Political Trenches: War, Partisanship, and Polarization*

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Abstract

We study the dynamics between local segregation, partisanship, and political polarization. We exploit large-scale, exogenous and high-stakes peer assignment due to universal conscription of soldiers assigned from each of 34,947 municipalities to French infantry regiments during WWI. We find that municipalities with soldiers serving with the same line regiment converge in their post-war voting behaviors. Soldiers from rural municipalities exposed to more leftist regimental peers become more leftist for the first time after the war, while adjacent municipalities assigned to the right are *inoculated* against the left. We provide evidence that these differences reflect persuasive information exchanged among peers when the stakes for cooperation and trust are high rather than group conformity. These differences further lead to the emergence of sharp and enduring post-war discontinuities across 435 regimental boundaries that are reflected, not only in voting, but also in violent civil conflicts between Collaborators and Resistants during WWII.

Keywords: Polarization, War, Voting Behavior, Peer Effects, France, World War I
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1 Introduction

Liberal democracies, once considered robust, are instead showing grave signs of fragility around the world (e.g. Diamond, 2022; V-DEM, 2023).[1] With voters increasingly segregated into politically partisan groups, both geographically and in their information environments, political polarization is often seen as a major potential cause (e.g., Sunstein, 2009; Rohner and Zhuravskaya, 2023). Segregated voters with policy preferences that increasingly deviate from pivotal voters in democratic systems may become more likely to heed authoritarian voices that claim the expedience of sacrificing democratic principles and institutional constraints to secure more closely-aligned policies (Svolik, 2018). The resultant lack of faith in democratic political processes can further exacerbate political violence. At the sharply polarized interfaces where politically segregated groups meet, this lack of faith may even escalate into civil war (Montalvo and Reynal-Querol, 2005; Esteban and Ray, 2008; Sunstein, 2009; Corvalan and Vargas, 2015; Klašnja and Novta, 2016).

The dramatic consequences of segregation, partisanship, and polarization are widely acknowledged. However, uncovering the causal dynamics between them is naturally highly challenging as partisans often *choose* to self-segregate, both by sorting into their physical locations (see, e.g., Bishop, 2009; Diamond, 2016; Brown, 2022; Brown and Enos, 2021) and into echo chamber-like media and information environments (Gentzkow and Shapiro, 2011; Levy and Razin, 2019; Levy, 2021).

To overcome these empirical challenges and shed new light on these dynamics, this paper uses a unique historical context—France's universal conscription of soldiers in World War I (WWI) to locally recruited line infantry regiments. During the war, French infantrymen, who constituted close to 90% of total troops, interacted with their peers in a high-stakes environment where their very lives could depend on mutual cooperation and trust.[2] We first show that municipalities whose soldiers were assigned to the same line regiment in WWI converged in their vote choices towards the prevailing partisan view within their regiment after the war. We then document that while this creates political homogenization *within* regimental catchment areas, in numerous cases it also generates sharp discontinuous post-war differences in partisan voting behavior—where none existed previously—*between* spatially adjacent rural municipalities that happened to be assigned to different (partisan) regiments. We exploit 435 such local discontinuities to demonstrate that common war-time regimental assignment leads not only to extreme local political polarization in the inter-war period but also manifests itself in violent incidents of civil conflict between Nazi Collaborators and the French Resistance

[1] According to the V-DEM Institute 2023, in 2022, closed autocracies outnumbered liberal democracies for the first time in more than two decades, with the levels of democracy enjoyed by the average global citizen falling to levels last seen in 1986.

[2] Of the 8.4 million Frenchmen mobilized in the war, the likelihood of being killed or wounded was greater than 65%, with more than 1.3 million fatalities. The medical corps served 9 million wounded, gassed or ill men, several of whom passed through three or four times (Greenhalgh, 2014, pg.xi). The infantry represents 86.08% of total French fatalities in WWI (Gay and Grosjean, 2023).

during WWII, and post-war political differences that last until the 1990s.[3]

The historical context of military recruitment during WWI France provides a valuable environment for studying the dynamics of segregation, partisanship, and polarization. First, the circumstances of military recruitment generate local exogeneity in a large-scale assignment of peers who were subsequently compelled to live together and work cooperatively in a high-stakes environment. Our identification strategy relies on the assignment of previously very similar adjacent municipalities to different line infantry regiments. As we describe below, this assignment was determined for geographical reasons well before the war and was unrelated to a large set of factors that could have influenced the evolution of political opinions. Second, legislative elections were held immediately before (April-May 1914) and immediately after the official cessation of hostilities and French demobilization (November 1919), thereby providing us with measures of voting behavior at the key contemporary moments of interest to us. The historical context of universal male suffrage combined with universal male military conscription in WWI ensures that our voting data, at the highly granular level of 34,947 French municipalities, effectively captures the preferences of the (male) population exposed to the war.

Our empirical findings first demonstrate that there are no broad nationwide shifts in polarization and partisanship in France immediately after the war. However, we show that, locally, the patterns are very different. The shared experience of fighting within the same unit in WWI made voters within the same regimental catchment area more politically homogeneous. This local reduction in polarization is robust and persists beyond the last (1936) elections prior to the death of France's Third Republic in 1940. Further, this reduction in polarization only occurs among municipalities within the same regimental catchment area (henceforth *recruitment bureau*) and, tellingly, *not within departments* or other important administrative divisions. Moreover, municipalities that were initially further away from the average of their assigned regiment converge faster to the political position of the majority of voters within the same recruitment bureau.

We interpret these results in light of a simple network model of polarization. We model partisan choices as *strategic complements*, implying that each agent chooses an action if a simple majority of their peers adopt the same action. Consequently, each community will coordinate on a specific partisan equilibrium and, thus, will become locally homogeneous. However, despite this, in the presence of multiple partisanship coordination equilibria with different groups moving in different directions (e.g., left, right), the overall impact on nationwide polarization and partisanship is ambiguous and may even be zero. Further, in terms of

[3]At the eve of WWII, these divisions were so irreconcilable that, after the French 1936 election victory of the socialist—and Jewish—Prime Minister Léon Blum, a common refrain of the right became "rather Hitler than Blum". Four years later, this call materialized when democracy was abolished, collaboration with Nazi Germany encouraged by the newly appointed plenipotentiary head of state Philippe Pétain, and local militia groups, with support from German occupying forces, cracked down on internal opposition. See also Cagé et al. (2023a).

the mechanism, the model predicts that, locally, individuals will converge in political opinions. This convergence may occur because either they want to *conform* to the views of the majority or they are being exposed to new types of *information*, including novel arguments, from their neighbors, which may persuade them to vote for the majority. As we detail below, our evidence suggests that the mechanism operates more through the information channel rather than pure conformity pressures.

After contrasting the lack of an obvious *global* pattern in polarization and partisanship in the immediate aftermath of WWI with *local* within-group homogenization due to war-time assignment, we next examine the effects of war-time assignment on the direction of partisan shifts within groups. Estimating the causal impact of regiment-level peers on partisan shifts in political attitudes is particularly challenging given the known difficulties with identifying peer effects, including the reflection problem (Manski, 1993). Although municipalities were pre-assigned to regiments decades before the war, one natural concern is that the left may have already been on the rise in municipalities that happened to be assigned to more left-leaning regiments, independent of war-time assignment. The ideal setting to overcome these empirical challenges would involve identifying geographically proximate municipalities that were never hitherto exposed to the left, yet happened to be assigned to regiments with drastically different average political compositions. We approximate this empirical setup by exploiting local discontinuities in regimental assignment across 435 military boundaries in a spatial regression discontinuity framework.

We analyze partisan conversion among (rural) municipalities with virtually no left vote prior to the war. While these are also otherwise similar across a wide array of other covariates on either side of regimental catchment boundaries before the war, we find that exposure to a socialist regiment induced a discontinuous jump in socialist votes *after* the war: by an average of 26% to 37%, depending on the specification and bandwidth used. We perform a similar exercise by studying the exposure to right-wing regiments. We find that exposure to a right-wing regiment reduces the vote share for the left. However, the decrease in left-wing votes due to exposure to a right-wing regiment mainly benefits the center rather than the right. If the effect was purely about pressures to conform within a group, one would expect symmetry: convergence towards both the left or the right depending on the regimental majority. Instead, we interpret the *asymmetry* of these results in light of our theoretical model and the historical setting as being consistent with the *information* mechanism being at work instead of pure pressures to conform.

Right-wing parties were well-established and mainstream in rural France in 1914, while left-wing party presence was much more novel in many parts of the country.[4] In the framework of

[4]In contrast to rural areas, socialist movements had a substantial history in *urban* France, particularly in Paris, where the Commune of 1871 had been associated with several excesses, including the execution with limited or no due process of religious leaders like the Archbishop of Paris, before being violently repressed by the Versaillais government that largely reflected rural voting interests (Horne, 2012). Rebel 'Communes' appeared, and were violently suppressed, in the cities of Le Creusot, Limoges, Lyon, Marseille, Narbonne,

the model, when exposed to peers in a left-wing regiment, less-affluent agricultural soldiers may learn about the pro-redistribution platform of the left from their left-wing comrades, changing their own voting behavior.[5] However, when exposed to majority right-wing comrades, they may instead be dissuaded from voting for the left because of exposure to information and counter-arguments posed by conservatives, including in the French context, the leftist platform on social (often religious) issues.[6] This informational *inoculation* against the left favors center parties rather than conformity to the right.[7]

Our novel empirical specification adapts the regression discontinuity (RD) with multiple thresholds (see e.g., Dell and Querubin, 2017) to the spatial setting. We nevertheless check that our results are robust to other RD specifications, as well as across multiple alternative geographic bandwidths, definitions of the treatment, and estimation samples. We show the effect is specific to post-war voting outcomes. As noted above, we observe no discontinuity in pre-war vote, nor in a wide array of pre- and post-war municipal-level characteristics, including population, literacy, and socio-economic structure. Socialist regiments also faced observationally similar circumstances and fatalities during the war. Crucially, we establish, as in the polarization results, that the effect is driven by regimental assignment, rather than being due to other jurisdictional or administrative divisions. The outcome of a placebo test employing a similar specification at the level of political districts' boundaries instead of regiments' boundaries shows no similar jump in the left vote share in 1919. The results of permutation-inference tests that randomly shift the regimental boundary borders also show that the estimated effect of the real border is well outside the range of estimated effects from these placebo treatments. Using data on registered versus actual voters, we are also able to rule out that our results are due to selective post-WWI migration or to a change in political mobilization. Descriptive statistics are also suggestive of little mobility: the average municipality in our estimation sample had 181 voters in the 1914 elections, 30 deaths in WWI, and 150 voters in the 1919 elections. Quantitatively, our estimates suggest 22.5 additional votes for the left in a municipality allocated to an exclusively left-wing regiment, which is consistent in magnitude with approximately *all* returning veterans from the line infantry being "converted" to socialism when exposed to a socialist regiment.

Saint-Étienne and Toulouse in 1871 as well. The French Section of the Workers' International (SFIO) was founded during the 1905 Congrès du Globe in Paris as a merger between the French Socialist Party and the Socialist Party of France. This created a novel Socialist political party which, in various forms, would outlast the Third Republic.

[5]The salary of a mobilized *soldat* (private) in 1914 had not changed since before Napoleon, at 1 sou per day (0.05 francs or 1/2 a British penny). In 1911 the average daily wage in Paris was 7.24 francs, compared to as low as 3.72 francs in rural areas (pg.29-30 Greenhalgh, 2014).

[6]Historian Kevin Passmore describes how conservative politicians during the war became convinced that "social democracy threatened the end of civilization", while conservative journalists wrote how "from the unfathomable depths of Russia, from the atavism of centuries of suffering ferment, a wave is breaking over Europe and threatens to swallow up the Latin conquest of Law and the benefits of civilization" (Passmore, 2012b).

[7]In a similar dynamic, albeit among elites, Becker et al. (2023) recently show how Erasmus' countervailing influence to Luther's in support of the status quo suppressed adoption of the Protestant Reformation.

An implication of our spatial regression discontinuity results is that sharp local discontinuities in partisanship emerged across military boundaries, which were not present before the war. Furthermore, given conversion on one side and inoculation on the other, this local polarization itself became entrenched. Our regression discontinuity estimates suggest that the vote share for the left in the last pre-WWII election of 1936 was 32.5% higher on the "left" side of the regimental boundary, and that the effect even persists in post-WWII elections, up until the 1990s.

Extending our investigation beyond electoral results, we conclude our empirical analysis by illustrating some of the real political costs of this local polarization with novel data related to political behavior and violent civil conflict during WWII. The inter-war period was followed by the suicide of France's longest-lived democratic republic and the rise of the authoritarian, traditionalist, and collaborationist Vichy regime that collaborated with Nazi Germany (Lacroix et al., 2019; Cagé et al., 2023a). After France's defeat in WWII, the Vichy regime took a violently repressive turn against internal enemies, chief among them the socialists, the communists, and the Jews, as well as the members of the Resistance who opposed both the regime and the German occupation. To some extent, such in-fighting was the continuation and materialization of France's increasing polarization and radicalization over the interwar period, and was largely anticipated by the attempted Fascist coup against the inauguration of a left-wing government on February 6th, 1934, which marked the beginning of what historians have termed France's "long civil war" (Jackson, 2001; Cagé et al., 2023a).

Our findings indicate that the local concentration of the Resistance and of the collaborationist groups—including the *Milice* whose *raison d'être* was to hunt and kill Resistance members—were higher along the boundaries of WWI military recruitment bureaus, but only when these boundaries coincided with sharp local discontinuities in partisanship. Analyzing detailed police and Gestapo files on Resistance activities, we find increased activity by the Resistance along such boundaries, but only against civilian targets. In contrast, we find no increased likelihood of observing attacks directed against German occupation forces. These effects are consistent with the *civil war* nature of these local conflicts. Our estimates suggest that a one standard deviation reduction in the distance to a polarized regimental boundary is associated with a 0.03 standard deviation increase in the local density of collaborators, a 0.05 standard deviation increase in the local density of Resistance members, and a 0.02 standard deviation increase in the number of Resistance attacks against civilian targets. These effects are in contrast to a statistically insignificant 0.01 standard deviation decline in the probability of a Resistance attack against a German target.

We illustrate these dynamics with a simple tale of two (small) cities, comparable on geographic location, size, elevation, rurality, and pre-WWI political vote: Annemasse and Belley. While both cities had hardly any vote for the left in 1914, Belley was allocated to a left-wing regiment in 1914 while nearby Annemasse was not. Five years later, the vote share for the

left was twice as high in Belley as it was in Annemasse. During WWII, these towns became fertile territory for *Résistants* and *Collaborators*, but with twice as many Resistance members emerging in Belley and seven times as many collaborators in Annemasse.

This paper contributes to several strands of the literature. A large literature in economics and political science has highlighted the deleterious consequences of political polarization and segregation (Sunstein, 2009; Barber et al., 2015; Iyengar et al., 2019; Levy and Razin, 2019; Boxell et al., 2022; Rohner and Zhuravskaya, 2023). Increasing polarization can exacerbate segregation and perpetuate lack of trust, prejudice, and hostility between groups (Iyengar and Westwood, 2015; Sunstein, 2009). Polarization may also undermine support for democracy, as partisans find themselves ever further from the preferences of pivotal decisionmakers (Svolik, 2018; Graham and Svolik, 2020). When sharp political divides coincide with a lack of faith in the prospect of peaceful resolutions of conflict through the democratic process, they can even deteriorate further into violence and even civil war (Montalvo and Reynal-Querol, 2005; Esteban and Ray, 2008; Sunstein, 2009; Corvalan and Vargas, 2015; Klašnja and Novta, 2016). However, establishing causal evidence is challenging because of endogenous sorting across partisan groups. We contribute to this literature by providing causal evidence on the political consequences of segregation and polarization. We rely on a unique historical experiment and local discontinuities that exposed similar individuals to different peer groups within the high-stakes environment of warfare during WWI.[8] We show how segregation and partisan conversion resulted in homogenization of voting within groups but local polarization across groups. Further, these patterns persisted over time and eventually degenerated into violent civil conflict.

We also contribute to the literature on state building and national identity (see Rohner and Zhuravskaya, 2023 for a valuable collection of recent research). The idea that functioning states, particularly democracies, require a strong sense of national identity has prompted a lot of research into the factors that may forge or threaten national identity and unity. War, and even just the threat of war, is often viewed as conducive to nation building. It can motivate leaders to build and unify the nation, rally citizens behind its defence, instill national identity either among current conscripts or future conscripts through the formal education system (Ramirez and Boli, 1987; Darden and Mylonas, 2016; Aghion et al., 2019; Alesina et al., 2020; Giuliano et al., 2022) or provide incentives for strengthening fiscal capacity (Tilly et al., 1992; Besley and Persson, 2009, 2010; Gennaioli and Voth, 2015; Becker et al., 2020).

Among military units, the need to fight alongside peers from different regional or social origins against external enemies in particular can be a potent source of inter-group complementarity that can support tolerance and trust, and provide a basis for further complementary investments in shared group identity and transmission of political values (Jha, 2013; Cagé et

[8] We also contributed to the literature on peer effects. Recent studies have empirically demonstrated the influence of peers in narrowing disparities in voting behavior among legislators (Saia, 2018; Harmon et al., 2019) and political views among college students (Algan et al., 2019).

al., 2023a; Jha and Wilkinson, 2023).[9] Recent papers have established that individuals from different regions during compulsory military service reveal reduced prejudice towards one another, and are more likely to self-identify with the nation (Bagues and Roth, 2023; Cáceres-Delpiano et al., 2021; Okunogbe, 2023; Weiss, 2022; Ronconi and Ramos-Toro, 2022).[10] The appealing idea that citizens thrown together with an existential need to cooperate and trust one another develop deep and lasting ties of solidarity even has a name, popularized from the French language: the *esprit de corps*.

Yet, rather than solidarity, wars often lead to national disunity, political polarization, and civil conflict, and not just among the losing side (Jha and Wilkinson, 2012; Besley and Reynal-Querol, 2014; Jha, 2023). Heroic networks developed in war may also foster new political fissures and spread autocratic values (Cagé et al., 2023a). In France, even though a government of national unity had delivered a military victory in WWI, increasing political polarization during the interwar period paved the way for the heavy repression of internal enemies by the Vichy collaborationist government during World War II (Jackson, 2001; Cagé et al., 2023a). In more recent times, many have highlighted the role of the Iraq War in driving polarization and the partisan divide in the United States to levels unseen since the Civil War (Jacobson, 2010; Gentzkow et al., 2019).

Our results illustrate a dynamic that can account for these conflicting patterns. We provide evidence that while war-time exposure does generate political solidarity *within* military units, it can also accentuate polarization and exacerbate violent conflict *between* units. In fact, despite being initially similar, the communities in the newly politically polarized border regions between regiments can even become flashpoints for subsequent violent civil conflict.[11]

With regiments in the line infantry bringing together both *hammer* (industrial workers) and *sickle* (rural agricultural workers) in a setting where they faced a critical need to trust and depend on one another, we argue that it is not completely coincidental that the end of the First World War also saw the penetration of a profoundly radicalizing and polarizing political force, socialism, beyond its mainly urban industrial strongholds to encompass rural areas as

[9] Lowe (2021) provides an field experimental application to the case of sports teams.

[10] More generally, social contact and shared experiences, for example through compulsory education (Bandiera et al., 2019), sporting events (Depetris-Chauvin et al., 2020), or resettlement programs (Bazzi et al., 2019) have been shown to foster national unity. However, the overall evidence for pure contact reducing prejudice is mixed (Paluck et al., 2019).

[11] We also contribute to an emerging literature on the political legacy of WWI in Europe. In the case of Germany, Koenig (2023) documents a large shift in political preferences from left to right in constituencies where fewer men were missing in the 1917 Census. Improving on data sources and recovering figures for fatalities and casualties, De Juan et al. (2021) show that areas with more war fatalities voted more for the Nazi Party, but the effect came mostly from family members of dead soldiers, rather than the veterans themselves. On the other hand, Acemoglu et al. (2022) argue that, in Italy, areas with more fatalities in WWI experienced a surge of political support for the left after the war, which spurred a fascist reaction. In contrast to these papers, we do not focus on war fatalities (although we do account for them). Instead, we focus on a completely different mechanism: peer effects in assignment to regiments. Our results indicate a nuanced effect of the war on political preferences, one which can explain both France's political landscape after WWI and help reconcile longstanding debates among historians over the political roles of returning veterans.

well.[12]

By documenting how socialism spread beyond urban intellectual elites and receptive industrial workers to penetrate the countryside, we also illustrate another means through which political realignments can occur from social (often rural-urban) divisions towards income redistributional concerns (see also Besley and Persson (2021)). Recent related literature has highlighted the role of propaganda in explaining the conversion of educated elites to communism in China (Bai et al., 2023), and the influence of military resistance against the Japanese occupation and nationalism in explaining the rise in organizational capacity of the Chinese Communist Party (Chen and Kung, 2022). Our focus and mechanism, based upon horizontal transmission of ideas and information, are different. Our findings demonstrate how certain French rural agricultural workers began to support socialist politics through the intense social interactions they experienced in the trenches of the Great War, and show how their material conditions intensified the appeal of socialist ideas.[13] However, our results also show how others, when not as intensively exposed to socialist peers, never converted to socialism even though they faced similar material conditions.

