The Politics of Railroads

Louis Rouanet* Ronan Tallec† Anne Alonzo‡

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Abstract

Infrastructure programs are eminently political projects whose allocation is not simply the result of concerns about economic efficiency. We show how representative politics influenced the allocation of railroads in France following the 1879 Freycinet plan, which projected a 40% increase in the size of the French network. Towns in Republican majority electoral districts were more likely to get train stations. This electoral effect emerged only after the parliament started getting involved in the making of the plan. Using a difference-in-discontinuity design, we find that infrastructure pork-barrel was greatest in swing districts. Within electoral constituencies, politically competitive municipalities benefited from greater railroad investments, as they contained more swayable voters. Finally, our results suggest distributive politics was more pronounced in regions where the government directly owned railroads.

Keywords: Political Economy, Infrastructure, Economic History, France.

JEL Codes: N01, N73, H54, D72.

*University of Texas at El Paso, Department of Economics and Finance, USA. Email: lcrouanet@utep.edu.
†Université Paris Cité, LIRAES. France. Email: ronantallec.edu@gmail.com
‡Saint-Gobain. France. Email: Anne.Alonzo@saint-gobain.com.

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Whether heavy investments in transportation infrastructure, and especially railroads, are essential to achieve economic prosperity or only a minor contributor to it is still open to debate. Yet, while the literature on the economic impact of railroads has vastly grown since Fogel's (1964) and Fishlow's (1965) seminal studies, it touches seldom and lightly one of the most basic questions: how did politics shape the allocation of railroads in the first place?

One view is that in highly competitive democratic systems, efficient policies are rewarded, and there is little room for political failures (Wittman, 1989, 1995). In this instance, the allocation of infrastructure spending will mostly be dictated by economic motives. Another influential view, at least since Buchanan and Tullock (1962), is that the politically optimal allocation of public goods differs from their economically optimal allocation. This approach was later formalized and expanded to study the provision of geographically targeted pork-barrel spending (Weingast et al., 1981), whether parties will target marginal or core voters (Lindbeck and Weibull, 1987; Cox and McCubbins, 1986; Dixit and Londregan, 1996), the effect of different electoral rules on the level and composition of public spending (Milesi-Ferretti et al., 2002), etc.

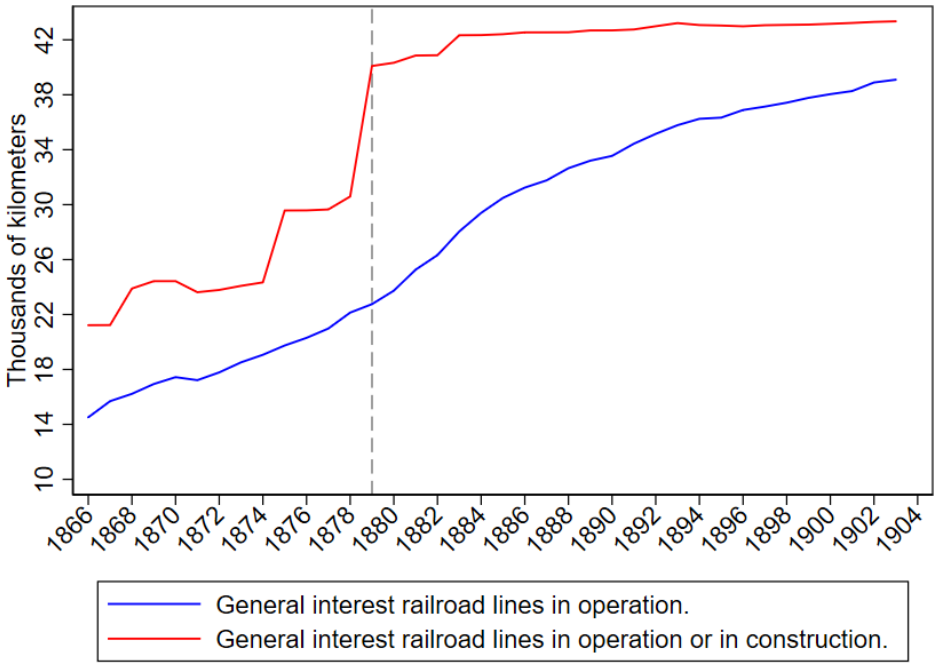
This paper studies how electoral politics shaped a major infrastructure plan, the so-called Freycinet Plan, approved by the French parliament in 1879. The Freycinet plan entailed a massive effort by the Republicans to further their political influence and solidify the Third Republic (1870-1940). While the original project pushed for 4,500 km of new railways, parliamentary politics drastically increased the plan to more than 8,800 km of projected new lines, corresponding to a 40% increase in the size of the French railroad network (Clapham, 1936, p.342).[1] The Freycinet plan of 1879 thus became one of the largest infrastructure programs in French history, as illustrated by Figure 1, with the French government allocating 9.11% of its budget to it between 1878 and 1887 —around 20% of French GDP (Lévy-Leboyer and Bourguignon, 2008).[2]

To analyze how representative politics shaped the plan, we collected novel data on train

[1]The Freycinet plan also invested in canals and river infrastructure, which we do not analyze in this article. More than two-thirds of the plan's spending was related to the railroad network (Gonjo, 1972, p.82). Merger (1980) examines part of the Freycinet Plan devoted to waterways.

[2]Those 9.11% represent all of the infrastructure spending done under the Freycinet plan. Spending on railways represented 6.24% of the French government's budget. Calculations were done using the data in Gonjo (1972, p.82) (on infrastructure spending) and data in Statistique générale de la France (1931, p.180*-181*).

Figure 1: The growth of the French railway network (1866-1903).



Notes: The dashed line represents 1879, during which the Freycinet plan started. The data used was collected from *Statistique des chemins de fer français au 31 Décembre 1903*, Première partie, p.6.

stations for each of the more than 35,000 French municipalities, which adds to the data we collected on election results, candidate incumbency, ideology, government ownership of railroads, and membership to the parliamentary transportation committee. Our results confirm the hypothesis that infrastructure projects leave ample room for pork-barrel spending.[3] We show that members of the Republican parliamentary majority allocated more train stations to their districts at the expense of the other electoral districts, which elected either monarchists or far-left candidates. This effect was strongest for the most competitive electoral districts and towns as well as on the government-run railroad network. Our findings thus point to a key feature of infrastructure programs: as they get politicized, infrastructure investments are allocated to politically influential constituencies instead of being allocated on efficiency grounds. Greater government control over the railroad network further intensified distributive politics as it reduced its cost to politicians.

To structure our results, we build a simple theory of pork-barrel spending analyzing its

[3]Adopting Stokes et al.'s 2013 taxonomy, we refer to partisan biased non-programmatic transfers which target collectivities, but not individuals, as "pork-barrel politics."

allocation both across electoral districts and between municipalities within the same district. We test four main predictions. First, we expect towns in districts represented by a member of the majority to receive more infrastructure following the Freycinet plan. Second, we expect this effect to be more pronounced in swing electoral districts. Third, within each electoral district, we expect politically competitive (or "swing") municipalities to receive more train stations since giving infrastructure to those communities confers a higher marginal benefit in terms of votes to politicians. Finally, politicians facing a lower opportunity cost of bringing pork to their districts will be more successful in doing so. While this last prediction is straightforward, we suggest that both incumbency and government ownership of railroads lowered the cost of politicians seeking infrastructure investments for their own political benefit. Distributive politics was therefore more intense in regions dominated by the government railroad network and in districts where the representative was an incumbent.

We first establish that Republicans in parliament crafted the Freycinet plan to favor their constituents by using a difference-in-difference setup. In 1879, around 11.4% of towns had a train station. We find that towns in districts having elected a member in the Republican majority during the 1877 election caused a 10% increase in the number of train stations operational by 1886. We further analyze the process through which parliamentary politics shaped the Freycinet plan using previously unused archival data. More precisely, we access the original plan made in 1878 by the *Conseil général des ponts et chaussées*, a technocratic institution composed of engineers. We show that there is no evidence of electoral bias in this original document, which laid the ground for the Freycinet program subsequently voted by the parliament. Over time, the plan expanded and adjusted due to the political pressures exerted by parliamentarians and local officials. This process continued until Freycinet, himself an engineer, became sufficiently frustrated and publicly complained about electoral considerations shaping infrastructure investments.[4] That no electoral bias can be found in the original plan designed by unelected technocrats further confirms that our results are unlikely to reflect correlations between electoral outcomes on the one

[4]Freycinet (1913, p.17 and 78) recalls that he "begged" deputies during the parliamentary discussions on the Plan not to increase the initial size of the project. He also argues the plan had "no political character" initially.

hand and military and economic factors on the other. Indeed, economic and military factors were largely accounted for in the original plan, and the political allocation of railroads only crept in as the parliament became increasingly involved in the decision-making process.

Our second and third predictions relate to the theoretical and empirical literature on distributive politics, neither of which provides conclusive answers about which electoral strategy is optimal and implemented. While Lindbeck and Weibull (1987) argue that a party will target swing voters since fewer resources are needed to convince them to vote for a candidate, Cox and McCubbins (1986) argue that parties will target their core supporters because they can allocate resources more efficiently in loyal constituencies and because risk-averse politicians will prefer maintaining the support of more predictable core voters. Subsequent contributions have clarified the mechanisms behind the two hypotheses.[5] Unfortunately, the existing empirical literature does not clearly adjudicate between the aforementioned theories (Golden and Min, 2013). Some studies find that evenly divided constituencies receive more pork-barrel spending (Case, 2001; Dahlberg and Johansson, 2002; Cole, 2009; Corvalan et al., 2018), while others find evidence for the core-voter hypothesis (Ansolabehere and Snyder Jr, 2006; Stokes et al., 2013, Chapter 2). Still, other studies find that the electoral strategy depends on the political alignment of sub-national political units (Albertus, 2019).

We look at the effect of electoral politics on the allocation of infrastructure in swing districts by adopting a difference-in-discontinuity design. The effect of distributive politics was greatest on infrastructure allocation for districts close to the 50% electoral threshold. A Republican candidate winning by one vote increased the number of train stations per municipality by almost 0.08 —40% of the mean train stations per municipality. Although this is consistent with the idea

[5]Similarly, Zarazaga (2016) argues that since voting is uncertain, parties target their supporters to shield their electoral coalition against unexpected events. Stokes (2005) set forth a model with very similar conclusions as in Lindbeck and Weibull (1987) and Dixit and Londregan (1996) but includes the political parties' ability to monitor voters after they received some particularistic benefit. Nichter (2008) points out that once we allow politicians to buy turnout as opposed to votes, an incumbent will target their loyal supporters since monitoring whether someone voted is cheaper than monitoring the choice of candidates. More recently, Smith and De Mesquita (2012) and Smith et al. (2017) build a model in which politicians can effectively boost participation and support by promising a prize to the group giving them the most votes. Catalinac et al. (2020) provides some evidence for this theory. A third hypothesis to the core and swing voter theories is that politicians will want to target the opposing party's strongholds to avoid buying support from their supporters (Casas, 2018).

that swing electoral districts are more likely to receive pork-barrel spending, it does not speak to whether core voters are targeted *within* those same districts. As pointed out by Cox (2010), many papers fail to test swing vs. core theories of distributive politics as they use electoral district-level data.[6] While intense electoral competition may incentivize politicians to redistribute resources to their districts, those resources may still target their most loyal constituents. Hence, we also look at the variation in train station allocation within districts and find that "swing" municipalities were more likely to receive one. This pattern is consistent in electoral districts controlled by the parliamentary majority and those controlled by the opposition. Overall, swing voters theories of distributive politics best describe the Freycinet plan.

Finally, we find some evidence that pork-barrel infrastructure investments were strongest for incumbent Republican politicians.[7] We also argue that government ownership made distributive politics cheaper to politicians and therefore more likely. France, the country analyzed in the current study, combined both extensive government intervention in the railroad sector and reliance on private sector investments and operations. The French case thus permits us to test how government ownership influenced the electoral allocation of train infrastructure.

A common argument against nationalization during the late 19^{th} and early 20^{th} centuries was that distributive politics would plague government ownership of railroads. During Progressive Era America, Senator Kenyon argued that "Congressmen would under government ownership be interested in an extension of the lines to every little Podunkville in the country. Can we believe that a Congress [...] would refuse to spend money for the extension and improvement of lines for purposes which are purely political?" (Phelps, 1919, p.192). In France, Yves Guyot (1915, p.53), ex-minister of public works (1889-92), opposed nationalizations, criticizing the Belgian State-run system because it "has committed itself to a policy of political expediency which

[6] To address this issue, Stokes (2005) was the first to use individual-level data in this context. In this paper, since infrastructure spending does not target individuals but communities, focusing on the municipality (town) instead is adequate. Another difficulty in assessing core versus swing theories is that we cannot use public programs with strong programmatic content since those theories model politically neutral pork-barrel spending. In our case, very few politicians openly opposed the construction of railroads, or for that matter the Freycinet plan itself.

[7] On the other hand, we find little evidence that sitting on the parliamentary transport committee increased infrastructure investment in one's district.

is sacrificing the general interest to interests purely local and electoral." Our results confirm that the effect of pork-barrel spending was around thrice as large in regions dominated by the government-run railroad network compared to regions where private companies dominated.[8]

Although there is ample literature on the (usually positive) economic effects of railways (Donaldson and Hornbeck, 2016; Berger and Enflo, 2017; Hornbeck and Rotemberg, 2024), including in the case of the Freycinet plan (Kakpo et al., 2019; Lenoir, 2020), the political determinants of railroad investments are seldom studied. Notable exceptions involve Esteves and Geisler Mesevage (2021), who study how members of the House of Commons used logrolling as a means to rent-seek, and Duran (2013), who argues that government subsidies to finance the first American transcontinental railroad were a way to deal with the political risk related to competition in Congress over the location of the route. None of these studies, however, analyze how distributive politics affects the spatial allocation of railroads.[9]

On the other hand, the political economy literature on public infrastructure is more developed. Some, as in Albertus and Gay (2024), look at the effect of infrastructure investment on political behavior in *Ancien Régime* France, and others, as González et al. (2024), analyze how politics also shapes infrastructure in autocracies. In our case, we study the effect of democratic representative politics on infrastructure in French economic history. Our results are consistent with Callais and Geloso's (2023), who find that political considerations mattered for the geographical allocation of lighthouses in antebellum America. Similarly, they conform to Bogart (2018) findings that after the Glorious Revolution of 1688-89, interest groups and their political connections in the parliament influenced the adoption of river navigation improvements. While, in this case, key interest groups opposing infrastructure investment explain the slow diffusion of water infrastructure in England, our paper points to how parliamentary politics led to rapid railroad growth in France. The result of pork-barrel politics was that by 1900, France had developed one of the densest railway networks in Europe.

[8]Of course, we do not deliberate whether state ownership of railroads was beneficial overall. Bogart (2009, 2010) assess the effects of railroad nationalization and government ownership of railroads during the 19^{th} century.

[9]To our knowledge, Fajgelbaum et al. (2023) is the only paper to do so for the modern case of the Californian high speed rail. Yet they do not endeavor to test alternative theories of distributive politics.

1 Historical Background

In barely five months, the Franco-Prussian war forced Emperor Napoleon III to abdicate and marked the advent of a new regime, the Third Republic (1870-1940). The French defeat had starkly exposed France's military weaknesses. In addition to the military defeat, a sense that France was starting to lag behind economically reigned.[10] Adding to those challenges, the survival of the brand-new republican institutions was uncertain. Because they favored suing for peace, unlike many bellicose Republicans, Monarchists won the 1871 election. Unable to agree upon which dynasty should rule, it took precious years for Republicans to affirm control over institutions.

Republicans won their first decisive electoral victory during the 1876 legislative elections. The chamber of deputies now counted 360 Republicans and 150 Monarchists. Despite this clear majority, conservative president Mac-Mahon pushed Prime Minister Jules Simon to resign on May 16, 1877, and nominated the monarchist Duc de Broglie instead. Republican members of parliament protested swiftly, and the chamber of deputies was dissolved. Despite the monarchists' attempts to regain political control, Republicans maintained their parliamentary majority in the lower chamber. In this context, the perspective of a major infrastructure plan to firmly establish Republican institutions became particularly attractive.[11]

The extension of the railway network was first suggested in 1876 after the Republican's first electoral victory but had been delayed by the "16 May 1877 crisis."[12] The Republic urgently needed to assert its legitimacy, including by mobilizing rural populations, which comprised the majority of the French population. By investing massively in railroads, the parliamentary majority hoped to republicanize France.[13] In addition, many Republicans were suspicious of

[10] On the French economic stagnation between 1873 and 1897, see Breton et al. (1997). Lévy-Leboyer and Bourguignon (1985) and Toutain (1987) document the economic slowdown during this period.

[11] This section draws extensively on Beck (1986) as well as Lenoir (2020) and Gonjo (1972). The financial dimensions of the plan are examined in detail in Hochstrasser (1977). Caron (1997, pp.476-483) offers a valuable overview of the key historical studies on the Freycinet Plan. Appendix A contextualizes the Freycinet plan by providing an overview of the development of the French railway network prior to its implementation.

[12] See Wilson's April 1879 speech: *Journal Officiel de la République Française*, April 13, 1879, p.3228.

[13] As early as in January 1878, the newspaper *La République Française* argued: "The Republic will grow such deep roots in France that it will never be eradicated if it succeeds, better than all the monarchies that preceded it,

large railroad companies because they "appeared as anti-republican institutions, controlled by anti-democratic financial feudalities." (Caron, 1997, p.469). A major infrastructure plan was an occasion for expanding the role of the state and marked a clear departure from *laissez-faire* principles. In May 1878, a first step toward greater involvement was crossed by creating a state network to manage the small and often unprofitable lines in Western France.

Expanding infrastructure gained traction following the formation of the Dufaure government in December 1877. The governing coalition comprised the Republican Union, the Republican Left, and the Center-Left. The far-left, on the other hand, did not participate in the executive. As Mayeur (1973, p.80) points out, "Victorious, Republicans became divided. The radicals moved into the opposition. [...] From then on [...] the radicals made their hostility toward the successive governments clear." As Minister of Public Works, Charles de Freycinet brought to bear his engineering background. By the end of December 1877, Freycinet had submitted a project to the presidential cabinet, and by early January 1878, Mac-Mahon had signed a decree establishing one regional commission for each private network. Those commissions were staffed with engineers and public servants and were to identify new railway lines. Their reports were then revised and reviewed in summary form by a general committee on April 28, 1878 (Freycinet, 1913, p.12). We detail the committee's history in Appendix A.4.

If we believe Freycinet (1913, pp.12-15), the infrastructure plan was decided on January 8 at a meeting between Léon Say, Gambetta, and Freycinet.[14] Gambetta agreed to avoid attacking the large private railroad companies, thus reassuring Léon Say's liberal dispositions. Say was, after all, the liberal economist Jean-Baptiste Say's grandson. He was also a *Compagnie du Nord* board member and a trusted associate of the Rothschilds, who founded the company in 1845. Léon Say's involvement with the plan reassured business circles. Rapid action stemmed partly from the Republicans' desire to preempt the Conservative Senate from claiming credit for railway expansions. The new lines would be financed by the state, which could conditionally entrust

in improving our industrial infrastructure and advancing public education." Cited in: Thibault (1975, p.237).

[14]Freycinet's account is confirmed by Léon Say himself, who lamented that "we were in a position to meet the commitments we were about to enter into. I'm not going to tell you that, unfortunately, we deviated from this original program." (Michel, 1899, p.317). Thibault (1975, pp.225-228) describes this meeting in detail.

their operation to either private companies or the State network. Funding for the plan, including the buyout of bankrupt companies, was not to exceed 4.5 billion francs. 3% annuities voted by the Chambers would be issued to finance the plan.

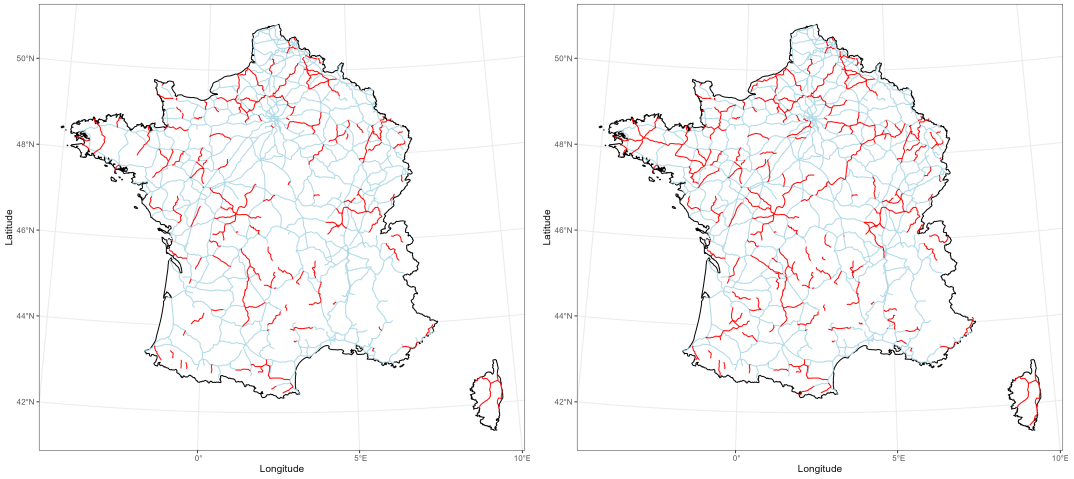
By April 1878, the commissions had completed their work. After a review by the *Conseil des Ponts-et-Chaussées*, Freycinet recommended in June the creation of 154 new lines and the classification of 53 former local lines into the general-interest network, thus adding a total of 8,700 km to the French railroad network.[15] During that summer, Freycinet and Finance Minister Léon Say embarked on a nationwide tour shortly before the municipal elections to promote the Plan and garner support for the Republican cause. Soon, political pressures started increasing the size of the Freycinet plan.

By November 1878, the original project was expanded to 163 new lines and 64 old local lines. Freycinet estimated an average construction cost of 200,000 francs per kilometer, although the *Conseil des Ponts-et-Chaussées* presented a higher figure of 250,000 francs. To control costs, technical adjustments were proposed, such as adopting smaller curve radii, repurposing existing roads for rail embankments, and constructing narrow-gauge lines where appropriate. Freycinet himself was forced to acknowledge the escalating scope of the plan.

By March 1879, the length of the proposed new lines voted upon in the Chamber of Deputies had increased from 7,000 km to 11,000 km. Adding to this the 3,000 km of new lines already legislated and the 5,000 km of previously conceded but reconstructed lines, the plan now encompassed 18,000 km. The Freycinet plan's estimated cost was now 5 billion francs —above the 4.5 billion limit originally agreed upon. The Senate approved the construction of 181 new lines on July 12, 1879, totaling approximately 8,848 km. An additional 94 lines, spanning 4,152 kilometers, were referred to the Ministry of Public Works for further examination and were subsequently approved (Picard, 1884). Figure 2 illustrates the increase in the plan's scale by comparing the railroad lines in the July 12, 1879 law to the recommendations made more than a year earlier by the technocratic *Conseil des Ponts-et-Chaussées*.

[15] See Beck (1986, p.42). The criteria for the construction of the new network were military utility, direct network connectivity, integration of key centers, and administrative requirements.

Figure 2: The expansion of the infrastructure plan between 1878 and July 1879.



(New railroads planned by the 1878 commission) (New railroads under the July 1879 law)

Notes: Railroads in operation in 1878 are denoted by the light blue color. The left panel represents the new train infrastructure recommended by the 1878 technocratic *Conseil des Ponts-et-Chaussées*. The right panel represents, in red, the new lines voted by the parliament in July 1879. The latter panel does not include the 94 lines referred to the Ministry of Public Works for further examination.

Historians remain divided on their interpretation of the Freycinet plan. Some perceive it as overly political and prioritizing equal access to transportation rather than efficiency (Beck, 1986; Blanchard, 1942; Weber, 1984). Some even considered the plan was conceived "in a moment of collective hallucination." (Caron, 1997, p.476). Other authors, such as Wolkowitsch (2004), challenge the charge of pork-barrel spending, arguing that new rail lines underwent rigorous ministerial evaluations and that the plan was indispensable to reduce transportation costs. Yet recognition that the Freycinet plan fell prey to distributive politics was largely recognized during the late 19^{th} century. On April 2, 1879, the Republican newspaper *Le Charivari* reports:

> Ever since Mr. Freycinet's proposal for classifying railway lines has been under discussion, we have seen, in all its ingenuousness, the emergence of *steam-powered electoralism*. Everyone is vying to grab a stretch of rail and carry it off triumphantly to their own department, so they can say at the ballot box: "You see! This is what I have won for you... No one else could have managed so much. From now on, you are inextricably bound to a deputy who singlehandedly wrested three and a half kilometers of branch line."

Of course, the conservative press was particularly embittered by the Republicans' attempts to

solidify their political influence through infrastructure investment. The Bonapartist newspaper *Le Petit Caporal* complained that Freycinet was the man who "gave each Republican deputy an electoral railway and stupidly launched us into three billion in sterile expenditure."[16] Another conservative newspaper, *Le Courier du Berry* featured a satirical imaginary monologue which used pork-barrel spending as an argument against democracy:

> Democratic railroads are electoral railroads. It's the third network imagined by M. de Freycinet before the last elections, designed not to transport coal, wheat, and potatoes but to support the candidacy of this or that deputy, general councilor, municipal councilor, or senator. [...] This railroad is intelligent; it doesn't care about rivers, mountains, or rough terrain; it stops in republican communes, places its stations close to influential voters, and only gives its smoke and whistle to conservative communes. [...] Fine, but who's paying for all this? [...] It's the taxpayers who pay it: direct, semi-direct, indirect, ordinary and extraordinary taxes. [...] What do I care about their useless railroads? Do we farmers need that? We've had enough of railroads. Maybe, but candidates can never have enough; that's why they've voted so many that they can't build them anymore.[17]

Criticisms of the plan were usually more subdued during parliamentary debates. Senator Krantz, a Republican and engineer, cautiously supported the plan while warning against its excessive scale.[18] In the end, no parliamentary group opposed the extension of the train infrastructure. Only once the construction of the lines was well advanced did some politicians start worrying about the cost to the taxpayer. For instance, Henri Germain, a center-left politician and banker, voiced his critiques during budget reviews, particularly concerning the overruns caused by the Plan's implementation. In particular, he attributed the over-expansion of the Freycinet plan and distributive politics to debt financing: "We would never have thought of building railroads like those that have been undertaken; we would never have given in to the pull of local interests if the public interest had had the only weapon with which to defend itself:

[16] *Le Petit Caporal*, April 9, 1885. See also passages in the following conservative newspapers: *L'Univers*, n°4283, July 14, 1879, p.1 ; "Parlementarisme et finances," *La Patrie*, January 9, 1884, p.1. Republican newspapers also complained about wasteful government pork-barrel spending on railroads. For instance: *Le Courrier du Soir*, n°2697, February 9, 1885, p.2

[17] *Le Courrier du Berry*, n°154, August 8, 1883, p.2.

