nearest border averaged, 1400–1800	−0.024*	−0.023*	−0.052	−0.046
	(0.012)	(0.012)	(0.043)	(0.043)
Log distance to nearest coast averaged, 1400–1800	0.002	0.001	0.074	0.069
	(0.013)	(0.013)	(0.046)	(0.045)
Number of universities within 50km	−0.015	−0.015	−0.105**	−0.108**
	(0.015)	(0.015)	(0.052)	(0.052)
Number of German imperial post within 50km	0.005	0.004	0.336***	0.331***
	(0.029)	(0.029)	(0.104)	(0.103)
Log distance to Wittenberg or Zürich	0.074*	0.069*	0.401***	0.376***
	(0.040)	(0.040)	(0.139)	(0.139)
Hub Roman road	0.055	0.053	−0.006	−0.014
	(0.036)	(0.036)	(0.129)	(0.128)
Roman road	−0.020	−0.024	0.058	0.038
	(0.034)	(0.034)	(0.115)	(0.114)
Intercept	−0.482*	−0.386	−3.379***	−2.912***
	(0.276)	(0.262)	(0.986)	(0.925)
Observations	88	88	88	88

Notes: The value for 1750 is used as a proxy for economic growth when the outcome variable is the proportion of deserters and draft dodgers and the value for 1850 is used when the outcome variable is the proportion of non-French-speaking population. *** denote $p < 0.01$, ** $p < 0.05$, and * $p < 0.1$.