The remainder of the paper is organized as follows. Section 2 provides the relevant historical background. In Section 3, we present some descriptive evidence on polarization during the war, while section 4 outlines our RD empirical strategy and presents our main empirical results. We then present some additional results on the costs of polarization in Section 5 and illustrate the dynamics we study through a case study of two cities in Section 6. Finally, we offer some concluding remarks in Section 7.

2 Historical Background

France suffered a tragedy in WWI, with victory coming at the cost of more than 1.3 million military fatalities (Gay and Grosjean, 2023). Not surprisingly, WWI left a lasting legacy on the people of France, from marriage patterns (Abramitzky et al., 2011), female labor force participation (Boehnke and Gay, 2022) to politics (Cagé et al., 2023a). However, as is also the case elsewhere, there remains a debate among historians, mainly based upon qualitative evidence, about whether the war served to forge cross-cutting connections across groups that made France more cohesive and less polarized in the face of the severe challenges of the

[12]This is not to say Socialism at the beginning of the 20th century is not distinct from Communism. The party we focus on, the French Section of the Second International (SFIO), encompassed social democrats, Marxists, and anarchists. The French Communist Party was only created in 1920, following a split of the SFIO at the 18th National Congress of the French Section of the Workers' International (SFIO). The split was not driven by fundamental ideological differences but because of conflicting views towards the 1917 Russian Revolution and the Bolshevik-led Communist International.

[13]Though the potential rise of the radical left in the army was viewed by contemporary conservative forces as deeply threatening to the established social order (see, for example, the secret *Corvignolles* organization established by Philippe Pétain's aide de camp, Georges Loustaunau-Lacau, explicitly to root out left-wing agents from the army), the role of war-time military service in shaping these patterns, to the best of our knowledge, has not been documented empirically until now.

interwar period on one hand (e.g., Prost, 1977; Passmore, 2012a) or whether the war led to increased mobilization in favor of political extremism among some groups (Millington, 2012; Cagé et al., 2023a). In this section, we describe the relevant historical background and how we can reconcile these two views using our novel data. We describe the process of recruitment and assignment into the line infantry regiments that we exploit for our study, the nature of the accompanying voting patterns, as well as our data on resistance and collaboration.

2.1 Military recruitment, WWI, and demobilization

The organization of the French Army underwent a radical change after the crushing defeat against Prussia in 1870-1871. A series of laws between 1872 and 1905 established two fundamental features of the Army that would remain until the First World War: universal conscription and a territorial organization of recruitment, service, and command. Universal conscription was meant in its inception to constitute the "school of the nation, of citizenship, and of the Republic" [p.318](Crépin, 2005). Every man was to serve for two years (increased to three years in 1913) in the "active" Army and then joined the Reserves for an additional 15 years. A 1873 law mandated that geography would be the organizational basis for the Army, with a 1875 law further specifying that the Army corps be formed from 144 infantry regiments recruited from geographically delimited areas (Greenhalgh, 2014, pg.11).[14] In 1914, metropolitan France was organized into 20 Army-corps military regions, with the addition of the Paris military region (see Figure 1). Each region was further divided into subregions that corresponded to local recruitment bureaus, from which infantry regiments were formed. To aid in rapid mobilization in the event of war, each municipality (and most sub-regions) tended to be assigned to a single recruitment bureau and thus to a single regiment (Imperial General Staff, 1914).[15]

We use data from the 9th edition of the *Dictionnaire des Communes* (Baron and Lassalle, 1915; Cagé et al., 2023a), which assigns each of the 34,947 municipalities within France's 1914 borders to their original military recruitment bureau.[16] Figure 1 displays the boundaries of France's 158 military recruitment bureaus.

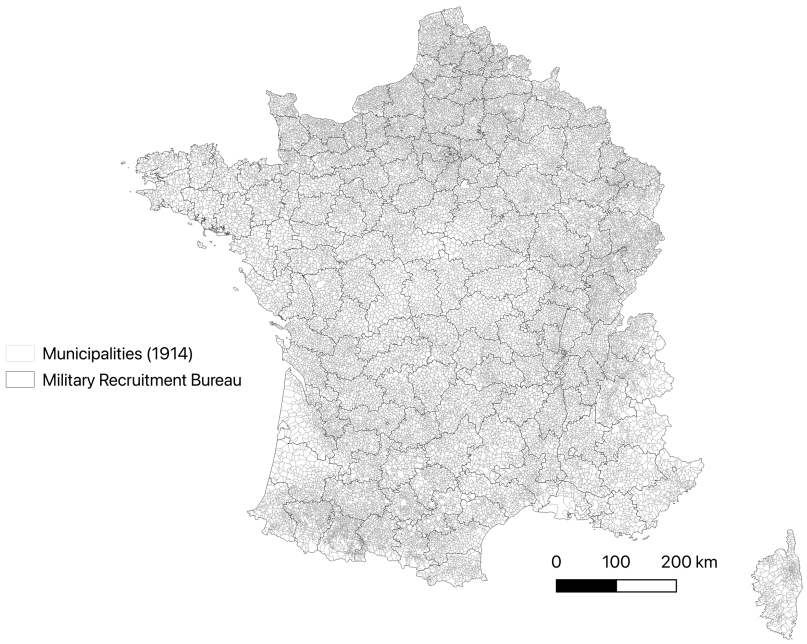
On August 2, 1914, France ordered the general mobilization of every man between 20 and 48 years of age.[17] At the start of the war, the youngest soldiers (817,000 men from the

[14]The main reason was to ensure speed and geographical accessibility if war was declared. As the historian Susan Greenhalgh (2014, pg.11) writes: "The aim was to enable a speedier and more efficient mobilisation in any future war, as men would know where to report".

[15]As we address below, a '*corps de couverture*' (covering force) was also created in the border regions to man the border fortresses and to give time to the broader mobilization of the army to take effect in the case of war.

[16]To replace war-time losses, there was more mixing of recruits from outside the original sub-regions as the war continued (Bracken, 2018). This mixing should *attenuate* the effects on the original municipalities, making our measures likely *underestimates*.

[17]On the comprehensive extent of the universal conscription of men age-eligible for the line infantry, and the few exemptions, see Boehnke and Gay (2022).



Notes: Municipalities (N=34,947) within France's 1914 borders and recruitment bureaus (N=158), from Baron and Lassalle (1915).

Figure 1: The territorial organization of the French Army in 1914: Municipalities' assignment to recruitment bureaus for the line infantry

cohorts of 1891-1893) were already in the barracks serving their 3-year-long military service. They became the initial core of troops for the line infantry regiments. These troops were supplemented by older cohorts who formed the reserves of the active army. By the end of the war, more than 8 million French troops had participated in the conflict (see Huber (1931) and Gay and Grosjean (2023) for more detail). We consider the regional base of the infantry, which constituted the bulk of the Army, and conduct our analysis at the municipality-recruitment bureau level.[18] In the majority of cases, a recruitment bureau fielded a single line infantry regiment (126 bureaus recruiting from 27,929, or 80% of municipalities). In the remaining cases, a recruitment bureau fielded several regiments. In particular, this was the case in large population centers (such as Paris bureaus) and the "fortress" regions on the eastern border. We use the terms *recruitment bureau* and *regiment* interchangeably for the rest of our analysis.

Consistent with the need for flexibility, the metropolitan Infantry Regiments of the French army were not specialized units but were designed to be interchangeable in training, equipment, and strength (Cagé et al., 2023a).[19] This made regiments easily redeployable into brigades and higher formations in response to enemy action and the needs of the moment, and greatly simplified logistics, the incorporation of replacement troops and resupply, each of which were key military imperatives.[20]

Though the Armistice was declared on 11 November 1918, the soldiers remained mobilized for some time afterwards. The official cessation of hostilities was not declared until October 24, 1919, and demobilization was mostly over by November 1919.[21]

2.2 Voting in 1914 and 1919

The 1914 elections were held in April and May 1914 as planned by the electoral calendar, but conveniently for our study, occurred immediately before the outbreak of WWI. Indeed, with the threat of war looming, voting patterns, particularly for the Socialist party (SFIO), under its pacifist leader, Jean Jaurès, provide a valuable gauge not only of local left-wing support prior to the war but also of opposition to the war itself.[22] We use data from Cagé et al. (2023a) on the first round of the elections, held on 26 April 1914 (for details, see Online Appendix in Cagé et al. (2023a)). As would be the case until 1945, elections were held under universal

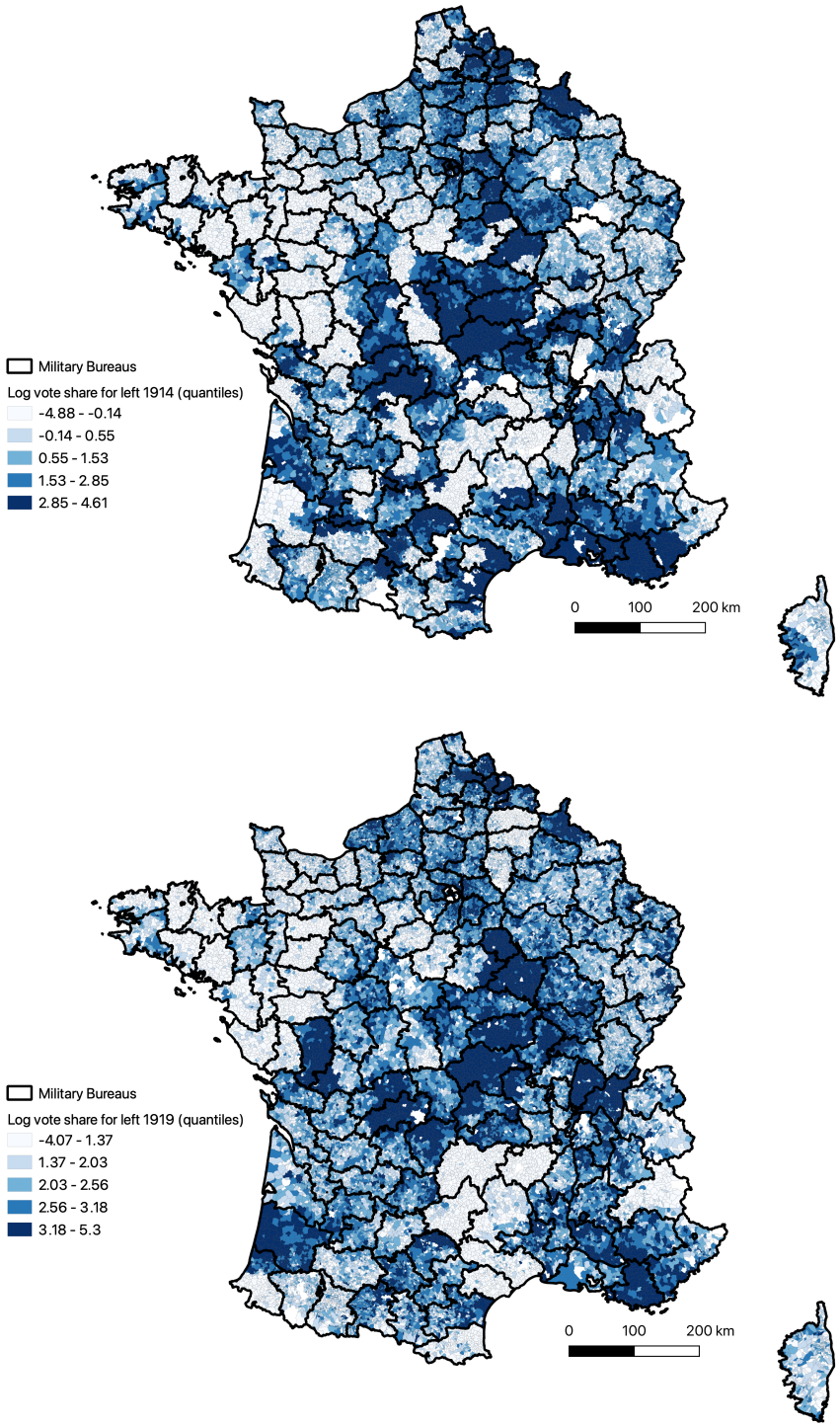
[18] Other army corps, such as the artillery, were organized at the broader region level and had much fewer men overall.

[19] In 1914, the standard war establishment of all non-fortress (i.e., three battalion) metropolitan line infantry regiments was 66 officers, 3,245 men, 18 pack horses, 129 draught horses, 3 one-horse vehicles, 58 two-horse vehicles, and 1 four-horse vehicle. Men were all issued with the same 1893 Lebel rifle and the same set of equipment. For more details see Imperial General Staff (1914) (pp. 226-229).

[20] See Jha and Wilkinson (2012, 2023) on how similar imperatives shaped the British Indian army, the French royal army and other forces as well.

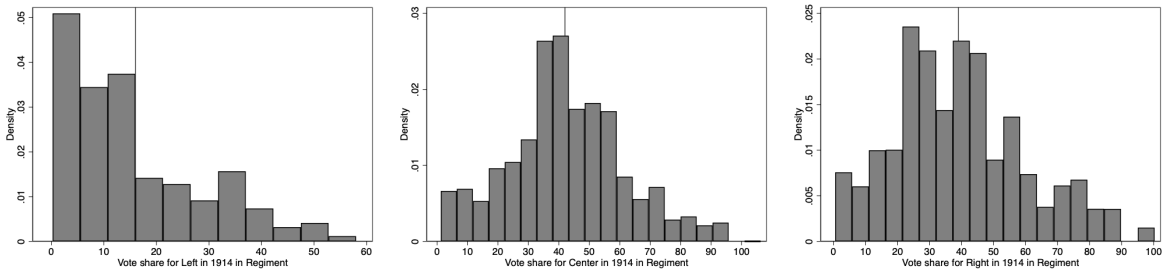
[21] The date of October 24, 1919 corresponds to the official date of cessation of hostilities per the Law of October 23, 1919 (Jold, 51(289), 11790).

[22] After the assassination of the SFIO leader and main opponent to the war, Jean Jaurès, on 31 July 1914 and the declaration of war by Germany on 3 August 1914, the SFIO rallied its support behind the national "Sacred Union" government.



Notes: This figure shows the (quantiles of the) share of left-wing votes in the 1914 (N=33, 725 municipalities) and in the 1919 elections (N=33, 680 municipalities) overlaid with the 1914 military recruitment bureaus.

Figure 2: Vote for the left in the 1914 and 1919 elections and WWI military recruitment bureaus



Notes: Shares of votes for the left, center, and right in 1914 at the recruitment bureau level (N=158). Vertical lines indicate the national mean.

Figure 3: Exposure to the left, center, and right at Bureau level

male suffrage, thus capturing the political opinions of those about to be drafted into war.

In the 1914 elections, the SFIO emerged as a major political force, gathering 15.84% of the vote, with a right-skewed distribution and a median of 12.02%. The top panel of Figure 2 shows the geographic distribution of the SFIO vote share across municipalities in 1914.[23] As we describe below, the geographic concentration of the left vote creates variation in exposure among otherwise similar municipalities to left-wing peers due to the happenstance of common regimental recruitment. The first panel of Figure 3 shows the distribution of the 1914 left vote share averaged at the level of recruitment bureaus. This distribution captures the variation in how much a municipality would be exposed to a given political composition in the military recruitment bureau. The majority of bureaus experienced extremely low shares of votes for the left, with 25% of regiments having an average vote share for the left below 5%. The distribution is right-skewed, however, with 5% revealing vote shares of around 42% or higher. By contrast, exposure to more traditional parties of the center or the right follows a more normal distribution, as displayed in the remaining panels of Figure 3.

Under the Constitution of the Third Republic, legislative elections were to be held every four years. Post-war elections were, however, postponed until the end of the official cessation of the conflict and demobilization, to enable soldiers to go back to their home municipalities and cast their votes. The first post-war elections were consequently held on the 16th and 30th of November 1919. We use data on the first round of these elections from Cagé et al. (2023a).[24] Despite some progress for the left over the course of the war, the socialists fell short

[23]The South East region around Toulon and Nice had become a traditional left stronghold, encompassing the birthplace of Louis Auguste Blanqui (born in Puget-Théniers, within the Nice recruitment bureau). Blanqui became a leading nineteenth century socialist, known as 'the Imprisoned One' due to his many incarcerations for fomenting radical activity.Slightly further to the West, in the Midi region close to Beziers, major riots by wine makers in 1907 had cemented a socialist stronghold. Léon Blum, who would become the highly polarizing Prime Minister of the Popular Front after the 1936 elections, was first elected as member of Parliament for nearby Narbonne in 1929. The center of France, specifically the region around Vierzon, was a primary industrial center and a stronghold for revolutionary trade unionists.

[24]Voters cast their votes in the municipalities where they were registered voters.

of a majority, with a national average vote share of 19.36%. The moderate right remained a dominant force and the left was defeated by the "National Bloc" coalition of right-leaning parties, which capitalized on the middle-classes' fear of Bolshevism, stirred up by conservative politicians, journalists and political scientists alike.[25] The historian, Kevin Passmore(2012b), describes how "the conviction that Communists manipulated the Socialists and Radicals cast the entire left as anti-French" and that "conservatives transferred the culture of war into anti-communism, identifying the Bolsheviks and Germans with barbarous Asia".

3 War and Polarization

Figure 2 overlays the legislative election results at the municipality level with the boundaries of military recruitment bureaus at the start of WWI. The figure illustrates how four years of trench warfare radically changed France's electoral map, with voting becoming much more homogeneous within a recruitment bureau by 1919.

Theoretical framework. In what follows, we illustrate the underlying dynamic with a simple network model of political polarization that is consistent with these visual empirical patterns. The formal derivation of this model can be found in Appendix A. Here, we explain informally the main intuition of the model. We consider a game with strategic complements, in which agents derive more utility from taking a discrete action (voting for the left or for the right) if other agents in their network (or regiment) take the same action. In fact, if more than half of each agent's neighbors (that is, allocated to the same recruitment bureau) choose an action (vote for the left or for the right), then it is optimal for this agent to also vote for the same party. We show that if all agents within a regiment interact with each other, then there can only be two Nash equilibria: either all agents in a regiment vote for the left or all agents in the regiment vote for the right. This simple model explains how agents coordinate within a regiment to vote for the same party.[26] This implies that if a soldier is allocated to a left (right) regiment in 1914, then, because of complementarities, he is very likely to vote for the left (right) in 1919. Complementarities could mean "conformity", that is, the soldier wants to conform to the majority's voting in his regiment and finds it costly to deviate from the majority (Akerlof, 1997; Ushchev and Zenou, 2020; Perez-Truglia, 2018), or "learning", that is, the soldier learns about the majority party from others in his regiment and decides to adopt

[25] In a 1920 issue of *The American Political Science Review*, political scientist Graham H. Stuart describes how "the extremists of the Socialist parties" (*sic* (Stuart, 1920, p.122)) were already, in 1919, seen by the rest of the political forces as a major threat. He describes how "the first session of the new chamber, on December 8, was [...] the occasion [...] of a vociferous demonstration against the Socialists. It was only after a quarter of an hour of loud jeering that M. Albert Thomas was able to read the Socialist declaration." (Stuart, 1920, p.122-123).

[26] Of course, in the real world, not all agents within the same regiment vote for the same party. It is straightforward to modify the model to reflect this reality, although the characterization of Nash equilibria would be less "clean" despite the underlying mechanism remaining the same.

its values (Ballester et al., 2006; Jackson and Zenou, 2015).

So far, we have shown how convergence occurs locally within a regiment. How do the equilibria look like at other levels of aggregation, including at the national level? It is straightforward to show that, in a dynamic model of learning, the long-term convergence result will depend on the initial conditions. All regiments that start in 1914 with one of the two Nash equilibria (majority voting for the left or for the right) will end up by being mostly left (respectively right) in 1919. This implies that the local political homogenization at the regiment level *can* lead to equilibria with enhanced polarization between left and right at the national level. However, if regiments homogenize in different directions, it can also lead to equilibria with falling or no change in polarization nationally or at other levels of aggregation, even while polarization has *increased* substantially between regiments.

Polarization over the war. Descriptive statistics, based on widely used measures of polarization (Montalvo and Reynal-Querol, 2005), confirm the homogenization of votes within military recruitment bureaus. We compute the Montalvo and Reynal-Querol (2005) polarization index based on individual party shares in the 1914 and 1919 elections at different levels: municipality, department (political district), and recruitment bureau. In Table 1, we show the evolution of these indices between 1914 and 1919. The only statistically significant decrease in polarization occurs within a recruitment bureau, where polarization decreased by 7.73%, on average between 1914 and 1919. In contrast, the decrease in polarization is not statistically significant within municipalities or departments.[27]

The measure of polarization used in Table 1 describes how polarization changes over time within a given unit, but does not allow us to measure the convergence process. To more closely align with our theoretical model— that examines individual coordination within a regiment— we introduce two alternative measures of polarization that capture individual variation at the municipality-level within a regiment. The first measure is simply the difference between the top party in a municipality and the top party in a regiment. The second measure, *the relative party index*, captures a more nuanced picture of the distribution of votes across multiple parties within each municipality and regiment. It considers the absolute difference between each political party's share in the municipality and its average share in the regiment (calculated over all municipalities $k \neq i$ within regiment r). We provide more details on the definitions of these measures in Appendix B.1.