[18] On Krantz and other engineers who became members of Parliament and contributed to the debates on the Freycinet Plan, see Marnot (2002).

the need to create taxes." (Germain, 1885, p.XVII). Because the Freycinet Plan was not financed using taxation, spending on new infrastructure was excluded from the state's "ordinary" budget, instead being hidden in separate accounts and further masking the true cost of the plan. Without much political success, Henri Germain, therefore, anticipated the idea of "fiscal illusion" put forward by Puviani (1897) and Buchanan and Wagner (1977) by several decades.[19]

Building permits were rapidly granted for numerous lines: 12 in 1879, 20 in 1880, 26 in 1881, and 12 in 1882.[20] Yet the implementation of the Freycinet plan soon proved disappointing. Initially budgeted at five billion francs, the estimated total cost soared to nine billion by 1882, with six billion allocated to railway construction alone. Starting in 1881, the price of annuities issued to finance the plan started falling on financial markets. The situation worsened further in 1882 as the government ran its first budget deficit since 1877. Facing a financial crisis with the bankruptcy of the *Union Générale*, the government signed financing and management agreements with the major railway companies in 1883 (Caron, 2005b, p.89).[21]

The 1883 conventions between the French government and major railway companies granted them a substantial share of the plan's implementation. Their network was extended from 23,040 to 34,122 km in exchange for an investment of 330 million francs over ten years to construct new lines. While additional government regulations were imposed, especially on rates, the companies obtained interest guarantees for their debts. Initially set to expire in 1914, these guarantees were extended to 1956 following a controversial decision by the *Conseil d'État* in 1895. In the longer run, the Freycinet plan considerably weakened the financial position of private companies. In addition, the substantial amount of capital used to finance unprofitable extensions to the railroad network may have crowded out investment in other key sectors during the second industrialization (Le Bris, 2012).

[19] Numa (2024) provides experimental evidence consistent with the idea of fiscal illusion at the individual level.

[20] See Hochstrasser (1977). According to Beck (1986, p.48), drawing on figures from Toutain (1967), the French railway network expanded by 6,750 km between 1880 and 1885, reaching a total of 29,839 km. This represents an average annual construction of 1,350 km per year, a record far exceeding even the peak years of the Second Empire (1856–1860: 4,130 km). By September 1882, 114 construction sites were in operation (Caron, 1997, p.490).

[21] The *Union Générale* was a French bank founded in Lyon in 1875 by Catholic monarchists. Its bankruptcy triggered the Paris Stock Market Crash of 1882. The crash was particularly severe, and approximately a quarter of all stockbrokers faced bankruptcy (Bouvier, 1960).

2 Electoral calculus and the allocation of railroads

Our simple theory aims to structure our empirical results. Consistent with the historical period studied, politicians in our model provide non-individualized goods in exchange for future votes. Candidates often advertised their support for the Freycinet plan during the campaign for the upcoming 1881 election.[22] Hence, we do not analyze pork-barrel spending as the result of strategic electoral promises by competing parties on the campaign trail. Instead, incumbent politicians try to bring pork to their district before the election and get more votes as a result. Naturally, representatives in the parliamentary majority are more successful in getting resources.

As in Dixit and Londregan (1996), we do not tackle the problems related to the possible opportunistic behavior of voters.[23] Yet unlike Dixit and Londregan's (1996) model, since infrastructure pork-barrel is not individually targeted, and since there is no particular reason to believe that train infrastructure provided by the central government would be more expensive to produce in a monarchist town, we do not allow for the cost of providing benefits to core voters to be lower. In addition, we analyze a case with multiple electoral districts whose representatives compete to bring infrastructure investments to their constituents. The theory predicts that both swing municipalities within districts and swing districts will receive more train stations. Throughout the paper, we define swing districts and municipalities as those closer to a $50/50$ electoral split.

Environment. There are two parties, R and M, standing for Republicans and Monarchists respectively.[24] There are D electoral districts composed of $j \in (1, ..., G)$ identifiable and geographically distinct communities called municipalities with population N_j. Each individual

[22]The preface to the collection of electoral professions known as the Barodet (1882, p.138) notes that "numerous professions of faith recall the great public works undertaken in recent years [...] to give credit to the Republic for what has been accomplished." The Republican deputy Even, who was up for re-election in the *Côtes-du-Nord* in 1881, advertised to his voters: "So I associated myself with the vote for the resources intended to ensure the execution of the Freycinet Plan. I must admit I was all the more eager to do so as the Dinan constituency is quite heavily involved in the project." (Barodet, 1882, p.667). The Barodet (1882) gives 33 other similar examples.

[23]Note that since the probability a voter is pivotal is small, so is the incentive for such opportunistic behavior.

[24]More than two candidates could run for the same seat during the Third Republic. However, during the 1877 elections, more than 80% of electoral districts had only two candidates. Even in districts with more than two candidates, the two front-runners typically secured the overwhelming majority of votes.

i has the following utility if Republicans are elected in their district:

$$U_{Ri} = \frac{P_j^{1-\theta}}{1-\theta} - \gamma_i \tag{1}$$

Where P_j is the amount of pork-barrel spending allocated to municipality j, and γ_i is an ideological preference parameter. $\gamma_i < 0$ means that individual i has an ideological preference for Republicans while $\gamma_i > 0$ means that he is ideologically closer to monarchists. For simplicity, U_{Ri} is expressed relative to the utility gotten from monarchists winning, so $U_{Mi} = 0$. If $U_{Ri} > 0$, then i votes Republican while he votes for the monarchists if $U_{Ri} < 0$. Hence all individual i satisfying $\gamma_i < \frac{P_j^{1-\theta}}{1-\theta}$ will vote Republican:

Individuals live in ideologically diverse municipalities. $\Phi(\gamma_i - \bar{\gamma}_j)$ is the cumulative frequency distribution of γ_i for municipality j with mean zero. $\bar{\gamma}_j$ is the mean ideological preference parameter for municipality j.[25] This implies that the number of votes for the Republican candidate is equal to:

$$V_R = \sum_{j=1}^{G} N_j \Phi\left(\frac{P_j^{1-\theta}}{1-\theta} - \bar{\gamma}_j\right) \tag{2}$$

Where N_j is the population of municipality j. The marginal effect of pork on votes is:

$$\frac{\partial V_R}{\partial P_j} = N_j \frac{\phi_j}{P_j^{\theta}} \tag{3}$$

Where ϕ_j is the single peaked probability density function —i.e. the partial derivative of Φ— reaching a maximum at $\phi(0)$. If Φ is Gaussian, then some of its sections are convex. To get quasi-concavity of the politician's payoff function, we assume that the marginal utility of pork-barrel is sufficiently decreasing —i.e., θ is large enough— so that $\frac{\partial V_R}{\partial P_j}$ is decreasing in P_j.[26] The main insight out of the above equation is that politicians will give little resources to

[25]Hence, municipalities have different mean ideological preferences but identical distributions of ideological preferences around the mean.

[26]More precisely, $\frac{\partial^2 V_R}{\partial P_j^2} < 0$ implies that $\theta > \frac{\phi_j'}{\phi_j} P_j^{1-\theta}$.

politically extreme municipalities as only a small portion of voters can be convinced through distributive politics.

Elections are notoriously prone to uncertainty. Voters may fail to travel to the voting booth because of bad weather or unforeseen events. To reflect this uncertainty, the probability of winning the election for the "R" (Republican) candidate is an increasing function in the number of votes equal to $p(V_R) \in [0, 1]$. At the extremities of this function, that is, when either all/no voters prefer voting Republican, the probability of winning is one/zero. $p(V_R)$'s properties are consistent with a standard S-shaped probability function.[27] Naturally, the effect of an additional vote on the probability of winning is greatest in close elections. In other words, $p'(V_R)$ has a unique inflection point at $p(V_R) = 0.5$, which occurs when $V_R = N_T/2$ —i.e. when half of a district's voting population chooses to cast their ballot for the Republicans.

Equilibrium. The total amount of pork P_T a politician can bring to his district is equal to:

$$\sum_{j=1}^{G} P_j = \omega L \tag{4}$$

Where ω represents the member of parliament's effectiveness in getting pork. Politicians face increasing marginal costs from seeking pork, which takes the form of increasing marginal disutility of labor ($\Gamma^{'}(L) > 0$ and $\Gamma^{''}(L) > 0$). Politicians' utility depends on their probability of winning and the disutility of labor: $U = p(V_R) - \Gamma(L)$. Each politician has discretion when it comes to allocating resources in his district. Setting the Lagrangian and solving for the first-order conditions:

$$\mathcal{L} = p(V_R) - \Gamma(L) - \lambda\left[\sum_{j=1}^{G} P_j - \omega L\right] \tag{5}$$

$$\frac{\partial \mathcal{L}}{\partial L} = -\Gamma^{'}(L) + \lambda\omega = 0 \tag{6}$$

[27]For mathematical simplicity we assume $p(V_R)$ is continuous. We also have: $\lim_{V_R \to 0} p(V_R) = 0$, $\lim_{s_R \to N_T} p(V_R) = 1$, $\lim_{V_R \to 0} p'(V_R) = 0$, and $\lim_{V_R \to N_T} p'(V_R) = 1$. N_T here refers to the total number of voters in the district.

$$\frac{\partial \mathcal{L}}{\partial P_j} = p'(V_R) N_j \frac{\phi_j}{P_j^{\theta}} - \lambda \leq 0, \ \forall j \tag{7}$$

The inequality accounts for potential corner solutions. A swing district is defined as one for which $\phi(0)$, which is the maximum of the probability density function. At this point, exactly 50% of the population votes for the Republican candidate. We denote the swing district by subscript s. Then, using the first-order conditions:

$$\frac{P_s}{P_j} = \left(\frac{N_s}{N_j} \frac{\phi(0)}{\phi_j} \right)^{\frac{1}{\theta}} \tag{8}$$

Since $\phi(0)$ is a maximum, $\phi_j < \phi(0)$ for any $\phi_j \neq \phi(0)$, that is any time $\frac{P_j^{1-\theta}}{1-\theta} - \bar{\gamma}_j \neq 0$. Since we have diminishing marginal utility in pork ($\theta > 0$), $P_s > P_j$ if the two districts have the same population. Hence, a prediction of the theory is that swing municipalities should receive more pork (in our case, train stations). Bigger municipalities receive more train stations as they contain more persuadable voters, but this effect diminishes the greater the diminishing returns to train infrastructure. Only when $\theta = 1$ (log-utility) will population have a proportional effect on resources politicians distribute to improve their electoral prospects.

From the first order conditions, we can set marginal benefit equal to marginal cost:

$$\frac{\Gamma'(L)}{\omega} = p'(V_R) N_j \frac{\phi_j}{P_j^{\theta}} \tag{9}$$

This equation yields two additional predictions. First, since the marginal benefit (the right-hand side) is declining in the amount of pork, while the marginal cost is increasing in the pork supply ($\Gamma'' > 0$), pork-barrel spending must increase with an increase in ω. Simply put, the lower the cost for politicians to get pork, the more pork they will distribute. We should therefore expect members of the majority coalition, politicians with greater experience, and politicians with more influence to get more train stations allocated for electoral purposes. Comparative statics are derived in Appendix F.1.

A second implication of equation 9 is that, under reasonable assumptions, politicians will

have stronger incentives to secure resources for their district if it is a swing district. The main reason, looking at equation 9, is that $p^{'}(V_R)$ is greatest for swing districts —i.e. one for which $V_R = N_T/2$. Yet, the marginal efficiency of pork ($\frac{\partial V_R}{\partial P_j} = N_j \frac{\phi_j}{P_j^{\theta}}$) must be sufficiently high for the overall marginal benefit of pork to be higher in swing districts. This will not always be the case, especially for extremely polarized districts.[28] Yet, as shown in Appendix F.2, with log-utility, swing districts get more resources as long as the density of persuadable voters increases as a district becomes more swing. This assumption is empirically defensible as the density of municipalities is highest around the districts' percentage of Republican voters. Hence, at least in the case of late 19^{th} century France, we should expect more politically allocated resources to flow to competitive districts.

3 Data

3.1 Railroads data

To track the evolution of the French network from 1870 to 1914, we hand-collected the data collected in the *Atlas Historique des Chemins de Fer Français* by Claudel (2020, 2021, 2022).[29] While previous work by Martí-Henneberg (2023) for Europe and Thévenin et al. (2013), Mimeur (2016) and Thevenin et al. (2016), for France rely heavily on databases meticulously compiled by railway enthusiasts, Claudel's work is both the most recent and complete. In addition, his atlas synthesizes data from diverse sources into a standardized, coherent framework. It also provides detailed cartographic representations of the French rail network, as well as data about

[28] Imagine, for instance, a district composed of three equally sized municipalities. municipality 1 is so Republican that no monarchist vote is cast ($\Phi = \phi_1 = 0$). Only one-third of people vote Republican in the other two municipalities. In that case, Republicans win with $5/9$th of the votes. Now imagine that the average ideological preference for monarchists $\bar{\gamma}_j$ increases in equal amounts in all three municipalities to bring the district closer to being swing (50% of the votes). The Republican municipality 1 is still in a corner, and no pork barrel spending is given to that municipality as there are no voters to convince. On the other hand, the two monarchist municipalities become even more monarchist, so the density of persuadable voters ϕ_j for those municipalities declines.

[29] This atlas is organized into three volumes, each corresponding to current French administrative regions. The first volume covers Corsica, Nouvelle-Aquitaine, Occitanie, and Provence-Alpes-Côte d'Azur; the second addresses Bretagne, Centre-Val de Loire, Hauts-de-France, Ile-de-France, Normandie, and Pays de la Loire; the third includes Auvergne-Rhône-Alpes, Bourgogne-Franche-Comté, and Grand-Est.

key dates such as declarations of public utility, concessions, station opening and closures, and electrification.[30] Finally, the *Atlas* connects the construction of railway lines to parliamentary legislation, as documented on the *Chronologie législative des chemins de fer français* website.[31] Based on this material, we have reconstructed the development of France's main railway network during the 19^{th} century (Figure 3).[32]

Claudel provides a complete list of stations that exist or have existed on the railway network since its creation, as well as their opening dates. For disused stations whose geolocation is not currently known, we have sought to determine their precise location.[33] We then identified which municipality each train station was part of.[34] The result is a balanced panel at the municipality level that includes data on the number of train stations but also which (private or public) network it was part of. Finally, we collected previously unpublished archival data on two versions of the infrastructure program (April 1878 and July 1879; see Figure 2 and Appendix A) to evaluate Parliament's influence on its development.

The initial program from 1878 proposed classifying 130 new train lines (4,540 km) and 78 existing local lines (2,500 km) as part of the general interest network. Presented as a *Tableau de classement des lignes du réseau complémentaire des chemins de fer d'intérêt général*, this document outlined planned railroads and their intended purposes (civil, military, or mixed). Despite its

[30]The *Atlas* also includes whether a line was general interest, local interest, or an inter-city tramway. We focus on so-called general interest lines in this article as they were the only ones impacted by the Freycinet plan.

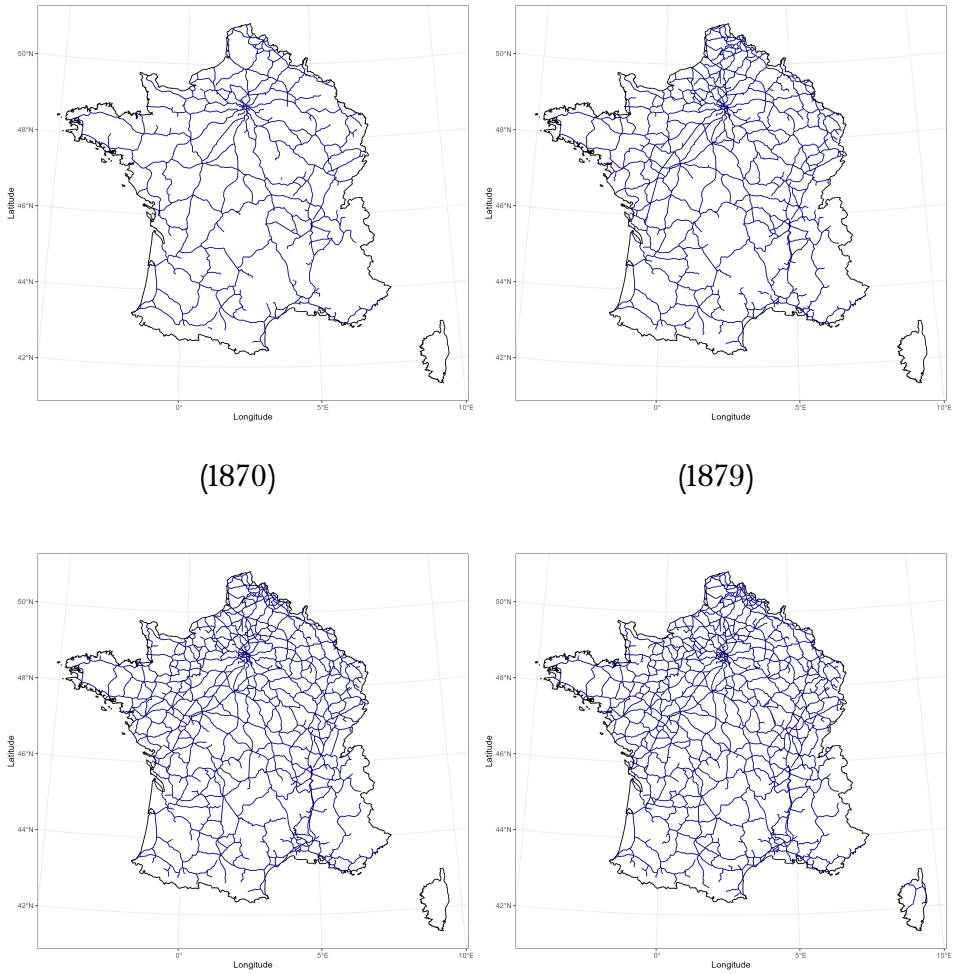
[31]This website compiles all railway-related legislation enacted by the French Parliament since 1826, offering extensive data on decrees, concessions, and local railway companies.

[32]Until the late 19th century, France's local rail network remained underdeveloped. The rail network was primarily operated by the *Grandes Compagnies*, which were considered to be of general interest. In contrast, the *Petites Compagnies*, managing local networks, expanded mainly towards the end of the 19th century (Caron, 2005a, p.93). Local railways established before this period and operated by smaller companies were largely integrated into the State network under the Freycinet Plan, and we have therefore included them in our analysis. Additionally, we consider the rail network in Alsace-Lorraine, despite its annexation by Germany between 1870 and 1918, even though it was not directly affected by the Plan.

[33]Jeansoulin (2021) followed a similar approach. We have limited our data collection to the rail network prior to 1938, the date after which rail transport was fully nationalized.

[34]During this period, some municipalities were created from existing ones, while others were merged into larger municipalities. To construct a balanced panel, we retained only those municipalities that existed continuously from 1872 (the first census year after 1870) to 1914. When a smaller municipality was merged into a larger one, we assigned its population and train stations to the latter. We excluded municipalities that were split across multiple large electoral districts.

Figure 3: The train network in 1870, 1879, 1885, and 1890.



(1870) (1879)

(1885) (1890)

significance, historians have not thoroughly analyzed or mapped this table.[35] On the other hand, the infrastructure plan voted on July 12, 1879, and formalized by Law 8168 on July 17, 1879, is better documented. Picard (1884, pp.630-697) offers a detailed analysis of this version. After a rapid examination and vote by the Chamber in March 1879, the Senate approved the construction of 181 lines (8,700 km) and referred 94 additional lines (4,152 km) to the Ministry of Public Works for further study and approval. Our ensuing database incorporates detailed

[35]Archive source: Ecole nationale des ponts et chaussées, 4°16851/C891. Available online at https://heritage.ecoledesponts.fr/ark:/12148/bpt6k1090538t.r=mal%C3%A9zieux?rk=42918;4. Caron (1997, p.480) mentions this document briefly. Most historians date the plan's first version to June 1878, which is inaccurate.

information on the railway lines and stations proposed at two critical stages of the Plan: the initial version conceived by Freycinet and the final version adopted by the parliament. By tracking the evolution of the Freycinet plan at different stages, we can shed light on how electoral politics influenced resource allocation.

3.2 Data on political representation and elections

Our data on the 1876 and 1877 elections, as well as political representation for each electoral district, comes mainly from official sources (Chambre des députés, 1880, 1881). These official records provide detailed information on electoral outcomes, including the names of victorious deputies, their opponents in the first and second rounds, and the number of votes each candidate received in every electoral constituency. We then collected data on political affiliation based on the classifications given in Robert and Cougny (1891) and Jean (1960). Both references are authoritative. These classifications include detailed categories: Far-Left, Republican Union, Republican Left, Center Left, Orleanist, Bonapartist, Legitimist, etc. As the Third Republic was bicameral, we reconstructed the list of senators at the time the Freycinet plan was voted on, as well as their political affiliations using the *Journal Officiel* of July 13, 1879.[36]

Since we wish to test whether, within electoral districts, swing municipalities get more pork, we also use the detailed municipal level electoral data from Piketty and Cagé (2023). Additionally, we reconstructed the parliamentary groups represented in the assembly on the Republican side using lists published by the radical Republican newspaper *Le Rappel* on July 19, 1879. These lists enabled us to distinguish far-left deputies from other Republican groups belonging to the governing majority. The far left, which was not part of the government, advocated in favor of nationalizing the entire rail network. Other Republican deputies held divergent views: members of Thiers' conservative Center Left and the liberal "Republican Left" supported operation under the control of the *Grandes Compagnies*. In contrast, Gambetta's *Union Républicaine* favored co-management of the new state-financed network.

[36]We assigned senators for life who had previously been elected in the Chamber of Deputies with their former electoral district's Department. We relied on the synthesis provided by Mayeur and Schweitz (1995).

To measure how influential deputies were within the assembly, we categorized whether they were incumbents during the 1877 election or newly elected. Since a long literature points to the importance of the committee system for distributive politics (Weingast and Marshall, 1988), we use data from Thibault (1975) who identifies which deputies participated in the Assembly's railway committees. The Classification Committee for Railways (1878–1881), chaired by Daniel Wilson, and the Jean David Committee are discussed further in Appendix A.4. Both committees were predominantly Republican. We focus on the Classification Committee, established in 1878 under pressure from the *Départements*, and aimed at defining new classification criteria for lines to be considered either local or general interest (Caron, 1997, p.481).[37]

3.3 Local characteristics

In addition to the data described above, we collected geographic data on a number of covariates that might influence railroad construction and electoral outcomes. We used Gay (2020) for the data on each municipality's population. Gay (2020) also provides information about whether a town is a canton capital, an administrative district capital,[38] as well as which electoral district a municipality was part of.[39] Finally, we extracted the average terrain ruggedness and wheat suitability for each municipality polygon and measured the distance to Paris as well as to the German border.[40] Summary statistics are reported in Appendix B.

[37]The Jean David Committee was not relevant to the extension of the Freycinet plan as it focused on methods for granting concessions and operating new lines, as well as on state control over the entire network, particularly regarding tariffs (Caron, 1997, p.484).

[38]In French: *arrondissement*.

[39]Some large municipalities were composed of several electoral districts. Luckily, only Republican members of parliament were elected in all those cases.

[40]We transformed every spatial object using the "NTF (Paris) / Lambert zone II" projection (EPSG:27572). We use Nunn and Puga's (2012) data for ruggedness. The wheat suitability raster is as follows: FAO, GAEZ v3.0. Crop suitability index (class) for intermediate input level rain-fed wheat. We construct Voronoi polygons for each municipality using the *Cassini project* available at http://cassini.ehess.fr/cassini/fr/html/6_index.htm (last accessed December 12, 2023).

4 Difference-in-difference results

We begin by investigating whether towns were more likely to receive train stations if they belonged to a district represented by a member of the Republican majority. Our identification strategy employs a difference-in-difference approach. We thus compare the changes in the number of train stations for municipalities part of a Republican district to the changes in all other districts' towns. Our specification is as follows:

$$Y_{idt} = \beta \times \text{Republican}_d \times \mathbb{1}[t > 1879] + \lambda \mathbf{X}_{idt} + \delta_d + \theta_t + \varepsilon_{idt} \tag{10}$$

Where Y_{idt} represents the number of train stations at time $t \in [1870, ..., 1914]$ in municipality i part of electoral district d. Our coefficient of interest is β. "Republican$_d$" is equal to one if the district elected a Republican part of the parliamentary majority following the 1877 election and is equal to zero otherwise. Far-left parliamentarians were not part of the Republican parliamentary majority as explained in the history section. As a result, "Republican$_d$" is equal to zero for their districts, although including them as part of the Republican majority does not change our results.[41] δ_d and θ_t represent electoral district and time fixed effects respectively. $\mathbf{X}_{idt}$ is a matrix of time-varying controls and flexible trends potentially correlated with changes in the number of train stations over time. Those include the natural logarithm of population and several flexible trends, such as whether a municipality is a canton or district capital interacted with year dummies, as well as department-year fixed effects. Standard errors are clustered at the electoral district level throughout the paper except if specified otherwise.

Table 1 reports our baseline difference-in-difference results. Our main coefficient is remarkably stable across specifications despite including controls and flexible trends. In all cases, our coefficient of interest is at least significant at the 5% level. Overall, being represented by a politician in the Republican majority increased the number of train stations a municipality received post-1879 by between 0.015 and 0.02. Since the number of train stations per municipality in

[41] See Appendix C.1.

Table 1: Towns with a representative in the Republican majority got more train stations.

	(1)	(2)	(3)	(4)	(5)
Republican majority (House) × Post 1879	0.017298**	0.015642**	0.016969***	0.018356***	0.020694***
	(0.0067963)	(0.0064223)	(0.0062137)	(0.0064917)	(0.0069740)
Republican majority (Senate) × Post 1879				-0.0048810	
				(0.0082414)	
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.19	0.31	0.35	0.35	0.36
*** p<0.01, ** p<0.05, * p<0.1					

1879 was equal to 0.147, this effect is quite large and is likely an underestimation since it took several years for the Freycinet plan to be fully implemented.

The first column includes no controls, while the second includes only the log of population as a covariate. Column 3 adds flexible trends. First, terrain ruggedness likely impacted the cost of building railroads and, thus, the Freycinet plan. To account for the time-varying effect of ruggedness, we interact it with year dummies. Railroad infrastructure was also key in developing agriculture as it enabled farmers to export their products cheaply.[42] Hence, we control for the time-varying effect of wheat suitability. Finally, one goal of the Freycinet plan was to link most administrative centers in France to the railroad network. Naturally, this means that both district (*arrondissement*) and canton capitals were more likely to receive a train station following the Freycinet plan. Thus, we add both canton capital and district capital flexible trends.

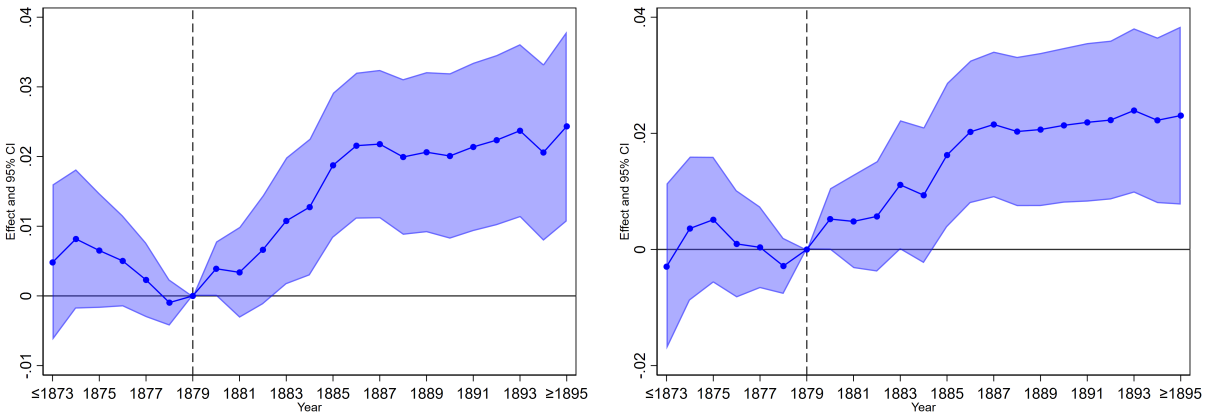
One potential problem is that political representation in the Senate might also have influenced the allocation of railroads. We find no evidence that the upper house had a positive and significant effect (Column 4). This confirms the primacy of the lower chamber.[43] Still, our

[42]In 1850, wheat prices could vary by as much as 70% across France. Improved transport infrastructure significantly reduced transportation costs. By 1863, shipping a ton of wheat on the Paris-Orléans railway network cost only 8 to 10 centimes per kilometer, dropping further to 3 to 8 centimes by 1877 (De Foville, 1880, p.239).

[43]Under the 1875 Constitutional laws, the Senate also had the power to initiate legislation, and the government

results may suffer from region-specific time-varying factors biasing our estimates. For instance, the Freycinet plan may have given more weight to connecting rural communities, which were usually conservative politically, to the existing network. To mitigate these issues, we include year-by-department fixed effects —i.e. the data is demeaned for $87 \times 45 = 3,915$ groups.[44] In other words, column 5 compares municipalities over time within the same department.

Figure 4: Event study results.



(Baseline controls) (Baseline controls + Department × Year F.E.)

Notes: This figure graphs the event study results from our difference-in-difference strategy. The left and right panels adopt the same controls as in columns 3 and 5 of Table 1 respectively. The dark blue dots represent the pre- and post-treatment effects of having a Republican representative on the number of train stations a town has. 1879 is used as the base year. The shaded blue area represents the 95% confidence interval. Standard errors are clustered at the electoral district level.

Identification assumptions. Our identification strategy relies on the premise that train infrastructure in municipalities represented in parliament by members of the majority and minority followed parallel trends over time. Figure 4 graphs the results from Table C.14, which presents the event-study version of the results in Table 1. None of the pre-treatment coefficients are statistically significant. Still, it seems that the number of train stations increased somewhat faster for municipalities represented by monarchists and far-left politicians during the pre-treatment period. This is likely because cities —Republican strongholds— were already

was responsible in front of both chambers. In practice, ministerial crises originated from the lower chamber. Budgetary laws had to first be voted by the lower chamber, which was also in charge of naming 75 senators for life until 1884. On the Senate during the Third Republic, see Smith (2005) and Berstein (2014).

[44]Since senatorial elections took place at the departmental level, we cannot include our senate representation variable as in column 4.

connected to the railroad network in 1879, whereas new lines were being constructed in the more politically conservative countryside. This slight difference in trends disappears once we include department-by-year fixed effects. To make sure our results are robust to deviations in the parallel trends assumption, we use the synthetic difference-in-difference method (Arkhangelsky et al., 2021) in Appendix D. The results from our synthetic difference-in-difference are in line with those from our difference-in-difference strategy. In both cases and consistent with the history of the Freycinet plan, the electoral effect continued to grow until 1886/87.[45]

Table 2: Politics did not shape the 1878 technocratic plan but shaped the July 1879 law.

Dep. var.:	*1878 plan*		*1879 law*		*Added to the 1878 plan*	
	(1)	(2)	(3)	(4)	(5)	(6)
Republican majority	-0.00094259	-0.00066912	0.012627*	0.012580**	0.0097549**	0.0097258**
	(0.0068070)	(0.0066735)	(0.0065831)	(0.0063954)	(0.0045736)	(0.0045248)
Train stations in 1878	✓	✓	✓	✓	✓	✓
Log(Population)	✓	✓	✓	✓	✓	✓
Ruggedness		✓		✓		✓
Wheat suitability		✓		✓		✓
Canton capital F.E.		✓		✓		✓
District capital F.E.		✓		✓		✓
Observations	35941	35940	35941	35940	35941	35940
R-squared	0.04	0.06	0.03	0.06	0.02	0.03
*** p<0.01, ** p<0.05, * p<0.1						

Note: This table gives the results of OLS regressions. The dependent variable for columns 1-2 is the number of train stations in the 1878 plan at the commune level. The dependent variable for columns 3-4 is the number of train stations planned under the July 1879 law at the commune level. Finally, the dependent variable in columns 5-6 is the number of train stations added to the 1878 plan in the 1879 law. Standard errors are clustered at the electoral district level.

To further strengthen our hypothesis that Republican politicians distributed resources to their districts, we collected previously unused archival data on the 1878 plan drawn by a technocratic commission from the *Conseil général des ponts et chaussées*. The goal of this plan was to lay the groundwork before parliamentary deliberations. Of course, politicians may have little incentive to abide by the commission's recommendations. Freycinet, then Minister of Public Works, complained on January 31, 1878, to the President of the Republic about the overly

[45]The decline in state funding for railroad expansion after 1885 presaged the end of the Freycinet Plan as originally conceived (Caron, 2005a, p.88). For lines initiated under the Freycinet Plan before the 1883 agreements, the duration of construction depended on the level of funding allocated by the state (Guillaumot, 1899, p.56). Starting in 1883, the agreements with the major railway companies stipulated an average construction period of four to five years (Picard, 1887, p.644).

technocratic character of the commission.[46]

If we are right to attribute the allocation of railroad infrastructure (partly) to political forces, we should see no impact of electoral variables on the 1878 technocratic plan, while we should see a clear correlation between electoral variables and the plan adopted by the parliament. Table 2 indeed finds no correlation between towns being part of a Republican district and the number of train stations allocated to them under the 1878 technocratic plan (columns 1 and 2). On the other hand, train stations planned under the July 1879 law passed by the parliament are positively correlated to whether a municipality is represented by a Republican member of parliament (columns 3 and 4).[47] Since the July 1879 law took the 1878 plan as a baseline to which many railroads were added, we look at those added train stations in columns 5 and 6. Predictably, the effect is stronger for the train stations that were added through political negotiations in the National Assembly.[48]

Other robustness checks. Our results are robust to aggregating the data at either the cantonal or electoral district levels (Appendix C.4 and C.5). To ensure our results are not driven by outliers, Appendix C.2 shows the same regressions as in Table 1 while changing the dependent variable to a dummy variable equal to one if a municipality has any train stations and zero otherwise. Finally, we disaggregate the results for the three parliamentary groups composing the Republican majority as the effect could be heterogeneous depending on each group's political strength (Appendix C.6). For instance, the Republican Union (*Union Républicaine*) was a more cohesive alliance and a precursor to genuine political parties (Thibault, 1975; Mayeur, 1973;

[46]"[I]t is not enough for me to be enlightened on the technical or administrative questions that the railway industry raises; I also need to be kept informed of the wishes of public opinion, to know the demands of our main population centers—in a word, to understand in which direction the administration must direct its efforts to satisfy, as much as it depends on it, the just demands of the country. However, the Central Railway Commission was not constituted in a way to achieve this latter goal." Cited in: *Journal des Économistes*, 1878, n°2, p.269.

[47]Those results are still stronger when aggregated at the canton or electoral district level (Appendix B.2).

[48]Further infrastructure was added to the Freycinet Plan by the National Assembly after July 1879. Freycinet (1884, p.24) estimated that until 1883, an additional 3,416 kilometers of railway lines were added to the 1879 Plan at a cost of 313 million francs. One notable example is the Dole-Ville to Poligny line, also known as the Jules Grévy presidential line. Built between 1882 and 1886 at the initiative of President Jules Grévy (in office from 1879 to 1887), it was used weekly for his travels to his home village and holiday retreat in Mont-sous-Vaudrey. The line opened to the public on August 30, 1884. Four days earlier, it had been officially inaugurated during a Republican banquet in Mont-sous-Vaudrey, attended by the President himself (Mairie de Parcey, 2021, p.4).

Hanson, 2010). As such, members of the Republican Union may have been able to negotiate better and get more infrastructure for their constituents. We find that the effect was similar for the Republican Union and the "Republican Left." On the other hand, the effect was weaker for the smallest group of the coalition, the Center-Left.[49] Overall, the evidence strongly suggests Republicans allocated train infrastructure preferably to their districts.

4.1 Government ownership increased electoralism

A straightforward implication of our theory is that electoralism will intensify as its cost to politicians decline. While we have no direct measure of this cost, there are good reasons to believe government ownership of railroads increased it. Private railroad companies were large, well-organized, and politically connected corporations. Naturally, they opposed political plans to allocate railroads which would reduce their profitability. On the other hand, the cost of politically motivated infrastructure projects under government ownership is dispersed among all of the nation's taxpayers. Collective action pushing back against such projects is thus harder to organize in that context.

Worries that government ownership of railroads would lead to pork-barrel spending predates the Freycinet Plan. During the Second Republic in 1848, plans to nationalize the rail network faced resistance over fears of political manipulation. Grippon-Lamotte (1904, p.103) recounts Montalembert's concerns that state control would create an army of civil servants used for electoral gain. After the beginning of the Freycinet plan came the question of whether railroads should be nationalized. Moderate Republicans feared this would further intensify the electoral allocation of train infrastructure. For instance, Émile Loubet argued during the July 1882 parliamentary debates that the Italian experience with government ownership showed how "work projects, traffic improvements, and expenditure reductions have been requested for private individuals at the expense of the state. In doing so, public interests—those most directly

[49] This is consistent with historical accounts of the period pointing to the limited political influence of this group —an influence further reduced with the fall of the Waddington government in December 1879 (Mayeur, 1973, p.84).

affecting taxpayers—are neglected."[50] Similarly, in 1885, the center-left politician and banker Henri Germain (1885, p.314) intensely debated in front of the parliament against state control:

> **Mr. Henri Germain**: [C]onsidering the matter from the perspective of the general interest of France, of the country, which should concern us above all, I say that the State network is dangerous precisely because of the qualities you attribute to it. Because it is driven not to defend its rates but to lower them below cost. Because it is driven by the will of the population to serve them beyond their strict necessity and needs. (*Interruptions and noise on the left.*)
>
> **On the left**: You only give us assertions that are not based on any data.
>
> **Mr. Henri Germain**: You will see where this system leads you!

Henri Germain indeed did not provide strong evidence against his opponents on the left and probably could not have. On the other hand, we provide evidence consistent with Germain's assertion by employing a triple-difference strategy in Table 3 to evaluate whether distributive politics was more pronounced in regions dominated by the government-owned network. Henri Germain was right. While Republican districts received more train stations in regions where only private companies operated, the effect of electoral politics was more than three times larger in regions where railroads had been nationalized. The last line in Table 3 reports the significance of an F-test, where the null is the effect being equal on the private and government-owned networks. In all but one case, p-values are significant at the 10% threshold and are fairly close to the 5% threshold in most cases.

This is not to say that the private network was completely devoid of electoral politics. It was, after all, heavily subsidized and regulated. Table 3 still finds a significant electoral effect on the private network. Yet as François Prosper Jacqmin (1878, p.444), a civil engineer working for a railroad company, explained in the *Revue des Deux Mondes*, electoral allocation is less likely without government ownership as "Railway companies resist all such demands because they have a substantial interest in safeguarding both the returns and the amortization of the massive capital invested in constructing their lines."[51]

[50] *Journal Officiel de la République Française*, July 17, 1883, p.1724.

[51] Many members of parliament were also railway companies shareholders, which must have further increased the cost of engaging in distributive politics (Thibault, 1975, Appendix III).

Table 3: Electoral politics was worst for the State network.

	(1)	(2)	(3)	(4)	(5)
Republican majority (House) × No state network	0.014281**	0.013287*	0.014271**	0.015614**	0.017193**
	(0.0072332)	(0.0068690)	(0.0066444)	(0.0067696)	(0.0075408)
Republican majority (House) × State network	0.049921***	0.040403**	0.044064***	0.046946***	0.050297***
	(0.016798)	(0.016141)	(0.015796)	(0.016358)	(0.016079)
State network	0.0071833	0.0014324	-0.0044768	-0.0062655	-0.0091227
	(0.012973)	(0.011848)	(0.012127)	(0.012418)	(0.020233)
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Republican majority (Senate) × Post 1879				✓	
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.19	0.31	0.35	0.35	0.36
Prob > F $\beta_{state} = \beta_{private}$	0.052	0.123	0.083	0.071	0.064
*** p<0.01, ** p<0.05, * p<0.1					

Defining what regions were part of the government-run network is not completely obvious since it expanded after 1878 —when the French government first started directly operating railways. While we document the presence of government-owned train stations in a district in 1900 to construct the "State network" variable in Table 3, Appendix C.9 uses all the different dates during which the government network expanded to assess its geographical dominance.[52] The results using those alternative measures of the State network are virtually identical as in Table 3. Finally, the event-study graphs in Appendix C.8 show no evidence of differential trends, thus bolstering further those findings.

4.2 Incumbent advantage

Politicians' characteristics may also alter their ability to distribute pork-barrel to their constituents. For instance, members of parliament who have previously served may have developed

[52]In all cases, we do not include as part of the government network train stations that were government owned only transitorily —e.g. because a railroad corporation went bankrupt. These instances were relatively rare. Overall, our mapping of the State network coincides with maps of the government network drawn contemporaneously (see Figure B.8).

relationships and institutional knowledge that help them secure more infrastructure for their districts. Similarly, parliamentarians participating in committees in charge of allocating resources may be more successful in redistributing them to their districts (Roberts, 1990; Knight, 2005).

Table 4 suggests that distributive politics is somewhat larger for members of the Chamber of Deputies who had previously served in the legislature. On the other hand, newly elected parliamentarians did not seem as successful in having railroads built in their districts. The difference in the effect between both groups, however, shrinks considerably once Department-Year fixed effects are included in column 5. In addition, the F-test for the equality between coefficients is insignificant in all columns. Overall, the idea that senior parliamentarians have an easier time distributing pork garners only weak statistical evidence, although the magnitude of our results is consistent with that hypothesis.

Table 4: Heterogenous effects between incumbent and new Republican politicians.

	(1)	(2)	(3)	(4)	(5)
Republican majority (House) × New	0.0056889	0.0040521	0.0040636	0.0052940	0.018277
	(0.014489)	(0.013602)	(0.013634)	(0.013718)	(0.012447)
Republican majority (House) × Incumbent	0.017188**	0.015971**	0.017724**	0.019127***	0.019300**
	(0.0078731)	(0.0074028)	(0.0071584)	(0.0073964)	(0.0075687)
Incumbent	0.0057341	0.0039428	0.0027952	0.0025516	0.0090897
	(0.010564)	(0.0099437)	(0.0098574)	(0.0098407)	(0.0082827)
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Republican majority (Senate) × Post 1879				✓	
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.19	0.31	0.35	0.35	0.36
Prob > F $(\beta_{inc.} + \beta_{Rep.\times inc.}) = \beta_{Rep.\times new}$	0.174	0.182	0.163	0.164	0.326
*** p<0.01, ** p<0.05, * p<0.1					

Note: This table reports triple difference results looking at the effect of political incumbency. The null hypothesis for the F-test at the bottom of the table is whether the Freycinet plan had the same effect in districts with Republican incumbents relative to districts with new Republican politicians. Standard errors are clustered at the electoral district level.

While the committee system in the United States Congress plays a major role in establishing policy, parliamentary committees were much less formal during the French Third Republic. We

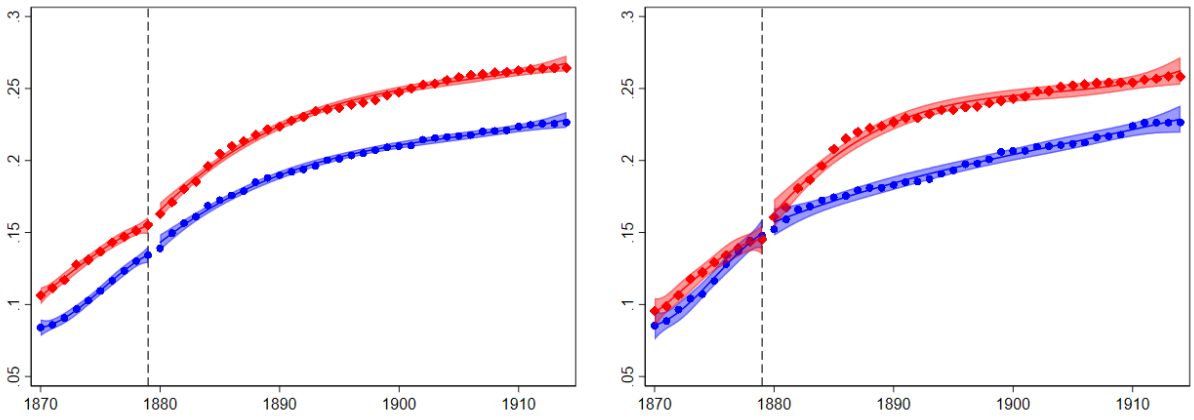
nonetheless collected data on the 21 members of the "Classification Committee," which partially shaped the Freycinet plan (Caron, 1997). Since less than 5% of all members of parliament sat on this committee, it is difficult to identify the effect it had on distributive politics. In only one of the five columns in Table C.18, does serving on the committee have a statistically significant effect. Nonetheless, in all cases, serving on the Classification Committee had a positive effect on the number of train stations and this effect was much larger than the effect of belonging to the Republican governing majority. Hence, despite the lack of strong statistical evidence, our results, both regarding parliamentary committee seats and seniority, are consistent with the intuition that political influence lowered the cost faced by politicians to distribute pork to their constituents.

5 Did Republicans target swing voters and swing districts?

As emphasized in our theory section, there are good reasons why Republicans mindful of their reelection chances would be further incentivized to distribute resources to their constituents when their electoral district is competitive. Within their district, they also would benefit from targeting swing municipalities to convince a maximum number of constituents to vote for them.

Even a cursory look at the data suggests the effect of politics on the allocation of infrastructure was much bigger among swing districts. As shown in the right panel of Figure 5, before the Freycinet plan, there was no difference in the number of train stations per municipality between swing electoral districts part of the Republican majority and other swing districts. After 1879, on the other hand, Republican districts benefited from substantially more railroad infrastructure. Comparing the left panel to the right panel, it is clear that the effect of the Freycinet plan was substantially larger for districts that could have been gained by the opposing party with a swing smaller than 5% of the votes.

Figure 5: Train stations before and after the Freycinet Plan.



(Full sample) (Winning margin within 5 percentage points)

Notes: Each dot shows the average number of train stations per town before and after the implementation of the Freycinet Plan in 1879. The data are grouped by electoral districts represented by a member of parliament belonging to the Republican majority (in red) and other districts (in blue). The red and blue curves on either side of the dashed line (marking 1879) are fitted using four distinct local polynomial regressions. The shaded regions depict 95% confidence intervals. The left panel includes all municipalities, while the right panel focuses on districts where the winning candidate's margin of victory was less than 5 percentage points.

5.1 Republicans focused on marginal districts

Instead of choosing arbitrary thresholds around the 50% of votes victory discontinuity to define "marginal" electoral districts, we can look at the effect of distributive politics on swing districts by estimating the difference in the discontinuity before and after the introduction of the Freycinet plan.[53] In this case, the discontinuity is at 50% since adding one vote to that threshold means electoral victory while one less vote implies defeat.[54] The benefit of this empirical strategy is that it accounts for unobservables varying smoothly across electoral districts with respect to electoral results. One additional benefit of our regression-in-discontinuity approach is that it accounts for time-invariant unobservables as well as trends common to all districts.

We start by estimating the following conventional regression discontinuity design for each

[53]In Appendix C.11, we implement a triple-difference strategy, defining swing districts as those with a victory margin of less than 5 percentage points. Consistent with our difference-in-discontinuity results, we find that swing districts benefited substantially more from the Freycinet Plan.

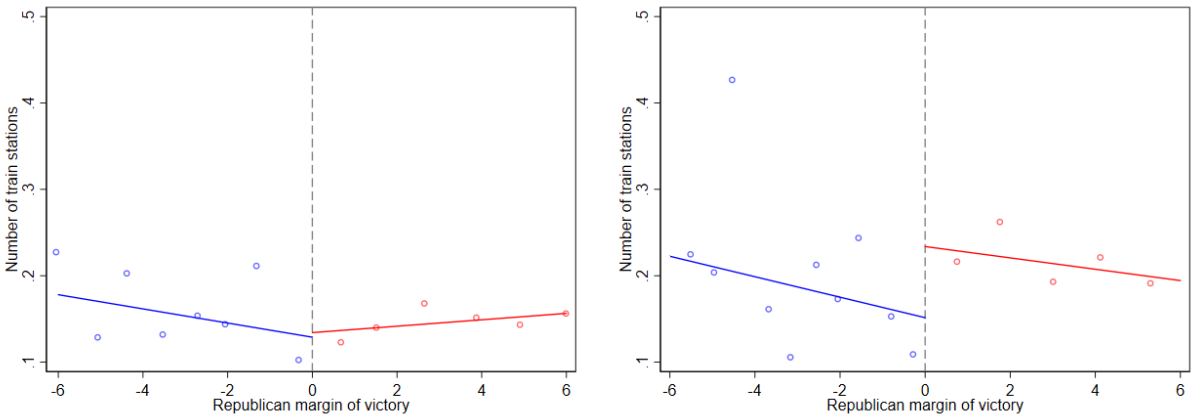
[54]Since the 1877 election relied on a two-round majority runoff system, we only use data from electoral districts in which there were two candidates, including one part from the Republican majority and one in the opposition. The vast majority of districts (441 out of 535) had two such candidates. Our results are robust to including districts with more than two candidates (Appendix E.8).

year in our sample:

$$Y_{id} = \alpha + \beta \times \text{Republican}_d + f(D_{id}) + f(D_{id}) \times \text{Republican}_d + \lambda \mathbf{X}_{id} + \varepsilon_{id}$$
$$\forall D_{id} \in (c - b, c + b) \tag{11}$$

Where $\text{Republican}_d = \mathbb{1}[D_{id} > 0]$. D_{id} is our running variable and measures the distance from the Republican electoral win cutoff c using the 1877 election results, while f is an unknown polynomial function. As before, Y_{id} is the number of train stations in municipality i, which is part of electoral district d. We use triangular kernel functions, which give more weight to observations close to the cutoff, and either linear or quadratic polynomial fits. We do not use higher order polynomials to avoid overfitting bias (Gelman and Imbens, 2019). As suggested in (Calonico et al., 2014), we use mean squared error (MSE) optimal bandwidths b. Finally, $\mathbf{X}_{id}$ represents the covariates and flexible trends included in the regressions.

Figure 6: Binned scatterplots for 1879 and 1887.



(1879) (1887)

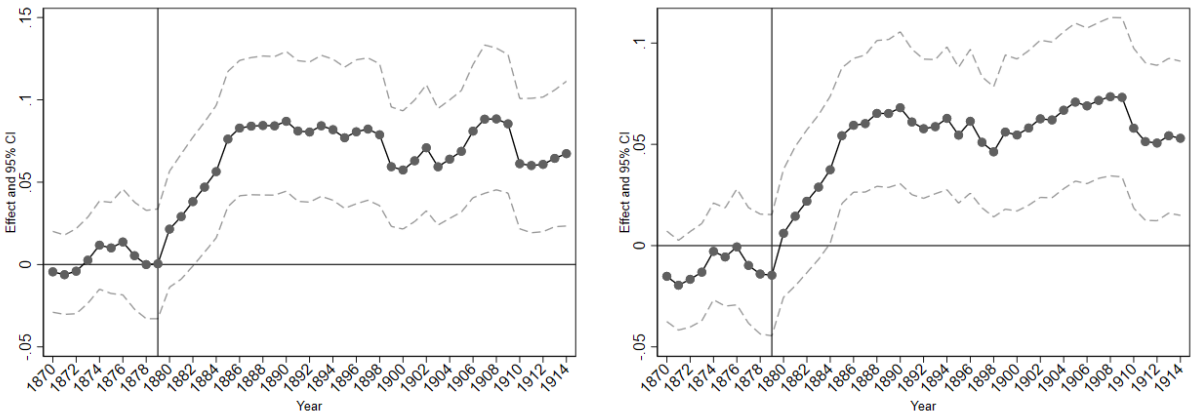
Notes: This figure displays RD plots for two separate years: 1879 and 1887. Circles show the average number of train stations by municipality within bins. Bins are based on the IMSE-optimal evenly-spaced selector. In each case we use the MSE optimal bandwidths.

Figure 6 visualize the intuition behind our approach. The left panel shows that at the time the Freycinet plan was enacted, there was no discontinuity in the number of train stations. In other words, Republican and Monarchist marginal seats following the 1877 election had about the same number of train stations. However, by 1887, eight years after the beginning of the

Freycinet plan, a clear discontinuity formed, with municipalities part of Republican swing districts getting significantly more train stations. Hence we can identify the effect of the Freycinet plan on swing districts by differencing the discontinuity before and after its implementation.

Figure 7 gives the results for each year between 1870 and 1914 by estimating equation 11. In both the left and right panels, there is no evidence of differential trends in the number of train stations at the discontinuity before 1879. As in our difference-in-difference estimates (Figure 4), the post-treatment effect increases sharply until 1886/87. The effect for swing districts estimated in Figure 7, however, is much greater than the effect identified using our difference-in-difference approach. While being part of a Republican district increases the number of train stations by 0.02 on average in Table 1, column 5, the effect identified by our regression discontinuity design is equal to 0.084 in 1887 (Figure 7, left panel), which is more than four times higher.

Figure 7: Regression discontinuity estimates for each year between 1870 and 1914.



(Without controls) (With controls)

Notes: Each point represents a separate regression discontinuity regression for a specific year using the 50% margin of victory in the 1877 election as the cutoff. The left panel includes no controls. The right panel includes the log of population, whether a municipality is a canton capital, and whether it is a district capital. We use the mean squared error optimal bandwidths and a first-order polynomial with a triangular kernel in all regressions. 95% Confidence intervals are reported by the dashed lines using robust standard errors.

To compare the pre and post-treatment periods more rigorously, we estimate the following specification which we adapt from Avdic and Karimi (2018) and Gay et al. (2023):

$$Y_{idt} = \beta \times \text{Republican}_d \times \mathbb{1}[t > 1879] + \gamma \times \text{Republican}_d + \lambda \mathbf{X}_{id} + \theta_t + \sum_{s=0}^{1} \mathbb{1}[\text{Republican}_d = s] \times \Big[f(D_{id}) \times \mathbb{1}[t > 1879] + f(D_{id}) \times \mathbb{1}[t \leq 1879] \Big] + \varepsilon_{idt} \tag{12}$$

Our coefficients of interest are γ and β. γ measures the effect of the 50% electoral victory threshold before the introduction of the Freycinet plan, while β measures the increase in that same discontinuity after 1879. In essence, equation 12 is a fully interacted version of equation 11 and includes four polynomials: two on each side of the electoral victory threshold both before and after 1879.[55] As in equation 11, $\mathbf{X}_{id}$ represents included covariates and flexible trends, to which we add year fixed-effects (θ_t).

Identification assumptions. The validity of our difference-in-discontinuity approach hinges on two main identification assumptions (Grembi et al., 2016; Avdic and Karimi, 2018). First, it requires observations just below and just above the electoral victory threshold to have parallel trends in the absence of the Freycinet plan. While the assumption of parallel trends is not directly testable, Figure 7 clearly shows that no pre-trend before 1879 is observed.