Table A2 in Appendix B.3 shows, in a panel regression setting with municipality fixed effects, that votes converged within a regiment during the war and that this convergence persisted throughout the interwar period.[28] As noted in Section 2.1, since recruitment was local,

[27] Nationally, this polarization measure also fluctuates somewhat from 0.37 in 1910, 0.52 in 1914 to 0.44 in 1919. The latter change may at first seem indicative of an overall unifying effect of the war, as argued by Prost (1977). However, as we discuss below, it also masks sharp local differences emerging from the war. Indeed, national polarization resurges in the inter-war period, rising to 0.54 by 1936.

[28] Appendix B.2 contains details of the empirical strategy underpinning this analysis.

Table 1: Polarization over the war

	Polarization, in the:		
	(1) Municipality	(2) Department	(3) Bureau
Post War (1919)	-0.033	-0.007	-0.058***
	(0.027)	(0.022)	(0.017)
Fixed Effect	Municipality	Department	Bureau
R-squared	0.56	0.60	0.59
Observations	65,448	186	316
Mean DepVar	0.73	0.76	0.75
Sd DepVar	0.31	0.17	0.17

Notes: The table presents comparisons between Montalvo and Reynal-Querol (2005)'s indices of polarization calculated at various levels: municipality (Column 1), department (Column 2), and military bureau (Column 3). We construct a panel of election results at each different level for 1914 and 1919, and then regress each measure of polarization on a dummy indicator taking the value of one in the 1919 election, controlling for unit fixed effects, as indicated. Robust standard errors, two-way clustered at military recruitment bureau level and at department level, are reported in parentheses.

a potential confound of the effect of military recruitment relates to local interactions. To address this concern directly, we estimate a dyadic model (specified in Equation B.2 in Appendix B.2), which regresses measures of similarity in voting outcomes between all municipality pairs (i, j) in election year t on an indicator variable for whether municipalities (i, j) were recruited in the same military bureau, controlling for a vector of constructed dyad-specific attributes, including the geographic distance between municipalities. Results are presented in Appendix Table A8.[29] The coefficient associated with the indicator variable for whether a municipality pair was recruited in the same bureau is insignificant in the case of the 1914 elections but becomes negative and statistically significant by 1919. In other words, although two municipalities drafted in the same regiment in WWI were not more likely to vote in a similar fashion *before* the war, they were more likely to do so *after* the war.

Polarization and collective action during the war. Finally, we also investigate whether the process of within-regiment homogenization identified above has consequences for the war effort. In Appendix B.4 we present additional empirical analysis indicating that homogeneity is positively associated with the occurrence of mutinies within the regiment (see Table A7). However, our analysis reveals a positive but insignificant statistical association between measures of polarization and overall war fatalities. This is consistent with two countervailing

[29]Due to the computational challenges related to the large number of possible dyads that can be constructed from our sample of 35,000 municipalities, we estimate the dyadic regressions on a random 1% sample (about 350 municipalities) over 500 replications and report average coefficients, and 95% confidence intervals based on the bootstrap percentile method.

patterns. As we also document below, units with particular initial political allegiances were not specially selected for more fatal battle assignments, however during the war, shared political preferences among soldiers within a regiment facilitated collective action, even when it sometimes ran counter to the diktats of the State.

4 War and Partisanship

Our results so far document how a common regimental history during the war built political solidarity, leading to a reduction in polarization within regiments. However, this process was not accompanied by a universal shift in partisanship. Nationally, the share of the left remained broadly stable. Examining the change in political preferences across municipalities over the course of the war, evident in the electoral map in Figure 2 or the aggregate swing at the municipal level in Appendix Figure A1, it becomes clear that some municipalities swing to the left while others swing to the right. In this section, we explore the dynamics of local partisan shifts. We employ a regression discontinuity design across 435 military boundaries to show how accidental exposure to partisan regiments led to partisan conversion.

4.1 Exposure to left-wing regiments

Our theoretical model predicts that municipalities will converge to the average political opinion within their regiment. We begin by focusing on the left partisan shift. We do this for several reasons. First, as noted above, in rural areas, the left was a new political force during this period that redefined politics, exposing many (rural) municipalities to its ideology for the first time due to regimental assignment. Second, the left would go on to become a deeply polarizing force in the aftermath of WWI. Diaries of veterans from the line infantry also highlighted how this novel ideology left a more profound mark on their political preferences, partly due to its novelty, but also because it appealed to the impoverished agricultural social classes of the infantry. As mentioned in the Introduction, it was in the trenches of WWI where the *hammer* (industrial workers) met and, as we show below, converted the *sickle* (agricultural workers).[30] Third, the left-wing SFIO party ran in both the 1914 and 1919 elections, allowing for easy comparison.

4.2 Spatial regression discontinuity empirical strategy

Estimating the effect of regimental peers on political opinions is hindered by identification challenges (Manski, 1993). Any observed correlation between regiment-level and municipal-

[30] One veteran recounted how "the industrial workers brought with them and left as an inheritance many of their distinctive traits [...] maybe because of the habit of life in the factory, and because of trade unionism, a sharp feeling of the collective: the regiment must "manage" together, consume together the content of the packages, that the country guys did not always want to share, apart from the guys from the same "country" [village]" [p.28] (Meyer, 1967).

level outcomes may be due to correlated effects—the tendency of units in a group to behave similarly because they share similar characteristics, contextual effects—the tendency of different units in a group to behave similarly due to common influences,[31] or endogenous (peer) effects that capture the influence of the group on individual outcomes. In other words, the concern here is that regiments may have been intentionally formed precisely to bring together municipalities with similar characteristics, which also predict their political opinions and their evolution over the course of the war. This concern is, however, at odds with the underlying principles of army organization. As we explained in Section 2.1, the regiments were designed to be non-specialized and interchangeable units, and as shown in Appendix Table A1, there are no observable pre-war differences in terms of population density in 1911, religion, occupation, and literacy in 1872 across communes that happened to be assigned to regiments with a higher vote share for the left. Table A1 also shows that more left-wing regiments were not more likely to be deployed in particularly dangerous battles or sectors of the Western front, nor on the South-Eastern front during the war. Nevertheless, concerns may linger about the influence of unobservable characteristics and the possibility that municipalities where the left was already on the rise were more likely to be assigned to more left-wing regiments.

The ideal setting to overcome these identification challenges and estimate the influence of exposure to the left at the regiment level on voting behavior is to compare geographically proximate municipalities that were not voting for the left before but which end up in different regiments where they are exposed to sharply different political compositions. Municipalities that are close to each other are more likely to share similar characteristics and face similar local contextual effects, thereby attenuating concerns that estimated effects are due to unobservable correlated and contextual effects. Focusing on municipalities that did not vote for the left before the war ensures that these municipalities are not driving the regiment-level left-leaning proclivity.

The following specification approximates this ideal setup. We estimate a spatial regression discontinuity design across military boundaries, where the treatment is defined as exposure to a left-wing regiment. In our main specification, a left-wing regiment is defined as one in which the average vote share for the left in 1914 is higher than the national average left vote share (15.84%). We later consider alternative treatment definitions as well as a fuzzy RD design for robustness. Given the large number of potential regimental boundaries to consider for each municipality (435 boundaries between 158 bureaus), we adapt the empirical regression discontinuity framework with multiple thresholds outlined in Dell and Querubin (2017) to the spatial RD context and estimate the following specification:[32]

[31] In our setting, since regiments are drawn locally, local contextual effects may be due, for example, to the influence of geographic proximity.

[32] Earlier studies that rely on spatial discontinuities with multiple borders include Black (1999) and Grosjean and Senik (2011). However, their empirical methodology only relies on simple comparisons of means in localized samples across the borders.

$$Y_{ib}^{1919} = \alpha + \beta_1 Left_{ib} + \sum_{b=1}^{435} \delta D_{ib} + \sum_{b=1}^{435} \gamma_{1b} D_{ib} f_b(geo_{ib}) Left_{ib} + \sum_{b=1}^{435} \gamma_{2b} D_{ib} f_b(geo_{ib})(1 - Left_{ib}) + \theta X_{ib}^{1914} + e_{ib}, \tag{1}$$

where Y_{ib}^{1919} is the share of votes for the left[33] in municipality i in 1919 and $Left_{ib}$ is a treatment indicator equal to 1 if municipality i is on the side of the military boundary b that was assigned to a left-wing regiment. Since we want to compare municipalities across the same boundary, D_{ib} is a set of dummy variables for each boundary b. The RD polynomial, $f_b(geo_{ib})$, is estimated separately on either side of each military boundary to control for smooth functions of geographic location around each boundary. We leverage the high granularity of our data to estimate this RD flexibly rather than constrain potential outcomes to be a function of distance to the boundary, but we assess the robustness of our results to alternative specification choices. X_{ib}^{1914} includes baseline characteristics for each municipality.

An observation is a municipality i - boundary b. There are 435 regimental boundaries (see the map in Figure 1) and 34,947 municipalities within France's 1914 borders (that is, excluding Alsace and Moselle, only recovered after the end of WWI).[34] Municipalities are the smallest administrative unit in the Census, with an average population of 1,138 inhabitants in the last pre-WWI Census of 1911 and 279 (male) registered voters in 1914. We focus on municipalities that did not vote for the left prior to the war (i.e., where the vote share for the SFIO in 1914 was below 3%, which corresponds to the median of the sample). This leaves us with 15,870,975 municipality-boundary observations (below we consider the robustness of our results to alternative estimation samples). These municipalities tend to be less densely populated, poorer, more agricultural, less industrial, and less literate, even compared to municipalities in the same department (see Table A12 in the Appendix).

Baseline estimates of Equation (1) use a 10-km bandwidth, with alternative bandwidths of 5 and 15 km.[35] The resulting estimation sample within the 10km bandwidth consists of 11,545 observations, 9.99% of which are allocated to a left-wing regiment. The average municipality

[33] In our empirical application, we consider the logarithm of vote shares for the SFIO and for the "Parti Communiste" (a different party to the French Communist Party, which will be created in 1920, which gathers only 0.53% of the vote in 1919). The log transformation in our context is not subject to recent criticism by e.g. Chen and Roth (2023), as no municipality has a vote share that equals zero for either the left, center, or right as a whole. Moreover, the log transformation is attractive in our context since the vote share for the left, both in 1914 and in 1919, is not normally distributed and has a long right tail. We show the robustness of our results to using the share of votes as the dependent variable in Column 3 of Table A11.

[34] We observe 33,680 municipalities in the 1919 elections.

[35] The average distance between a municipality and a military boundary is 377 km and the average distance between a municipality and the *closest* recruitment bureau boundary is 12.84 km. The 10-km bandwidth roughly corresponds to the 50th (9.05 km) percentile of the distribution of distance between a municipality and its closest regimental boundary. 15km roughly corresponds to the 75th (14.70 km) percentile and 5km to the 25th (5.12 km) percentile.

in this sample had 181 voters in 1914, 30 combat deaths in WWI, and 150 voters in 1919.

We estimate local linear regressions and cluster standard errors two-way by municipality and military boundary. For robustness, we estimate a simpler RD specification in the cross section of municipalities in which we only consider the discontinuity over the *closest* boundary for each municipality. The optimal Calonico et al. (2014a,b) bandwidth in this specification is 11 km, close to our choice of 10km.

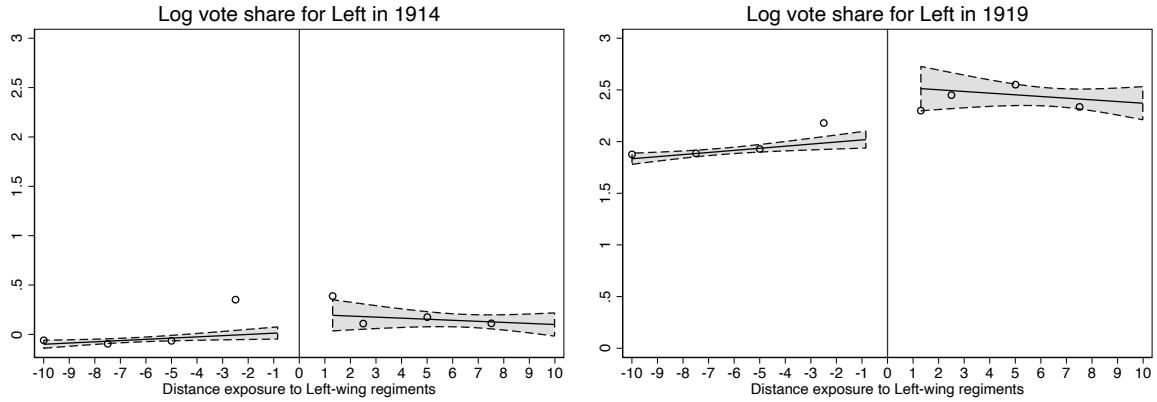
Our empirical framework estimates a local average treatment effect on the left vote share in municipalities that were initially not socialist but ended up in a left-wing regiment due to local quasi-random assignment across regimental boundaries. We provide support for the assumption of local exogeneity of regimental assignment by showing that other covariates as well as the outcome at baseline (the left vote share in the last two pre-WWI elections in 1910 and 1914) vary smoothly at the military border.

4.3 Regression discontinuity results

Validation checks We begin by examining visually the relationship between exposure to a left-wing regiment and baseline municipality covariates. The left panel of Figure 4 uses a local polynomial to plot the distribution of municipal vote shares for the left in 1914 against the distance to a military boundary. Dashed lines indicate the 95% confidence intervals. A positive distance signifies that the municipality is allocated to a left-wing regiment. The plot demonstrates that vote shares in 1914 are smooth across the threshold. Estimates from equation (1) shown in Table 2 confirm that vote shares in 1914 vary smoothly across military boundaries. Similarly, we observe, both graphically (Figure 5) and through regression estimates (Table 2), that other municipal-level covariates, including left vote share in 1910, population in the last pre-WWI Census of 1911, municipality size, and fatality rate in WWI also exhibit a smooth pattern across the threshold. Other dimensions of WWI, such as rotation to major battles like the Marne in 1914, Verdun in 1916 (including under the leadership of then-General Philippe Pétain, which has been associated with a right-wing swing over the interwar period and collaboration in WWII by Cagé et al. (2023a)), and the Somme in 1916 are also smooth around the border.

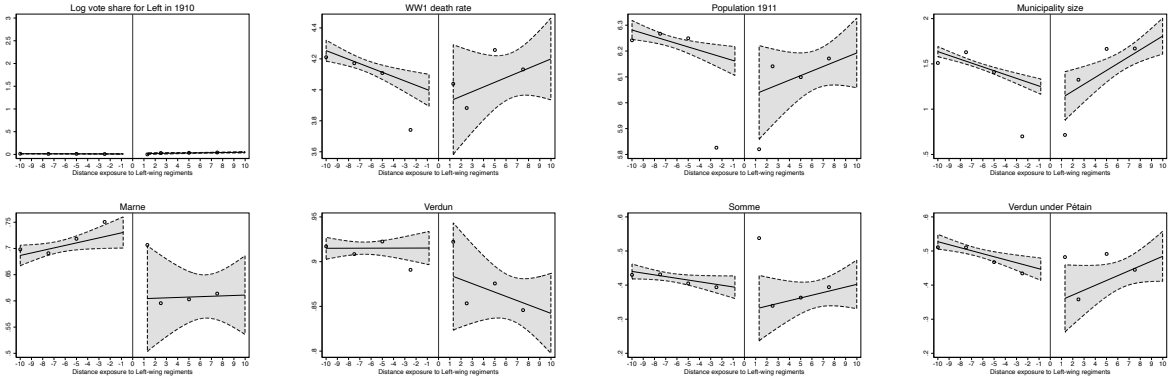
For robustness, in Panels B and C of Table 2, we use recently digitized data by Piketty and Cagé (2023) as well as data collected by Cagé et al. (2023a) on religion from the 1872 Census (only available at the more aggregated level of 429 to 510 arrondissements) to show that municipalities allocated to left-wing regiments are statistically similar to others on a wide array of additional characteristics capturing literacy, religion, wealth, employment, and industrial structure.[36] We consistently observe that all other characteristics vary smoothly at the regimental boundary.

[36] In contrast to the characteristics in Panel A, and apart from the 1910 electoral results, other variables are imputed at the municipal level from more aggregated statistics (at departement, arrondissement, or canton level), and thus should be interpreted with more caution because of measurement error.



Notes: Underlying observations are at the municipality level (averaged across municipality-boundary observations). The sample is restricted to observations within 10km of a regimental boundary. Dots correspond to average values of each variable aggregated into 2.5-km (1.55-mile) bins for visualization. The solid line plots a local linear regression and the shaded area shows 95% confidence intervals.

Figure 4: Regression Discontinuity: Voting in 1914 and in 1919



Notes: Underlying observations are at the municipality level (averaged across municipality-boundary observations). The sample is restricted to observations within 10km of a regimental boundary. Dots correspond to average values of each variable aggregated into 2.5-km (1.55-mile) bins for visualization. The solid line plots a local linear regression and the shaded area shows 95% confidence intervals.

Figure 5: Regression Discontinuity: Baseline Vote and Covariates

Table 2: Baseline Vote and Covariates: Regression Discontinuity Estimates

Panel (a)

	Sh. left 1914	WWI death rate	Pop. 1911	Munic. size	Marne	Verdun	Verdun Pétain	Somme
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exposure to Left-wing Regiment	0.099	0.049	-0.050	-173.003	0.016	-0.019	-0.025	-0.028
	(0.076)	(0.136)	(0.062)	(144.283)	(0.093)	(0.055)	(0.069)	(0.060)
Bandwidth	10	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.48	0.29	0.43	0.46	0.90	0.84	0.86	0.88
Observations	11,511	11,511	11,511	11,511	11,511	11,511	11,511	11,511
Mean DepVar	-0.02	4.14	6.22	1,454.57	0.70	0.90	0.50	0.43
Sd DepVar	0.76	1.48	0.81	1,204.92	0.43	0.28	0.48	0.48

Panel (b)

	Sh. left 1910	Jewish (1872)	Protest. (1872)	Catho. (1872)	Prop. literate	High school	Mean income	Prop. foreign.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exposure to Left-wing Regiment	0.004	-0.000	0.003	-0.002	0.000	-0.008	-0.027	-0.001
	(0.018)	(0.001)	(0.004)	(0.004)	(0.023)	(0.018)	(0.020)	(0.002)
Bandwidth	10	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.61	0.87	0.65	0.69	0.33	0.23	0.65	0.46
Observations	11,353	9,021	9,021	9,021	11,503	11,511	11,511	11,405
Mean DepVar	0.02	0.00	0.01	0.98	0.65	0.20	0.83	0.01
Sd DepVar	0.06	0.01	0.03	0.04	0.23	0.21	0.33	0.03

Panel (c)

	Farmers	Indep.	Managers	Indus. Workers	Employees	Interm. prof.	Agr. indep,	Unemp.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exposure to Left-wing Regiment	0.001	-0.039	-0.021	-0.004	-0.007	0.006	-0.005	-0.031
	(0.011)	(0.027)	(0.018)	(0.030)	(0.015)	(0.019)	(0.014)	(0.020)
Bandwidth	10	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.51	0.17	0.19	0.56	0.33	0.18	0.57	0.15
Observations	11,511	11,511	11,511	11,511	11,511	11,511	11,511	11,511
Mean DepVar	0.82	0.32	0.21	0.35	0.19	0.25	0.80	0.25
Sd DepVar	0.15	0.31	0.17	0.30	0.17	0.20	0.17	0.20

Notes: An observation is a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator equal to one if a municipality is on the side of the military boundary that was allocated to a left-wing bureau, defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by male adult population in 1914). The Table reports OLS estimation results of Equation 1 for different dependent variables, which are indicated in column headers. Vote shares for the left in 1910 and 1914, WWI death rate, and population in 1911 are in logs. Specifications use a 10km bandwidth, as indicated. Robust standard errors two-way clustered at municipality and boundary level in parentheses. Data in Panel A are from Cagé et al. (2023a) and Gay and Grosjean (2022), and are at municipal level. Data on religion in Panel B are from the 1872 Census at arrondissement level, imputed uniformally to municipality, and are in proportion of the population. The rest of the data in Panel B and data in Panel C are from Piketty and Cagé (2023) for the year 1913 and, apart from the 1910 election results, are imputed by Piketty and Cagé (2023) from aggregated statistics (arrondissement, canton or departement level). *Prop. literate*: proportion of the population above 20 who are literate; *High school:* percentile in the national distribution of high school graduates; *Mean income*: mean income per capita relative to national mean income; *Prop. foreign.*: proportion of foreigners in population; *Farmers, Indep., Managers, Indus. workers, Employees, Interm. prof., Agr. indep, Unemp.*: are the percentiles in the 1913 distribution, respectively, of the proportion of farmers, independents, managers, workers, employees, intermediate professions, non-agricultural self-employed, and unemployed.