The second identifying assumption is that all relevant factors besides treatment must vary smoothly around the cutoff.[56] We evaluate this hypothesis in Appendix E.2 by running balancing tests on potentially important covariates. Table E.24 reports the results from estimating equation 11 while including one of eight different covariates as the dependent variable: the log of population, ruggedness, wheat suitability, the log distance to the German border, the presence of a commercial court (*tribunal de commerce*), as well as dummies for whether a municipality is a canton, district, or military district capital. In all cases, the effect (β) is small both when using linear and quadratic polynomials. In only one out of eight cases is the RD estimate statistically

[55] Here, $\mathbb{1}[\text{Republican}_d = s]$ denotes an indicator variable that equals 1 when the district's Republican status matches s and 0 otherwise. In other words, $\mathbb{1}[\text{Republican}_d = 0]$ equals 1 if district d is not Republican (i.e., $\text{Republican}_d = 0$) and $\mathbb{1}[\text{Republican}_d = 1]$ equals 1 if district d is Republican (i.e., $\text{Republican}_d = 1$). The summation over $s = 0$ and $s = 1$, therefore, captures both mutually exclusive cases.

[56] For the United States House of Representatives, Caughey and Sekhon (2011) find that bare winners and bare losers fundamentally differ in their pre-treatment characteristics. In contrast, Eggers et al. (2015) 40,000 elections in the US as well as in nine other countries and find that the smoothness assumption is likely met in many settings.

significant. Figure E.17 provides visual support for the smoothness assumption.[57]

Table 5: Electoral difference-in-discontinuity estimates.

	(1)	(2)	(3)	(4)
Republican majority (House)	0.00048492	0.011226	-0.0071350	-0.0064332
	(0.015138)	(0.017253)	(0.013911)	(0.018188)
Republican majority (House) × Post 1879	0.076445***	0.080572***	0.060259***	0.077052***
	(0.012565)	(0.013881)	(0.011648)	(0.013829)
Log(Population)			✓	✓
Year F.E. × Ruggedness			✓	✓
Year F.E. × Wheat suitability			✓	✓
Year × Canton capital F.E.			✓	✓
Year × District capital F.E.			✓	✓
Year F.E.	✓	✓	✓	✓
MSE-optimal bandwidth	0.06	0.11	0.07	0.09
Kernel	Triangular	Triangular	Triangular	Triangular
Order polynomial	linear	quadratic	linear	quadratic
Observations (in thousands)	514.53	776.79	612.59	698.63
R-squared	0.01	0.01	0.20	0.20
Mean dep. variable	.2	.19	.19	.19
*** p<0.01, ** p<0.05, * p<0.1				

Notes: This table reports the estimates from equation 12. The sample consists of communes falling within the MSE-optimal bandwidth on each side of the 50% electoral cutoff. We only use data from electoral districts with two candidates running in the 1876 election. The dependent variable is the number of train stations. We use local-polynomial of first and second order and triangular kernel functions for local-polynomial estimation. Standard errors are clustered at the municipality level.

Results. Table 5 reports our difference-in-discontinuity estimates which are consistent with the those in Figure 7. The first row of coefficients suggests that there was no discontinuity in the number of train stations before 1879, as they are insignificant and close to zero. On the other hand, the Freycinet plan led to a 0.06 to 0.08 increase in the number of train stations per town. Since the mean number of train stations per municipality during the period studied was 20%, this effect is very large in addition to being significant at all conventional significance levels. In addition, the identified effect is quite stable whether we use linear (columns 1 and 3) or quadratic (columns 2 and 4) polynomials. The introduction of controls, as in previous tables, also does not change the magnitude of our results much. Overall, as the effect is three to five times greater than for our difference-in-difference results (Table 1), the results in Table 5 provide

[57] Additionally, we run the McCrary test of no manipulation of the running variable which could not be rejected at any conventional levels of statistical significance (Appendix E.1).

solid evidence in favor of our hypothesis that swing districts are most likely to be targeted by distributive politics.

Placebo using the 1876 election results. We use the electoral score during the 1876 election as a placebo. While Republicans had decisively won the 1876 election, their victory following the May 16, 1877 crisis was much more meager. The number of (metropolitan) Republican seats fell from 368 in 1876 to 324 in 1877.[58] Since the Freycinet plan was voted upon by the parliament as elected during the 1877 election, we should expect the results using the margin of victory in the 1876 election instead to yield, at the very least, a smaller effect, if any. Both Figure E.18 and Table E.26 in Appendix E.4 confirm the absence of any identified effect when using the 50% electoral discontinuity during the 1876 election as opposed to the 1877 election. Overall, our placebo further bolsters confidence that the identified effect in Table 5 is not due to other important factors shaping both the political landscape and transportation infrastructure. Instead, our results are most likely due to the political composition of the French parliament at the time the Freycinet plan was legislated.

Other robustness checks. As with our difference-in-difference approach, our difference-in-discontinuity results are robust to aggregating the data at the canton (Appendix E.5) or electoral district (Appendix E.6) levels. As in Section 4, we rerun our results while changing the dependent variable to a dummy measuring the presence of a train station (Appendix E.7). Our results are also robust when adopting various bandwidths between 5 to 40 percentage points instead of our MSE optimal bandwidths (Appendix E.3). Finally, Table E.30 in Appendix E.8 reports the results: (a) using a uniform as opposed to triangular weighting kernel, (b) Including fixed effects for the thirteen modern regions in metropolitan France, (c) including department fixed effects, (d) including electoral districts with more than two candidates running, (e) including far-left candidates as part of the Republican majority. In all cases, our results remain large and statistically significant.

[58]The average Republican vote share across metropolitan electoral districts fell slightly between 1876 and 1877 from 53.7 to 52.7%. Of course, we exclude members of parliament elected in the colonies from our analysis.

5.2 Swing constituencies within electoral districts received more pork

A final implication of the theory set forward in Section 2 is that within each electoral district, swing municipalities will receive more pork than municipalities that are solidly acquired to the Republican or Monarchist cause. Since Piketty and Cagé (2023) collected data on elections at the municipal level, we can test this hypothesis by estimating the following regression:

$$Y_{idt} = \beta \times V_i^R \times \mathbb{1}[t > 1879] + \gamma \times \left(V_i^R \times \mathbb{1}[t > 1879]\right)^2 + \lambda \mathbf{X}_{idt} + (\delta_d \times \theta_t) + \psi_i + \theta_t + \varepsilon_{idt} \quad (13)$$

Equation 13 looks at the effect of a municipality's republicanness on the number of train stations received following the Freycinet plan (Y_{idt}). V_i^R is the percentage of Republican votes in municipality i in 1876. Since our theory predicts that swing municipalities should get more pork, we expect β to be positive and γ to be negative. As this relationship should hold within each electoral district, we include electoral district times year fixed effects ($\delta_d \times \theta_t$) to focus exclusively on within electoral district variation. ψ_i and θ_t stand for municipality and year fixed-effects respectively. As before, $\mathbf{X}_{idt}$ represents controls and flexible-trends.

Ideally, we would want to use the town-level results from the 1877 election, which is the closest to the Freycinet plan. Unfortunately, Piketty and Cagé (2023) did not collect the data for that one election. As a result, we use the best alternative, which is to use the data for the 1876 election. Table C.20 reports the results from estimating equation 13 and finds evidence of a concave relationship between republicanness and the number of train stations a municipality gets. Since the interpretation of coefficients and their magnitude in Table C.20 is unnecessarily tedious, we relegate these results to the appendix and instead divide the data into five categories of political support for Republicans in Table 6. More specifically, municipalities are divided into those with Republicans gaining less than 20% of the votes, those where Republicans got between 20 and 40% of the votes, etc. The omitted category in all of Table 6's regressions is the "central" one —i.e., the municipalities where Republicans received between 40 and 60% of the votes.

Our results suggest that swing municipalities in districts that elected a member of the Republican majority (columns 1, 3, and 5), as well as districts that didn't (columns 2, 4, and 6),

Table 6: Testing core versus swing voter theories within electoral districts.

	Republican	*Minority*	*Republican*	*Minority*	*Republican*	*Minority*
	(1)	(2)	(3)	(4)	(5)	(6)
Republican vote below 20% × Post 1879	-0.036493***	-0.037671***	-0.031702***	-0.0090420	-0.030439***	-0.0089914
	(0.0087456)	(0.0091427)	(0.0084514)	(0.0084418)	(0.0087492)	(0.0088621)
Republican vote between 20% and 40% × Post 1879	-0.029440***	-0.024430***	-0.023238***	-0.0055470	-0.021046**	-0.0025145
	(0.0085222)	(0.0092013)	(0.0083464)	(0.0086058)	(0.0084400)	(0.0082207)
Republican vote between 60% and 80% × Post 1879	0.014340	0.0072678	0.00070394	-0.0051751	-0.0021340	0.00094745
	(0.0087964)	(0.011755)	(0.0083769)	(0.011106)	(0.0084265)	(0.010125)
Republican vote above 80% × Post 1879	-0.028529***	-0.054589***	-0.027678***	-0.037393***	-0.030439***	-0.038447***
	(0.0082920)	(0.010061)	(0.0079699)	(0.0094782)	(0.0082372)	(0.0097147)
Log(Population)	✓	✓	✓	✓	✓	✓
Year × Electoral District F.E.	✓	✓	✓	✓		
Year × Canton F.E.					✓	✓
Year F.E. × Ruggedness			✓	✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓	✓
Year × District capital F.E.			✓	✓	✓	✓
Commune F.E.	✓	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓	✓
Observations (in thousands)	902	714	902	714	899	712
Communes	20042	15872	20041	15872	19971	15822
R-squared	0.89	0.88	0.90	0.89	0.90	0.90
*** p<0.01, ** p<0.05, * p<0.1						

Note: This table gives results on the allocation of train stations *within* electoral districts. We divided communes in five categories based on the percentage of Republican votes in the 1876 election (far-left votes excluded). The four reported coefficients represent the effect of the Freycinet plan for each of the four categories relative to communes –those which Republicans received between 40 and 60% of the votes. Standard errors are clustered at the commune level.

benefited from more train stations following the Freycinet plan. For instance, in Republican districts, a municipality that voted more than 80% Republican got around 0.027 fewer train stations than swing municipalities (column 3). Similarly, municipalities in Republican districts with less than 20% Republican votes were also less likely to benefit from the Freycinet plan and got around 0.032 fewer train stations as a result —relative to those voting 40 and 60% Republican. These results are large when compared to the results in Table 1. Predictably, they are stronger in Republican districts, which received more pork-barrel infrastructure spending than districts whose representatives were not part of the governmental majority.[59]

In addition to the baseline regressions in columns 1 and 2, columns 3 and 4 add a battery of controls. Finally, regressions in columns 5 and 6 go further by including Canton × Year fixed effects. Each electoral district was composed of at least one canton (Franck and Gay, 2024). Columns 5 and 6 thus explore whether the relationship holds when looking at within canton

[59]Furthermore, while members of the parliamentary minority may have wished to further their reelection changes, the Republican majority may inversely have tried to thwart their attempts to do so.

variation. Since there were more than 3,000 cantons, it is unlikely that unobserved geographic heterogeneity is what drives our results. Indeed, the same pattern is apparent in all columns, with both staunch Republican and staunch Monarchist towns benefiting less from the Freycinet plan's largesse.[60] The same results prevail when using a dummy for the presence of a train station as opposed to its number (Table C.21). Finally, the validity of our estimates in Table 6 relies on the assumption of parallel trends. The event-study version of our results (Figure C.13) finds no evidence of differential pre-trends between the different groups in Table 6.

While in most columns, municipalities voting 60 to 80% Republicans seemed to have received about the same amount of pork as swing municipalities, we should keep in mind that Republicans did less well during the 1877 election than during the 1876 election. Since we are using the 1876 election data, this pattern is not surprising. Overall, the evidence conforms with the hypothesis that politicians will distribute less resources to communities that are either solidly on their side or frankly opposed to them politically.

6 Conclusion

There is no room for idealism when assessing the merits of various infrastructure projects. Whatever well-founded economic rationale underpins the decision to undertake large investments in transportation, politics still works in not entirely mysterious ways. The present study provides evidence about how distributive policy-making shaped what is arguably the largest infrastructure plan in French history. The members of the Republican parliamentary majority managed to funnel investments to their districts. Politicians facing more competitive elections were more successful in their attempt to distribute resources to their constituents. Within their districts, politicians allocated train stations to politically competitive communities, likely to increase their re-election chances. Finally, several factors influenced politicians' ability to capture pork-barrel spending. In particular, politicians elected in regions with nationalized railroads

[60] The number of observations varies between columns 1, 3, and 5, as well as between columns 2, 4, and 6, because the `reghdfe` Stata package automatically drops singletons to avoid bias. See: Correia (2015).

managed to capture more investments, maybe because they did not face the opposition of private companies that wished to maintain the profitability of their network.

The idea of government by experts became increasingly attractive during the late 19th century. In the United States, the Progressive Era saw growing confidence in the scientific management of economic affairs over the reliance on representative institutions and impersonal market forces (White, 2012). Proposals to create independent railway commissions that would avoid politicization by bypassing parliament were common (Phelps, 1919). Interestingly, the history of the Freycinet plan points to the limitations of this approach. A railway commission was established in 1878, but Parliament bypassed its recommendations anyway. Freycinet himself complained that this committee, which included many technically proficient engineers, did not sufficiently take into account political realities. Once members of parliament took part in the process, economic efficiency took a back seat to political expediency. While many French conservatives at the time saw the Freycinet plan as exemplifying the shortcomings of republican institutions, Republicans were quick to point out that political considerations also had shaped the development of the railroad network during the Second Empire (1852-1870).[61]

In the longer run, the Freycinet plan may have contributed to the firm establishment of the Third Republic, with some authors even pointing to its important contribution to French victory during WWI (Lepage, 2012). Yet while the Freycinet plan is often hailed as an example of a bold and successful public investment program (Caron, 2005a; Lenoir, 2020), the assessment of the plan in the 1880s was often negative, or at the very least hotly debated (Thibault, 1975). While Freycinet had attempted some cost-benefit analysis in 1878, he was using an outdated method first used by Jean-Baptiste Say, which economist and engineer Jules Dupuit later had shown was overestimating the benefits of railway construction (Faccarello and Silvant, 2024).[62] Yet

[61]See for instance: *La République française*, November 20, 1878, p.1.

[62]Freycinet calculated the benefit from building a railroad by subtracting the cost of road transport to that of railroad transport. Hence, in his view, a railroad could be useful even if its revenue did not cover the cost (Porter, 1995, p.131). However, since transportation is subject to declining marginal utility (and therefore willingness to pay), Freycinet's calculations were wrong. At the time, "two engineers, Eugène Varroy and J. B. Krantz, criticized his computation [...] before the Senate" on this ground (Porter, 1995, p.131). Varroy explicitly referred to Dupuit when the Freycinet law was debated on July 11 (see the *Journal des Economistes*, November 1879, p.232). Debates about the cost-benefit analysis of railway construction continued during the following years. On those debates, see Porter

whatever mistake was made when computing costs and benefits, it did not prevent Parliament from expanding the plan so much that many rail lines were never completed, while many others had to close due to their chronic unprofitability. Albert Christophle, Freycinet's predecessor as minister of public works, accused him of not having been "inspired by rational economics, but by craven politics" (Porter, 1995, p.131). This is not to say that economic expertise was in short supply. It wasn't. Yet economic sermons are listened to only when decision-makers wish to hear the preacher. Politics has a motion of its own.

(1995, p.114-147) and Faccarello and Silvant (2024, p.163-165).

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Online Appendix

A A history of French transportation and the Freycinet Plan

This section provides historical context on the expansion of the French railway network before and during the Freycinet Plan. By outlining key developments, we aim to help readers unfamiliar with railway history better understand the significance of the Plan within the broader trajectory of rail infrastructure growth in France. This section is mainly based on the works of Toutain (1967), Beck (1986) and Caron (1997, 2005b).

A.1 Transportation infrastructure before railways

Between 1820 and 1840, France undertook a major transformation of its national transport infrastructure to create a unified national market (Léon, 1976). This process, crucial for supporting an expanding economy, relied on connecting the country's various regions. The July Monarchy (1830-1848) therefore made substantial investments in transport infrastructure to reduce territorial isolation and stimulate trade (Lepetit, 1984).

Road construction was given priority, especially as technical innovations such as macadam surfacing - using compact, durable stone - were introduced. The national road network nearly doubled within three decades, from 14,288 km in 1824 to 35,600 km in 1855. Despite these efforts, disparities persisted: the wealthier northern and eastern regions enjoyed better access, while the south and west lagged behind (Lepetit, 1984, p.53).

Waterways also played a key role in the country's economic integration strategy. The canal network expanded from 1,200 km in 1821 to 3,750 km in 1847. However, canal construction remained concentrated in the north and east. The introduction of steam navigation helped reduce transport times on certain waterways, such as the Loire and Rhône, but it was insufficient to overcome the structural limitations of the existing infrastructure. As demand grew for faster and more reliable transportation capable of handling larger volumes of goods and passengers, railways became indispensable and gradually replaced other modes of transport (Merger, 1990, p.78).

Table A.7: Comparative evolution of operational French transport networks (in 1,000s of km).

Years	National Roads	Waterways	Railroads
1814-1820	14.35	1.2	—
1830	28.9	2.129	0.031
1836-1840	34.5	3.848	0.499
1847-1854	35.6	4.446	4.315
1855-1864	36.6	4.630	12.362
1865-1874	37.7	—	18.744
1875-1884	37.4	—	28.722

Sources: Toutain (1967); Lepetit (1984); Goger (1992).

A.2 The rise of the railways (1823-1859)

Railway construction in France only picked up during the mid-19th Century. A law passed on June 11, 1842, known as the "Railway Charter", laid out plans for an extensive network connecting Paris to major French seaports and international destinations, as well as links between the Mediterranean and the Rhine and the Mediterranean and the Atlantic. This law regulated the French railway system under a public-private partnership model Brunot and Coquand (1982, p.693). Under this framework, the state acquired the land selected for railway construction and financed the infrastructure (bridges, tunnels, and stations), while private companies built the superstructure (rail tracks and operational facilities) and were granted exclusive operating rights over the lines they helped construct.

Designed in collaboration with the *Pont-et-Chaussées* engineer Alexis Legrand, the law envisioned seven radial networks extending from Paris to the English Channel, the Atlantic, the Pyrenees, the Mediterranean, and the Rhine, along with two transversal connections linking the Mediterranean to the Rhine and the Atlantic to the Mediterranean. Each network was designed to remain separate to prevent private companies from merging into monopolies. This centralized network, commonly referred to as the "Legrand Star", shaped the railway development of France for the next century.

Before 1842, the French network was small, with only 319 kilometers of lines in operation, out of 566 granted. Concomitantly, England had already granted 2521 km and the German

states 627 km. Belgium, twenty times smaller than France, had already conceded 378 km. The United States operated 5,800 km and projected increasing its network to 15,500 km. While between 1831 and 1841, only 47 km of railroads were opened each year, this figure rose to 265 km per year over the next ten years; by 1848, 2,000 km were in service, and by 1851, 3,248 km.

However, the financial crisis of 1846 plunged railway construction into crisis. Construction resumed after Louis Napoleon's coup on December 2nd, 1851, which created the conditions necessary for secure investments in the railway sector: political stability, long concessions, and mergers to create financially sound companies. Between 1852 and 1857, six major companies were created, with concessions grouped geographically into six 'major networks':

- the Chemin de Fer d'Orléans (PO), which dominated the south-west as far as Bordeaux and the west of France,
- the Compagnie du Nord,
- the Compagnie de l'Ouest,
- the Compagnie du Chemin de fer de l'Est,
- the Paris-Lyon-Marseille train (PLM),
- the Compagnie du Midi ferroviaire in the south and south-west of France.

In 1857, the railway lines built under the 1842 law were completed. New agreements were signed that year between the major railway companies and the government to build the *second réseau* ("second network"). As the construction of these additional lines was much more expensive and its benefits uncertain, the financial burden became too heavy for the companies, which turned to the French government to terminate their agreements.

To address this issue, new agreements were signed in 1859, introducing a guarantee of interest system. The government took responsibility for ensuring a minimum return on the capital invested in railway expansion by guaranteeing the payment of interest for the operation of these lines for a period of 50 years. This mechanism reduced the financial risk for private investors, encouraging further railway development even when profitability was low. In return, profits above a certain threshold and generated by the "first network" had to be reinvested in

the second network. Railroads were divided into an "old network" (first network) and a "new network" (second network), with the interest guarantee applying only to the second network.

These agreements provided the railway companies with 99-year concessions and a partial guarantee of interest on their invested capital, stabilizing their financial situation. Hence the French network's expansion after 1859 was primarily financed with long-term amortizable bonds. While this system successfully accelerated railway development, the government had to cover deficits in periods of weak railway revenues.

A.3 The 1865 law and its consequences

In 1860, France had 9,167 km of railways. Vast regions remained without railway access, and notables from areas not served by the major companies exerted pressure to secure a broader local rail network. In 1864, (Caron, 1997, p.430) observed that almost every *département* sought to obtain new railway lines.[63] Rural communities' became more vocal in their demands and local elected officials called the central government for help with infrastructure development (Girard, 1952, p.294).

The 1865 law's goal was to answer those demands by opening up rural areas and creating a denser railway network.[64] The law allowed concessions for local lines to be granted without requiring specific legislation for each project, thereby simplifying the administrative process.[65] These lines were often built with narrow-gauge tracks to reduce costs. The government retained a supervisory role through the *Conseil d'État* and the *Conseil des Ponts et Chaussées*, notably by requiring that construction projects be declared in the public interest before approval.

Local railway concessions were granted following the 1865 law and some entrepreneurs exploited loopholes to launch economically nonviable projects (Caron, 1997, pp.443-460).[66] The

[63] Caron stresses that sixty-two *départements* requested the construction of new lines, thirteen commissioned preliminary studies, and six voted for extraordinary taxes to initiate work.

[64] This law, known as the Migneret Law, authorized *départements* and municipalities to grant concessions for railway lines of local interest.

[65] The law made it possible to override most of the oversight procedures of the *Ponts et Chaussées*, which often opposed the development of a local network.

[66] The creation of small railway companies was further encouraged by a law passed in 1867, which authorized

lines, initially promoted as a solution to opening up rural areas, often remained unfinished or unused, thus fueling discontent in many communities. In 1878, the government decided to nationalize struggling railway companies in the West and Southwest, thus leading to the creation of the *Chemins de fer de l'État*.

By 1870, 1,819 km of local railway lines had been authorized. By 1875, this number had increased to 4,368 km. Despite this growth, the network remained incomplete in the eyes of many, particularly in western France and the Massif Central. Transversal lines, crucial for linking landlocked regions to major economic routes, were inadequate, leaving vast areas without infrastructure.

A.4 Genesis of the Freycinet Plan: the Plan of April 1878

Infrastructure projects did not originate with Freycinet's ministry, as the idea of expanding the existing network had already been considered under the *Second Empire* and under the Caillaux ministry in 1875.[67] Its scale, however, was unprecedented.

As Freycinet (1913) recounts, Prime Minister Dufaure took the initiative of presenting the plan to President Mac-Mahon (p.9). For Dufaure, it was essential that "the people forget their quarrels in the face of projects that interest them." Mac-Mahon, a monarchist, unexpectedly agreed and supported the project (p.11). Yet, even before the project's official launch, the finance minister, Léon Say, expressed concerns to Freycinet about how electoral considerations could divert the program from its goals (p.10). When Mac-Mahon signed the decrees on January 2, 1878, initiating the exploratory works for the Plan, Gambetta, the leader of the Republican Union group in parliament, convened a meeting to secure Say's uncertain support. Say ultimately agreed to back the project in exchange for guarantees on its economic and financial aspects.

the formation of limited companies without requiring government approval.

[67] A decree on June 14, 1861, declared 25 lines in underserved regions as public necessities. For Girard (1952, p.257), the discussions surrounding this decree triggered "a long series of electioneering. [...] Their purpose is to satisfy localities where the government's prestige is compromised and to support faltering official candidacies." Eugène Caillaux, served as Minister of Public Works from 1874 to 1876 in the Orleanist Cissey government. He lent his name to a plan supporting railway construction, which authorized the construction of 20 lines and the planning of 19 others.

He wanted the six railway Companies to collaborate to prevent the nationalization of railroads. Gambetta promised Léon Say that:

> Our friends will conduct a sustained press campaign to explain our prudent intentions. The goal is not to destabilize public credit through reckless borrowing nor to challenge established financial interests. (p.14)

Freycinet's involvement reassured moderate republicans as he oversaw the regional commissions tasked with drafting the Plan (decree of January 2, 1878) and as those commissions were mainly composed of *Ponts-et-Chaussées* engineers traditionally opposed to network expansions.

A.5 Elaborating the Plan: the regional commissions of 1878

The purpose and composition of the regional commissions responsible for preparing the Plan were outlined following the Mac-Mahon's decree.[68] These commissions were tasked with establishing the list of general interest railway lines to be included in the Plan and were composed almost exclusively of engineers —either members of the *Ponts-et-Chaussées* administration or former members working with private railway companies.[69]

Since the 1865 law had authorized departmental councils to construct new local railway lines, numerous private railway companies had emerged. By 1878, however, most of these companies were on the brink of bankruptcy (Girard, 1952, p.295). The Freycinet Plan thus presented an unprecedented financial opportunity for these departmental railway companies that could now potentially be financed by the central government. Yet engineers from the *Ponts-et-Chaussées* were, for the most part, opposed to the demands of the local *Conseils Départementaux*, which sought to expand the secondary "local interest" network. Leclercq (1982, p.910) explains that

[68] See the *Rapport au Président de la République française proposant la création de six commissions régionales des chemins de fer* published in the *Journal Officiel de la République Française*, January, 2-3, pp.34-36.

[69] Each commission was composed of the *Ponts-et-Chaussées* inspectors from the respective region, their General Inspector, the Director of Railway Operations Control, one of the Principal Inspectors of Commercial Operations of the railway companies, and the Chief Engineers who had played a significant role in the construction or operation of railways. All these members were civil servants, the vast majority of whom were active officials, with a few working for railway companies. The Secretary General of the Ministry of Public Works and the Director of Railways at the Ministry were ex-officio members. The resolution accompanying Mac-Mahon's decree, published on January 2, 1878, lists the names of the commission members and their professional backgrounds. There were 42 Ponts-et-Chaussées engineers out of 56 full members.

the *Ponts-et-Chaussées* engineers feared that competition from the new lines operated by local companies would diminish the *Grandes Compagnies*' revenues.

By entrusting the implementation of the Plan to the expertise of the public-servant engineers, Freycinet was fairly certain that the project would remain within reasonable limits, in line with their recommendations (Thibault, 1975, p.231).[70] After all, the 1865 law had been passed against the advice of the *Ponts-et-Chaussées* General Council, under pressure from local officials (Girard, 1952, p.296). Freycinet hoped that a balanced approach would emerge from his collaboration with skilled experts. The Plan, in his view, was an operation of "distributive justice" (p.35), but the railway lines to be selected also had to be designated according to objective criteria, namely their economic and military significance. By trusting engineers, he was asking them to integrate considerations they had long dismissed and place less importance on those they favored: strict administrative rationality, economic benefits, and to avoiding excessive financial strain.[71] Still, the plan's distributive ambition made it particularly susceptible to local pressures as representatives sought to secure infrastructure projects for their constituencies. Quickly, the involvement of technocrats failed to fully contain the electoral ambitions of politicians.