Figure A2 presents the McCrary plot, which tests for selective sorting around the threshold. The military plan pre-assigned municipalities to regiments, ruling out manipulations of regimental assignment around the threshold. Accordingly, we observe no discontinuity in the density of observations around a military border.

Voting outcomes in 1919 We next examine how allocation to a left-wing regiment changes voting outcomes in 1919. The graphical illustration in the right panel of Figure 4 shows how the vote share for the left in 1919 increased discontinuously in municipalities locally exposed to left-wing regiments.[37] When we include controls specified in Equation 1 and adjust standard errors for two-way clustering, the estimates remain statistically significant and do not change in magnitude. These results are presented in Table 3. The estimates are robust across different bandwidths. The estimated effects are sizeable, ranging from about a 26% to 37% increase in the left vote share in 1919. Results estimating the effects separately by political party, from left to extreme right in the 1919 elections show that the effects are specific to the SFIO (Appendix Table A9).[38]

Since we observe municipalities in the 1914 and the 1919 elections, we can also estimate a first-difference version of Equation 1, where the dependent variable is the inverse hyperbolic sine of the difference in the vote share for the left between 1919 and 1914. These results, displayed in Columns 4 to 6 of Table 3 suggest a 26.5 to 41% increase in the left vote share within a municipality exposed to a left-wing regiment. The results of different weighted regressions, displayed in Appendix Table A10, are robust and similar in magnitude.

For simplicity, our baseline specification considers a binary treatment. In practice, however, the regiment-level average vote share for the left jumps discontinuously, but not discretely, at the military boundary. Column 1 of Table A11 shows that the average jump across military boundaries in the regiment-level left vote share (corresponding to the first stage of a fuzzy RD specification) is 19.3 percentage points (statistically significant below the 1% level). Column 2 shows that our results are robust to using the regiment-level left vote share predicted by the first stage as the independent variable in Equation 1 (second stage of a fuzzy RD specification). In Column 3, we present the reduced form results (estimation of Equation 1) when we consider the vote share for the left in 1919 in a municipality. The point estimate in Column 3 suggests that exposure to a left-wing regiment is associated with a statistically significant 3.07 p.p. increase in the left vote share in 1919. The Wald estimator, combining these reduced form estimates with the first stage, suggests that a 1 p.p. increase in the regiment left vote share

[37] For the graphical illustration, we use data averaged at the municipality level. In regressions, we keep data at the municipality boundary level but correct standard errors for clustering at the municipality (as well as at boundary) level.

[38] The results are actually larger in magnitude when we consider the SFIO alone rather than together with the marginal "Parti Communiste". The point estimate corresponding to the estimates in Table A9 for the "Parti Communiste" is -0.005 with a standard error of 0.004. We do not display this estimate in Table A9 since the Table only displays estimates for parties that gather at least 2% of the vote nationally.

converts 15% of voters to socialism. This estimate naturally corresponds to the last column of Table A11, which shows the results of the 2SLS estimation, using predicted regiment-level vote share as the independent variable. Given that the average municipality in the estimation sample had 150 voters in 1919, our estimates suggest that exposure to a fully socialist regiment (vs. a regiment with no socialist) would have converted 22.5 voters (15% of 150). This number corresponds to the likely population of returning veterans from the line infantry.[39] In other words, quantitatively, our effects can be explained by just the line infantry veterans adopting socialism, with no spillover effects necessary to explain the magnitude of our effect.

Table 3: Exposure to Socialist Regiments in WWI and Vote in 1919: Regression Discontinuity Estimates

	Log. Left vote share in 1919			IHS Diff. Left vote share 1919-1914		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure to Left-wing Regiment	0.259***	0.370***	0.323**	0.265**	0.410***	0.364**
	(0.092)	(0.116)	(0.141)	(0.110)	(0.138)	(0.172)
Bandwidth	15	10	5	15	10	5
Flex Polynomial	✓	✓	✓	✓	✓	✓
R-squared	0.63	0.68	0.72	0.62	0.66	0.71
Observations	19,313	11,177	3,905	19,313	11,177	3,905
Mean DepVar	1.95	1.96	2.01	2.42	2.44	2.47
Sd DepVar	0.96	0.96	0.94	1.07	1.08	1.07

Notes: An observation is a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator equal to one if a municipality is on the side of the military boundary that was allocated to a left-wing bureau, defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by male adult population in 1914). The dependent variable in Columns 1 to 3 is the log vote share for the left in 1919 in the municipality. The dependent variable in Columns 4 to 6 is the inverse hyperbolic sine of the simple difference in votes for the left between 1919 and 1914 in the municipality. Specifications use alternative bandwidths of 15, 10, and 5 km, as indicated. Robust standard errors two-way clustered at municipality and boundary level in parentheses.

We interpret these results as evidence of voter conversion in the trenches. One potential question is whether these events are driven by voter mobilization rather than conversion. Columns 1 to 3 of Appendix Table A13 show that voter mobilization is not at play. Indeed, we observe no difference in turnout neither at baseline in 1914, which suggests that the places where we observe voter conversion were not on a different mobilization trajectory before the war, nor after the war in 1919, which shows that our results are not due to differences in voter mobilization. The estimates for turnout in 1914 and 1919 are not only statistically insignificant but are also negligible in magnitude.

Conversion should be particularly effective where the left was unknown and where its political message resonated with local material needs. Consistent with these hypothesized

[39] At the start of the war, the line infantry included 3 out of 28 cohorts of men, or 10% of the Army, and incorporated 4 more cohorts as the war went on and older cohorts were demobilized as they turned 48. The death toll of 30 men in each municipality in our estimation sample, combined with an estimated military death rate of 16% in the war (see, e.g., Gay and Grosjean, 2023), suggests that almost all men in the municipality can be considered as having been drafted.

effects, the heterogeneity analysis presented in Appendix Table A14 reveals that the treatment effect of exposure to left-wing regiments was more intense where the initial left vote share was lower and in poorer municipalities.[40] By contrast, we do not observe any significant interaction with initial literacy. Consistent with the interpretation that regiments brought together the "hammer" (industrial workers) who converted the "sickle", more agricultural municipalities experienced a more intense treatment effect.

Medium and long-term effects In Table 4, we look at the medium and long-term effects. Column 1 shows that voter conversion to the left in the trenches persisted throughout the interwar period, remaining relatively unchanged in magnitude into the last election before WWII. The effect further persists after WWII until the end of the 1980s, albeit much attenuated in magnitude.[41] Interestingly, the emergence and persistence of our effect corresponds not only to the time when the left-right divide structured French politics, but also with the period when the left-wing vote was the highest in the countryside, and the rural-urban divide was the least pronounced across all elections between the restoration of the Republic in 1848 and 2020 (Piketty and Cagé, 2023).

We now explore the robustness of these results before turning to the effect of right-wing exposure in Section 4.5.1.

Table 4: Exposure to Socialist Regiments in WWI: Persistence (Regression Discontinuity)

	SFIO: 1936	Left: 1945-58	Left: 1962-78	Left: 1981-88	Left: Post 1990
	(1)	(2)	(3)	(4)	(5)
Exposure to Left-wing Regiment	0.325*	0.019**	0.029***	0.019	0.003
	(0.187)	(0.009)	(0.011)	(0.013)	(0.010)
Bandwidth	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓
R-squared	0.74	0.79	0.82	0.66	0.72
Observations	11,344	11,541	11,540	11,500	11,543
Mean DepVar	1.85	0.26	0.29	0.37	0.20
Sd DepVar	1.48	0.10	0.10	0.11	0.09

Notes: An observation is a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator equal to one if a municipality is on the side of the military boundary that was allocated to a left-wing bureau, defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by male adult population in 1914). The Table reports OLS estimation results of Equation 1, with a 10 km bandwidth. Robust standard errors two-way clustered at municipality and boundary level in parentheses. Data is from Cagé et al. (2023a) for 1936 and from Piketty and Cagé (2023) for later years.

[40] The interaction effect between mean income and the treatment term is only significant at the 10.6% level. Data on mean income is imputed at the municipality from higher aggregates, introducing a likely measurement error and attenuation bias.

[41] This may potentially be due to compositional changes on the left and the electorate due to female suffrage post-WWII.

4.4 Robustness

In this section, we consider the robustness of our results to alternative specifications, treatment definitions, and estimation samples. We also establish, by conducting randomization inference tests and placebo analysis at the level of political districts that our results are driven by regimental exposure. Furthermore, we show that our results are exclusive to political outcomes.

Alternative treatment definitions. Thus far, we have defined the treatment as being exposed to a regiment where the average vote share for the SFIO in 1914 was higher than the sample mean. We explore alternative treatment definitions based on different thresholds of average left-wing vote in a regiment.[42] Specifically, we consider exposure to a regiment where the left vote share in 1914 is higher than the sample *median*, as well as alternative percentiles of the average regimental-level left vote share (ranging from the 45th percentile to the 80th, in increments of 5 points). These results, presented in Appendix Table A15 for the outcome and Figure A3 for baseline vote and municipality-level covariates, confirm that our findings are robust to these alternative treatment definitions and that covariates and baseline left vote shares remain identical on both sides of the regimental boundary.[43] The estimates of the jump in the 1919 vote share, under the various alternative definitions of left-wing exposure, are stable in magnitude. They increase slightly for the highest percentiles, suggesting that more intense exposure has larger effects.

Alternative estimation samples Our main specification considers only municipalities that had never been exposed to the left before, defined as municipalities where the initial left vote share was lower than 3%, which corresponds to the sample median. Results displayed in Appendix Table A16 consider alternative cutoffs of initial vote shares for the left from 1% to 6%, in increments of 0.5pp. They show that the share of vote for the left in 1919 still jumps discontinuously at the regimental border and is higher in municipalities exposed to a left-wing regiment. The estimate becomes smaller in municipalities where the initial left vote share was higher in 1914, suggesting that the effect of exposure to left-wing regiments is larger in municipalities with less prior exposure to the left. Figure A4 shows that the municipality-level covariates remain balanced in these alternative samples.

Alternative specification of the spatial RD. Our main specification in Equation 1 considers a flexible function of geography. An alternative specification is to consider the geodesic distance between each municipality's centroid and the boundary and estimate the

[42] In all the robustness tests, we consider our preferred 10km bandwidth.

[43] There are too many specifications to report estimates in regression tables, since we consider 8 different specifications for 8 baseline covariates. We only consider municipal-level covariates from Panel A of Table 2.

following specification:

$$Y_{ib}^{1919} = \beta_0 + \beta_1 Left_{ib} + \beta_2 f(d_{ib}) + \beta_3 (1 - Left_{ib}) f(d_{ib}) + \sum_{b=1}^{435} \delta D_{ib} + e_{ib}, \quad (2)$$

where $Left_{ib}$ is a dummy equal to 1 if the municipality belongs to a bureau where the initial average left vote share is higher than national mean (as before), $f(d_{ib})$ is a function of the distance between each municipality and the boundary, and D_{ib} is a set of boundary fixed effects.

The results, displayed in columns 1 and 2 of Table A17 are robust and similar in magnitude in this alternative specification. Columns 3 and 4 of Table A17 show that our results are also robust to a more parsimonious version of our main specification, in which we only include a linear interaction between coordinates (latitude, longitude) and each boundary.

Our baseline specification considers multiple boundaries and adapts the RD framework with multiple thresholds to the spatial setting. We verify that our results hold when we employ a simpler spatial RD specification with a unique boundary for each municipality. We consider for each municipality only the closest boundary to a left-wing bureau.[44] The optimal Calonico et al. (2014b,a) bandwidth is 11 km, very close to our 10km baseline bandwidth.[45] We estimate a spatial regression discontinuity across the boundary as follows:

$$Y_{i,s}^{1919} = \beta_0 + \beta_1 Left_{is} + \beta_2 f(geo_{is}) + \alpha_s + e_{is}, \quad (3)$$

where $Left_{is}$ is a dummy equal to 1 if the municipality belongs to a bureau where the initial average left vote share is higher than national mean (as before), α_s is a fixed effect for each block s of left-wing bureaus (pictured in Figure A7), and $f(geo_{is})$ is an RD polynomial in latitude and longitude. Standard errors are clustered by block of left-wing bureaus. Regression results displayed in Appendix Table A18 show that our results are robust in this alternative specification. Table A19 implements standard error corrections for arbitrary spatial correlation in this simpler specification and show that this does not affect the precision of our estimates.

Randomization of regimental boundary. The absence of any discontinuity in baseline outcome, in covariates, and in the number of observations provide reassurance that the assumption of quasi-random treatment assignment across the border is valid.

To provide further evidence that the discontinuous jump in 1919 vote is not driven by potential endogeneity of the regimental boundary and unobservable differences between municipalities in our estimation sample, we perform a permutation inference exercise where we randomly shift the regimental boundary borders 1,000 times within the regimental boundary samples, i.e., within the sample of municipalities in the 15-, 10-, or 5-km bandwidths on either

[44] For consistency, we drop municipalities in which the vote share for the left in 1914 was higher than 3%.
[45] The average distance between a municipality and the closest boundary to such a block is 13.8 km.

side of a regimental boundary. These permutation inference tests also address potential issues related to imbalance across boundary clusters and spatial correlation. The results of both exercises, displayed in Figures A5 and A6, show that our effect size is well outside the range of estimated effects from these placebo treatments. We also show in Table A20 the results of robustness tests that exclude the municipalities closest to the border ("donut" tests). The results are stable in magnitude and statistical significance, with the coefficient obtained when excluding the municipalities within 5km of the border being only 4% higher than the coefficient including them, and not statistically distinguishable. The stability of the estimated coefficients additionally suggests that spatial spillovers in political preferences across the border are limited. If voters were influenced by their neighbors across the border, one would expect the coefficient to be much higher when we exclude the municipalities contiguous to the border, which is not the case. This result suggests that once converted in the trenches, political preferences become entrenched.

Regiment vs. political district boundary. Another potential confounding factor in our analysis is that in certain cases (see the map in Figure A8), the regimental boundary coincides with the political district (department) boundary. Therefore, a discontinuous jump in electoral outcomes after the war could be due to unobservable characteristics of political districts, such as local politicians, differences in political campaigning, or other local political characteristics. To address this concern, we conduct several tests that show that our results are driven by regimental assignment rather than any such unobserved district-level heterogeneity.

Firstly, we show that our results are robust to adding a set of (85) department fixed effects in Equation (1). With the inclusion of the department fixed effects, the identifying variation arises from differences in exposure to left-wing regiments within the bandwidth around the regimental boundary, all within a given political district. The map in Figure A8 illustrates the identifying variation by overlaying the regimental and department boundaries. Table A21 confirms the absence of any discontinuity in covariates and the baseline outcome when department fixed effects are included. Estimation results for the left vote share in 1919 are displayed in Table A22 in the Appendix. The estimates with the inclusion of department fixed effects are comparable in terms of magnitude and statistical significance to our baseline estimates, suggesting that most of the results discussed so far are driven by regimental assignment.

To provide further evidence that our results are attributable specifically to regimental assignment, we undertake a placebo analysis that replicates our spatial RD analysis but at the political district level rather than the military bureau. We classify a municipality as "exposed to a left-wing *department*" in 1914 in the same way we define exposure to a left-wing regiment to our approach for regimental level exposure. We define a dummy variable taking value 1 if the municipality falls within a department whose average vote share exceeds the national average. We then estimate Equation (1) replacing our treatment dummy variable by this "Exposure to left-wing *department*" in 1914 with similar bandwidths around departmental

borders, and we test for the presence of a discontinuous jump in the left vote share in 1919 across the department boundary. Results are displayed in Appendix Table A23. Across bandwidths similar to those employed in our main RD specification, we consistently observe that the left vote share in 1919 does not jump discontinuously across the departmental boundary. We also check that these results are not confounded by initial differences across departmental boundaries. Appendix Table A24 shows that pre-determined covariates, WWI rotation and military fatalities, and baseline vote share for the left are smoothly distributed at the departmental boundary.

Economic and other outcomes. We also show that the results are specific to voting outcomes. Using data from Piketty and Cagé (2023), results in Table A25 show the absence of any post-war jump in income, literacy, education, unemployment, shares of employment in agriculture or industrial sector, occupations, and share of foreigners. This provides further evidence that other potential outcomes were continuous around the boundary, and point to our results reflecting a convergence in *political attitudes* among the soldiers of regiments during the war, rather than local economic shocks that also may have occurred as a result of the war.

4.5 Mechanisms

4.5.1 Exposure to right-wing regiments

Next, we estimate the impact on voting in 1919 for a municipality that is exposed to a right-wing regiment (that is, the average right vote share is higher than the national mean in 1914). Specifically, we estimate equation (1), where now $Y_{i,b}^{1919}$ is the share of votes for the right in municipality i in 1919 and where we replace $Left_{ib}$ by $Right_{ib}$, which is a treatment indicator equal to 1 if municipality i is on the side of the military boundary b that was assigned to a right-wing regiment.[46] As stated above, the definition of a right-wing vote is complicated because the political supply on the right changed over time. In 1914, the right-wing parties consisted of PRDS (17.92% of vote), Progressistes (9.45%) and ALP (13.02%) while, in 1919, it was a collection of many more, mostly smaller parties, such as the FR-URD (10.46%), UNR (12.06%), 3.75(4%), ERD (7.31%), and Anciens Combattants (3.28%).

The results are presented in Table 5.[47] Exposure to a right-wing regiment makes people less likely to vote for the left (SFIO) and more likely to vote for the center. However, it does not necessarily increase the vote for the right. Individual results party by party included in Appendix Table A26 show that exposure to a right-wing regiment is associated with a significant decline of the vote for the SFIO and the Radical Socialists (PRRS) and a statistically

[46] This is not the simple mirror image of the exposure to left variable due to the presence of the centre.

[47] Contrary to the specifications examining the effect of exposure to left-wing regiments, we do not exclude any municipalities from our estimation sample, since we cannot consider, as we do for the case of the left, that any municipality had not previously been exposed to a mainstream, right-wing party.

significant increase for the centrist parties: REP-SOC, ARD, and GRD as well as the more right-wing ERD (Entente Républicaine Démocratique).

Interpreting this asymmetry between exposure to the left (which yields people voting *more* for the socialists) and exposure to the right (which yields people voting *less* for the socialists) in the light of our model suggests a mechanism based on information and not conformity. Conformity implies symmetric adherence to one platform (or even party). However, an information mechanism allows for asymmetry. The results are consistent with the latter; that when poor agriculturalists are exposed to the left, they learn about a new party (the SFIO) with a platform that favors redistribution, solidarity and equality. Many individuals who fought in WWI, especially those from rural areas— and, by design, those who constitute our estimation sample— had limited exposure to the redistributive platform of the radical left in 1914. They thus many learned about this platform by their peers in the trenches. On the contrary, as noted above, a number of the right wing parties had established histories in rural areas in 1914. While the novel economic redistribution platform might be attractive to poor agriculturalists, regiments with more right-wing voices that instead emphasize the left's *social and cultural* platform, including its history (in France) of excesses with respect to priests, and perceived threat to often deeply-held cultural and religious beliefs, may have *inoculated* listeners to the platform of the left, without inducing whole-scale adherence to the right. The overall effect, as the results suggest, is a rise in a vote for the center instead.

4.5.2 Hierarchical or horizontal transmission of ideas?

So far we have argued that the mechanism appears to reflect the transmission of ideas rather than conformity. Transmission of ideas and values can be hierarchical, acting through authority figures (see also Cagé et al. (2023a)), or horizontal, occurring through peers. To shed further light on this aspect of the mechanism, we can examine whether the treatment effect is moderated by the proportion of officer deaths during WWI. The idea is that if information was transmitted through regimental hierarchies rather than by peers, the effect should be smaller when a higher proportion of authority figures —in this case officers— died in the regiment. The results, presented in Table A27 in the Appendix, show that the proportion of Commissioned (COs) or of Non-Commissioned officers (NCOs) among the total deaths of the regiment plays no role in explaining the effect of left-wing exposure. The coefficient associated with the interaction between exposure to a left-wing regiment and proportion of COs among the deaths is negative but statistically insignificant and small in magnitude, given that COs account for hardly more than 1% of WWI deaths in our sample. Thus, the results appear more consistent with horizontal transmission, that is, peer transmission.

Table 5: Exposure to Right-wing Regiments in WWI and Vote in 1919: Regression Discontinuity Estimates

	Log. Left vote share in 1919			Log. Center vote share in 1919			Log. Right vote share in 1919		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Exposure to RW Regiment	-0.164***	-0.131**	-0.081	0.364***	0.304**	0.187	-0.049	-0.029	-0.012
	(0.054)	(0.064)	(0.078)	(0.107)	(0.126)	(0.157)	(0.072)	(0.090)	(0.132)
Bandwidth	15	10	5	15	10	5	15	10	5
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.59	0.62	0.63	0.73	0.77	0.79	0.72	0.76	0.76
Observations	43,995	25,012	8,775	43,995	25,012	8,775	43,995	25,012	8,775
Mean DepVar	2.40	2.39	2.41	2.60	2.59	2.61	3.40	3.40	3.40
Sd DepVar	0.97	0.98	0.95	1.60	1.60	1.59	1.16	1.17	1.16

Notes: An observation is a municipality-boundary. *Exposure to RW Regiment* is an indicator equal to one if a municipality is on the side of the military boundary that was allocated to a right-wing bureau, defined as a bureau whose average vote share for the right in 1914 is higher than the mean (weighted by male adult population in 1914). The dependent variable in Columns 1 to 3 is the log vote share for the left in 1919 in the municipality. The dependent variable in Columns 4 to 6 is the inverse hyperbolic sine of the simple difference in votes for the left between 1919 and 1914 in the municipality. See Online Appendix of Cagé et al. (2023a) for details on each party in the 1914 and 1919 elections. Specifications use alternative bandwidths of 15, 10, and 5 km, as indicated. Robust standard errors two-way clustered at municipality and boundary level in parentheses.