A.6 The design of the April 1878 Plan

Freycinet committed to incorporating the six commissions' recommendations into law in his *Rapport* of January 2, 1878 (p.35). The regional commissions were required to submit their report to the Minister by March 31, 1878. A sub-committee composed of three Inspectors General reviewed the reports submitted before their presentation to the *Conseil Général des*

[70] According to the law of July 7, 1833, a legislative act was required to authorize the creation of any railway, whether public or private (Picard, 1884, pp.33-34). This act had to be preceded by an administrative inquiry. The *Ponts-et-Chaussées* Council, placed under the authority of the Ministry of Public Works and presided over by the Minister, was in charge of this process. See Aucoc (1886, p.58) and Brunot and Coquand (1982, p.257). Within the *Ponts-et-Chaussées* administration, the Railway Advisory Committee was specifically responsible for administrative and economic matters. It started as a permanent unit since 1847 and could include members of civil society. Within this structure, a dedicated committee assessed railway lines, while an administrative commission oversaw their exploitation. It was renamed the Central Commission in 1872 (Aucoc, 1886, p.63). In 1878, the commission comprised 53 members, of whom 49 were government officials.

[71] Until the 1865 Secondary Railways Act, which had curtailed their influence, they had resisted any political demands for the expansion of the network. See Caron (1997, pp.435-437).

Ponts et Chaussées. A committee met to study the preliminary project on April 25, 26, and 27, 1878.

We present the data we collected from the classification table finalized by the committee, which constitutes the final report presented to the Minister (Table A.8). First, the names of the railway lines and a brief description of their routes are listed in the first column (Column A). Column B provides the total length of each line. The report then lists lines of local interest to be integrated into the general network, section by section (Column C, lines already in operation; Column D, declared of public interest; Column E, already conceded). It also includes the lines provided for in the *Caillaux* Law of December 31, 1875, those to be built and integrated into the general network as part of the Plan (Column F). The new lines to be constructed are listed next (Column G).

For each line, the report also specifies the purpose of each railway (Column H): civilian, military, or both. The report goes beyond a mere enumeration of general-interest railway lines, as it establishes their relative importance. Local lines and those to be built and integrated into the general-interest network are classified into three categories according to their priority level (Columns I, J, K). The commissions initially presented an absolute ranking that the *Conseil Général* did not preserve to avoid "giving a quasi-legal basis to requirements that could be ill-founded." Importantly, the minutes state that the commission members were careful not to favor "local or particular interests."

Column L signals whether the War Ministry wishes to see the construction of a line deferred. Finally, railways deemed solely for military use are also identified (*Procès-verbal*, p.8, Column M). The last column (N) contains the Commission's observations about the classification of lines decided prior to the Plan according to their strategic military interest (*Procès-Verbal*, p.7).

At the end of the *Procès-verbal* (p.9), the committee provided a summary of the total number of lines it classified and estimated that the total cost of the plan to 2.5 billion francs. However, as a warning, the commission urged the government to exercise caution, recalling the observations of the Ministry of Finance in a report on Public Works dated May 14, 1877:

> Regardless of how net revenues are distributed among the railway companies, we observe that, for the entirety of our railway network, these revenues are insufficient to directly remunerate the capital invested, and this shortfall will increase as additional, less profitable lines are added. The direct and indirect benefits the state derives from railway construction diminish as traffic expands [...] and while railway expansion is a powerful stimulus for industrial and commercial activity, it must be recognized that its effectiveness cannot be indefinitely sustained. The state's immediate sacrifices must therefore be limited in the interest of public finances. The scale of the network must correspond to the actual transport needs, and local traffic should, when possible, rely on less costly transportation alternatives than the national railway system.

The *Procès-verbal* concludes by stating that the commission members "fully endorse the considerations" expressed in the report. It further states that the final cost of the project may be slightly underestimated (p.11) and asserts that part of the project's financing should be borne by the *départments* and municipalities benefiting from the Plan.[72] Overall, the Commission pushed the scale of the infrastructure program in the sense of moderation.

[72]The Commission also highlights the high expropriation costs, which appear to have been inadequately budgeted (p.12). It recommends amending the law to reduce these future costs.

Table A.8: The First Freycinet Plan of April 1878

A	B	C	D	E	F	G	H	I	J	K	L	M
Armentières à Lens par Don	36	nc	nc	nc	nc	36	civil	36	nc	nc	nc	no
Armentières à la nouvelle gare de Tourcoing	20	nc	nc	nc	nc	20	civil	nc	nc	20	nc	no
Don à Templeure (Aisne)	23	nc	23	nc	nc	nc	civil	nc	nc	23	nc	no
Hazebrouck à Merville (Aisne)	11	nc	nc	nc	nc	nc	civil	nc	nc	11	nc	no
Roubaix à la frontière belge vers Audenarde	4	nc	nc	nc	nc	nc	civil	nc	nc	nc	4	no
Amiens à Frévent (Pas-de-Calais)	60	60	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
St-Omer-en-Chaussée (Oise) au Tréport	88	88	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Rochy-Condé (Oise) à Cambrai par Saint-Just	142	142	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
La Rue-St-Pierre (Oise) à Ornoy (Oise)	76	14	62	nc	nc	nc	combined	nc	nc	62	nc	no
Ornoy à la ligne de Château-Thierry à Villers-Cotterêts	25	nc	nc	nc	nc	25	civil	nc	nc	25	nc	no
De ce dernier point à un point à déterminer sur la ligne de Paris à Avricourt entre Meaux et La Ferté-sous-Jouarre	18	nc	nc	nc	nc	18	civil	nc	nc	18	nc	no
Achiet (Pas-de-Calais) à Guise par Velu-Bertincourt et Saint-Quentin	101	55	46	nc	nc	nc	military	nc	nc	nc	nc	46
Guise à Hirson	35	nc	nc	nc	nc	35	military	nc	nc	nc	nc	35
Busigny (Nord) à Hirson	56	nc	nc	nc	nc	56	military	nc	nc	nc	nc	56
Valenciennes à Douzies (Nord)	32	nc	32	nc	nc	nc	military	nc	nc	nc	nc	32
Maubeuge à Solre-le-Château (Nord)	19	nc	nc	nc	nc	19	combined	19	nc	nc	nc	no
Valenciennes à Laon par ou près Le Cateau	106	nc	nc	nc	nc	107	combined	nc	106	nc	nc	no
Laon à Mézières par ou près de Rosoy (Aisne)	72	nc	nc	nc	nc	72	military	nc	nc	nc	nc	72
Hirson à Amagne	61	nc	nc	nc	61	nc	combined	nc	nc	nc	nc	no
Amagne à Vouziers	27	27	nc	nc	nc	nc	combined	nc	nc	nc	nc	no
Revigny à Saint-Dizier	28	nc	nc	nc	nc	28	combined	28	nc	nc	nc	no
Nançois-le-Petit à Gondrecourt	35	35	nc	nc	nc	nc	combined	nc	nc	nc	nc	no
Esbly à Guérard (Seine-et-Marne)	18	nc	nc	nc	nc	18	civil	nc	nc	18	18	no
Marle (Seine-et-Marne) à Melun	32	nc	nc	nc	nc	32	civil	nc	nc	32	32	no
Oiry (Marne) à Romilly (Aube)	84	84	nc	nc	nc	nc	combined	nc	nc	nc	nc	no
La Ferté-Gaucher à Sézanne	40	nc	nc	40	nc	nc	combined	nc	nc	nc	nc	no
Sézanne à Fêre-Champenoise	nc	nc	nc	nc	nc	nc	military	nc	nc	nc	nc	no
Fêre-Champenoise à Vitry-le-François	45	nc	nc	nc	nc	45	military	nc	nc	nc	nc	no
Henrichemont (Cher) à Sancerre	32	nc	32	nc	nc	nc	military	nc	32	nc	nc	no
Sancerre à St-Sauveur par Cosne	33	nc	nc	nc	nc	33	military	nc	33	nc	nc	no
Auxerre à Troyes par ou près Saint-Florentin	73	nc	nc	nc	nc	73	military	nc	73	nc	nc	no
Rouilly-St-Loup (Aube) à Brienne	24	nc	nc	nc	nc	24	military	nc	24	nc	nc	no
Brienne à Vitry-le-François	30	nc	nc	nc	nc	30	military	nc	30	nc	nc	no
Jessains (Aube) à Eclaron (Haute-Marne)	53	nc	nc	53	nc	nc	military	nc	nc	nc	nc	no
Wassy à Doulevant-le-Château (Haute-Marne)	15	nc	nc	nc	nc	15	civil	nc	nc	nc	nc	no
Nancy à Vézelise et embranchements	37	37	nc	nc	nc	nc	military	nc	nc	nc	nc	no
Vézelise à Mirecourt	23	nc	23	nc	nc	nc	military	23	nc	nc	nc	no
Mirecourt à Chalindrey	36	nc	nc	nc	36	nc	military	nc	nc	nc	nc	no
Langres à Andilly	19	nc	nc	nc	19	nc	military	nc	nc	nc	nc	no
Merrey à Neufchâteau	38	nc	nc	nc	38	nc	military	nc	nc	nc	nc	no
Toul à Colombey	22	nc	22	nc	nc	nc	military	nc	nc	22	nc	no
Colombey à Mirecourt	33	nc	nc	nc	nc	33	military	nc	nc	33	nc	no
Pompey à Leyr (Meurte-et-Moselle)	10	nc	nc	nc	nc	10	civil	nc	nc	10	nc	no
Leyz à Nomény (Meurthe-et-Moselle)	10	nc	nc	nc	nc	10	civil	nc	nc	10	10	no

Continued on next page

Table A.8: The First Freycinet Plan of Apris 1878 (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M
Nancy à la frontière allemande vers Château-Salins	24	24	nc	nc	nc	nc	military	nc	nc	nc	nc	no
Baccarat à Badonviller (Meurthe-et-Moselle)	14	nc	nc	nc	nc	14	civil	nc	nc	nc	nc	no
Arches (Vosges) à Saint-Die et embranchements	72	72	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Bas-Evette (Belfort) à Giromagny	71	nc	nc	nc	nc	71	military	nc	nc	nc	nc	7
Entre la ligne de ceinture (rive gauche) et la ligne de Paris à Limours	2	nc	nc	nc	nc	2	civil	nc	nc	2	nc	no
Entre la ligne d'Auteuil à Boulogne prolongée et celle du Pont de l'Alma à Courbevoie	6	nc	nc	nc	nc	6	civil	nc	nc	6	nc	no
Entre la ligne de Ceinture (rive gauche) et celle du Pont-de-l'Alma à Courbevoie	1	nc	nc	nc	nc	1	civil	nc	nc	1	nc	no
Entre la ligne de Grande ceinture à Saint-Germain et la gare de Saint-Germain	2	nc	nc	nc	nc	2	military	2	nc	nc	nc	no
Entre la ligne de Grande Ceinture vers Marly et la ligne de Paris à Saint-Germain vers le Vésinet	6	nc	nc	nc	nc	6	military	nc	nc	nc	nc	6
Wy-Marines (Seine-et-oise) à Rambouilles par Epône et Villiers-Neaulphe	60	nc	nc	nc	nc	60	civil	60	nc	nc	60	no
Palaiseau (Seine-et-Oise) à Epinay-sur-Orge	91	nc	nc	nc	nc	91	civil	91	nc	nc	nc	no
Saint-Georges (Eure) à la limite Nord de l'Eure près Montaure	81	81	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Saint-Aubin à Elbeuf	3	nc	nc	nc	nc	3	military	nc	3	nc	nc	no
Evreux à Acquigny (Eure)	18	18	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Pacy-sur-Eure à Beauvais par Vernon et Gisors	32	32	nc	nc	nc	nc	military	nc	nc	nc	nc	no
Pont-de-l'Arche à Gisors	53	53	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Eu à Dieppe	29	nc	nc	nc	nc	29	civil	nc	29	nc	nc	no
Dieppe à ou près Beuzeville	65	nc	nc	nc	nc	65	civil	nc	nc	65	nc	no
Glos-Montfort (Eure) à Pont-Audemer	17	17	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Pont-Audemer à Quetteville (Calvados)	13	nc	nc	nc	nc	13	civil	13	nc	nc	nc	no
Lisieux à Orbec (Calvados)	18	18	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Mézidon à Dives (Calvados)	29	nc	29	nc	nc	nc	civil	nc	nc	29	nc	no
Falaise à Berjon	23	23	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Brioure (Orne) à La Ferté-Macé	14	14	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Vire à Saint-Lô	36	nc	nc	nc	nc	36	civil	nc	nc	36	nc	no
Du port d'Isigny (Calvados) à la ligne de Paris à Cherbourg	81	nc	nc	nc	81	nc	civil	nc	nc	nc	nc	no
Carentan à Portbail-et-Carteret (Manche)	43	nc	43	nc	nc	nc	civil	nc	nc	43	nc	no
Cherbourg par ou près Martinvast à Beaumont (Manche)	18	nc	nc	nc	nc	18	military	nc	nc	nc	nc	18
Avranches à la limite de la Manche	57	nc	57	nc	nc	nc	civil	57	nc	nc	nc	no
De la Manche à Domfront	8	nc	nc	nc	nc	8	civil	8	nc	nc	nc	no
Alençon à Condé-sur-Huisne	66	66	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Mamers à St-Calais	77	77	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
St-Calais à Château-du-Loir	44	nc	44	nc	nc	nc	civil	nc	nc	44	nc	no
Sablé à Sillé-le-Guillaume	50	nc	nc	nc	nc	50	civil	nc	50	nc	nc	no
Niort à Moncontour	86	nc	nc	nc	nc	86	civil	86	nc	nc	nc	no
Raccordement des gares de Saumur	2	nc	nc	nc	nc	2	civil	2	nc	nc	nc	no
Saumur à la limite de la Sarthe	45	nc	nc	nc	nc	45	civil	45	nc	nc	nc	no
De là à la Flèche	5	nc	5	nc	nc	nc	civil	5	nc	nc	nc	no
De la Flèche à la Suze	29	29	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
La Flèche à Sablé	22	22	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Angers à la limite de la Sarthe vers La Flèche	40	nc	nc	nc	40	nc	civil	nc	nc	nc	nc	no
De là à La Flèche	14	nc	14	nc	nc	nc	civil	14	nc	nc	nc	no
Savenay à Châteaubriant	40	nc	nc	nc	40	nc	civil	nc	nc	nc	nc	no
Pouancé (Maine-et-Loire) à un point à déterminer sur la ligne de Paris à Rennes entre Laval et Le Genest, par ou près Craon	50	nc	nc	nc	nc	50	civil	nc	nc	50	nc	no

Continued on next page

Table A.8: The First Freycinet Plan of Apris 1878 (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M
Châteaubriant à Rennes	60	nc	nc	nc	60	nc	civil	nc	nc	nc	nc	no
Embranchement de la ligne de Châteaubriant à Rennes à Vitré	40	nc	nc	nc	40	nc	civil	nc	nc	nc	nc	no
Raccordement à Pontorson des lignes de Saint-Lô à Lamballe et de Fougères à la baie du Mont-Saint-Michel	1	nc	nc	nc	nc	1	civil	1	nc	nc	nc	no
Minac à Chateauneuf	71	nc	nc	nc	nc	7	military	nc	nc	nc	nc	7
Ploërmel à Caulnes (La Brohinière)	36	nc	nc	nc	36	nc	civil	nc	nc	nc	nc	no
La Brohinière à Dinan	30	nc	nc	nc	nc	30	civil	nc	30	nc	nc	no
Dinan à Dinard	23	nc	nc	nc	nc	23	civil	nc	23	nc	nc	no
Auray à Quiberon (Morbihan)	20	nc	nc	nc	nc	20	military	20	nc	nc	nc	no
Guingamp à Paimpol (Côtes-du-Nord)	32	nc	nc	nc	nc	32	civil	nc	nc	32	nc	no
Concarneau à Rosporden (Finistère)	14	nc	nc	nc	nc	14	civil	nc	14	nc	nc	no
Rosporden à Carhaix	69	nc	nc	nc	nc	69	civil	nc	nc	69	nc	no
Carhaix à ou près Morlaix	42	nc	nc	nc	nc	42	civil	nc	nc	42	nc	no
Morlaix à Roscoff (Finistère)	26	nc	nc	nc	nc	26	civil	nc	26	nc	nc	no
Brest au Conquet	31	nc	nc	nc	nc	31	military	nc	nc	nc	nc	31
Châteaulin à Camaret	46	nc	nc	nc	nc	46	military	nc	nc	nc	nc	46
Quimper à Douarnenez	18	nc	nc	nc	nc	18	civil	nc	18	nc	nc	no
D'un point à l'autre entre Machecoul et la Roche-sur-Yon (à ou près Challans) au Goulet de Fromentine (Vendée)	24	nc	nc	nc	nc	24	military	nc	nc	24	nc	no
Velluire à Fontenay-le-Comte	12	nc	nc	nc	nc	12	civil	12	nc	nc	nc	no
Fontenay-le-Comte à Chollet	84	nc	nc	nc	nc	84	civil	nc	nc	84	nc	no
Saint-Laurent de la Prée au fort d'Enet (Charente-Inférieure)	9	nc	nc	nc	nc	9	military	nc	nc	9	nc	no
Surgères (Charente-Inférieure) à Cognac	75	nc	75	nc	nc	nc	civil	nc	nc	75	nc	no
Matha (Charente-Inférieure) à Villefagnan (Charente)	40	nc	nc	nc	nc	40	civil	nc	nc	40	nc	no
Pons à Royan et La Tremblade (Charente-Inférieure)	69	69	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Saujon (Charente-Inférieure) à un point de la ligne de Tonnay-Charente à Marennes	14	nc	nc	nc	nc	14	civil	nc	14	nc	nc	no
Châteauneuf à Barbézieux	18	18	nc	nc	nc	nc	civil	nc	nc	nc	nc	no
Barbézieux à Montendre (Charente-Inférieure)	31	nc	nc	nc	nc	31	civil	nc	nc	31	nc	no
D'un point entre Saint-Loubès et Saint-Sulpice à un près de Cavignac (Gironde)	24	nc	nc	nc	nc	24	civil	24	nc	nc	nc	no
Port-Boulet à Port-de-Piles avec embranchement sur le camp de Ruchard	66	nc	nc	nc	66	nc	military	nc	nc	nc	nc	no
Port-de-Piles à Preuilly (Indre-et-Loire)	35	nc	nc	nc	35	nc	civil	nc	nc	nc	nc	no
Châtellerault à Tournon-Saint-Martin (Indre)	33	nc	nc	nc	nc	33	military	33	nc	nc	nc	no
Tournon-Saint-Martin au Blanc	16	nc	16	nc	nc	nc	military	16	nc	nc	nc	no
Le Blanc à Argenton	36	nc	36	nc	nc	nc	military	36	nc	nc	nc	no
Argenton à La Châtre	43	nc	43	nc	nc	nc	military	43	nc	nc	nc	no
Chateaumeillant à Nevers	80	nc	80	nc	nc	nc	military	nc	80	nc	nc	no
Le Blanc à Romorantin près Mézières et Valencay	84	nc	nc	nc	nc	84	civil	nc	nc	84	nc	no
Issoudun à Bourges par Saint-Florent	47	nc	nc	nc	nc	17	civil	17	nc	nc	nc	no
Poitiers au Blanc	63	nc	nc	nc	63	nc	military	nc	nc	nc	nc	no
Civray au Blanc par Montmorillon	91	nc	nc	nc	91	nc	military	nc	nc	nc	nc	no
Confolens à la ligne de Civray au Blanc	23	nc	nc	nc	23	nc	civil	nc	nc	nc	nc	no
Le Dorat à Magnac-Laval (Haute-Vienne)	7	nc	nc	nc	nc	7	military	nc	nc	nc	nc	7
Ruffec à Exideuil	40	nc	nc	nc	nc	40	civil	nc	40	nc	nc	no
Nontron à Périgueux	47	nc	nc	nc	47	nc	civil	nc	nc	nc	nc	no
Nontron à un point à déterminer près Brive sur la ligne de Limoges à Brive par Saint-Yrieix passant par ou près Thiviers	80	nc	nc	nc	nc	80	civil	nc	nc	80	nc	no
Limoges à Uzerche (Corrèze)	63	nc	nc	nc	nc	65	civil	nc	nc	65	nc	no

Continued on next page

Table A.8: The First Freycinet Plan of Apris 1878 (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M
Uzerche à Brive	30	nc	nc	nc	nc	30	civil	nc	nc	30	nc	no
De Brive à Gourdon, Cahors et Montauban	132	nc	nc	nc	132	nc	civil	nc	nc	nc	nc	no
Uzerche à Aurillac par ou près Tulle et Argentat	80	nc	nc	nc	nc	80	civil	nc	nc	80	nc	no
D'un point à déterminer sur la ligne de Châteauroux à Limoges entre la Souterraine et Eguzon à Guéret (La Brionne)	30	nc	nc	nc	nc	30	civil	nc	nc	30	nc	no
Felletin à Bort par Ussel	58	nc	nc	nc	nc	58	civil	nc	nc	58	nc	no
Bort à Nenssargues (Cantal)	60	nc	nc	nc	nc	60	civil	nc	nc	60	nc	no
Vendes à Aurillac	75	nc	nc	nc	75	nc	civil	nc	nc	nc	nc	no
Tonneins à Villeneuve-sur-Lot	34	nc	nc	nc	nc	34	civil	34	nc	nc	nc	no
Cahors à Capdenac	65	nc	nc	nc	65	nc	civil	nc	nc	nc	nc	no
Ribérac au chemin de fer de Tours à Bordeaux, au sud de Charmant et du souterrain de Livernant	27	nc	nc	nc	nc	27	civil	nc	27	nc	nc	no
Nevers à Tamnay (Nièvre)	42	nc	nc	nc	nc	42	civil	nc	nc	42	nc	no
Tamnay à Château-Chinon	21	nc	nc	nc	nc	21	civil	nc	21	nc	nc	no
Chagny à Verdun-sur-Doubs (Saône-et-Loire)	20	nc	nc	nc	nc	20	military	20	nc	nc	nc	no
Verdun-sur Doubs à Auxonne	33	nc	nc	nc	nc	33	military	33	nc	nc	nc	no
Paray-le-Monial à Mâcon	77	77	nc	nc	nc	nc	military	nc	nc	nc	nc	no
Lons-le-Saunnier à Châlon-sur-Saône	66	66	nc	nc	nc	nc	military	nc	nc	nc	nc	no
Charlieu (Loire) à Cluny (Saône-et-Loire)	67	nc	67	nc	nc	nc	military	nc	nc	nc	nc	67
Cluny à Châlon-sur-Saône	60	nc	60	nc	nc	nc	military	nc	60	nc	nc	no
Saint-Gengoux à Montchanin	25	nc	25	nc	nc	nc	military	nc	25	nc	nc	no
La Cluze (Ain) à Champagnole (Jura) avec embranchement sur Morez	102	nc	nc	nc	nc	102	civil	nc	102	nc	nc	no
Lons-le-Saunier à Champagnole	44	nc	nc	nc	nc	44	civil	nc	44	nc	nc	no
Gilley (Doubs) à Pontarlier	22	nc	nc	nc	nc	22	civil	nc	22	nc	nc	no
Voujancourt (Doubs) à Saint-Hyppolyte	26	nc	nc	nc	nc	26	civil	nc	26	nc	nc	no
La Roche à Saint-Gervais (Haute-Savoie)	48	nc	nc	nc	nc	48	civil	nc	48	nc	nc	no
Moutiers à Albertville (Savoie)	28	nc	28	nc	nc	nc	military	28	nc	nc	nc	no
Albertville à Annecy	45	nc	nc	nc	nc	45	civil	nc	nc	45	nc	no
La Mure (Isère) à la ligne de Grenoble à Gap	37	nc	nc	nc	nc	37	civil	nc	nc	37	nc	no
Savines (Hautes-Alpes) à Barcelonnette	40	nc	nc	nc	nc	40	civil	nc	nc	40	nc	no
Nyons au Rhône par ou près Orange	50	nc	nc	nc	nc	50	civil	nc	50	nc	nc	no
Forcalquier à la ligne d'Avignon à Gap	12	nc	nc	nc	nc	12	civil	nc	12	nc	nc	no
Valdonne (Bouches-du-Rhône) à la ligne de Carnoules à Aix	91	nc	nc	nc	nc	9	civil	nc	nc	9	nc	no
Digne à Castellane	70	nc	nc	nc	nc	70	military	nc	nc	70	nc	no
Castellane à ou près Draguignan	43	nc	nc	nc	nc	43	military	nc	nc	nc	nc	43
Draguignan à Cagnes par ou près Grasse	85	nc	nc	nc	nc	85	military	nc	85	nc	nc	no
Nice à la frontière italienne vers Coni par Sospel	60	nc	nc	nc	nc	60	civil	60	nc	nc	60	no
Ajaccio à Ucciani	40	nc	nc	nc	nc	40	civil	40	nc	nc	nc	no
Ucciani à Corte	35	nc	nc	nc	nc	35	civil	nc	nc	35	nc	no
Corte à Bastia	80	nc	nc	nc	nc	80	civil	80	nc	nc	nc	no
Ponte-Leccia à Calvi	72	nc	nc	nc	nc	72	civil	nc	nc	72	nc	no
Cazamossa à Solenzara	83	nc	nc	nc	nc	83	civil	nc	nc	83	nc	no
Issingeaux à la ligne du Puy à Saint-Etienne	22	nc	nc	nc	nc	22	civil	nc	nc	22	nc	no
Mende au Puy par ou près la Bastide en Langogne	89	nc	nc	nc	89	nc	civil	nc	nc	nc	nc	no
Ambert à la ligne du Puy à Saint-Georges d'Aurac	60	nc	nc	nc	nc	60	civil	nc	60	nc	nc	no
Largentière à l'embranchement d'Aubenas	14	nc	nc	nc	nc	14	civil	nc	nc	14	nc	no

Continued on next page

Table A.8: The First Freycinet Plan of Apris 1878 (continued)

A	B	C	D	E	F	G	H	I	J	K	L	M
Pont-de-Montgon (Cantal) à Arvant	48	nc	nc	48	nc	nc	civil	nc	nc	nc	nc	no
Florac à Anduze par le col de Fonmort	60	nc	nc	nc	nc	60	civil	nc	nc	60	nc	no
Montpellier à Ganges	47	nc	nc	nc	nc	47	civil	nc	nc	47	nc	no
Espalion à Bertholène (Aveyron)	24	nc	nc	nc	nc	24	civil	nc	nc	24	nc	no
Estréchoux (Hérault) à Castenet-le-Haut	13	nc	nc	nc	nc	13	civil	nc	nc	13	nc	no
Albi au Vigan	139	nc	nc	nc	139	nc	civil	nc	nc	nc	nc	no
Carmaux à Rodez	63	nc	nc	nc	63	nc	civil	nc	nc	nc	nc	no
La Bastide-Rouairoux (Tarn) à Bize (Aude)	33	nc	nc	nc	nc	33	civil	nc	nc	33	nc	no
Agde à la Mer	4	nc	nc	nc	nc	4	civil	4	nc	nc	nc	no
Saint-Girons à Foix	45	nc	nc	nc	nc	45	civil	nc	nc	45	nc	no
Pamiers à Bram (Aude) par Mirepoix	56	nc	nc	nc	nc	56	civil	nc	56	nc	nc	no
Cépic (Aude) à la ligne de Pamiers à Bram	19	nc	nc	nc	nc	19	civil	nc	nc	19	nc	no
Quillan à Rivesaltes (Pyrénées-Orientales)	65	nc	nc	nc	nc	65	military	nc	65	nc	nc	no
Embranchement de la ligne de Pamiers à Bram sous Lavelanet (Ariège)	32	nc	nc	nc	nc	32	civil	nc	nc	32	nc	no
Prades à Olette (Pyrénées Orientales)	16	nc	nc	nc	nc	16	civil	16	nc	nc	nc	no
Perpignan à Arles-sur-Tech par Elne	35	nc	nc	nc	35	nc	civil	nc	nc	nc	nc	no
Vicdessos à Tarascon (Ariège)	15	nc	nc	nc	nc	15	civil	nc	nc	15	nc	no
Saint-Girons à Seix (Ariège)	13	nc	nc	nc	nc	18	civil	nc	nc	18	nc	no
Ligne de ceinture de Toulouse	10	nc	nc	nc	nc	10	military	10	nc	nc	nc	no
De Lombez à la ligne d'Auch à Toulouse	20	nc	nc	nc	nc	20	civil	nc	nc	20	nc	no
Auch à Lannemezan	63	nc	nc	nc	nc	63	civil	nc	63	nc	nc	no
Chaum (Haute-Garonne) à la frontière Espagnole au Pont-du-Roi	14	nc	nc	nc	nc	14	civil	14	nc	nc	nc	no
Lannemezan à Arreau (Hautes-Pyrénées)	25	nc	nc	nc	nc	25	civil	nc	25	nc	nc	no
Pau à Vic-en-Bigorre (Hautes-Pyréenées)	45	nc	nc	nc	nc	45	civil	nc	45	nc	nc	no
Pierrefitte à Barèges, Cauterets et La Raillère (Hautes-Pyrénées)	30	nc	nc	nc	nc	30	civil	nc	30	nc	nc	no
De la ligne de Pau à Oloron à Laruns (Basses-Pyréenées)	20	nc	nc	nc	20	nc	civil	nc	nc	nc	nc	no
Oloron à Bédous (Basses-Pyrénées)	25	nc	nc	nc	nc	25	civil	nc	nc	25	nc	no
Roquefort (Landes) à Castel-Jaloux (Lot-et-Garonne) par Houeillès	55	nc	nc	55	nc	nc	civil	nc	nc	nc	nc	no
Mont-de-Marsan à Saint-Sever	19	nc	nc	nc	nc	19	civil	nc	19	nc	nc	no
Saint-Sever à Puyôo (Basses-Pyréenées)	49	nc	nc	nc	nc	49	civil	nc	nc	49	nc	no
Saint-Martin-Autevielle à Mauléon	26	nc	nc	nc	nc	26	civil	nc	nc	26	nc	no
Bayonne à St-Jean-Pied-de-Port	45	nc	nc	nc	nc	45	military	nc	nc	45	nc	no

A.7 The growth of the Freycinet Plan

Once the regional commissions had been appointed, events progressed rapidly. As early as January 12, Freycinet proposed that the state purchase struggling local railway companies in western France and temporarily operate them. Then, on February 7, 1878, Say proposed financing the Plan through the issuance of a 3% amortizable annuity. At that point, it seemed that the Plan was being implemented following the framework agreed upon in the tripartite discussions between Freycinet, Say, and Gambetta. Yet soon, the process became increasingly political.

Freycinet quickly complained about the engineers' overly technocratic approach. "It is not enough," he argued, "for me to be enlightened on the technical or administrative questions that the railway industry raises. I also need to be kept informed of the wishes of public opinion, to know the demands of our main population centers."[73] On January 31, he proposed reforming the Central Railway Commission by establishing a Higher Council for Transport Infrastructure. This new council would comprise 16 members from both chambers of Parliament, 16 members from the senior administration and state engineering corps, and 16 representatives from commerce, industry, and agriculture (Thibault, 1975, p.233).[74] For the first time, elected officials and representatives of civil society were incorporated into a consultative body essential to the development of the railway network, enabling them to exert direct influence over state railway policy. The door to electoral considerations was opened.

In the Chamber of Deputies, a railway commission tasked with examining the distribution of the lines to be built was formed at the beginning of the 1878 parliamentary session. The deputies wished to regain control over the plan. The new classification commission was chaired by Daniel Wilson, who was also the budget rapporteur and President Jules Grévy's stepson.[75]

[73] *Journal des Économistes*, 1878, n°2, p.269.

[74] The 16 members belonging to the National Assembly of the newly formed Central Railway Commission were, for the Senate, Béraldi, Claude, Dupuy de Lôme, Feray, Hubert-Delisle, Krantz, Jacques-Palotte and Varroy, and for the Chamber, Allain-Targé, Sadi Carnot, Jules Ferry, Germain, Lebaudy, Le Cesne, Waddington and Wilson. The republicans were in the majority. Only Dupuy de Lôme, center-right, Hubert-Delisle, monarchist, and Beraldi, independent candidate, did not belong to the republican majority. Members are listed in the republican newspaper *Le Globe* of February 3, 1878, p.67, which also gives the list of members of the administration.

[75] Beck (1987, p.568) discusses Wilson's role in promoting the Plan and its electoral benefits. He also gives testimonies of Wilson promising to create railroad lines once elected. This electoral haggling was criticized by the

The members of the commission were almost exclusively republican (Thibault, 1975, appendix 12). Thibault (1975, p.246) points out that, until that point, the government had hoped to rely on the engineers to contain the Plan's expansion. Those hopes were soon dashed.

Table A.9: The Chamber of Deputy's Railway Classification Commission (1878-1881).

Name of the deputy	**Political affiliation**
Albert Grévy	President, Gauche républicaine
Lebaudy	Vice-president, Centre-gauche
Latrade	Vice-president, Centre-gauche
Hérault	Secretary, Gauche républicaine
De la Porte	Gauche républicaine
Jacques	Union républicaine
Tézenas	Gauche républicaine
Laumond	Centre-gauche
Allain Targé	Union républicaine
Creuzet-Fourneyron	Union républicaine
Journault	Gauche républicaine
Brice	Centre-gauche
Gastu	Union républicaine
Bienvenu	Gauche républicaine
Wilson	Gauche républicaine
Nadaud	Union républicaine
Borriglione	Gauche républicaine
Soye	Gauche républicaine
Perras	Gauche républicaine
Fourot	Gauche républicaine
Constans	Union républicaine
Vacher	Union républicaine

The Plan grew significantly between 1878 and July 1879 when the parliament voted on the plan. Aucoc (1882, p.297), a member of the Central Railway Commission, points out that Freycinet's initial project for new railway construction did not exceed 5,000 km of new lines reclassified only 10,000 km of lines within the "general interest network." On June 4, 1878, the number of new lines to be built was raised to 6,200 km. Following sessions with the departmental councils, a new bill introduced on November 4, 1878, added several hundred kilometers. The lower Chamber Commission's report was presented on March 15, 1879 (published in the *Journal Officiel* on April 13 and 15, 1879) and the Chamber approved additional railroads, bringing the total to 8,827 km of new lines. Finally, the Senate referred a number of projects to the minister so they could be studied further. Many of these lines were eventually built (Picard, 1887). As

Journal d'Indre-et-Loir, a conservative newspaper, when the projects fell behind schedule.

Thibault (1975, p.256) argues, the deputies sought to restore parliamentary initiative against the administration, while the government accused the deputies of having destroyed the coherence of the Plan. By 1882, Aucoc (1882) wondered:

> Is there not some excess in the expansion of the general-interest railway network as promised to the population under the law of July 17, 1879? Are there not, among the railways approved in principle, a considerable number whose construction costs are disproportionate to the services they will provide? (p.296)

For Cornu (2016, p.48), Freycinet was genuinely "obsessed" with justifying the choices made in the process leading to the Plan, which bears his name. In a speech defending his actions, Freycinet (1884) justified the Plan against accusations of fiscal irresponsibility by emphasizing its economic rationale. He argued that "the entire financial mechanism of the program's implementation was based on forecasts of increased revenues. In 1878, no one doubted that, on the one hand, the strengthening of republican institutions and, on the other hand, the execution of major works linked to the country's productive capacity, would lead to economic development, which would inevitably result in higher tax revenues." (p.6). He argued that the budgetary difficulties in 1884 were not attributable to the Plan. He specifically pointed to the rise in military expenditures, Jules Ferry's education reform, and the increase in life annuities, which together amounted to 277 million francs (p.10), as well as the concurrent reduction in various indirect taxes, which led to a revenue loss of 221 million francs (p.11). In contrast, he maintained that the Plan had generated an additional 300 million francs in tax revenue between 1878 and 1883.[76] Ultimately, between 1878 and 1879, the Plan expanded far beyond its original scope as elected officials steered it away from its initial objectives toward electoral considerations. What had begun as a carefully structured infrastructure initiative had become a political instrument.

[76]Freycinet (1913, pp.81-82) once again maintains that "it is natural to ask whether this massive operation was beneficial to the country and whether the nation should regret it. Were the invested capital and resources adequately remunerated? Senator Buffet has often posed this question to me in the Senate. He sought to prove that the state had made a terrible miscalculation and had indebted itself in vain. My response was that this reasoning was fundamentally flawed. The state is not a merchant; it does not seek high-yield investments, but rather considers the general interest."

B Summary statistics, maps, and additional results

B.1 Summary statistics

Table B.10: Summary Statistics

	Observations	Mean	Std. Dev.	Min	Max	p25	p50	p75
				Commune level data:				
Arrondissement chef-lieu	1616040	0.010	0.100	0.000	1.000	0.000	0.000	0.000
Canton chef-lieu	1616040	0.075	0.264	0.000	1.000	0.000	0.000	0.000
Number of train stations	1616040	0.197	0.597	0.000	29.000	0.000	0.000	0.000
Train stations dummy	1616040	0.150	0.357	0.000	1.000	0.000	0.000	0.000
Log(Distance to Germany)	1616038	12.574	0.880	3.438	13.632	12.268	12.782	13.194
Log(Distance to Paris)	1616038	12.498	0.725	4.378	13.803	12.084	12.630	13.038
Log(Population)	1616040	6.274	0.945	2.197	13.238	5.642	6.227	6.835
Ruggedness	1616040	0.910	1.196	0.000	11.318	0.286	0.516	0.946
Republican majority (Senate)	1616040	0.650	0.389	0.000	1.000	0.333	0.750	1.000
State network (1878)	1616040	0.061	0.240	0.000	1.000	0.000	0.000	0.000
State network (1879)	1616040	0.063	0.243	0.000	1.000	0.000	0.000	0.000
State network (1880)	1616040	0.064	0.245	0.000	1.000	0.000	0.000	0.000
State network (1881)	1616040	0.070	0.256	0.000	1.000	0.000	0.000	0.000
State network (1882)	1616040	0.075	0.264	0.000	1.000	0.000	0.000	0.000
State network (1883)	1616040	0.079	0.270	0.000	1.000	0.000	0.000	0.000
State network (1889)	1616040	0.092	0.290	0.000	1.000	0.000	0.000	0.000
State network (1900)	1616040	0.094	0.292	0.000	1.000	0.000	0.000	0.000
Wheat suitability	1615995	3.654	1.339	1.000	9.000	3.000	3.500	4.500
Republican (far-left excluded)	1616040	0.558	0.497	0.000	1.000	0.000	1.000	1.000
Republican (including far-left)	1616040	0.585	0.493	0.000	1.000	0.000	1.000	1.000
Center Left	1616040	0.141	0.348	0.000	1.000	0.000	0.000	0.000
Gauche Republicaine	1616040	0.267	0.442	0.000	1.000	0.000	0.000	1.000
Union Republicaine	1616040	0.150	0.357	0.000	1.000	0.000	0.000	0.000
Train stations in the 1878 plan	35917	0.057	0.287	0.000	7.000	0.000	0.000	0.000
Train stations in 1879 law	35917	0.057	0.300	0.000	13.000	0.000	0.000	0.000
Train stations added to the 1878 plan	35917	0.029	0.213	0.000	11.000	0.000	0.000	0.000
				Canton level data:				
Arrondissement chef-lieu	131805	0.124	0.329	0.000	1.000	0.000	0.000	0.000
Number of train stations	131805	2.441	2.840	0.000	29.000	0.000	2.000	4.000
Train stations dummy	131805	1.845	1.959	0.000	12.000	0.000	1.000	3.000
Log(Distance to Germany)	131805	12.734	0.751	7.761	13.622	12.471	12.930	13.243
Log(Distance to Paris)	131805	12.597	0.797	4.378	13.803	12.248	12.762	13.121
Log(Population)	131805	9.201	0.646	5.707	13.238	8.867	9.194	9.499
Ruggedness	131760	1.019	1.297	0.004	8.824	0.314	0.542	1.056
Republican majority (Senate)	131805	0.617	0.397	0.000	1.000	0.250	0.667	1.000
Wheat suitability	131760	3.862	1.397	1.000	8.000	3.000	3.750	4.667
Republican (far-left excluded)	131805	0.573	0.495	0.000	1.000	0.000	1.000	1.000
Republican (including far-left)	131805	0.543	0.498	0.000	1.000	0.000	1.000	1.000
Train stations in the 1878 plan	2930	0.700	1.595	0.000	13.000	0.000	0.000	0.000
Train stations in 1879 law	2930	0.695	1.596	0.000	19.000	0.000	0.000	0.000
Train stations added to the 1878 plan	2930	0.356	1.135	0.000	18.000	0.000	0.000	0.000
				District level data:				
Arrondissement chef-lieu	24075	0.677	0.468	0.000	1.000	0.000	1.000	1.000
Canton chef-lieu	24075	5.061	2.380	0.000	19.000	4.000	5.000	6.000
Number of train stations	24075	13.365	9.788	0.000	61.000	6.000	12.000	19.000
Train stations dummy	24075	10.102	7.403	0.000	49.000	5.000	9.000	14.000
Log(Distance to Germany)	24075	12.721	0.708	8.851	13.599	12.471	12.863	13.226
Log(Distance to Paris)	24075	12.375	1.203	4.378	13.770	12.137	12.706	13.057
Log(Population)	24075	11.082	0.436	7.911	13.238	10.883	11.078	11.315
Ruggedness	23985	0.930	1.182	0.021	6.911	0.304	0.497	0.926
Republican majority (Senate)	24075	0.617	0.399	0.000	1.000	0.250	0.667	1.000
Wheat suitability	23985	4.007	1.432	1.385	8.000	3.000	3.767	4.667
Republican (far-left excluded)	24075	0.591	0.492	0.000	1.000	0.000	1.000	1.000
Republican (including far-left)	24075	0.553	0.497	0.000	1.000	0.000	1.000	1.000
Train stations in the 1878 plan	536	3.828	5.379	0.000	29.000	0.000	1.000	6.000
Train stations in 1879 law	536	3.799	5.223	0.000	33.000	0.000	1.000	6.000
Train stations added to the 1878 plan	536	1.946	3.625	0.000	20.000	0.000	0.000	3.000

B.2 Additional results on the 1878 plan and July 1879 law

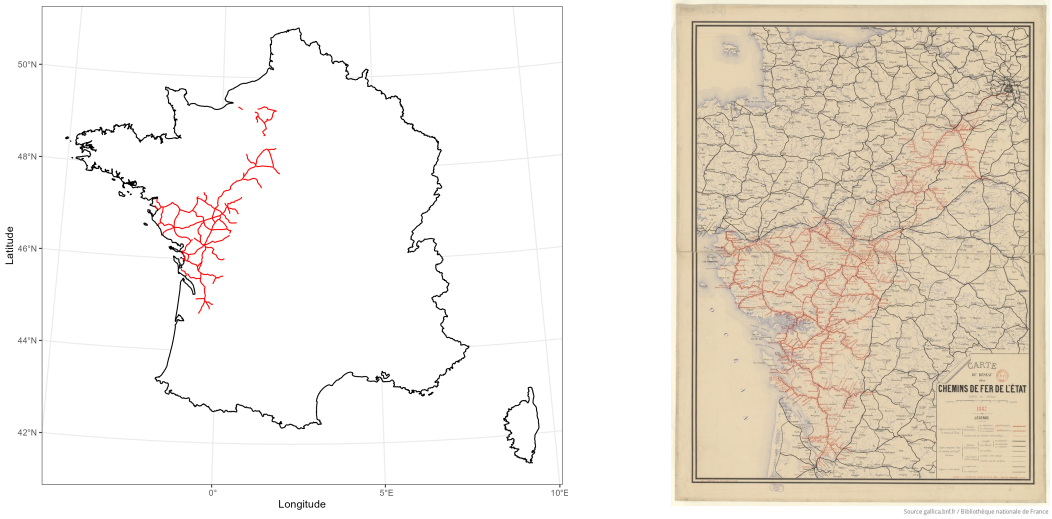
Table B.11: Reproducing the results in Table 2 at different levels of aggregation.

Dep. var.:	*1878 plan*		*1879 law*		*Added to the 1878 plan*	
	(1)	(2)	(3)	(4)	(5)	(6)
	Canton level					
Republican majority	0.14371	0.14646	0.24672**	0.24123**	0.12708**	0.15281**
	(0.11124)	(0.11039)	(0.098450)	(0.097246)	(0.055289)	(0.066500)
Observations	2918	2915	2918	2915	2918	2915
R-squared	0.02	0.03	0.03	0.04	0.01	0.02
	Electoral district level					
Republican majority	0.054102	0.14489	1.22283**	1.12435**	0.57197*	0.94266**
	(0.70266)	(0.66832)	(0.54880)	(0.53953)	(0.31564)	(0.38145)
Observations	522	520	522	520	522	520
R-squared	0.04	0.10	0.05	0.09	0.01	0.04
Same controls as in Table 2	✓	✓	✓	✓	✓	✓
*** p<0.01, ** p<0.05, * p<0.1						

Note: Regressions are weighted by the number of municipalities. Standard errors are clustered at the electoral district level.

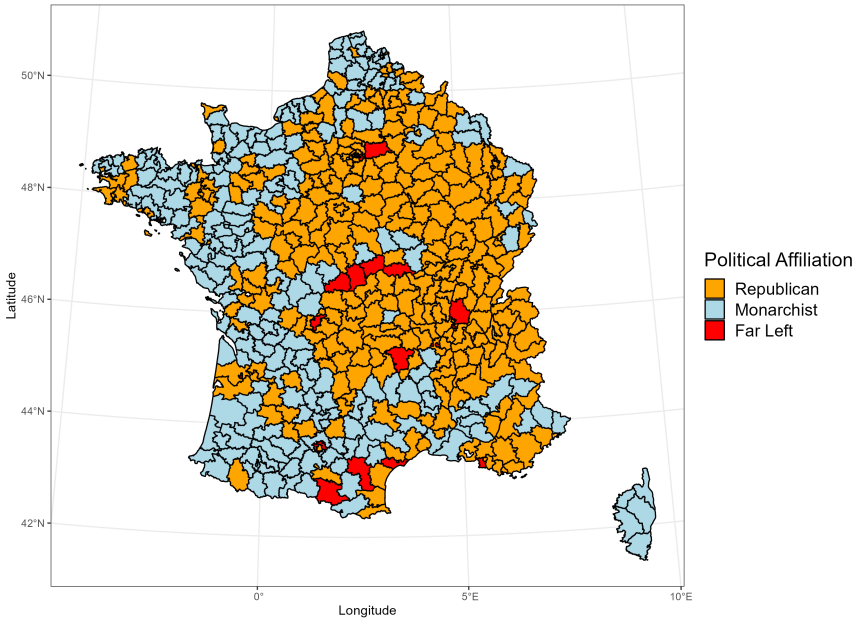
B.3 The State network and electoral maps

Figure B.8: State network.



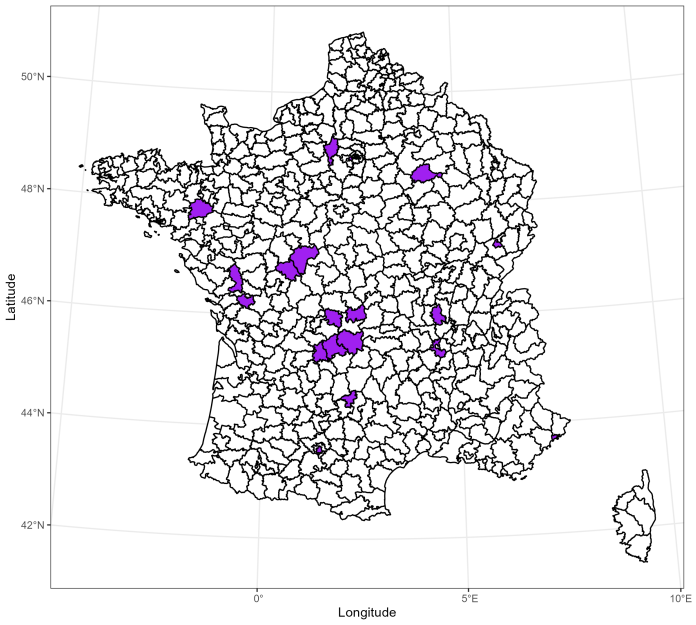
Notes: The left image represents (in red) the districts in which the State network was present in 1887. The image on the right represents the different types of railroad networks covering France in 1887 and was retrieved from Gallica.

Figure B.9: Electoral map for the 1877 election.



Notes: This figure maps the electoral results of the 1877 election. We distinguish members of parliament among three groups" monarchists, members of the Republican majority, and far-left Republicans.

Figure B.10: Districts whose member of parliament was part of the “Classification commission.”



C Additional difference-in-difference results

C.1 Results including the far-left in the Republican majority

Table C.12: Results from 1 while including the far-left in the Republican majority.

	(1)	(2)	(3)	(4)	(5)
Republican majority (House, including far left) × Post 1879	0.015627**	0.012174*	0.013819**	0.014887**	0.017703**
	(0.0068707)	(0.0064739)	(0.0062621)	(0.0065442)	(0.0069711)
Republican majority (Senate) × Post 1879				-0.0035520	
				(0.0082847)	
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.19	0.31	0.35	0.35	0.36
*** p<0.01, ** p<0.05, * p<0.1					

C.2 Train station dummy

Table C.13: Towns with a representative in the Republican majority had more chance to get at least one train station.

	(1)	(2)	(3)	(4)	(5)
Republican majority (House) × Post 1879	0.012879***	0.011912***	0.012984***	0.013552***	0.014510***
	(0.0047197)	(0.0045968)	(0.0045308)	(0.0046957)	(0.0048728)
Republican majority (Senate) × Post 1879				-0.0020017	
				(0.0059227)	
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.06	0.18	0.19	0.19	0.19
*** p<0.01, ** p<0.05, * p<0.1					

C.3 Event study results

Table C.14: Dynamic effect of the House Republican majority.

	(1)	(2)	(3)	(4)	(5)
$\leq$ 1873	0.0047102	0.0051949	0.0048147	0.0041538	-0.0029530
	(0.0057722)	(0.0057377)	(0.0056883)	(0.0061829)	(0.0072684)
1874	0.0081449	0.0085893*	0.0081767	0.0072670	0.0036121
	(0.0051662)	(0.0051368)	(0.0050886)	(0.0054536)	(0.0063032)
1875	0.0063489	0.0068302	0.0065170	0.0065369	0.0051228
	(0.0042371)	(0.0042291)	(0.0041946)	(0.0046316)	(0.0055179)
1876	0.0046971	0.0052955	0.0050265	0.0048301	0.00095763
	(0.0033375)	(0.0033582)	(0.0033261)	(0.0038393)	(0.0046965)
1877	0.0023582	0.0027174	0.0022990	0.0017295	0.00036389
	(0.0027215)	(0.0027401)	(0.0027237)	(0.0031016)	(0.0035782)
1878	-0.0010854	-0.00091348	-0.00096038	-0.0022622	-0.0028446
	(0.0016871)	(0.0016876)	(0.0016852)	(0.0020951)	(0.0024567)
1880	0.0038950**	0.0037400*	0.0039016**	0.0048585**	0.0052397*
	(0.0019672)	(0.0019713)	(0.0019848)	(0.0021448)	(0.0026959)
1881	0.0031688	0.0028752	0.0033805	0.0062076*	0.0048308
	(0.0033289)	(0.0033562)	(0.0033184)	(0.0032721)	(0.0040974)
1882	0.0067668*	0.0062134	0.0066244*	0.0084699**	0.0056951
	(0.0040373)	(0.0040507)	(0.0039802)	(0.0039465)	(0.0048383)
1883	0.011116**	0.010326**	0.010765**	0.012503***	0.011128*
	(0.0046971)	(0.0047060)	(0.0046276)	(0.0046421)	(0.0056654)
1884	0.013111**	0.012090**	0.012748**	0.013595***	0.0093438
	(0.0050909)	(0.0050896)	(0.0049887)	(0.0050994)	(0.0059546)
1885	0.019136***	0.017903***	0.018747***	0.019494***	0.016256**
	(0.0054127)	(0.0054042)	(0.0052942)	(0.0054162)	(0.0063136)
1886	0.022160***	0.020720***	0.021561***	0.021880***	0.020255***
	(0.0054812)	(0.0054801)	(0.0053331)	(0.0054594)	(0.0062474)
1887	0.022490***	0.020936***	0.021786***	0.021812***	0.021529***
	(0.0056169)	(0.0055878)	(0.0054227)	(0.0056605)	(0.0063872)
1888	0.020629***	0.018963***	0.019938***	0.020916***	0.020311***
	(0.0058763)	(0.0058215)	(0.0056886)	(0.0057350)	(0.0065449)
1889	0.021457***	0.019669***	0.020627***	0.020714***	0.020651***
	(0.0060614)	(0.0059873)	(0.0058496)	(0.0059214)	(0.0067131)
1890	0.021011***	0.019115***	0.020083***	0.021042***	0.021376***
	(0.0062739)	(0.0061897)	(0.0060438)	(0.0060226)	(0.0067823)
1891	0.022380***	0.020371***	0.021381***	0.022246***	0.021891***
	(0.0063996)	(0.0063151)	(0.0061497)	(0.0061927)	(0.0069516)
1892	0.023447***	0.021408***	0.022356***	0.022417***	0.022284***
	(0.0064957)	(0.0063940)	(0.0062166)	(0.0062448)	(0.0069648)
1893	0.024779***	0.022722***	0.023711***	0.024757***	0.023934***
	(0.0066389)	(0.0065229)	(0.0063235)	(0.0063876)	(0.0072049)
1894	0.021531***	0.019450***	0.020588***	0.021615***	0.022244***
	(0.0067856)	(0.0066634)	(0.0064539)	(0.0065210)	(0.0072635)
$\geq$ 1895	0.024297***	0.023126***	0.024342***	0.025073***	0.023061***
	(0.0074341)	(0.0072449)	(0.0069429)	(0.0070665)	(0.0078065)
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Year × Senate F.E.				✓	
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.19	0.31	0.35	0.35	0.36

*** p<0.01, ** p<0.05, * p<0.1

C.4 Results at the canton level

Table C.15: Results using canton level data.

	(1)	(2)	(3)	(4)	(5)
Republican majority (House) × Post 1879	0.27568***	0.25267***	0.25973***	0.22171***	0.16378**
	(0.061930)	(0.061505)	(0.060884)	(0.062708)	(0.082183)
Republican majority (Senate)				0.13953*	
				(0.075475)	
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Year × Department F.E.					✓
Canton F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	131	131	131	131	131
Cantons	2919	2919	2915	2915	2915
R-squared	0.87	0.87	0.87	0.87	0.89
*** p<0.01, ** p<0.05, * p<0.1					

C.5 Results at the electoral district level

Table C.16: Results using electoral district level data.