5 The Costs of Polarization

5.1 Polarization in the interwar period

The left's rise after WWI occurred in a context of increasing political instability, polarization, and economic challenges. A left-wing coalition, known as the first *Cartel des Gauches* won the 1924 elections, but was soon confronted with a severe financial crisis. Seven Cartel cabinets between 1924 and 1926 were unable to deal with the situation, and the right returned to power in 1926. The financial situation stabilized and the left returned to power in 1932, with the victory of the second "Cartel des Gauches", only to be confronted with the economic difficulties of the Great Depression. Among a highly unstable — and polarized — political environment, there were 26 successive cabinet governments between 1930 and 1940 (Steiner, 2005).

During this period, right-wing leagues — some openly fascist, others advocating a more traditional authoritarianism — grew both in size and activity. However, because they were openly opposed to democracy, these leagues rejected participation in the elections until 1936. On the 6th of February 1934, as a new left-leaning cabinet was about to be inaugurated, organized columns of right-wing Leagues marched on the Chamber of Deputies. These included those marching under the banner of veterans' groups such as the *Croix de Feu* ("Crosses of Fire"), including Marcel Bucard, decorated veteran and head of the explicitly Fascist *Francisme* party. The police panicked and opened fire, a bloody riot ensued, 15 people were killed and 236 wounded. The next day, left-wing newspapers decried the incident as a fascist coup attempt, while the right denounced the "assassins" of the corrupt Third Republic. The Radical Socialist party withdrew its support for the cabinet and the Premier Edouard Daladier resigned. This was seen by some as the start of a "long civil war" in France that would last until 1944 (Jackson, 2001) .

The subsequent election in 1936 of an even more radical left-wing alliance around the SFIO, the *"Front Populaire"* (Popular Front), led by the socialist (and Jewish) Premier Léon Blum was again accompanied with violence, and political assassinations, including an attempt against Léon Blum himself, conducted by right-wing leagues. This election, whose results had been shaped by the political dynamics in the trenches as we have shown in Table 4, marked a "dramatic polarization of politics" ([p.78] Jackson (2001)). "Rather Hitler than Blum" became a common refrain, not only among the most extreme fringes of the right but also among the frightened bourgeois elites. The Radicals' exit from the coalition caused the collapse of the Popular Front in 1938.

5.2 The defeat of 1940, Collaboration, and Resistance

France declared war on Germany on the 3rd of September 1939. After nine months of 'phony' war with hardly any military engagement between the two countries, Germany invaded France on the 10th of May 1940. Within six weeks, the Allies were defeated, what was left of the

Allied military forces had retreated to Britain via Dunkirk, 2 million French soldiers had been made prisoner, and the French government had fled from Paris.

On the 17th of June 1940, the newly appointed Prime Minister, a WWI military hero and Marshal of France, Philippe Pétain, offered 'the gift of his person' to the people of France as their new leader. The next day, on 18th June 1940, in London, an hitherto relatively unknown French General, Charles De Gaulle aired his appeal on the BBC for the French to resist the German occupiers. Though not widely heard at the time, this speech, which invited all military personnel to join him in London and urged "all the French people" to "unite with [him] in action, sacrifice, and hope" came to be considered as the founding act of the French Resistance.

Within a few weeks, Pétain established an authoritarian, reactionary, and anti-Semitic government who was to collaborate with Nazi Germany until France's liberation by the Allies in 1944. Many turned against internal enemies the regime blamed for the military debacle: the Socialists, the Jews,the Communists , the Republic in general, and all those opposed to Pétain.[48] Many would join paramilitary collaborationist organizations, such as the *Milice*, which was created in January 1943 partly in response to a request made by Hitler himself to the French authorities to create an internal Militia to supplement Gestapo efforts in cracking down on the Resistance and hunting Jews. Others would directly work for the Nazis, by volunteering for the Gestapo, the SS, or the Sicherheitsdienst (Security Service, SD) or would join more or less violent collaborationist political parties. As described in Cagé et al. (2023a), at the moment of France's liberation by the Allies in 1944, 95,967 French individuals would be listed by Free French military intelligence as having actively participated in explicit collaboration with Nazi Germany, while countless more would collaborate more tacitly (see Map in Figure A9).

5.3 Resistance

Meanwhile, nearly 528 thousand individuals would officially be recognized as members of the French Resistance (see the map in Figure A10). We build upon data assembled by Cagé et al. (2023b), who compile two complementary sources of data on the Resistance. The first data source is based on individual membership to Resistance networks, containing information on the first and last names, place of birth, and affiliation to different Resistance networks for each individual. These records come from the *"Titres, homologations et services pour faits de résistance"* that provides metadata of all the individual files in the military archives of the *Service Historique de la Défense* at the Chateau de Vincennes, and was created in order to

[48] Chief among them was Léon Blum, who was imprisoned, put on trial, and deported to Buchenwald and later to Dachau, while several of the socialist members of his government were summarily executed by a paramilitary collaborationist organization, the *Milice*. Léon Blum survived deportation. His brother René was arrested by French police in December 1941, imprisoned in France and deported to Auschwitz in September 1942 where he was immediately murdered.

recognize (and in some cases, compensate for) the activities of various Resistance members during the war.

The main resistance networks that appear in this dataset include the *"Forces Françaises Libres"* (*FFL* – Free French Forces): these were the mainly military-trained personnel who responded to Général Charles De Gaulle's call to join him in London early in the occupation from June 1940 onwards. These soldiers tended to operate outside of France, mainly in the conflicts in Africa, before joining the June 1944 Allied D-Day landings in France itself; (ii) the *"Forces Françaises Combattantes"* (FFC - the Fighting French) : these were individuals, often also with military training, who mostly served within metropolitan France between 1940 and 1944, and were mainly involved in gathering intelligence and in supporting escape networks for allied troops, (iii) the *"Forces Françaises de l'Intérieur"* (FFI – French Forces of the Interior): this was an amalgamation of a range of *civilian* resistance networks that emerged mainly in 1943-1944, and took direct action against the Occupation in the run-up to D-Day. A fourth category included the *"Déportés et Internés de la Resistance"* (*DIR* – Deported and Imprisoned of the Resistance): those resistance members who were the victims of Nazi occupation forces and were deported or interned in Germany.

One potential concern about this dataset was that it was mainly curated in the post-war period, when De Gaulle was in power. There may have been some incentives to favor groups and individuals affiliated with De Gaulle during the war, against, for example, their rivals in the Communist resistance.[49]

Thus, Cagé et al. (2023b) hand-collected a second data source — based on the original Gestapo files on resistance activity — to measure the intensity of the Resistance activities at the very local level. The Gestapo was concerned with fighting all forms of Resistance, monitoring and recording all acts of what they deemed 'terrorist' activity, without discriminating between whether the perpetrators were Gaullists or Communists. Thus, this data source does not suffer from these specific biases. These files were hand-collected from the archives of the Paris *"Préfecture de Police"*, covering the main period of violent Resistance activity from 1943-1944. The list contains detailed information on the date, precise location, and nature of each attack, including sabotage (including of factories and trains), acts of arson, etc.

5.4 Polarization and France's civil war

We combine the data on collaboration and resistance to investigate the extent to which the internal political divisions, stemming from the local discontinuity in partisanship across WWI

[49]For example, one of the key war-time resistance groups was the *"Francs-tireurs et partisans français"* (FTP), the armed resistance organization created by leaders of the French Communist Party. French Communists, though initially facing split loyalties due to the Molotov-Ribbentrop Pact of non-aggression that also divided Poland between Germany and the Soviet Union, would be among the first to engage in violent attacks against German interests following Hitler's assault on the Soviet Union in 1941. On a recent account of how the Gaullist narrative underplayed the contributions of foreigners and minorities, including Jews and Spanish Republicans, in the Resistance, see Gildea (2015).

military boundaries, played a role in France's "civil war". In particular, we focus on the violent polarization between collaborators and resistance members. More precisely, we aim to test the hypothesis that participation in Collaboration and the Resistance was heightened in locations that were on the opposite side of the political spectrum as a consequence of military recruitment in WWI. We do not implement the RD design because we expect more infighting closer to a divided boundary, rather than a jump in conflict on one side of the border compared to the other. These results should thus be interpreted with caution, as correlations.

We compute for each municipality its distance to the closest boundary of a military recruitment bureau (*dist. to military bureau*) and its distance to the closest boundary of a bureau that voted for a different majority (left/right) in 1919 (*dist. to opposite-majo bureau*). The average distance to the closest bureau is 12.84km (median: 9.05km), while the average distance to the opposite majority bureau is 23.52km (median: 38.27km).

Table 6 shows how local political polarization is associated with political infighting during WWII. Controlling for the distance to the closest bureau boundary and for municipal-level voting in 1914, the local density of collaborators (panel (a)) and Resistance members (panel (b)) is higher the closer a municipality is to an opposite majority bureau boundary. This result holds for political and paramilitary collaboration, including the *Milice*, but it is weaker in magnitude and marginally significant for direct Nazi collaboration and economic collaboration. One interpretation of this heterogeneity is that the goals of political and paramilitary collaboration were primarily defined against other groups in France (pro-Republican parties and the Resistance). Nazi collaborators, in particular those in the Gestapo, also fought against the Resistance but were more focused on implementing German policies, in particular against the Jewish population. As for economic collaborators, their objectives were primarily to profit economically from the German occupation and while a general collaborationist atmosphere and a more favorable personal inclination for collaboration may have facilitated their pursuit, they may have been less politically motivated than other collaborators.

Similarly, the heterogeneity among the Resistance is consistent with our interpretation of participation in the Resistance as a proxy for internal fighting against collaborators. The results are statistically significant for both the civilian (FFI) and military resistance (FFC). However, they are not significant and, although still positive, much smaller in magnitude for Resistance members who were victimized by German authorities (DIR). Since German repression mostly targeted those who worked directly against the German and Nazi forces, rather than those involved in French internal political divisions, this last finding suggests that the higher local density of Resistance near polarized borders was more related to the 'civil war' among French citizens than a partisan fight against the Germans.

Historians have long argued that the division between the Resistance and Collaboration was far from a clear left-right divide (see, e.g., Wieviorka (2016)). De Gaulle himself was hardly a socialist, and the Resistance included many former members of extreme nationalistic right-

Table 6: More Collaboration and Resistance closer to polarized boundaries

Panel (a)

	Collaboration				
	(1) Overall	(2) Paramilitary	(3) Political	(4) Nazi	(5) Economic
Log dist. to opposite-majo bureau	-0.026***	-0.019***	-0.025***	-0.017***	-0.012**
	(0.009)	(0.007)	(0.008)	(0.006)	(0.006)
Log dist. to military bureau	0.015*	-0.003	0.004	-0.004	-0.012**
	(0.008)	(0.006)	(0.006)	(0.005)	(0.006)
Dept FE	✓	✓	✓	✓	✓
Pre WWI controls	✓	✓	✓	✓	✓
R-squared	0.60	0.80	0.78	0.90	0.95
Observations	34,942	34,942	34,942	34,942	34,942
Mean DepVar	-5.75	-5.93	-5.91	-6.02	-6.06
Sd DepVar	0.83	0.91	0.90	0.97	1.03

Panel (b)

	Resistance			
	(1) Overall	(2) Civilian	(3) Military	(4) DIR
Log dist. to opposite-majo bureau	-0.043***	-0.044***	-0.035***	-0.012
	(0.015)	(0.016)	(0.010)	(0.010)
Log dist. to military bureau	0.028**	0.019	0.000	0.014
	(0.012)	(0.014)	(0.009)	(0.009)
Dept FE	✓	✓	✓	✓
Pre WWI controls	✓	✓	✓	✓
R-squared	0.31	0.40	0.60	0.56
Observations	34,942	34,947	34,947	34,947
Mean DepVar	-4.54	-4.92	-5.65	-5.59
Sd DepVar	0.82	0.87	0.84	0.81

Notes: All regressions are at the municipality level with department fixed effects. Pre-WWI controls are at the municipality level: log population in 1911, log vote shares for the left in 1914, and log vote shares for the right in 1914. The dependent variables are the log of the number of collaborators (panel (a)) or Resistance members (panel (b)) listed in each category (as indicated by column headers), per capita, at the municipality level (34,942 municipalities). "dist. to military bureau" is a municipality's distance to the closest boundary of a military recruitment bureau and "dist. to opposite-majo bureau" is its distance to the closest boundary of a military recruitment that voted for a different majority (left/right) in 1919. "Civilian" Resistance includes members of the FFI; "Military" Resistance includes members of the FFC. "DIR" denotes the Deportees and Imprisoned Resistance members. Robust standard errors two-way clustered at military recruitment bureau and department levels in parentheses. Sources: Cagé et al. (2023a), Archives-Service Historique de la Défense.

wing organizations.[50] Columns 1 and 2 of Table 7 show that the relationship between distance to a polarized regimental boundary and collaboration is only statistically significant on the side of the border that was not exposed to a left-wing regiment, although this difference itself falls short of statistical significance. Conversely, Columns 3 and 4 show that there was more internal Resistance closer to a polarized regimental boundary, and particularly on the "left" side of the border (i.e., exposed to a left-wing regiment), a difference that is statistically significant at the 10% level.[51] The same pattern holds for military Resistance. These findings suggest that both Resistance and Collaboration were more active closer to a polarized boundary, with higher intensity of Resistance on the left-wing side of the border and Collaboration on the right-wing side.

Table 7: Exposure to Left-Wing Regiments, Collaboration and Resistance

	Collaboration		Civil. Resistance		Mil. Resistance	
	(1)	(2)	(3)	(4)	(5)	(6)
	Not Exposed	Exposed	Not Exposed	Exposed	Not Exposed	Exposed
Log dist. to opposite-majo bureau	-0.058***	-0.031	-0.049**	-0.061*	-0.055**	-0.091**
	(0.020)	(0.035)	(0.022)	(0.032)	(0.021)	(0.038)
Log dist. to military bureau	-0.021	-0.047	0.001	0.009	-0.038**	-0.048
	(0.016)	(0.049)	(0.018)	(0.037)	(0.016)	(0.044)
Dept FE	✓	✓	✓	✓	✓	✓
Pre WWI controls	✓	✓	✓	✓	✓	✓
R-squared	0.26	0.17	0.35	0.26	0.26	0.21
Observations	26,319	8,617	26,323	8,618	26,323	8,618

Notes: All regressions are at the municipality level with department fixed effects. Pre-WWI controls are at the municipality level: log population in 1911, log vote shares for the left in 1914, and log vote shares for the right in 1914. "Collaboration" includes all collaborators; "Civil. Resistance" includes members of the FFI; "Mil. Resistance" includes members of the FFC. "*dist. to military bureau*" is the distance between the municipality's centroid and the closest boundary of a military recruitment bureau and "*dist. to opposite-majo bureau*" is the distance to the closest boundary of a military recruitment that voted for a different majority (left/right) in 1919. Robust standard errors clustered at military recruitment bureau level in parentheses. Sources: Cagé et al. (2023a), Archives-Service Historique de la Défense.

We next examine the nature of Resistance activity. We use data recorded by the Gestapo on 4,563 "terrorist" acts.[52] Figure A11 shows the spatial distribution of these events. Because the events were recorded by the Gestapo, a vast majority of them are recorded in the occupied zone.

[50] Germanophobia was a key aspect of French nationalism particularly following the Franco-Prussian war. For example, the far right conservative Georges Loustaunau-Lacau, whom as mentioned earlier, set up the Corvignolles regiment to hunt the left in the army, assumed the codename 'Navarre' as leader of the Alliance resistance network. He would be deported to Mauthausen concentration camp. Daniel Cordier, an ex-member of the extreme right-wing, royalist, Germanophobe and anti-Semitic *Action Française*, also became a major figure of the Resistance. Meanwhile, the collaborationist fascist movement featured several former socialists and communists among its leaders, including Michel Déat, a former SFIO Member of Parliament, and Jacques Doriot, a former communist leader turned Waffen SS, who headed the *Légion des Volontaires Français*, a French volunteer unit of the Wehrmacht.

[51] The coefficient associated with the interaction between "Exposed" and "Log dist. to opposite-majo bureau" is -0.063, with a standard error of 0.037.

[52] This data corresponds to funds GB045 and GB046 kept by the Archives of the Prefecture of Police in Pantin.

Results presented in Table 8 control for dummy variables indicating whether a municipality belongs to the "free", German-occupied, or Italian-occupied zone. They show heightened activity by the Resistance close to polarized military boundaries, but only when this activity involved fires and sabotage of civilian or public infrastructure rather than attacks against German troops ("attentats").

Table 8: Resistance activity

	Resistance activity		
	(1)	(2)	(3)
	Attentat	Sabotage	Fires
Log dist. to opposite-majo bureau	0.002	-0.007*	-0.003*
	(0.002)	(0.004)	(0.001)
Log dist. to military bureau	-0.000	0.007	-0.002
	(0.004)	(0.008)	(0.001)
Vichy dummy	✓	✓	✓
Pre WWI controls	✓	✓	✓
R-squared	0.05	0.06	0.01
Observations	34,947	34,947	34,947
Mean DepVar	0.02	0.04	0.01
Sd DepVar	0.19	0.32	0.12

Notes: All regressions are at the municipality level with a dummy variable indicating whether the municipality is in the German-occupied, Italy-occupied, or in the Vichy-ruled zone and the usual set of pre-WWI controls at the municipality level (log population in 1911, log vote shares for the Left in 1914, and log vote shares for the right in 1914). The dependent variables are the number of listed "terrorist" activities by the Resistance recorded by the Gestapo. "*dist. to military bureau*" is the distance between the municipality's centroid and the closest boundary of a military recruitment bureau and "*dist. to opposite-majo bureau*" is the distance to the closest boundary of a military recruitment that voted for a different majority (left/right) in 1919. Robust standard errors clustered at military recruitment bureau level in parentheses. Sources: Funds GB045 and GB046, the Archives of the Police Prefecture.

6 A tale of two cities: A case study of Annemasse and Belley

We illustrate the overall political dynamics described so far through a case study of two cities: Annemasse and Belley, plotted in Figure 6. These two cities are comparable along a vast number of geographic and socio-demographic characteristics. They are both small, rural, mountainous towns. Prior to WWI, the left had not been able to substantially penetrate either of them. The vote share for the left in 1914 was 0.3% in Annemasse and 0.1% in Belley. They were nevertheless assigned to two different military recruitment bureaus in 1914. As shown in the second panel of Figure 6, while Annemasse was allocated to a regiment with other municipalities where the left vote share was very low in 1914, Belley was allocated to

a regiment that drew from a more urbanized and industrialized region to its North. Overall, Belley was assigned to a more left-leaning regiment (average 1914 vote for the left at regiment level: 11%) than Annemasse (average: 0.7%).

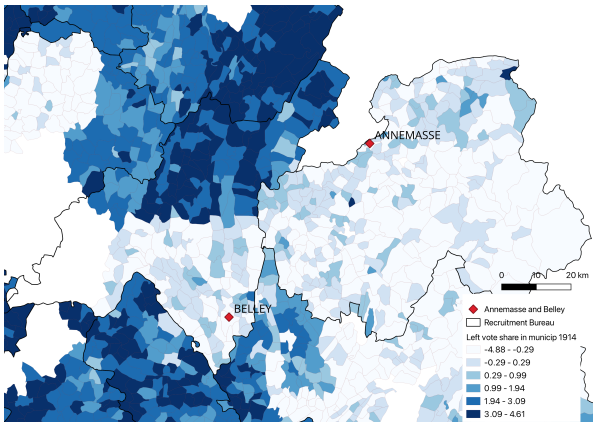
Immediately after the war, as shown in the third panel of Figure 6, the share of votes for the left had soared to 43.89% in Belley. It was less than half as much in Annemasse (21.71%).

The region, and these towns in particular, were of high strategic importance in WWII. After the defeat in 1940, France was divided between a so-called "free zone" administered by the collaborationist Vichy government and a German, as well as a (small) Italian occupation zone. Annemasse and Belley were initially under Italian occupation until the spring of 1942 when they fell under German occupation, but they were both very close to the demarcation line which passed through nearby Bellegarde-sur-Valserine (44km from Annemasse and 52km from Belley by road). Mountainous and isolated terrain was also favorable to the creation of Resistance groups and facilitated OSS and SOE drops of weapons to arm them. Closeness to the demarcation line and their location at the crossroads for escape routes to Switzerland further contributed to Annemasse and Belley's strategic importance.

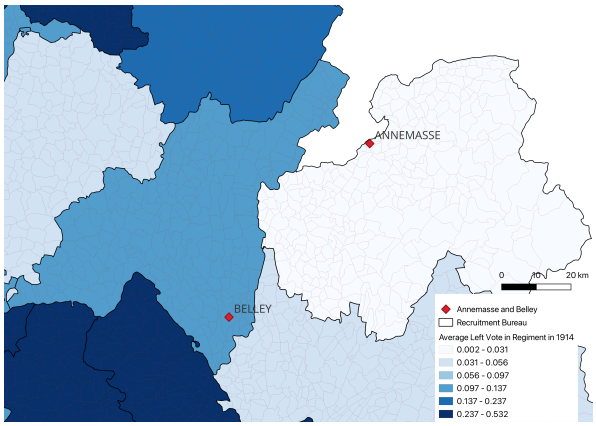
Belley quickly became a major center of the Resistance in the region. By the end of the war, Belley recorded 92 resistance members, a ratio of 158.21 resistance members per 10,000 inhabitants. Annemasse recorded 62 resistance members, a ratio of 77.32 per 10,000 residents, about half of that of Belley, but still well above the national average of 11.62 resistance members per 10,000. Annemasse was also a hotbed of collaboration. The town counted 54 collaborators, including 7 members of the *Milice* and 5 members of the *Gestapo*. This amounted to 67.35 collaborators per 10,000, about 7 times as many collaborators per capita as Belley. Belley, on the other hand, counted 6 collaborators, or 10.32 collaborators per 10,000, on par with the national average of 9.03, but with a large overrepresentation of the *Milice*. Among Belley's 5 recorded collaborators for whom more information is available, 4 belonged to the *Milice*, and one to the *Gestapo* (the proportions of Miliciens and Gestapo among collaborators in Annemasse, at 80% and 20%, comparable to average national shares of 16.11% for the Milice and 5.47% for the Gestapo). The vagaries of WWI regimental assignment thus transformed the local political landscape of these rural towns, leading to extreme political antagonisms that surfaced the next time the exigencies of war would return to the region.

7 Conclusion

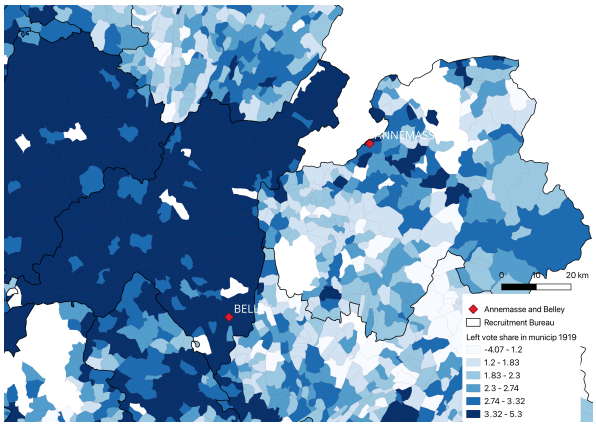
This paper provides new evidence on the dynamic effects that link segregation, partisan conversion, political polarization and violent civil conflict. Our results demonstrate how the shared regimental experience in WWI contributed to the convergence of political preferences among soldiers. However, this political convergence within regiments paradoxically also led to broader disparities in political preferences, creating sharp partisan local divisions after the



(a) Quantiles of left vote share in 1914 at municipal level.



(b) Quantiles of average left vote share in 1914 at regiment level.



(c) Quantiles of left vote share in 1919 at municipal level.

Notes: Scale: 1:320000.

Figure 6: Annemasse and Belley in 1914 and 1919

war. Our findings highlight how these local polarization dynamics sowed the seeds for France's "long civil war". Local political divides, born of the First World War, became entrenched in the inter-war period, reflected not only in polarized local voting patterns but later even violent civil conflict between the Resistance and Nazi collaborators thirty years later, when war would again return to France. The enduring impact of wartime alignments and disparities on subsequent political behaviors and conflicts illustrates the profound reach of such experiences.

Along with shedding new light on the dynamics of segregation, polarization, and partisanship, our work may help with understanding a crucial, and puzzling, transition in the politics of France— the transition from rural-urban divisions based often on social and cultural issues towards contests between the right and left-wing coalitions that incorporated many rural voters. Indeed, the left-right divide would shape French politics for much of the twentieth century. We show that the emergence and persistence of our effect corresponds not only to the time at which the left-right divide structured French politics, but also the time at which the left-wing vote was highest in the countryside, and the rural-urban divide the least pronounced. To the extent that the politics of redistribution is one more capable of policy accommodation and compromise than the politics of cultural identity, our results shed new light on how past alignments in favor of the former were forged.

Finally, while our analysis leverages historical patterns in inter-war and war-time France to measure causal effects, more generally, the effects we measure demonstrate how social interactions can shape political preferences and exacerbate polarization across distinct peer networks that can lead to violence. The patterns we document are, sadly, all too relevant for modern societies, being arguably even accentuated in environments where individuals choose to interact with like-minded peers, leading to increasingly polarized views and behaviors (Zhuravskaya et al., 2020). Our study suggests that such segregation and polarization can have far-reaching consequences, including deteriorating into violence and civil war.

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Political Trenches: War, Partisanship, and Polarization

Appendix

By **Pauline Grosjean**, **Saumitra Jha**, **Michael Vlassopoulos**, and **Yves Zenou**

A Theoretical framework

Consider a finite set of agents N^r who simultaneously choose whether to vote for the left (L) or for the right (R) in 1919, that is, each agent i chooses action a_i. Each agent belongs to a regiment r and is influenced by all other agents within the same regiment r. Here a regiment r is modeled as a *complete network* $\mathbf{g}^N$. The size of the regiment, in terms of population, is denoted by $|N^r|$.

A.1 The majority game (or majority voting)

Consider a game with *strategic complements,* where agents derive more utility from taking an action if more other agents take the same action. Each each agent i chooses action $a_i \in \{L, R\}$, where L represents voting for the *left* party while R represents voting for the *right* party The action space for i is $A_i = \{L, R\}$. In other words, actions are *discrete*.

We are studying the voting behavior of agent i in 1919 given that they have been allocated to regiment r in 1914. We assume that if more than half of agent i's neighbors choose action $p = L, R$, then it is optimal for player i to also choose action p. Conversely, if fewer than half of agent i's neighbors choose action p, then it is optimal for player i to choose action $p' \neq p$.

Denote by $\mathbf{a}^r_{-i}$ the vector of actions taken by all agents but i in regiment r. Thus, the payoff of agent (i, r) from taking action L compared to action R depends on the *fraction of neighbors* in their regiment who choose action L. For the ease of the exposition and without loss of generality, assume that $a_j = 1$ when agent j votes for L and $a_j = 0$ when agent j votes for R. We have:

$$u_i(L, \mathbf{a}^r_{-i}, \mathbf{g}^N) > u_i(R, \mathbf{a}^r_{-i}, \mathbf{g}^N) \quad \text{if} \quad \frac{\sum_{j \in N^r} a^r_j}{|N^r|} > \frac{1}{2}$$

and

$$u_i(L, \mathbf{a}^r_{-i}, \mathbf{g}^N) < u_i(R, \mathbf{a}^r_{-i}, \mathbf{g}^N) \quad \text{if} \quad \frac{\sum_{j \in N^r} a^r_j}{|N^r|} < \frac{1}{2}.$$

In other words, it does not matter what type of agent i is (for example which party he voted in 1914 or which municipality he is coming from). For their decision in the 1919 elections, agent i is only concerned with the majority vote of their regiment.

A.2 Equilibrium characterization for each regiment r

This is a standard *coordination game.*

Definition: *A pure strategy Nash equilibrium is a profile of actions* $a \in A = A_1 \times ... \times A_{N^r}$ in network $\mathbf{g}$ *such that*

$$u_i(a^r_i, \mathbf{a}^r_{-i}, \mathbf{g}) \geq u_i(a'^r_i, \mathbf{a}^r_{-i}, \mathbf{g})$$

for all $i \in N^r$ *and* $a'^r_i \in A_i$.

Proposition 1: *Consider that the regiment r is a complete network so that all agents within a regiment interact with each other. Then, there are two Nash equilibria: either all agents in regiment r vote for the left L or all agents in regiment r vote for the right R.*

A.3 Equilibrium at the national level

Consider a complete network $\mathbf{g}^N$ for each regiment r. According to Proposition 1, there are two Nash equilibria in each regiment r: either all agents vote for L or all agents vote for R. In other words, there is an homogenization of political opinions at the regiment level. If we consider that the "initial condition" of a regiment r, that is, the fraction of agents in regiment r that voted for L or R in 1914 determines which equilibrium prevails (this can be shown in a dynamic DeGroot model; see e.g., Golub and Jackson, 2010), then all regiments that started with a majority L (such as Vierzon) will end up by being mostly L in 1919, while all regiments that started with a majority R (such as Paris) will end up by being mostly R. This implies that the *local political homogenization* at the regiment level (Proposition 1) *can* lead to equilibria with enhanced polarization between left and right at the national level.

B Polarization

B.1 Within-regiment measures of polarization

We define two main measures of polarization that allow us to study peer effects within a regiment and capture the convergence in voting patterns between a municipality and its regiment. Standard measures, such as the one developed by Montalvo and Reynal-Querol (2005), calculate polarization within a unit. While this approach enables the study of polarization changes over time at the level of a given unit, it does not allow for the examination of the convergence process within the unit. In our case, employing an index of polarization à la Montalvo and Reynal-Querol (2005) at the regiment level would not allow us to leverage any individual variation in a municipality within a regiment. Given that our model examines individual coordination within a regiment, we use instead measures that capture individual variation at the municipality-level within a regiment.

Consider municipality i within regiment r, in election $t = 1914, 1919$. We define a left-to-right axis and assign the different political parties a number $n = 1, 2, ..., 8$, starting from the extreme left (1) and ending at the extreme right (8). For each municipality at time t, we define $Y_{ir}^t = n$ if party n receives the highest share of votes. For example, if in 1914, in municipality i, party $n = 3$ has 35% of the votes, party $n = 6$ has 20%, etc., then $Y_{ir}^{1914} = 3$. We repeat this for all municipalities in regiment r and then calculate the average of these numbers, across all municipalities $k \neq i$.

Our first measure of polarization is simply the difference between the top party in municipality i and the top party in regiment r (computed over municipalities $k \neq i$).[1] Denote by N_r the number of municipalities in regiment r. Then, we have:

$$\Delta Y_{ir}^t = \left|Y_{ir}^t - Y_r^t\right| = \left|Y_i^t - \frac{\sum_{k \neq i, k \in r} Y_k^t}{N_r - 1}\right|$$

is the absolute difference in political opinions at time $t = 1914, 1919$.

The main limitation of this measure is that it only considers the top vote in each municipality or regiment. To capture a more nuanced picture of the distribution of votes over multiple parties of each municipality and regiment, we define a *relative party index*. This index considers the absolute difference between each political party's share in the municipality and

[1] For example, imagine there are four municipalities $i = 1, 2, 3, 4$ in regiment r. For each municipality, as above, we determine the party with the highest share of votes. Suppose that in 1914, for regiment r, we obtain: municipality 1 = 3, municipality 2 = 6, municipality 3 = 8, municipality 4 = 2. Then, our *relative majority index* :

$$\Delta Y_{1r}^{1914} = \left|3 - \frac{(6+8+2)}{3}\right| = 2.33,\ \Delta Y_{2r}^{1914} = \left|6 - \frac{(3+8+2)}{3}\right| = 1.67$$

$$\Delta Y_{3r}^{1914} = \left|8 - \frac{(3+6+2)}{3}\right| = 4.33,\ \Delta Y_{4r}^{1914} = \left|2 - \frac{(3+6+8)}{3}\right| = 3.67$$

We can do the same calculation for ΔY_{ir}^{1919}.

its average share in the regiment (calculated over all municipalities $k \neq i$ within regiment r). Formally, denoting by s_{irp}, the share of political party p in municipality i in regiment r, and s_{rp}, the share of political party p in regiment r (averaged over all municipalities $k \neq i$ in r), the relative diversity index between municipality i and regiment r is:

$$RDPI_{ir} = \sum_{p} |s_{irp} - s_{rp}| .$$

This index decreases the more the composition of political parties in municipality i mirrors the composition of political parties in regiment r.

B.2 Empirical strategy

Panel regressions We describe the dynamics of political convergence within a military bureau by estimating the following empirical specification in the panel of municipalities:

$$Y_{i,r,t} = \alpha_{i,r} + \beta PostWar_t + \gamma PostWar_t * \mathbf{X}_{i,r,<1919} + u_{i,r,t}, \tag{B.1}$$

where our unit of analysis is a municipality i raising troops for regiment r observed in election t. Municipalities are the smallest administrative unit in the Census, with an average population of 1,138 inhabitants in 1911. We weigh each regression by the number of adult males in 1914, which we proxy by the number of registered voters in the 1914 election. On average, a municipality had 279 registered voters in 1914 (median: 147). We observe 33,725 municipalities in the 1914 elections, and between 29,118 municipalities (1932) and 34,216 municipalities (1936) in four interwar elections, leaving us with an (unbalanced) panel of 174,735 municipalities (69,894 over 1914-1919). The panel is constructed by projecting all geographies to their 2015 municipal borders.

$Y_{i,r,t}$ denotes the measure of polarization between municipality i and regiment r in election year t. $PostWar_t$ is an indicator variable taking the value of one in the Post-WWI period. $\mathbf{X}_{i,r,<1919}$ is a vector of municipality-level characteristics before WWI, including pre-war population and voting outcomes. $\alpha_{i,r}$ denotes local fixed effects for municipalities. We cluster standard errors two-way at the regiment r (158) and at the political district (90) levels and show robustness of our results to alternative clustering assumptions regarding spatial correlation. The coefficient γ captures the heterogeneity in the evolution of polarization across different municipalities, based on factors such as their initial voting outcomes.

The purpose of this analysis is purely descriptive. The coefficient β describes how polarization within a recruitment bureau changed after the war. The convergence of political opinions over time within a recruitment bureau could simply be due to the fact that regiments bring together municipalities that were more similar to one another and would have converged to one another even in the absence of the war. While municipality fixed effects account for time-invariant municipality-level heterogeneity, the possibility remains that regiments brought

together municipalities on the basis of specific dimensions that drive their convergence over time. However, this concern is somewhat at odds with the principles of Army organization. As we explained in Section 2.1, the regiments were designed to be non-specialized and interchangeable units. These objectives would be undermined by the systematic sorting of municipalities with specific characteristics into different regiments. An empirical translation of the concern that political convergence is driven by the dynamic influence of omitted characteristics is that regiments in which municipalities were closer politically to one another were also the ones in which these municipalities systematically differed along other characteristics that could have driven political convergence over the war. We show in Table A1 that this is not the case for a broad range of observable characteristics.

The first panel of Table A1 uses data from the 1872 Census at the arrondissement level to show that regiments' initial polarization is uncorrelated with other observable characteristics, such as initial municipal population in 1911 or religion, literacy, occupation, or unemployment in 1872. The second panel of the Table shows that the experience of more or less polarized regiments was also very similar *during* the war. Consistent with the military objectives of interchangeability of regiments, more or less polarized regiments did not differ in the probability of deployment on different sectors of the front or to different battles. We show this for a wide range of major battles during the war, such as the First Battle of the Marne in 1914, the Battles of Verdun, the Aisne and the Somme in 1916, and the major French offensive disaster of 1917 at the Chemin des Dames.

Dyadic regressions Second, we directly account for the influence of geographic closeness in the following dyadic model:

$$Y_{ij}^{t} = \beta SameRegiment_{ij} + \gamma Y_{ij}^{1914} + \mathbf{X}_{ij}\phi' + \alpha_i + \alpha_j + e_{ij}, \tag{B.2}$$

where the dependent variable Y_{ij}^{t} measures the similarity in voting outcomes of municipality pair (i, j) in election year t. $SameRegiment_{ij}$ is an indicator variable for whether municipalities (i, j) were recruited in the same military bureau. X_{ij} is a vector of constructed dyad-specific attributes, including the geographic distance between municipalities (implicitly X_{ij} for $i \neq j$). The specification includes fixed effects α_i and α_j for each municipality in the pair (i, j). The model is estimated on the $N(N-1)/2$ municipality dyads. In Equation (B.2), β thus captures the influence of military recruitment net of the influence of geographic distance and local unobservable municipal characteristics.

This specification has the additional advantage of allowing us to estimate whether municipalities that are in the same regiment are also more similar to each other in voting outcomes prior to the start of the war, in 1914. In this placebo regression, we expect β to be statistically indistinguishable from zero. By contrast, we expect β to be negative and statistically significant when the dependent variable measures polarization between two municipalities after the

Table A1: Balance on War Experience and Pre-War Characteristics

	Observations (municipalities)	Mean	Coeff (se)	p-value	Coeff (se)	p-value	Coeff (se)	p-value
Variables			Dist Party i-b		Relative Party Index		Sh/ Left Regiment	
Pre-War Characteristics								
Log pop 1911	34,922	6.237	0.030	0.038	-0.056	0.443	0.056	0.233
		(0.985)	(0.014)		(0.072)		(0.046)	
Prop Jewish in 1872	30,333	0.003	0.000	0.988	0.001	0.090	-0.001	0.181
		(0.007)	(0.000)		(0.001)		(0.001)	
Prop Protest in 1872	30,333	0.018	0.000	0.631	-0.002	0.805	0.002	0.616
		(0.057)	(0.001)		(0.007)		(0.005)	
Prop Cathol in 1872	30,333	0.976	0.001	0.465	0.001	0.922	-0.001	0.791
		(0.061)	(0.001)		(0.007)		(0.005)	
Prop Foreign in 1872	30,333	0.021	0.001	0.354	0.001	0.689	0.005	0.149
		(0.031)	(0.001)		(0.004)		(0.003)	
Prop Intern Migrants in 1872	30,333	0.191	-0.002	0.330	-0.010	0.485	0.002	0.823
		(0.108)	(0.002)		(0.014)		(0.007)	
Prop Literate in 1872	29,832	0.619	0.004	0.278	0.025	0.222	-0.020	0.102
		(0.152)	(0.003)		(0.020)		(0.012)	
Prop in agric in 1872	30,333	0.167	-0.003	0.331	-0.002	0.889	0.022	0.018
		(0.142)	(0.003)		(0.017)		(0.009)	
Prop in indus in 1872	30,333	0.322	0.005	0.103	-0.008	0.607	0.003	0.764
		(0.142)	(0.003)		(0.015)		(0.009)	
Prop in commerce in 1872	30,333	0.153	0.000	0.898	0.016	0.085	-0.005	0.275
		(0.071)	(0.002)		(0.009)		(0.005)	
Prop in banks in 1872	30,333	0.046	0.000	0.773	-0.001	0.765	-0.001	0.741
		(0.041)	(0.001)		(0.005)		(0.003)	
Prop professionals in 1872	30,333	0.129	0.000	0.980	0.003	0.712	-0.006	0.191
		(0.063)	(0.001)		(0.008)		(0.004)	
Prop rentiers in 1872	30,333	0.094	-0.001	0.423	0.000	0.971	-0.005	0.054
		(0.049)	(0.001)		(0.005)		(0.003)	
Prop unempl in 1872	30,333	0.013	0.000	0.317	-0.005	0.038	-0.001	0.421
		(0.023)	(0.000)		(0.002)		(0.001)	
War Experience								
Marne	34,947	0.659	0.001	0.939	0.049	0.453	-0.069	0.128
		(0.443)	(0.011)		(0.065)		(0.045)	
Verdun	34,947	0.899	-0.010	0.137	0.034	0.414	0.007	0.819
		(0.280)	(0.007)		(0.041)		(0.030)	
Verdun under Petain	34,947	0.501	-0.005	0.687	0.010	0.883	0.000	0.995
		(0.468)	(0.012)		(0.066)		(0.045)	
Somme	34,947	0.441	0.020	0.111	0.038	0.586	0.005	0.919
		(0.479)	(0.013)		(0.070)		(0.046)	
Aisne	34,947	0.479	0.011	0.399	0.118	0.092	-0.036	0.428
		(0.477)	(0.013)		(0.070)		(0.045)	
Chemin des Dames	34,947	0.378	0.009	0.450	0.076	0.271	-0.032	0.482
		(0.457)	(0.012)		(0.068)		(0.045)	
Outside France	34,947	0.086	0.008	0.235	-0.029	0.466	0.023	0.351
		(0.268)	(0.007)		(0.040)		(0.025)	

Notes: This Table shows the coefficients (and corresponding p-values) of an OLS regression of each characteristic on the two main measures of polarization: distance in top party vote shares and Relative Party Index, as well as on the average (log) share of left-wing vote (in the 1914 elections) in the regiment to which a municipality is assigned. Standard errors are clustered at the military recruitment bureau level.

war.

B.3 Empirical results: War and Polarization

Each column of Table A2 reports the estimates of Equation B.1 in the panel of municipalities for each interwar election separately. The last column pools all five elections together. Columns 1 to 5 present results for the first measure of polarization, and Columns 6 to 10 for the second measure. Consistently, the results show that local polarization sharply decreased over the course of the war, by an average of 21% (Columns 1, 5) to 44% (Columns 6, 10) depending on the measure used.[2] This reduction in local polarization, brought about by the war, persisted throughout the entire interwar period, although it became weaker in magnitude over time.