	(1)	(2)	(3)	(4)	(5)
Republican majority (House) × Post 1879	0.97316**	1.08598**	1.70069***	1.55696***	1.03122**
	(0.48852)	(0.49494)	(0.46526)	(0.46284)	(0.48087)
Republican majority (Senate)				0.59673	
				(0.54228)	
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	23490	23490	23220	23220	23175
Electoral districts	522	522	516	516	515
R-squared	0.88	0.88	0.90	0.90	0.94
*** p<0.01, ** p<0.05, * p<0.1					

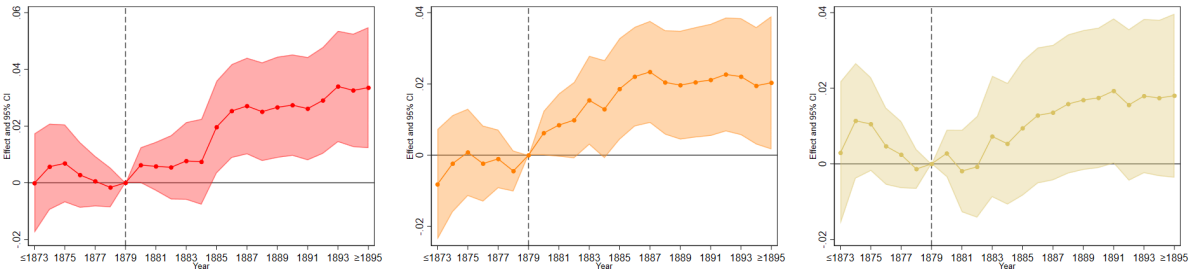
C.6 Results disaggregated by ideological groups

Table C.17: Results by ideological group.

	(1)	(2)	(3)	(4)	(5)
Center Left × Post 1879	0.011577	0.010265	0.012081	0.013193	0.011190
	(0.010287)	(0.010126)	(0.010078)	(0.010112)	(0.0095549)
Gauche Republicaine × Post 1879	0.018511**	0.016566**	0.017269**	0.019075**	0.023335***
	(0.0084181)	(0.0078406)	(0.0075303)	(0.0079122)	(0.0085031)
Union Republicaine × Post 1879	0.020537**	0.019071*	0.021062**	0.022850**	0.026524***
	(0.010189)	(0.0097547)	(0.0093861)	(0.0094615)	(0.0087965)
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Senate × Post 1879				✓	
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.19	0.31	0.35	0.35	0.36
*** p<0.01, ** p<0.05, * p<0.1					

Notes: The reference group is composed of all members of parliament that were not part of the governmental majority. As in Table 1, standard errors are clustered at the electoral district level.

Figure C.11: Event study results by ideological groups.



(Union Républicaine) (Republican Left) (Center Left)

Notes: This figure graphs the event study results from our difference-in-difference strategy disaggregated by ideological group as identified in newspapers reporting the election's results. The left and right panels adopt the same controls as in column 5 of Table C.17. 1879 is used as the base year. The shaded areas represent the 95% confidence intervals. Standard errors are clustered at the electoral district level.

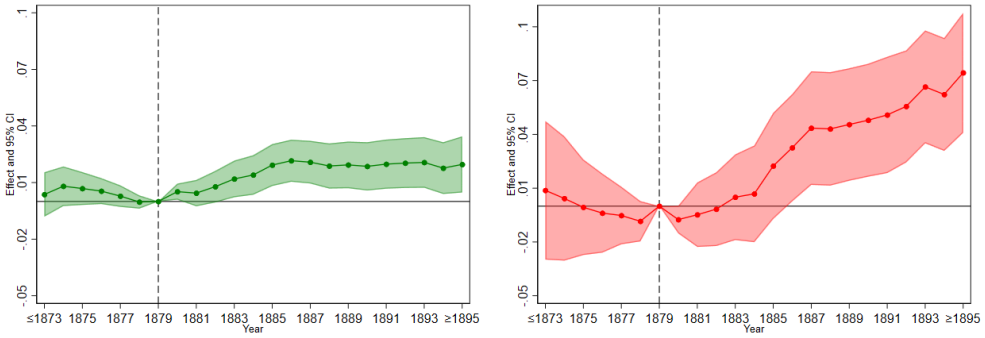
C.7 The effect of serving on the lower house's transportation committee

Table C.18: The effect of a representative serving on the transportation committee.

	(1)	(2)	(3)	(4)	(5)
Republican majority (House) × Post 1879	0.015293**	0.014227**	0.015807**	0.017207***	0.020027***
	(0.0068275)	(0.0064736)	(0.0062748)	(0.0065120)	(0.0069858)
Transport committee (1878/81) × Post 1879	0.046468*	0.032787	0.027721	0.027570	0.024113
	(0.026661)	(0.023853)	(0.023187)	(0.022942)	(0.021823)
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Republican majority (Senate) × Post 1879				✓	
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.19	0.31	0.35	0.35	0.36
*** p<0.01, ** p<0.05, * p<0.1					

C.8 Event study: private vs. government networks

Figure C.12: Event study for the government owned vs. private networks.



(Government network) (Private network)

Notes: The left panel looks at the effect of Republican political representation on the number of train stations for regions dominated by the government railroad network. The right panel does the same for the regions dominated by the private network. The left and right panels adopt the same controls as in column 3 of Table 3. 1879 is used as the base year. The shaded areas represent the 95% confidence intervals. Standard errors are clustered at the electoral district level.

Table C.19: Our results are robust to alternative definitions of the State network.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bandwidth:	1878	1879	1880	1881	1882	1883	1889	1900
				Panel A: Table 3, column 3.				
Republican majority (House) × No state network	0.015643**	0.015372**	0.015510**	0.014905**	0.014616**	0.014967**	0.014070**	0.014271**
	(0.0065092)	(0.0065113)	(0.0065180)	(0.0065373)	(0.0065613)	(0.0065820)	(0.0066313)	(0.0066444)
Republican majority (House) × State network	0.039212*	0.043927**	0.042366**	0.048001***	0.048001***	0.041945**	0.046028***	0.044064***
	(0.020138)	(0.019943)	(0.019852)	(0.018044)	(0.017177)	(0.016969)	(0.015975)	(0.015796)
State network	-0.0071656	-0.0071221	-0.0054028	-0.0053038	-0.0080321	-0.0061534	-0.0066741	-0.0044768
	(0.013274)	(0.013274)	(0.013153)	(0.013155)	(0.012982)	(0.012852)	(0.012355)	(0.012127)
Observations (in thousands)	1617	1617	1617	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522	522	522	522
R-squared	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Prob > F $\beta_{state} = \beta_{private}$	0.266	0.174	0.199	0.085	0.070	0.139	0.065	0.083
				Panel B: Table 3, column 5.				
Republican majority (House) × No state network	0.018827**	0.018540**	0.018799**	0.018328**	0.017909**	0.018003**	0.017151**	0.017193**
	(0.0073088)	(0.0073459)	(0.0073570)	(0.0073402)	(0.0073644)	(0.0073958)	(0.0075429)	(0.0075408)
Republican majority (House) × State network	0.045615**	0.048473**	0.044857**	0.050106***	0.052821***	0.050433***	0.051666***	0.050297***
	(0.020181)	(0.019735)	(0.019708)	(0.018730)	(0.018117)	(0.017433)	(0.017437)	(0.016079)
State network	-0.018554	-0.017637	-0.012761	-0.010306	-0.013650	-0.014995	-0.010864	-0.0091227
	(0.017201)	(0.017101)	(0.017404)	(0.017394)	(0.018362)	(0.019392)	(0.021845)	(0.020233)
Observations (in thousands)	1617	1617	1617	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522	522	522	522
R-squared	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Prob > F $\beta_{state} = \beta_{private}$	0.210	0.156	0.217	0.112	0.073	0.086	0.073	0.064
				*** p<0.01, ** p<0.05, * p<0.1				

Notes: This table reproduces the results in Table 3 with the same variables as in column 3 (Panel A) and column 5 (Panel B), but using different measure of the state network. More specifically, a district is considered as subject to the state network if there is a government-run train station in this district at a specified date (1878, 1879, 1880, 1881, 1882, 1883, 1889, and 1900). These dates represent the only ones during which there are consequential changes to the state network. The dependent variable is the number of train stations. Standard errors are clustered at the electoral district level.

C.10 Additional results on within electoral district allocation

Table C.20: A higher Republican vote share in 1876 (far left excluded) has a non-linear effect on infrastructure investment.

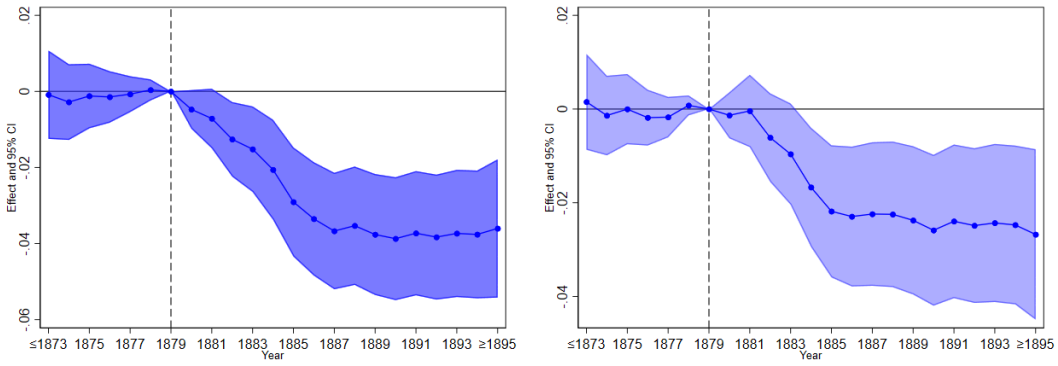
	Republican	*Minority*	*Republican*	*Minority*	*Republican*	*Minority*
	(1)	(2)	(3)	(4)	(5)	(6)
1876 Republican vote share × Post 1879	0.25196***	0.20125***	0.18877***	0.073254*	0.18285***	0.076879*
	(0.042820)	(0.042101)	(0.041658)	(0.039691)	(0.043448)	(0.043079)
(1876 Republican vote share × Post 1879)^2	-0.15725***	-0.14480***	-0.12580***	-0.069013	-0.11615***	-0.042119
	(0.041511)	(0.048082)	(0.040613)	(0.046385)	(0.042503)	(0.048055)
Log(Population)	✓	✓	✓	✓	✓	✓
Year × Electoral District F.E.	✓	✓	✓	✓		
Year × Canton F.E.					✓	✓
Year F.E. × Ruggedness			✓	✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓	✓
Year × District capital F.E.			✓	✓	✓	✓
Commune F.E.	✓	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓	✓
Observations (in thousands)	849	683	849	683	846	680
Communes	18869	15167	18868	15167	18795	15118
R-squared	0.89	0.88	0.90	0.89	0.90	0.90
*** p<0.01, ** p<0.05, * p<0.1						

Note: This table gives results on the allocation of train stations *within* electoral districts. The results are consistent with a non-linear, concave effect of the percentage of Frenchmen voting for Republicans on the number of train stations a commune received following the Freycinet plan. Standard errors are clustered at the commune level.

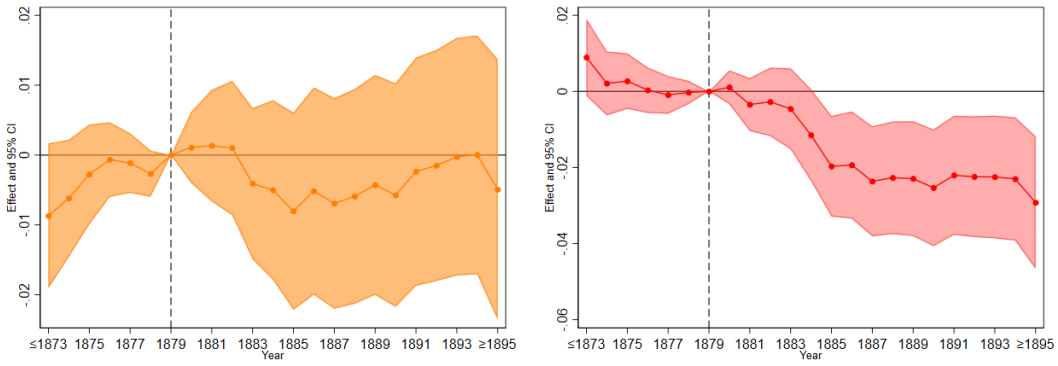
Table C.21: Reproducing the results in Table 6 but with a train station dummy variable.

	Republican	*Minority*	*Republican*	*Minority*	*Republican*	*Minority*
	(1)	(2)	(3)	(4)	(5)	(6)
Republican vote below 20% × Post 1879	-0.021016***	-0.015524***	-0.018272***	-0.0050288	-0.015970**	-0.0061706
	(0.0062792)	(0.0058248)	(0.0062226)	(0.0057469)	(0.0066547)	(0.0061224)
Republican vote between 20% and 40% × Post 1879	-0.015781***	-0.0084374	-0.012774**	-0.0023155	-0.010917*	-0.000064183
	(0.0061134)	(0.0057890)	(0.0060893)	(0.0056979)	(0.0062456)	(0.0056965)
Republican vote between 60% and 80% × Post 1879	0.0078588	-0.0027088	0.0050530	-0.0050348	0.0019707	-0.00076122
	(0.0060528)	(0.0069202)	(0.0059758)	(0.0068862)	(0.0060294)	(0.0065699)
Republican vote above 80% × Post 1879	-0.020960***	-0.039071***	-0.019618***	-0.032339***	-0.020597***	-0.027900***
	(0.0057971)	(0.0061793)	(0.0057445)	(0.0060919)	(0.0060832)	(0.0065124)
Log(Population)	✓	✓	✓	✓	✓	✓
Year × Electoral District F.E.	✓	✓	✓	✓		
Year × Canton F.E.					✓	✓
Year F.E. × Ruggedness			✓	✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓	✓
Year × District capital F.E.			✓	✓	✓	✓
Commune F.E.	✓	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓	✓
Observations (in thousands)	902	714	902	714	899	712
Communes	20042	15872	20041	15872	19971	15822
R-squared	0.88	0.88	0.88	0.88	0.89	0.90
*** p<0.01, ** p<0.05, * p<0.1						

Figure C.13: Event study results for within electoral district allocation.



(Republican votes $\leq 20\%$) ($20\% <$ Republican votes $\leq 40\%$)



($60\% <$ Republican votes $\leq 80\%$) ($80\% <$ Republican votes)

Notes: These four graphs report the results of the fully interacted version of column 3 in Table 6. The omitted category is the municipalities with between 40 and 60% of Republican votes during the 1876 election. 95% confidence intervals are reported by the shaded areas using standard errors clustered at the municipality level.

C.11 Triple difference: Core vs. Swing districts

Table C.22: Swing vs. Core districts.

	(1)	(2)	(3)	(4)	(5)
Republican (swing district) × Post 1879	0.046228***	0.044902***	0.043499***	0.043734***	0.027535**
	(0.016615)	(0.015446)	(0.015055)	(0.014951)	(0.013300)
Republican (core district) × Post 1879	0.013027*	0.011322*	0.013082**	0.013771**	0.018888***
	(0.0068438)	(0.0064892)	(0.0062927)	(0.0066462)	(0.0072840)
Log(Population)		✓	✓	✓	✓
Year F.E. × Ruggedness			✓	✓	✓
Year F.E. × Wheat suitability			✓	✓	✓
Year × Canton capital F.E.			✓	✓	✓
Year × District capital F.E.			✓	✓	✓
Republican majority (Senate) × Post 1879				✓	
Year × Department F.E.					✓
Electoral district F.E.	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓
Observations (in thousands)	1617	1617	1617	1617	1617
Electoral districts	522	522	522	522	522
R-squared	0.19	0.31	0.35	0.35	0.36
Prob > F $\beta_{swing} = \beta_{core}$	0.045	0.030	0.044	0.050	0.524
*** p<0.01, ** p<0.05, * p<0.1					

Note: This table presents results similar to those in Table 1, while distinguishing between 'swing' and 'core' Republican districts. Swing districts are defined as those where the winning candidate secured victory by a margin of less than 5% of the votes over the runner-up. All other districts are classified as 'core' districts. The last row of the table reports an F-test, where the null hypothesis is that the two reported coefficients are equal. Standard errors are clustered at the electoral district level.

D Synthetic difference-in-difference results

This appendix uses the synthetic difference-in-difference method developed by Arkhangelsky et al. (2021). This method weakens the reliance on the parallel trends assumption. The synthetic difference-in-difference estimator is a weighted average of control units. The units and time weights ensure a parallel time trend with the treated pre-intervention trend.

Table D.23 reports the average treatment effects for three different specifications. The data is at the canton level for columns 1 to 3 and the electoral district level for columns 4 to 6.[77] Columns 1 and 4 do not include any controls. Columns 2 and 5 include the log of population as a control. Columns 3 and 6 further add covariates on ruggedness, wheat suitability, and whether a town is a district (*arrondissement*) capital or a canton capital.[78]

Note that while time-invariant covariates cannot be included in the standard difference-in-difference framework, they can be accommodated in the synthetic difference-in-difference framework "by adjusting the unit weights so the weights also balance these unit-specific covariates." (Arkhangelsky et al., 2021, p.4).

Table D.23: Synthetic difference-in-difference results at the canton and electoral district levels.

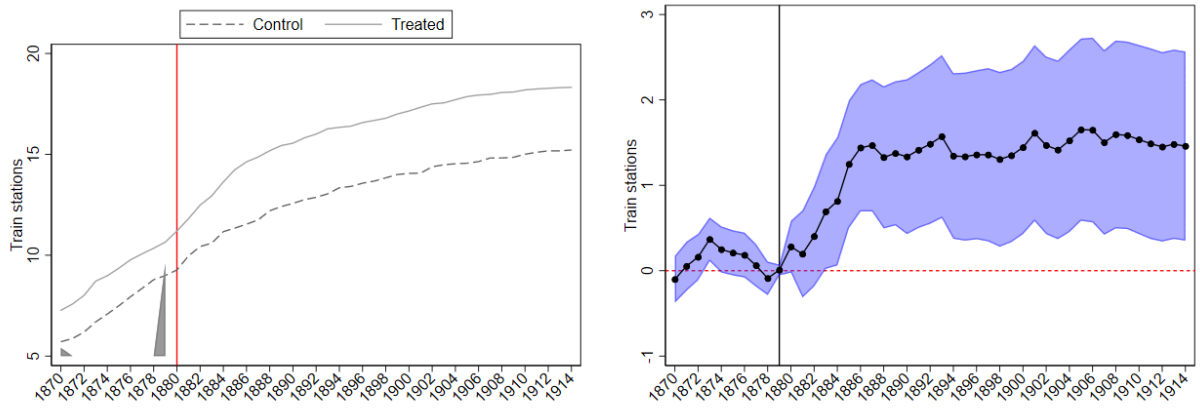
	Canton level:			*Electoral district level:*		
	(1)	(2)	(3)	(4)	(5)	(6)
Republican majority (House) × Post 1879	0.30527***	0.27617***	0.27939***	1.31729***	1.32345***	1.33022***
	(0.055007)	(0.055907)	(0.052973)	(0.46447)	(0.48757)	(0.45569)
Log(Population)		✓	✓		✓	✓
Ruggedness			✓			✓
Wheat suitability			✓			✓
District capital			✓			✓
Canton capital						✓
Observations	131355	131355	131175	23490	23490	23400
*** p<0.01, ** p<0.05, * p<0.1						

Notes: This table reports the results of our synthetic difference-in-difference estimates. The bootstrapped standard errors are in parentheses. In all cases, the number of repetitions for bootstrap standard errors is 100.

[77] Running the `sdid` package in Stata is computationally intensive, hence the reason why we do not report the results at the municipal level here.

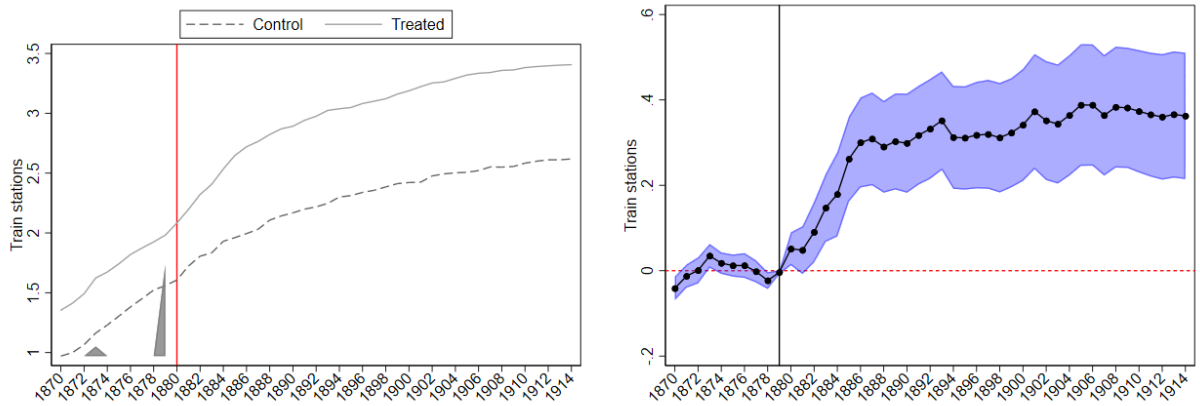
[78] In column 3, we do not include "canton capital" since obviously there is no variation on that margin —all cantons have a single capital. Conversely, not all electoral districts have an administrative district (*arrondissement*) capital.

Figure D.14: Synthetic difference-in-difference event study graphs using district-level data.



Notes: The left panel represents the average number of train stations per district in the control and treated groups. The grey shaded area represents the weights such that most of the weight is put on year 1879. The right panel represents the estimated treatment effect using the synthetic difference-in-difference method disaggregated by year. The pre-1879 years represent the pre-treatment fit. The shaded blue area represents 95% confidence intervals calculated using the standard deviation of 100 bootstrap resamples.

Figure D.15: Synthetic difference-in-difference event study graphs using canton-level data.

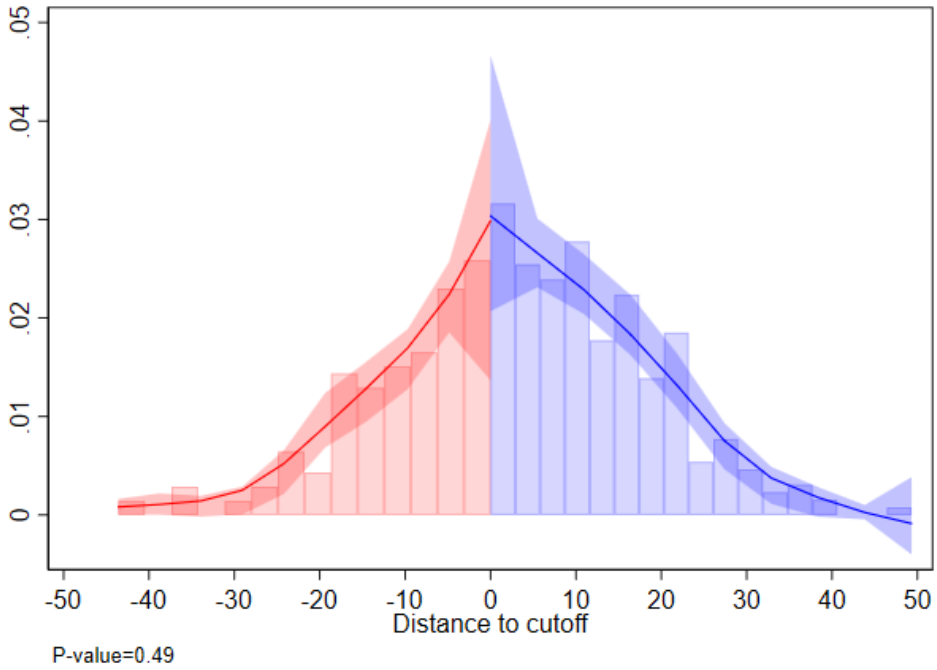


Notes: The left panel represents the average number of train stations per canton in the control and treated groups. The grey shaded area represents the weights such that most of the weight is put on year 1879. The right panel represents the estimated treatment effect using the synthetic difference-in-difference method disaggregated by year. The pre-1879 years represent the pre-treatment fit. The shaded blue area represents 95% confidence intervals calculated using the standard deviation of 100 bootstrap resamples.

E Additional RD-DD results

E.1 Density test

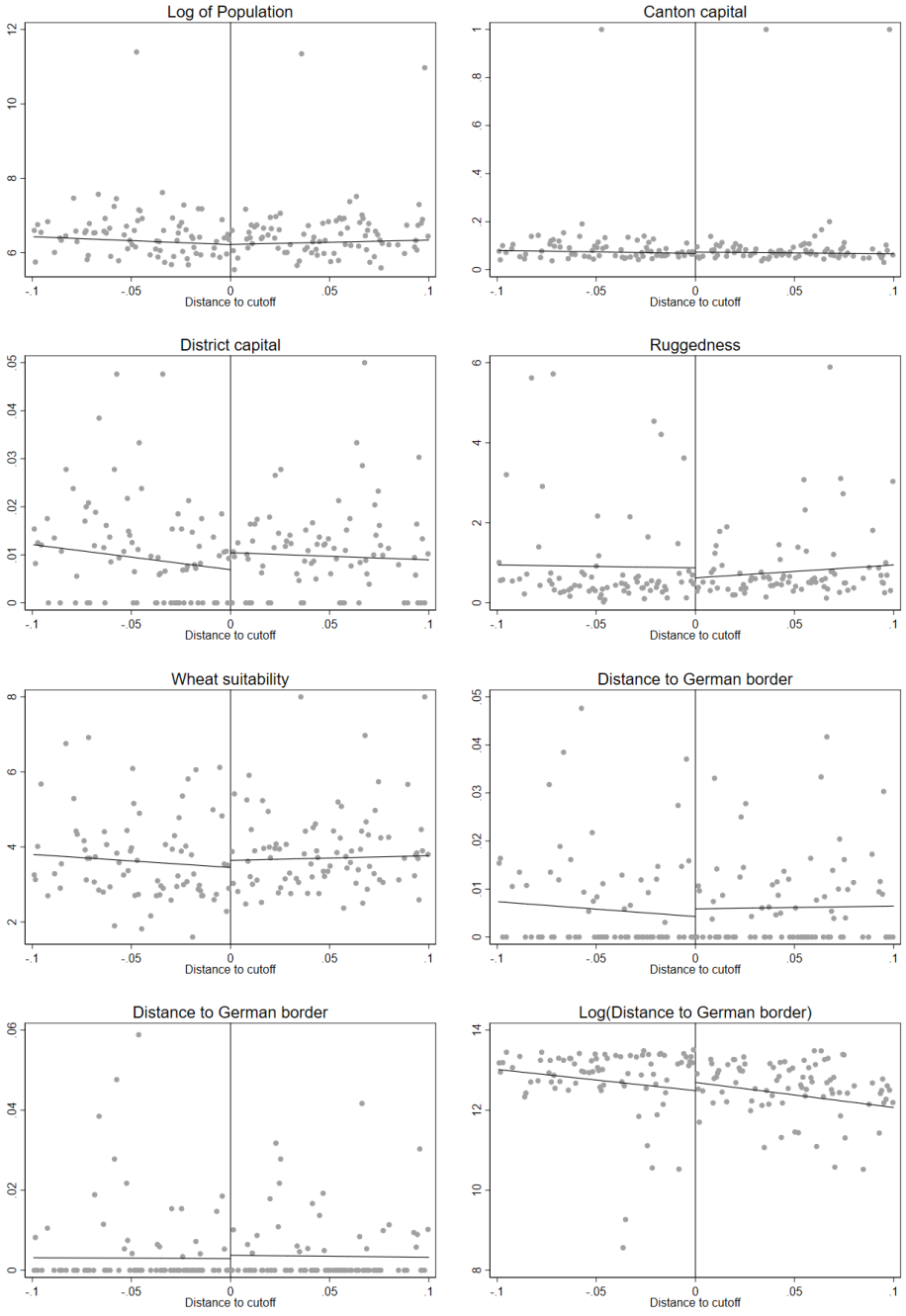
Figure E.16: Density test.



Notes: This figure implements the density test from Cattaneo et al. (2018). The running variable is the margin of victory for candidates whose party belonged to the Republican majority. The p-value for this test is reported below the x-axis.

E.2 Covariate balance

Figure E.17: Regression discontinuity balance plots.



Notes: This figure shows the RD plots for the same covariates as in Table E.24. Circles represent the average value of each covariate for evenly spaced bins that mimic the variance of the original data. The bandwidth is +/- 10% from the 50% electoral win threshold —close to the MSE-optimal bandwidths found in Table E.24.

Table E.24: Covariates balance test for our regression discontinuity analysis.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Log of Population	Canton chef-lieu	Arrondissement chef-lieu	Ruggedness	Wheat suitability	Tribunal de commerce	Military subdivision chef-lieu	Log Distance to German border
				Panel A: Linear polynomial				
RD Estimate	0.016338	0.0035572	0.0034666**	-0.32539	0.17760	0.0013079	0.0021968	0.033505
	(0.12008)	(0.0061589)	(0.0017298)	(0.30392)	(0.33966)	(0.0024042)	(0.0016797)	(0.28688)
MSE-optimal bandwidth	0.11	0.13	0.09	0.11	0.12	0.12	0.10	0.10
Observations (in thousands)	31	31	31	31	31	31	31	31
				Panel B: Quadratic polynomial				
RD Estimate	0.028384	0.0075260	0.0039629**	-0.38319	0.22884	0.00094863	0.0028926	-0.55564
	(0.14895)	(0.0081066)	(0.0019852)	(0.36604)	(0.44326)	(0.0033671)	(0.0021145)	(0.34505)
MSE-optimal bandwidth	0.15	0.12	0.15	0.14	0.15	0.15	0.13	0.10
Observations (in thousands)	31	31	31	31	31	31	31	31
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
				*** p<0.01, ** p<0.05, * p<0.1				

Notes: This table reports regression discontinuity estimates. The sample consists of towns falling within the MSE-optimal bandwidth on each side of the 50% electoral cutoff. We use data from electoral districts with two candidates running in the 1877 election. The dependent variable is the set of covariates described at the top of the table. We use local-polynomials of first (Panel A) and second order (Panel B) and triangular kernel functions for estimation. Standard errors are clustered at the electoral district level.

Table E.25: Our results are robust to alternative bandwidths.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bandwidth:	+/- 5%	+/- 10%	+/- 15%	+/- 20%	+/- 25%	+/- 30%	+/- 35%	+/- 40%
				Panel A: Linear polynomial				
Republican majority (House)	-0.0083213	-0.0079198	-0.012534	-0.0069145	-0.0062092	0.0023222	0.0015796	0.0050737
	(0.045245)	(0.031017)	(0.025487)	(0.022257)	(0.020324)	(0.019786)	(0.019113)	(0.019192)
Republican majority (House) × Post 1879	0.069539**	0.052794**	0.040912**	0.027894*	0.024873*	0.021989*	0.022070*	0.022059*
	(0.028510)	(0.021864)	(0.017627)	(0.015049)	(0.013733)	(0.012876)	(0.012498)	(0.012227)
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
MSE-optimal bandwidth	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40
Mean dep. variable	.19	.19	.2	.2	.19	.19	.2	.2
Observations (in thousands)	429	725	999	1183	1311	1353	1374	1384
				Panel B: Quadratic polynomial				
Republican majority (House)	0.066157	0.00060892	-0.0097855	-0.020444	-0.016790	-0.025273	-0.020723	-0.026205
	(0.068014)	(0.049081)	(0.038824)	(0.033834)	(0.030240)	(0.028166)	(0.026882)	(0.027917)
Republican majority (House) × Post 1879	0.066431**	0.076664**	0.067549**	0.060822***	0.047494**	0.041511**	0.037302**	0.034903**
	(0.032226)	(0.030515)	(0.026510)	(0.022937)	(0.020778)	(0.018802)	(0.017963)	(0.017414)
MSE-optimal bandwidth	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Order polynomial	quadratic	quadratic	quadratic	quadratic	quadratic	quadratic	quadratic	quadratic
Observations (in thousands)	428.99	725.45	998.60	1183.41	1310.67	1353.42	1373.98	1384.24
R-squared	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.18
Mean dep. variable	.19	.19	.2	.2	.19	.19	.2	.2
Log(Population)	✓	✓	✓	✓	✓	✓	✓	✓
Year F.E. × Ruggedness	✓	✓	✓	✓	✓	✓	✓	✓
Year F.E. × Wheat suitability	✓	✓	✓	✓	✓	✓	✓	✓
Year × Canton capital F.E.	✓	✓	✓	✓	✓	✓	✓	✓
Year × District capital F.E.	✓	✓	✓	✓	✓	✓	✓	✓
Year F.E.	✓	✓	✓	✓	✓	✓	✓	✓

*** p<0.01, ** p<0.05, * p<0.1

Notes: This table reproduces the results in Table 5, column 3-4, for various bandwidths on each side of the 50% electoral cutoff. We only use data from electoral districts with two candidates running in the 1877 election. The dependent variable is the number of train stations. We use local-polynomial of first (Panel A) and second (Panel B) order and triangular kernel functions for local-polynomial estimation. Standard errors are clustered at the electoral district level.

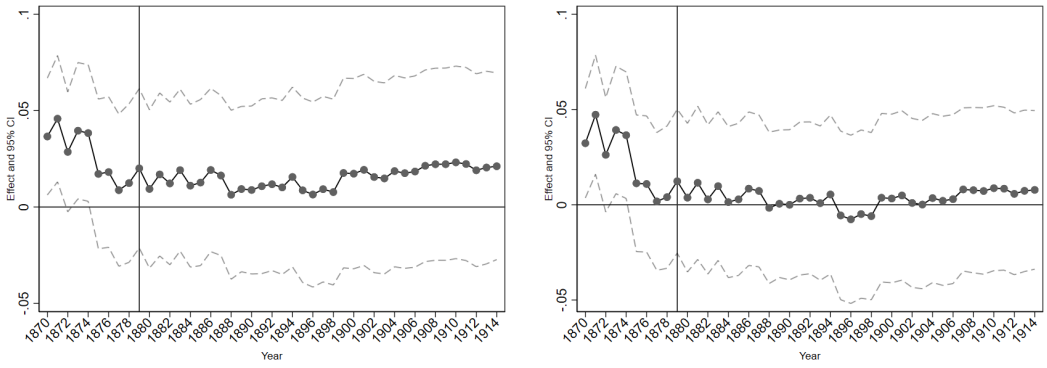
E.4 Placebo using the 1876 election

Table E.26: Electoral difference-in-discontinuity estimates using the 1876 election.

	(1)	(2)	(3)	(4)
Republican majority (House)	0.0071490	0.00087719	0.0075759	0.049402
	(0.016108)	(0.028150)	(0.016627)	(0.038616)
Republican majority (House) × Post 1879	0.0023376	-0.026435	-0.018928	-0.052589***
	(0.011113)	(0.017499)	(0.011618)	(0.018621)
Log(Population)			✓	✓
Year × Ruggedness			✓	✓
Year × Wheat suitability			✓	✓
Year × Canton capital F.E.			✓	✓
Year × District capital F.E.			✓	✓
Year F.E.	✓	✓	✓	✓
MSE-optimal bandwidth	0.11	0.13	0.11	0.11
Kernel	Triangular	Triangular	Triangular	Triangular
Order polynomial	linear	quadratic	linear	quadratic
Observations (in thousands)	352.75	380.70	330.21	330.21
R-squared	0.01	0.01	0.23	0.24
Mean dep. variable	.21	.2	.21	.21
*** p<0.01, ** p<0.05, * p<0.1				

Notes: This table reports the estimates from equation 12. The sample consists of communes falling within the MSE-optimal bandwidth on each side of the 50% electoral cutoff. We only use data from electoral districts with two candidates running in the 1876 election. The dependent variable is the number of train stations. We use local-polynomial of first and second order and triangular kernel functions for local-polynomial estimation. Standard errors are clustered at the municipality level.

Figure E.18: Results using the 1876 election as placebo.



(Without controls) (With controls)

Notes: This figure reproduces the results in Figure 7 while using the 1876 election as a placebo. Each point represents a separate regression discontinuity regression for a specific year using the 50% margin of victory in the 1876 election as a placebo cutoff. The left panel includes no controls. The right panel includes the log of population, whether a municipality is a canton capital, and whether it is a district capital. We use the mean squared error optimal bandwidths and a first-order polynomial with a triangular kernel in all regressions. 95% Confidence intervals are reported by the dashed lines using robust standard errors.

E.5 Results at the canton level

Table E.27: Reproducing the results in Table 5 using canton level data.

	(1)	(2)	(3)	(4)
Republican majority (House)	-0.036627	-0.025728	-0.23324	-0.19939
	(0.24058)	(0.30760)	(0.22282)	(0.34341)
Republican majority (House) × Post 1879	0.71885***	0.92694***	0.61962***	0.93096***
	(0.20661)	(0.24678)	(0.20092)	(0.26400)
Log(Population)			✓	✓
Year × District capital F.E.			✓	✓
Year F.E.	✓	✓	✓	✓
MSE-optimal bandwidth	0.09	0.12	0.10	0.10
Kernel	Triangular	Triangular	Triangular	Triangular
Order polynomial	linear	quadratic	linear	quadratic
Observations (in thousands)	51.48	66.02	54.41	55.80
R-squared	0.05	0.05	0.23	0.24
Mean dep. variable	2.48	2.56	2.49	2.5
*** p<0.01, ** p<0.05, * p<0.1				

Notes: This table reports the estimates from equation 12. The sample consists of cantons falling within the MSE-optimal bandwidth on each side of the 50% electoral cutoff. We only use data from electoral districts with two candidates running in the 1877 election. The dependent variable is the number of train stations. We use local-polynomial of first and second order and triangular kernel functions for local-polynomial estimation. Standard errors are clustered at the canton level.

E.6 Results at the electoral district level

Table E.28: Reproducing the results in Table 5 using electoral district level data.

	(1)	(2)	(3)	(4)
Republican majority (House)	-1.79646	-1.91995	-1.17005	-1.30815
	(1.76249)	(2.42094)	(1.51616)	(2.48527)
Republican majority (House) × Post 1879	2.86365*	3.90834*	3.00791**	4.67166**
	(1.72455)	(2.30148)	(1.39046)	(2.21568)
Log(Population)			✓	✓
Year F.E. × Ruggedness			✓	✓
Year F.E. × Wheat suitability			✓	✓
Year × Canton capitals F.E.			✓	✓
Year F.E.	✓	✓	✓	✓
MSE-optimal bandwidth	0.12	0.13	0.15	0.12
Kernel	Triangular	Triangular	Triangular	Triangular
Order polynomial	linear	quadratic	linear	quadratic
Observations (in thousands)	11.34	12.15	13.68	11.56
R-squared	0.13	0.13	0.29	0.30
Mean dep. variable	14.88	14.95	14.66	14.78
*** p<0.01, ** p<0.05, * p<0.1				

Notes: This table reports the estimates from equation 12. The sample consists of electoral districts falling within the MSE-optimal bandwidth on each side of the 50% electoral cutoff. We only use data from electoral districts with two candidates running in the 1877 election. The dependent variable is the number of train stations. We use local-polynomial of first and second order and triangular kernel functions for local-polynomial estimation. Standard errors are clustered at the electoral district level.

E.7 Train station dummy

Table E.29: Electoral difference-in-discontinuity estimates using a dummy variable instead of the number of train stations.

	(1)	(2)	(3)	(4)
Republican majority (House)	0.0037174	0.0066974	-0.0048715	-0.00097821
	(0.011998)	(0.013419)	(0.011299)	(0.013826)
Republican majority (House) × Post 1879	0.062814***	0.071161***	0.059053***	0.067984***
	(0.0086081)	(0.0094136)	(0.0081872)	(0.0094810)
Log(Population)			✓	✓
Year F.E. × Ruggedness			✓	✓
Year F.E. × Wheat suitability			✓	✓
Year × Canton capital F.E.			✓	✓
Year × District capital F.E.			✓	✓
Year F.E.	✓	✓	✓	✓
MSE-optimal bandwidth	0.05	0.10	0.06	0.09
Kernel	Triangular	Triangular	Triangular	Triangular
Order polynomial	linear	quadratic	linear	quadratic
Observations (in thousands)	451.67	708.98	472.90	661.23
R-squared	0.01	0.01	0.14	0.14
Mean dep. variable	.19	.19	.19	.19
*** p<0.01, ** p<0.05, * p<0.1				

Notes: This table reports the same estimates as in Table 5 but using a dummy variable equal to one if a municipality has a train station and zero otherwise.

E.8 Other RD-DD robustness checks

Table E.30: Other difference-in-discontinuity robustness checks.

	(1)	(2)	(3)	(4)
Panel A: Uniform kernel.				
Republican majority (House) × Post 1879	0.078765***	0.085576***	0.063549***	0.061807***
	(0.012941)	(0.015015)	(0.013021)	(0.013029)
MSE-optimal bandwidth	0.05	0.09	0.05	0.10
Observations (in thousands)	451.67	657.04	384.93	745.47
Panel B: Including Region fixed effects.				
Republican majority (House) × Post 1879	0.062033***	0.079248***	0.065282***	0.072847***
	(0.011079)	(0.013683)	(0.011805)	(0.013430)
MSE-optimal bandwidth	0.09	0.11	0.07	0.11
Observations (in thousands)	676.75	818.73	534.47	748.35
Panel C: Including Department fixed effects.				
Republican majority (House) × Post 1879	0.055764***	0.086666***	0.059230***	0.074038***
	(0.010010)	(0.014766)	(0.011621)	(0.013600)
MSE-optimal bandwidth	0.11	0.09	0.08	0.10
Observations (in thousands)	815.31	685.80	624.42	730.75
Panel D: Including electoral districts with more than two candidates.				
Republican majority (House) × Post 1879	0.072029***	0.071384***	0.062147***	0.061567***
	(0.013055)	(0.012801)	(0.012142)	(0.012580)
MSE-optimal bandwidth	0.13	0.24	0.14	0.22
Observations (in thousands)	536.31	864.32	567.67	776.65
Panel E: Including the far left in the Republican majority.				
Republican majority (House) × Post 1879	0.070026***	0.063234***	0.063427***	0.058843***
	(0.011405)	(0.012563)	(0.011068)	(0.012761)
MSE-optimal bandwidth	0.06	0.10	0.06	0.09
Observations (in thousands)	532.44	747.50	529.97	689.40
Same controls as in Table 5	✓	✓	✓	✓
*** p<0.01, ** p<0.05, * p<0.1				

Notes: This table reports a number of robustness checks for the results in 5. The sample consists of cantons falling within the MSE-optimal bandwidth on each side of the 50% electoral cutoff. The dependent variable is the number of train stations. We use local-polynomial of first and second order and triangular kernel functions except for Panel A in which observations are uniformally weighted. Panel B includes fixed effects for modern regions. Panel C includes department fixed effects. Panel D includes electoral districts for which more than two candidates ran as long as the first and second candidate (in terms of votes) have different political inclinations –i.e. one is part of the governing coalition while the other isn't. Thus the distance from the cutoff in Panel D is the percentage of total votes margin of victory the first candidate enjoyed. If there was a second round of voting due to the first leaving no candidate breaking the 50% of the votes, we use the results from the second round of voting. Panel E considers districts with a far-left member of parliament as treated. Standard errors are clustered at the electoral district level.

F Mathematical appendix

F.1 The effect of a change in ω

In this appendix, we derive the total effect of a change in a politician's effectiveness in getting pork (ω) on the total amount of pork he brings to his district. Starting from equation 9:

$$\frac{\Gamma'(L)}{\omega} = p'(V_R)N_j\frac{\phi_j}{P_j^\theta} \tag{14}$$

For simplicity of notation, let's have the marginal benefit of pork be $\pi(P_j) = p'(V_R)N_j\frac{\phi_j}{P_j^\theta}$, which by assumption is concave in P_j. Keep in mind from equation 4 that $L = \frac{P_T}{\omega}$ —where P_T is the total amount of pork in the district. Total differentiating and solving for $dP_T/d\omega$.

$$\frac{\Gamma''}{\omega^2}\frac{dP_T}{d\omega} - \frac{(P_T/\omega)\Gamma'' + \Gamma'}{\omega^2} = \frac{\partial\pi}{\partial P_j}\frac{dP_j}{d\omega} \tag{15}$$

From the FOCs, for all $s \neq j$:

$$N_s\frac{\phi_s}{P_s^\theta} = N_j\frac{\phi_j}{P_j^\theta} \tag{16}$$

Since $\frac{\partial V_R}{\partial P_j} = N_j\frac{\phi_j}{P_j^\theta}$, total differentiating with respect to ω gives us:

$$\frac{dP_j}{d\omega} = \frac{\partial^2 V_R}{\partial P_s^2}\frac{\partial P_j^2}{\partial^2 V_R}\frac{dP_s}{d\omega} \tag{17}$$

Note that for all j, $\frac{\partial^2 V_R}{\partial P_j^2} < 0$, so by the previous equation, all $\frac{dP_j}{d\omega}$ have the same sign.

We then solve for $dP_j/d\omega$ in equation 15 using the fact that:

$$\frac{dP_T}{d\omega} = \frac{dP_j}{d\omega} + \sum_{s\neq j}\frac{dP_s}{d\omega} \tag{18}$$

Substituting equation 17 in equation 18:

$$\frac{dP_T}{d\omega} = \frac{dP_j}{d\omega}\left[1 + \sum_{s\neq j}\frac{\partial^2 V_R}{\partial P_j^2}\frac{\partial^2 P_s}{\partial V_R}\right] \tag{19}$$

Using this equality in conjunction with equation 15 and solving for $\frac{dP_j}{d\omega}$:

$$\frac{dP_T}{d\omega} = \frac{(P_T/\omega)\Gamma'' + \Gamma'}{\Gamma''\left[1 + \sum_{s \neq j} \frac{\partial^2 V_R}{\partial P_j^2} \frac{\partial P_s^2}{\partial^2 V_R}\right] - \omega^2(\partial\pi/\partial P_j)} \tag{20}$$

Since all the terms on the right-hand side are positive except for $\partial\pi/\partial P_T < 0$ and $\frac{\partial^2 V_R}{\partial P_j^2} < 0$, it must be that $dP_T/d\omega > 0$. The more efficient a politician is in getting pork, the more total pork he brings to his district.

F.2 Swing districts

We now want to show under what conditions swing districts will get more pork-barrel spending. We define a district as more or less "swingy" by how close to the 50% of votes victory threshold it is. As we will explain, the key assumption for this result is that the mass of persuadable voters is largest at the margin when a district is split along 50/50 partisan lines. In the case of log-utility ($\theta = 1$), this assumption is both necessary and sufficient. It is also justifiable based on the data. Indeed, the distribution of municipalities based on the percentage of Frenchmen voting for Republicans was very close to symmetrically distributed around the mean. When $\theta \neq 1$, on the other hand, additional assumptions are needed. We start from equation 9, which says that in equilibrium, marginal benefit must be equal to marginal cost:

$$\frac{\Gamma'(L)}{\omega} = \underbrace{p'(V_R)}_{\substack{\text{Bigger for} \\ \text{swing districts}}} \quad \underbrace{N_j \frac{\phi_j}{P_j^\theta}}_{\substack{\text{Not necessarily} \\ \text{bigger for} \\ \text{swing districts}}}$$

A district becoming more swing can take many forms. For instance, you may have increased political polarization among municipalities, which nonetheless translates into their district becoming more electorally competitive. Here, we decompose the municipality average ideological preference $\bar{\gamma}_j$ into the district mean and the municipality idiosyncratic ideological preference:

$\bar{\gamma}_j = \mu + \varepsilon_j$.[79] Substituting and taking the total derivative with respect to μ:

$$\frac{\Gamma^{''}}{\omega^2}\frac{dP_T}{d\mu} = p^{''}\left[\frac{\partial V_R}{\partial \mu} + \sum_j \frac{\partial V_R}{\partial P_j}\frac{dP_j}{d\mu}\right] + p^{'}\left[\frac{\partial^2 V_R}{\partial P_j \partial \mu} + \frac{\partial^2 V_R}{\partial P_j^2}\frac{dP_j}{d\mu}\right] \tag{21}$$

A swing district —one in which $V_R = N_T/2$— is one in which $p^{''} = 0$. Hence, total pork P_T is at a maximum for a swing district when $\frac{dP_T}{d\mu} = 0$, which implies the following condition is met:

$$\frac{\partial^2 V_R}{\partial P_j \partial \mu} + \frac{\partial^2 V_R}{\partial P_j^2}\frac{dP_j}{d\mu} = 0, \forall j \tag{22}$$

This condition is directly obvious in equation 21. We are interested in finding some assumptions under which this condition is met. We first rewrite it as:

$$\frac{\partial^2 V_R}{\partial P_j \partial \mu} + \frac{\partial^2 V_R}{\partial P_j^2}\frac{dP_j}{d\mu} = x \tag{23}$$

Remember that $\frac{\partial V_R}{\partial P_j} = N_j \frac{\phi_j}{P_j^\theta}$ where $\phi_j = \phi(\frac{P_j^{1-\theta}}{1-\theta} - \mu - \varepsilon_j)$. Hence we can rewrite the equation above as:

$$N_j\left[\frac{\phi_j^{'}}{P_j^{2\theta}} - \theta P_j^{-\theta-1}\phi_j\right]\frac{dP_j}{d\mu} - N_j\frac{\phi_j^{'}}{P_j^\theta} = x \tag{24}$$

$$N_j\left[\frac{\phi_j^{'}}{P_j^\theta}\frac{dP_j}{d\mu} - \phi_j^{'}\right] - \theta\frac{\partial V_R}{\partial P_j}P_j^{\theta-1}\frac{dP_j}{d\mu} = xP_j^\theta \tag{25}$$

The density of persuadable voters at the district level is equal to $D = \sum_j N_j\phi_j$. A change in the district's ideological factor will lead to the following change in D:

$$\frac{dD}{d\mu} = \sum_j N_j\left[\frac{\phi_j^{'}}{P_j^\theta}\frac{dP_j}{d\mu} - \phi_j^{'}\right] \tag{26}$$

Assuming that the density of persuadable voters is greatest when a district is swing implies

[79] Hence, the percentage of electors voting Republican for municipality j is $\Phi(\frac{P_j^{1-\theta}}{1-\theta} - \mu - \varepsilon_j)$.

that $\frac{dD}{d\mu} = 0$ when $V_R = N_T/2$. Keeping in mind that in equilibrium $\frac{\partial V_R}{\partial P_j}$ is equal across all j, we can rewrite equation 25 as:

$$-\theta \frac{\partial V_R}{\partial P_j} \sum_j \frac{dP_j}{d\mu} P_j^{\theta-1} = x \sum_j P_j^{\theta} \tag{27}$$

$$x = -\frac{\theta \frac{\partial V_R}{\partial P_j} \sum_j \frac{dP_j}{d\mu} P_j^{\theta-1}}{\sum_j P_j^{\theta}} \tag{28}$$

Assumptions under log-utility. If $\theta = 1$ (log-utility), then *for swing districts* $x = -\frac{\partial V_R}{\partial P_j} \frac{dP_T}{d\mu} \frac{1}{P_T}$ and using equation 21:

$$\frac{dP_T}{d\mu} = \frac{p^{''} \frac{\partial V_R}{\partial \mu}}{\frac{\Gamma''}{\omega^2} - p'' \frac{\partial V_R}{\partial P_j} + p' \frac{\partial V_R}{\partial P_j} \frac{1}{P_T}} \tag{29}$$

Since for swing districts, we have $p^{''}(V_R = N/2) = 0$, log-utility ($\theta = 1$) and the maximum density of persuadable voters being achieved when $V_R = N/2$ are sufficient conditions for $\frac{dP_T}{d\mu}$ to equal zero. We have not yet, however, shown that $\frac{dP_T}{d\mu} = 0$ corresponds to a maximum. We take the second total differential at $V_R = N/2$ in the case of a swing district:

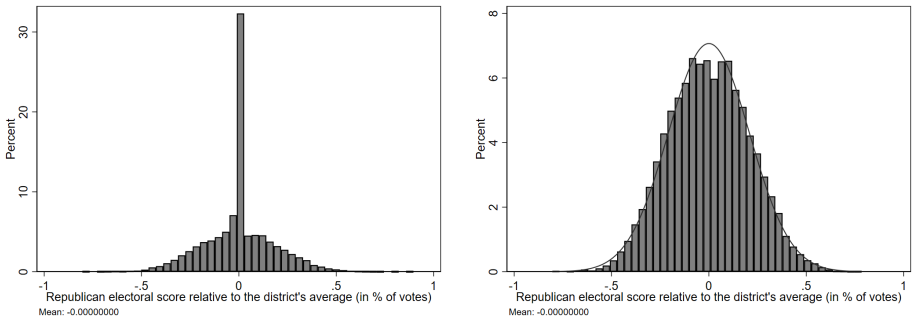
$$\frac{d^2 P_T}{d\mu^2} = \frac{p^{'''} \left(\frac{\partial V_R}{\partial \mu}\right)^2}{\frac{\Gamma''}{\omega^2} + p' \frac{\partial V_R}{\partial P_j} \frac{1}{P_T}} \tag{30}$$

Keep in mind that this is not the general formula for $\frac{d^2 P_T}{d\mu^2}$. Instead, it is its value when $V_R = N/2$ —i.e. when a district is swing. Hence the calculations are greatly simplified by the fact that in this case, $p^{''} = 0$ and, as explained above, $\frac{dP_T}{d\mu} = 0$. Since $p^{'''} < 0$ and all the terms in the denominator are positive, $\frac{d^2 P_T}{d\mu^2} < 0$. In other words, P_T is at a maximum when a district is swing under the abovementioned assumptions.

We have thus shown that in the case of log-utility, the assumption that the density of persuadable voters is greater when a district is swing is sufficient to yield the following prediction: swing *districts* get the most pork. The assumption that the density of persuadable voters is greater for swing districts is eminently reasonable given the empirical evidence on French elections during

the 1870s. Indeed, during the 1876 election, the distribution peak for municipalities' percentage of electors voting Republicans was almost exactly at their district's mean (See Figure F.19). In other words, if μ shifts such that a district becomes swing, municipalities split $50/50$ would be the most common. Those municipalities also have the most persuadable voters —since $\phi_j(0)$ is a maximum.

Figure F.19: Distribution of electoral scores by commune relative to the district's mean.



(All communes) (Monarchists/Republicans $< 95\%$ of votes)

Notes: This figure shows the distribution of the % of votes cast in favor of Republican candidates (far-left excluded) relative to the electoral district mean. We exclude communes in districts with only one candidate running for election. Even then, some districts have more than 95% of the votes going to either Republicans or Monarchists. This tends to occur when only Republican or Monarchist serious contenders are running. Hence, the right panel excludes districts in which more than 95% of votes go to either Republicans or Monarchists. The black line in the right panel represents the normal density, to which we can compare the actual distribution. The mean distance to the district's electoral score is reported at the bottom left of each graph. Each mean is extremely close to zero.

Assumptions necessary when $\theta \neq 1$. We must note that when utility is not logarithmic, the assumption that the density of persuadable voters is greater when a district is swing is insufficient to ensure that swing districts will get the most pork. An additional and necessary assumption (see equation 28) is:

$$\sum_j \frac{dP_j}{d\mu} P_j^{\theta-1} = 0 \tag{31}$$

Note that as long as $p(V_R)$ declines rapidly when a district moves away from being swing, then districts *close to* the $50/50$ electoral threshold will get more pork even though the condition above does not hold.