Table A2: Convergence in voting preferences

	Distance Majo Party in i vs Reg.					Relative Party Index				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1919	-0.208**				-0.208**	-0.443***				-0.443***
	(0.103)				(0.103)	(0.028)				(0.028)
1924		-0.257***			-0.257***		-0.452***			-0.452***
		(0.088)			(0.088)		(0.030)			(0.030)
1932			-0.155**		-0.164**			-0.161***		-0.161***
			(0.072)		(0.070)			(0.033)		(0.033)
1936				-0.183***	-0.258***				-0.150***	-0.150***
				(0.063)	(0.064)				(0.021)	(0.021)
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.54	0.53	0.54	0.57	0.29	0.69	0.67	0.61	0.63	0.45
Observations	67,450	67,450	65,706	51,510	159,783	67,450	67,450	67,450	67,450	168,625
Mean DepVar	1.22	1.20	1.25	1.16	1.15	0.62	0.61	0.76	0.76	0.60
Sd DepVar	1.72	1.59	1.54	1.48	1.58	0.41	0.45	0.36	0.31	0.40

Notes: An observation is a municipality i in election t. All regressions include municipality fixed effects and are weighted by the adult male population in 1914. Robust standard errors, two-way clustered at military recruitment bureau level and at department level, are reported in parentheses.

Even though the panel regression results account for time-invariant municipality-level heterogeneity, the possibility remains that regiments brought together municipalities on the basis of specific dimensions that drive their convergence over time. In particular, a primary concern is that due to the local nature of recruitment, municipalities geographically close to each other would have converged politically to each other and to the regimental average, even in the absence of the war. Therefore, regimental assignment may also pick up the influence of local social interactions. We directly account for the influence of geographic closeness by estimating a dyadic model that regresses measures of similarity in voting outcomes between all municipality pairs (i, j) in election year t on an indicator variable for whether municipalities (i, j) were recruited in the same military bureau, controlling for a vector of constructed dyad-specific attributes, including the geographic distance between municipalities.

Table A3 displays results pooled over the interwar period, showing that even municipalities

[2]The pre-war averages of the measures of polarization are 1.22 and 0.82, respectively.

that were peripheral to their regiment, those that were in the areas close to the regiment's boundaries, also converged to their regiment's average. We estimate Equation B.1 in the subsample of municipalities close to regimental boundaries, employing a bandwidth of 20km or 10km from a military bureau boundary. The results are all statistically significant and the estimates are relatively stable in magnitude. These results suggest strong local polarization within a regiment, even for municipalities that were geographically peripheral.

Table A3: Convergence in voting preferences: Border samples

	Distance Majo Party in i vs Reg.			Relative Party Index		
	(1)	(2)	(3)	(4)	(5)	(6)
Post War	-0.220***	-0.234***	-0.185**	-0.301***	-0.294***	-0.289***
	(0.062)	(0.066)	(0.074)	(0.020)	(0.021)	(0.023)
Municipality FE	✓	✓	✓	✓	✓	✓
Subsample	All	20	10	All	20	10
R-squared	0.29	0.29	0.30	0.34	0.34	0.33
Observations	159,783	141,383	88,174	168,625	149,155	92,890
Mean DepVar	1.15	1.16	1.22	0.60	0.60	0.60
Sd DepVar	1.58	1.58	1.63	0.40	0.41	0.42

Notes: See notes to Table A2. This Table presents the results of estimating Equation B.1 in the subsample of municipalities close to regimental boundaries (alternatively using 20km and 10 km bandwidths). All regressions include municipality fixed effects and are weighted by the adult male population in 1914. Robust standard errors, two-way clustered at the military recruitment bureau level and at the department level, are reported in parentheses.

To assess the relevance of spatial correlation, we show in Table A4 that our results are robust to correcting standard errors for arbitrary spatial correlation of the error term within spatial clusters defined at different cutoffs, from 25km, 50km and increments of 50km from 100km to 250km (Colella et al., 2019). Overall, these statistics provide confidence that correlation in spatial noise does not drive our results.

We then investigate whether even municipalities that were *politically* peripheral also converged to the regiment's average. To do so, we estimate Equation B.1 with an interaction term involving the initial level of polarization between a municipality and its military bureau. Results are displayed in Table A5. Regardless of the measure of polarization, the findings suggest a strong process of convergence, in which municipalities that were initially politically further away from their bureau exhibited greater convergence (Columns 1 and 3). The remaining columns in Table A5 show that the same process of strong convergence also holds in the subsample of municipalities located on the borders of regimental bureaus. Table A6 shows that the effects are persistent over interwar elections.

Table A4: Convergence in voting preferences: Corrections for Spatial Correlations of the Error Term

	Distance Majo Party in i vs Reg.						Relative Party Index					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1919	-0.208**	-0.443***	-0.208**	-0.443***	-0.208	-0.443***	-0.208	-0.443***	-0.208*	-0.443***	-0.208*	-0.443***
	(0.084)	(0.021)	(0.098)	(0.026)	(0.138)	(0.031)	(0.141)	(0.034)	(0.120)	(0.039)	(0.114)	(0.043)
1924	-0.257***	-0.452***	-0.257***	-0.452***	-0.257***	-0.452***	-0.257***	-0.452***	-0.257***	-0.452***	-0.257***	-0.452***
	(0.066)	(0.019)	(0.072)	(0.026)	(0.076)	(0.031)	(0.074)	(0.035)	(0.075)	(0.041)	(0.087)	(0.045)
1932	-0.164***	-0.161***	-0.164**	-0.161***	-0.164**	-0.161***	-0.164***	-0.161***	-0.164**	-0.161***	-0.164**	-0.161***
	(0.057)	(0.021)	(0.069)	(0.028)	(0.071)	(0.029)	(0.063)	(0.029)	(0.071)	(0.033)	(0.076)	(0.033)
1936	-0.258***	-0.150***	-0.258***	-0.150***	-0.258***	-0.150***	-0.258***	-0.150***	-0.258***	-0.150***	-0.258***	-0.150***
	(0.056)	(0.014)	(0.062)	(0.017)	(0.071)	(0.015)	(0.075)	(0.017)	(0.084)	(0.018)	(0.100)	(0.018)
Conley cutoff	25	25	50	50	100	100	150	150	200	200	250	250
R-squared	0.01	0.26	0.01	0.26	0.01	0.26	0.01	0.26	0.01	0.26	0.01	0.26
Observations	159,783	168,625	159,783	168,625	159,783	168,625	159,783	168,625	159,783	168,625	159,783	168,625
Mean DepVar	1.06	0.65	1.06	0.65	1.06	0.65	1.06	0.65	1.06	0.65	1.06	0.65
Sd DepVar	1.46	0.43	1.46	0.43	1.46	0.43	1.46	0.43	1.46	0.43	1.46	0.43

Notes: This table presents OLS estimates of Equation B.1 as shown in Table A2 with standard errors corrected for arbitrary spatial correlation of the error term within spatial clusters. The clusters are defined at different cutoffs, from 25km, 50km and increments of 50km from 100km to 250km. An observation corresponds to a municipality i in election t. All regressions include municipality fixed effects and are weighted by adult male population in 1914. Robust standard errors, two-way clustered at military recruitment bureau level and at department level, are reported in parentheses. The unit of observation is a municipality.

Table A5: Strong convergence in voting preferences

	Distance Majo Party in i vs Reg.			Relative Party Index		
	(1)	(2)	(3)	(4)	(5)	(6)
1919	1.011***	1.016***	1.118***	0.273***	0.268***	0.254***
	(0.106)	(0.113)	(0.147)	(0.034)	(0.035)	(0.042)
PostXInitial Distance Majo	-0.921***	-0.924***	-0.904***			
	(0.031)	(0.029)	(0.025)			
PostXInitial RPI				-0.852***	-0.846***	-0.831***
				(0.043)	(0.041)	(0.042)
Municipality FE	✓	✓	✓	✓	✓	✓
Sample	All	20k boundary	10k boundary	All	20k boundary	10k boundary
R-squared	0.73	0.73	0.72	0.80	0.80	0.79
Observations	67,450	59,662	37,156	67,450	59,662	37,156
Mean DepVar	1.22	1.23	1.30	0.62	0.61	0.61
Sd DepVar	1.72	1.74	1.80	0.41	0.41	0.42

Notes: OLS estimation results of Equation B.1 with initial polarization between municipality i and its bureau b included in X. An observation is a municipality i in election t. All regressions include municipality fixed effects and are weighted by adult male population in 1914. Robust standard errors, two-way clustered at military recruitment bureau level and at department level, are reported in parentheses.

Table A6: Strong convergence voting preferences: All interwar elections

	Distance Majo Party in i vs Reg.		Sum Diff. in Shares	
	(1)	(2)	(3)	(4)
1919	1.011***	3.510***	0.273***	0.206***
	(0.106)	(0.240)	(0.034)	(0.041)
1924	0.988***	3.493***	0.261***	0.216***
	(0.074)	(0.190)	(0.050)	(0.062)
1932	1.066***	3.551***	0.497***	0.428***
	(0.075)	(0.210)	(0.053)	(0.058)
1936	0.900***	3.217***	0.518***	0.466***
	(0.063)	(0.167)	(0.037)	(0.038)
1919*Dist. in Max Party in 1914	-0.921***			
	(0.031)			
1924*Dist. in Max Party in 1914	-0.940***			
	(0.033)			
1932*Dist. in Max Party in 1914	-0.927***			
	(0.040)			
1936*Dist. in Max Party in 1914	-0.884***			
	(0.057)			
1919*Dist. in Max Party in 1914 (above median)		-2.669***		
		(0.157)		
1924*Dist. in Max Party in 1914 (above median)		-2.692***		
		(0.148)		
1932*Dist. in Max Party in 1914 (above median)		-2.666***		
		(0.156)		
1936*Dist. in Max Party in 1914 (above median)		-2.500***		
		(0.126)		
1919*Diff. in vote shares in 1914			-0.852***	
			(0.043)	
1924*Diff. in vote shares in 1914			-0.848***	
			(0.054)	
1932*Diff. in vote shares in 1914			-0.784***	
			(0.052)	
1936*Diff. in vote shares in 1914			-0.795***	
			(0.043)	
1919*Diff. in vote shares in 1914 (above median)				-0.433***
				(0.030)
1924*Diff. in vote shares in 1914 (above median)				-0.446***
				(0.036)
1932*Diff. in vote shares in 1914 (above median)				-0.393***
				(0.030)
1936*Diff. in vote shares in 1914 (above median)				-0.411***
				(0.025)
Municipality FE	✓	✓	✓	✓
R-squared	0.44	0.40	0.52	0.49
Observations	159,783	159,783	168,625	168,625
Mean DepVar	1.15	1.15	0.60	0.60
Sd DepVar	1.58	1.58	0.40	0.40

Notes: OLS estimation results of Equation B.1 with initial polarization between municipality i and its bureau b included in X. An observation is a municipality i in election t, , for $t = 1914, 1919, 1924, 1932, 1936$. All regressions include municipality fixed effects and are weighted by adult male population in 1914. Robust standard errors, two-way clustered at military recruitment bureau level and at department level, are reported in parentheses.

B.4 Political homogeneity and collective action in the war

Numerous personal accounts of veterans highlight the intensity of the common experience within a line infantry regiment in the trenches. Jacques Meyer, a veteran of the Great War, describes how the "esprit de corps" of a regiment "melted destinies", took precedent over the social or political differences of soldiers and durably united them ([p.369] Meyer (1967)). This "esprit de corps" was forged in "misery and danger" ([Premiere partie] (Meyer, 1967)).

There were clear advantages to a homogeneous regiment for the coordination of local collective action. This motivation was instrumental in the reorganization of the French Army after the Franco-Prussian war of 1870-1871, from an Army of socially unconnected professional soldiers to a locally recruited Army of conscripts. High Command envisioned that soldiers would fight harder for co-regimental recruits if they shared their regional identity (and often, dialect), despite the potential downside risk of regional secessionism.[3] However, the military circumstances of WWI were very different from those of the Franco-Prussian war. Because of technological and military developments, the battle was overwhelmingly shaped by artillery bombardment, punctuated by punctual bursts of direct infantry engagement in which most men died under shells and automatic firepower. As described by veteran C.-M. Chenu, soldiers in the frontline "fought not against men, but against catastrophe" (Chenu cited in [p.369] Meyer (1967)). On the French side, close to 85% of casualties and 80% of fatalities were caused by artillery.

In Columns 1-6 of Table A7, we regress the fatality rate among the line infantry in each municipality on political polarization within a military bureau, measured in the 1914 elections. We show results for the Montalvo and Reynal-Querol (2005) index (computed over bureau-level average vote shares) and the two alternative measures that leverage municipal-level election results (the measures are described in Section B.1). We control for political district (department) fixed effects and initial municipal population throughout and add controls for initial vote shares for the left or for the right in a municipality in even-numbered columns. We adjust standard errors for two-way clustering at recruitment bureau and department levels in all specifications. Pre-war polarization has a positive but insignificant relationship with the military fatality rate.

A clear indicator of collective action in the context of WWI is the occurrence of mutinies within the regiment. We obtain this information from each regiment's *Historique*. On average, 31.8% of municipalities raised a line infantry regiment that experienced a mutiny over the course of the war.[4] In Columns 7-12 of Table A7, we regress the probability of mutiny on either proxy of political polarization in a military bureau in 1914. Consistent with the intuition that political homogeneity should facilitate collective action, we observe that the probability of mutinies was higher in regiments raised in military bureaus that were more homogeneous

[3]The potential risk of regional secessionism was highlighted during the winemakers protest in Beziers in 1907 when the line infantry regiment sent to quash the rebellion mutinied and sided with the strikers.

[4]Most mutinies occurred in 1917, with 24.28% of regiments experiencing a mutiny that year.

politically.

In the even-numbered columns of Table A7, we include controls for the initial voting patterns in each municipality. We find that both the fatality and the mutiny rates are lower in regiments raised in bureaus that consisted of more left-wing municipalities. However, the coefficients associated with the measures of polarization are barely affected, suggesting that polarization was associated with collective action through separate channels than partisanship.

The negative relationship between the socialist vote share in 1914 and the fatality rate is explained by the fact that although mobilization in 1914 was universal, many industrial workers were recalled as the conflict progressed due to the increasing exigencies of war production. However, these left-wing industrial workers, more than any other group, left a durable imprint in their former regiments. "The industrial workers brought with them and left as an inheritance many of their distinctive traits [...] maybe because of the habit of life in the factory, and because of trade unionism, a sharp feeling of the collective: the regiment must "manage" together, consume together the content of the packages, that the country guys did not always want to share, apart from the guys from the same "country" [village]" [p.28] (Meyer, 1967). As shown in section 4, exposure to the left within a regiment, indeed, durably affected partisanship.

Table A7: Political cohesion and collective action: Evidence from mutinies and military fatalities

	Line infantry death rate						Mutinies					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Polarization (M-RQ) in regiment	-4.280	-3.489					-0.628*	-0.671*				
	(43.636)	(41.950)					(0.345)	(0.341)				
Distance Majo Party in municip. vs Reg.			0.324	0.109					-0.011*	-0.011		
			(0.830)	(0.809)					(0.007)	(0.006)		
Relative Party Index municip. vs. reg.					-0.100	-0.051					-0.015**	-0.014**
					(1.687)	(1.648)					(0.007)	(0.007)
Left vote, municip. 1914		-0.166*		-0.167*		-0.167*		-0.001**		-0.001**		-0.002***
		(0.094)		(0.095)		(0.095)		(0.001)		(0.001)		(0.001)
Right vote, municip. 1914		0.124**		0.123**		0.124**		-0.000		-0.000		-0.000
		(0.052)		(0.052)		(0.052)		(0.000)		(0.000)		(0.000)
Dept FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.14	0.14	0.14	0.14	0.14	0.14	0.70	0.71	0.70	0.70	0.70	0.70
Observations	34,518	33,407	33,407	33,407	33,405	33,405	34,947	33,725	33,725	33,725	33,723	33,723
Mean DepVar	268.71	269.00	269.00	269.00	269.00	269.00	0.32	0.32	0.32	0.32	0.32	0.32
Sd DepVar	119.72	119.38	119.38	119.38	119.38	119.38	0.43	0.43	0.43	0.43	0.43	0.43

Notes: An observation is a municipality. All regressions include department fixed effects. In Columns 1 to 6, the dependent variable is the (log of) each municipality's WWI fatality rate (computed as the number of soldiers born in a municipality who died in WWI, divided by the municipality population in 1911, see Gay and Grosjean (2023) on data sources for WWI fatalities). In Columns 7 to 12, the dependent variable is a dummy variable taking value one if the line infantry regiment recruited in the bureau to which the municipality is attached experienced a mutiny over the course of the war (mean: 0.39, s.d.: 0.49). "Polarization (M-RQ) in regiment" is the Montalvo and Reynal-Querol (2005) index of polarization, measured at the regiment level. "Distance Majo Party in municip. vs Reg." and "Relative Party Index municip. vs. reg." are our two main measures of polarization between a municipality and its regiment, which we described in Section B.1. Odd columns control for department fixed effects and municipal population in the 1911 Census. Even columns add controls for vote shares for the left and for the right in 1914 at the municipality level (excluded category is center). We reconstruct the mutiny history of each regiment from each of the 173 *"Historique du Régiment"* books, which describe the day-to-day operations of each regiment. Robust standard errors, two-way clustered at military recruitment bureau level and at department level, are reported in parentheses.

C Additional Tables

Table A8: Convergence in voting preferences after WWI: Dyadic results (Monte Carlo)

	Diff in majo. party btw i and j	
	(1)	(2)
	1914	1919
Same recruit. bureau	-0.173	-0.842
	(-0.413, 0.069)	(-1.173, -0.557)
Log dist	0.151	0.066
	(0.077, 0.244)	(0.024, 0.115)
Diff in majo. party btw i and j in 1914		0.082
		(0.026, 0.147)
Municipalities FE	✓	✓

Notes: The table reports average coefficients obtained from estimating the regressions on a random 1% sample (about 350 municipalities) over 500 replications. The parentheses indicate 95% confidence intervals based on the bootstrap percentile method.

Table A9: Exposure to Socialist Regiments in WWI and Vote in 1919: Regression Discontinuity Estimates for each Party in the 1919 Election

	Left	Center				Right					Ext. Right
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	SFIO	PRRS	REPSOC	ARD	GRD	FRURD	UNSR	ARS	ERD	Anc. Combatt	AF
Exposure to Left-wing Regiment	0.464***	-0.398	-0.175	-0.175	0.063	0.179	0.059	-0.100	-0.011	0.185	0.006
	(0.144)	(0.289)	(0.126)	(0.135)	(0.105)	(0.258)	(0.191)	(0.170)	(0.211)	(0.198)	(0.069)
Bandwidth	10	10	10	10	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.67	0.84	0.66	0.78	0.69	0.82	0.81	0.73	0.80	0.71	0.47
Observations	11,177	11,177	11,177	11,177	11,177	11,177	11,177	11,177	11,177	11,177	11,177
Mean DepVar	1.60	1.25	0.25	0.39	0.22	1.00	1.23	0.31	1.07	0.37	0.01
Sd DepVar	1.12	1.79	1.10	1.42	1.18	1.74	1.94	1.28	1.76	1.21	0.81

Notes: An observation is a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator equal to one if a municipality is on the side of the military boundary that was allocated to a left-wing bureau, defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by male adult population in 1914). Each Column provides the estimation results of Equation 1 for different dependent variables that consist of the (log) vote share for each party in the 1919 elections that gathered at least 2% of the vote, organized from left to right. Specifications use bandwidths of 10 km, as indicated. Robust standard errors two-way clustered at municipality and boundary level in parentheses.

Table A10: Exposure to Socialist Regiments in WWI and Vote in 1919: Weighted Regression Discontinuity Estimates

	Log. Left vote sh. 1919			IHS Diff. Left vote share 1919-1914		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure to Left-wing Regiment	0.373***	0.336**	0.361**	0.410***	0.341**	0.361**
	(0.132)	(0.141)	(0.149)	(0.158)	(0.156)	(0.167)
Bandwidth	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓
Weight	1/Num municip.	1914 Voters	1914 Voters/Num municip.	1/Num municip.	1914 Voters	1914 Voters/Num municip.
R-squared	0.68	0.77	0.77	0.67	0.76	0.76
Observations	11,177	11,177	11,177	11,177	11,177	11,177
Mean DepVar	1.96	1.84	1.83	2.43	2.38	2.37
Sd DepVar	0.97	1.17	1.17	1.09	1.23	1.23

Notes: An observation corresponds to a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914). The dependent variable in Columns 1 to 3 is the log vote share for the left in 1919 in the municipality. The dependent variable in Columns 4 to 6 is the inverse hyperbolic sine of the simple difference in votes for the left between 1919 and 1914 in the municipality. In Columns 1 and 5, the specifications use weights equal to the inverse of the number of repeated municipality-boundary observations. In Columns 2 and 6, the specifications use weights equal to the inverse of the number of voters in the municipality in 1914. In Columns 3 and 7, the specifications use weights equal to the number of voters in the municipality in 1914 times the inverse of the number of repeated municipality-boundary observations. Specifications use a bandwidth of 10km, as indicated. Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses.

Table A11: Exposure to Socialist Regiments in WWI and Vote in 1919: Fuzzy RD results

	Regiment left-wing share First stage	Log. Left vote sh. 1919 2SLS	Left vote sh. 1919 Reduced Form (eq. 1)	Left vote sh. 1919 2SLS
	(1)	(2)	(3)	(4)
Exposure to Left-wing Regiment	19.298***		3.070**	
	(1.353)		(1.534)	
Regiment left-wing share (2SLS)		0.019***		0.158**
		(0.006)		(0.079)
Bandwidth	10	10	10	10
Flex Polynomial	✓	✓	✓	✓
R-squared	0.95	0.68	0.67	0.67
Observations	11,545	11,177	11,171	11,171
Mean DepVar	8.38	1.96	11.19	11.19
Sd DepVar	8.59	0.96	12.35	12.35

Notes: An observation corresponds to a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914). "Regiment left-wing share" is the military bureau level average vote share for the left in 1914, weighted by the 1914 (male) voters' population. The first column of the table presents the "first stage", which entails estimating Equation 1 with the bureau-level vote share as the dependent variable. Column 2 (respectively 4) shows the results of estimating Equation 1 with the average bureau-level vote share for the left as predicted by the first-stage as the main independent variable and the log. share of vote (respectively the share of vote) for the left in a municipality in 1919 as the dependent variable. Column 3 shows the results of estimating Equation 1 with the share of votes for the left as the dependent variable. All specifications use a 10-km bandwidth. Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses.

Table A12: RD estimation sample: Municipalities with less then 3 p.p. left vote share in 1914

	Pop. density 1911	Mean income	Prop. farmers	Prop. ind. workers	Prop. literate	High school
	(1)	(2)	(3)	(4)	(5)	(6)
Municip < 3p.p sh. left vote in 1914	-1.264***	-0.109***	0.044***	-0.007	-0.032***	-0.094***
	(0.408)	(0.021)	(0.008)	(0.010)	(0.007)	(0.017)
R-squared	0.00	0.02	0.02	0.00	0.01	0.02
Observations	34,922	34,947	34,922	34,870	34,922	34,922

Notes: An observation is a municipality. The Table reports the results of an OLS regression of each variable on a dummy variable taking value one if the left vote share in 1914 in the municipality is less than 3%, with no additional control (Column 1) and with department fixed effects (for each of the 85 department). *Pop. density in 1911* is from the 1911 Census at municipal level. Other covariates are from Piketty and Cagé (2023) for the year 1913 and are imputed from aggregated statistics (arrondissement, canton or departement level). *Mean income*: mean income per capita relative to national mean income; *Prop. farmers*, and *Prop. ind. workers* are the percentiles in the 1913 distribution respectively of the proportion of farmers and industrial workers. *Prop. literate*: proportion of the population above 20 who are literate; *High school*: percentile in the national distribution of high school graduates. Robust standard errors clustered at military recruitment bureau level are presented in parentheses.

Table A13: Exposure to Socialist Regiments in WWI and Turnout

	Turnout in 1914	Turnout in 1919
	(1)	(2)
Exposure to Left-wing Regiment	0.031	0.019
	(0.025)	(0.022)
Bandwidth	10	10
Flex Polynomial	✓	✓
R-squared	0.51	0.45
Observations	11,545	11,185
Mean DepVar	4.39	4.28
Sd DepVar	0.12	0.19

Notes: An observation corresponds to a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914). The Table reports OLS estimation results of Equation 1 with turnout in different elections (as indicated) as dependent variables. All specifications are with a 10 km bandwidth. Robust standard errors, two-way clustered at municipality and boundary level, are presented in parentheses.

Table A14: Exposure to Socialist Regiments in WWI and Vote in 1919: Heterogeneous Effects

	Log. Left vote share in 1919			
	(1)	(2)	(3)	(4)
Exposure to Left-wing Regiment	0.376***	0.590***	0.464***	-0.139
	(0.121)	(0.198)	(0.129)	(0.238)
Log sh. Left 1914	0.182***			
	(0.028)			
Log sh. Left 1914 X Expos. Left Wing	-0.102*			
	(0.054)			
Mean income		0.053		
		(0.051)		
Mean income X Expos. Left Wing		-0.274		
		(0.169)		
Prop. literate			-0.015	
			(0.053)	
Prop. literate X Expos. Left Wing			-0.135	
			(0.139)	
Prop. farmers				-0.565***
				(0.120)
Prop. farmers X Expos. Left Wing				0.611**
				(0.268)
Bandwidth	10	10	10	10
Flex Polynomial	✓	✓	✓	✓
R-squared	0.69	0.68	0.68	0.68
Observations	11,177	11,177	11,169	11,177
Mean DepVar	1.96	1.96	1.96	1.96
Sd DepVar	0.96	0.96	0.96	0.96

Notes: An observation is a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914). *Mean income*: mean income per capita relative to national mean income in 1913 from (Piketty and Cagé, 2023) ; *Farmers* is the percentile in the 1913 distribution of the proportion of farmers from (Piketty and Cagé, 2023); *Log sh. Left in 1914* is the log vote share for the left in the municipality in 1914. *Prop. literate*: proportion of the population above 20 who are literate *Prop. farmers*: percentiles in the 1913 distribution of the proportion of farmers. All specifications use a 10-km bandwidth. Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses.

Table A15: Robustness Regression Discontinuity: Vote share in 1919: Alternative definitions of the treatment

	Log. Left vote share in 1919							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exposure to Left-wing Regiment	0.212***	0.204***	0.232***	0.219**	0.223**	0.272**	0.363***	0.342***
	(0.074)	(0.078)	(0.086)	(0.086)	(0.101)	(0.127)	(0.112)	(0.132)
Treatment Threshold	P45	P50	P55	P60	P65	P70	P75	P80
Bandwidth	10	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68
Observations	11,145	11,145	11,145	11,145	11,145	11,145	11,145	11,145
Mean DepVar	1.96	1.96	1.96	1.96	1.96	1.96	1.96	1.96
Sd DepVar	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96

Notes: An observation corresponds to a municipality-boundary. The Table reports OLS estimation results of Equation 1, with a 10 km bandwidth. Each column shows the results of alternative specifications with a different definition of the treatment. *Exposure to Left-wing Regiment* is a series of indicator variables that take value one if a municipality is on the side of the military boundary where the regiment's average vote share for the socialist in 1914 is higher than various percentiles of the distribution, as indicated (weighted by male adult population in 1914). Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses.

Table A16: Robustness Regression Discontinuity: Vote share in 1919: Alternative definitions of the estimation sample

	Log. Left vote share in 1919										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Exposure to Left-wing Regiment	0.394*	0.353**	0.356***	0.365***	0.370***	0.307***	0.263**	0.268**	0.282***	0.255***	0.236**
	(0.236)	(0.165)	(0.132)	(0.124)	(0.116)	(0.112)	(0.108)	(0.106)	(0.100)	(0.095)	(0.093)
Sample cutoff	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
Bandwidth	10	10	10	10	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.79	0.74	0.71	0.69	0.68	0.66	0.65	0.64	0.64	0.63	0.63
Observations	5,081	7,357	9,108	10,349	11,177	11,937	12,569	13,018	13,498	13,894	14,279
Mean DepVar	1.81	1.87	1.91	1.94	1.96	1.99	2.00	2.01	2.03	2.04	2.05
Sd DepVar	1.14	1.05	1.00	0.98	0.96	0.95	0.94	0.94	0.93	0.93	0.93

Notes: An observation is a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914). The Table reports OLS estimation results of Equation 1, with a 10 km bandwidth. The estimation samples consider different cutoffs for initial left vote shares, as indicated. Robust standard errors, two-way clustered at municipality and boundary level, are presented in parentheses.

Table A17: Robustness to simple RD in distance design: left vote share in 1919

	Log. Left vote share in 1919		IHS Diff. Left vote share 1919-1914	
	(1)	(2)	(3)	(4)
Exposure to Left-wing Regiment	0.359***	0.288**	0.371***	0.320**
	(0.095)	(0.121)	(0.115)	(0.145)
Bandwidth	10	10	10	10
Flex Polynomial	Distance	Lat/Long	Distance	Lat/Long
R-squared	0.53	0.65	0.52	0.64
Observations	11,145	11,177	11,145	11,177
Mean DepVar	1.96	1.96	2.43	2.44
Sd DepVar	0.96	0.96	1.08	1.08

Notes: The Table displays the estimation results of Equation 1 but with different specifications of the function of geography. Columns 1 and 2 considers a function of distance to each boundary instead of a polynomial in coordinates. Columns 3 and 4 simply control for boundary fixed effects and a polynomial in coordinates without interactions to each boundary. All specifications with a 10-km bandwidth. Robust standard errors, clustered two-way at municipality and boundary levels, are presented in parentheses.

Table A18: Robustness to simple RD design: left vote share in 1919

	Log. Left vote share in 1919			IHS Diff. Left vote share 1919-1914		
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure to Left-wing Regiment	0.662***	0.663***	0.665***	0.716***	0.722***	0.687***
	(0.127)	(0.106)	(0.121)	(0.165)	(0.140)	(0.166)
Bandwidth	15	10	5	15	10	5
Flex Polynomial	✓	✓	✓	✓	✓	✓
R-squared	0.16	0.17	0.20	0.14	0.15	0.18
Observations	9,682	6,305	2,839	9,682	6,305	2,839
Mean DepVar	1.91	1.92	1.92	2.39	2.40	2.41
Sd DepVar	0.99	1.00	1.02	1.09	1.11	1.12

Notes: The Table displays the estimation results of Equation 3. An observation is a municipality. *Exposure to Left-wing Regiment* is an indicator equal to one if a municipality is on the inside of a block of contiguous military bureaus that were allocated to a left-wing regiment, defined as a bureau in which the average vote share for the socialist in 1914 is higher than the mean (weighted by male adult population in 1914). The dependent variable is the log vote share for the left in 1919 in the municipality. Specifications use alternative bandwidths of 15, 10, and 5 km, as indicated. Robust standard errors clustered at the level of a block of contiguous left-wing bureaus are presented in parentheses.

Table A19: RD results: correcting for spatial correlation of errors

	Log. Left vote share in 1919				IHS Diff. Left vote share 1919-1914	
	(1)	(2)	(3)	(4)	(5)	(6)
Exposure to Left-wing Regiment	0.663***	0.663***	0.663***	0.722***	0.722***	0.722***
	(0.068)	(0.104)	(0.148)	(0.080)	(0.122)	(0.173)
RD Bandwidth	10	10	10	10	10	10
Conley bandwidth	5	10	20	5	10	20
R-squared	0.10	0.10	0.10	0.09	0.09	0.09
Observations	6,305	6,305	6,305	6,305	6,305	6,305
Mean DepVar	1.92	1.92	1.92	2.40	2.40	2.40
Sd DepVar	1.00	1.00	1.00	1.11	1.11	1.11

Notes: The Table displays the results of estimating Equation 3 displayed in Table A18 but with standard errors corrected for arbitrary spatial correlation of the error term within spatial clusters defined for different cutoffs of 5, 10, or 20km, as indicated. All specifications use a 10-km RD bandwidth.

Table A20: RD Donut Estimates

	Log. Left vote share in 1919				
	(1)	(2)	(3)	(4)	(5)
Exposure to Left-wing Regiment	0.370***	0.368***	0.391***	0.398***	0.386**
	(0.116)	(0.117)	(0.129)	(0.140)	(0.159)
Bandwidth	10	10	10	10	10
Donut exclusion	1	2	3	4	5
Flex Polynomial	✓	✓	✓	✓	✓
R-squared	0.68	0.68	0.69	0.70	0.71
Observations	11,175	11,030	10,153	8,765	7,272
Mean DepVar	1.96	1.96	1.95	1.94	1.94
Sd DepVar	0.96	0.97	0.98	0.98	0.98

Notes: An observation corresponds to a municipality-boundary. The Table reports OLS estimation results of Equation 1, with a 10 km bandwidth. Each Column shows the results of alternative specifications that exclude different sets of municipalities closest to the RD boundary. Each column indicates the threshold for exclusion, which goes from 1 km from the boundary (Column 1) to 5 km from the boundary (Column 5), in increments of 1 km. In other words, the estimation sample in Column 1 consists of municipalities that are between 1 and 10km away from the boundary, the estimation sample in Column 2 consists of municipalities that are between 2 and 10km away from the boundary, etc. *Exposure to Left-wing Regiment* iis an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914). Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses.

Table A21: Baseline Vote and Covariates: Regression Discontinuity Estimates with Department Fixed Effects

Panel (a)

	Log. left vote share in 1914	Log. WWI death rate	Log pop. 1911	Municip. size
	(1)	(2)	(3)	(4)
Exposure to Left-wing Regiment	0.093	-0.005	-0.030	-281.268*
	(0.084)	(0.042)	(0.085)	(158.617)
Bandwidth	10	10	10	10
Flex Polynomial	✓	✓	✓	✓
R-squared	0.50	0.29	0.44	0.47
Observations	11,510	11,510	11,510	11,510
Mean DepVar	-0.02	1.59	6.22	1,454.55
Sd DepVar	0.76	0.32	0.81	1,204.96

Panel (b)

	Marne	Verdun	Verdun under Petain	Somme
	(1)	(2)	(3)	(4)
Exposure to Left-wing Regiment	0.011	-0.086	-0.038	0.092
	(0.069)	(0.056)	(0.052)	(0.063)
Bandwidth	10	10	10	10
Flex Polynomial	✓	✓	✓	✓
R-squared	0.95	0.94	0.96	0.97
Observations	11,510	11,510	11,510	11,510
Mean DepVar	0.70	0.90	0.50	0.43
Sd DepVar	0.43	0.28	0.48	0.48

Notes: This Table reports OLS estimation results of Equation 1 with the addition of a department fixed effects. An observation is a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914). We consider a 10 km bandwidth. Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses.

Table A22: Regression Discontinuity Estimates: Robustness to Department Fixed Effects

	Log. Left vote share in 1919		
	(1)	(2)	(3)
Exposure to Left-wing Regiment	0.131	0.221**	0.315**
	(0.094)	(0.113)	(0.151)
Bandwidth	15	10	5
Flex Polynomial either side	✓	✓	✓
R-squared	0.70	0.73	0.77
Observations	19,313	11,175	3,903
Mean DepVar	1.95	1.96	2.01
Sd DepVar	0.96	0.96	0.94

Notes: This Table reports OLS estimation results of Equation 1 with the addition of a department fixed effects. An observation is a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914). We consider a 10 km bandwidth. Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses.

Table A23: Placebo Spatial Regression Discontinuity at Department Border

	Log. Left vote share in 1919		
	(1)	(2)	(3)
Exposure to Left-wing Department	-0.011	-0.063	-0.067
	(0.158)	(0.207)	(0.304)
Bandwidth	15	10	5
Flex Polynomial	✓	✓	✓
R-squared	0.59	0.63	0.67
Observations	13,185	7,789	2,799
Mean DepVar	1.98	1.98	2.01
Sd DepVar	0.95	0.95	0.93

Notes: An observation corresponds to a municipality-boundary. *Exposure to Left-wing Department* is defined in a similar way as the variable *Exposure to Left-wing Regiment* but for a department (administrative and political district) instead of a regiment. In other words, *Exposure to Left-wing Department* is an indicator equal to one if a municipality is in a department whose average vote share for the socialist in 1914 is higher than the mean (weighted by male adult population in 1914). The Table reports OLS estimation results of Equation 1 with this alternative treatment variable and a 10 km bandwidth. Robust standard errors, two-way clustered at municipality and boundary level, are presented in parentheses.

Table A24: Placebo Spatial Regression Discontinuity at Department Border: Covariates and Pre-war Left Vote

	Log. left vote share in 1914		Log. WWI death rate		Log pop. 1911		Municip. size		Marne		Verdun		Verdun under Petain		Somme	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Exposure to Left-wing Departement	-0.002	-0.018	-0.013	0.002	0.015	0.023	171.206	206.469**	-0.036	-0.047	-0.021	-0.048	-0.107	-0.068	-0.230***	-0.212***
	(0.095)	(0.083)	(0.035)	(0.039)	(0.077)	(0.065)	(122.625)	(104.287)	(0.068)	(0.091)	(0.074)	(0.065)	(0.109)	(0.154)	(0.062)	(0.064)
Bandwidth	15	10	15	10	15	10	15	10	15	10	15	10	15	10	15	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.40	0.44	0.24	0.26	0.37	0.41	0.38	0.46	0.87	0.90	0.76	0.79	0.79	0.80	0.84	0.85
Observations	13,730	8,110	13,730	8,110	13,730	8,110	13,730	8,110	13,730	8,110	13,730	8,110	13,730	8,110	13,730	8,110
Mean DepVar	-0.03	-0.03	1.59	1.59	6.20	6.19	1,474.87	1,484.54	0.68	0.68	0.91	0.91	0.49	0.49	0.44	0.44
Sd DepVar	0.76	0.76	0.32	0.32	0.82	0.82	1,213.59	1,269.53	0.44	0.44	0.27	0.27	0.47	0.47	0.48	0.48

Notes: An observation corresponds to a municipality-boundary. *Exposure to Left-wing Department* is defined in a similar way as the variable *Exposure to Left-wing Regiment* but for a department (administrative and political district) instead of a regiment. In other words, *Exposure to Left-wing Department* is an indicator equal to one if a municipality is in a department whose average vote share for the socialist in 1914 is higher than the mean (weighted by male adult population in 1914). The Table reports OLS estimation results of Equation 1 with this alternative treatment variable and a 10 km bandwidth. Robust standard errors, two-way clustered at municipality and boundary level, are presented in parentheses.

Table A25: Placebo Outcomes: Regression Discontinuity Estimates

Panel (a)

	Pop. literate	school ed. (perc.) in 1919	High school ed. (perc.) in 1919	Mean income (% nat. inc.) in 1919	GNP muni (% nat. mean) in 1919	Land capital per cap. in 1919	Prop. foreign. in 1919
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Exposure to Left-wing Regiment	0.001	0.011	-0.008	-0.023	0.009	-0.018	-0.001
	(0.021)	(0.022)	(0.018)	(0.021)	(0.020)	(0.037)	(0.003)
Bandwidth	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓
R-squared	0.29	0.23	0.23	0.65	0.58	0.66	0.47
Observations	11,503	11,511	11,511	11,511	11,511	10,635	11,405
Mean DepVar	0.68	0.19	0.20	0.81	0.76	0.64	0.02
Sd DepVar	0.22	0.20	0.21	0.33	0.28	0.40	0.03

Panel (b)

	Agr. (perc.)	Ind. (perc.) in 1919	Manag. & comm. (perc.) in 1919	Workers (perc.) in 1919	Employes (perc.) in 1919	Int. prof. (perc.) in 1919	Agr. (perc.) in 1919	Unemp. (perc.) in 1919	Capitalists (perc.) in 1919
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Exposure to Left-wing Regiment	0.001	-0.039	-0.021	-0.004	-0.007	0.006	-0.005	-0.031	0.003
	(0.011)	(0.027)	(0.018)	(0.030)	(0.015)	(0.019)	(0.014)	(0.020)	(0.017)
Bandwidth	10	10	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.51	0.17	0.19	0.56	0.33	0.18	0.57	0.15	0.21
Observations	11,511	11,511	11,511	11,511	11,511	11,511	11,511	11,511	11,511
Mean DepVar	0.82	0.32	0.21	0.35	0.19	0.25	0.80	0.25	0.23
Sd DepVar	0.15	0.31	0.17	0.30	0.17	0.20	0.17	0.20	0.18

Notes: An observation corresponds to a municipality-boundary. *Exposure to Left-wing Regiment* is an indicator equal to one if a municipality is on the side of the military boundary that was allocated to a left-wing bureau, defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by male adult population in 1914). The Table reports OLS estimation results of Equation 1 for different dependent variables, which are indicated in Column headers. Specifications use a 10km bandwidth, as indicated. Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses. Data is from Piketty and Cagé (2023) and is imputed from Census data.

Table A26: Exposure to Right-wing Regiments in WWI and Vote in 1919: Regression Discontinuity Estimates for each Party in the 1919 Election

	Left	Center				Right					Ext. Right
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	SFIO	PRRS	REPSOC	ARD	GRD	FRURD	UNSR	ARS	ERD	Anc. Combatt	AF
Exposure to Right-wing Regiment	-0.170**	-0.273**	0.179**	0.308***	0.216***	-0.199	-0.026	-0.140	0.376***	0.090	0.063
	(0.076)	(0.137)	(0.083)	(0.101)	(0.082)	(0.125)	(0.117)	(0.097)	(0.135)	(0.087)	(0.043)
Bandwidth	10	10	10	10	10	10	10	10	10	10	10
Flex Polynomial	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
R-squared	0.65	0.80	0.63	0.71	0.63	0.76	0.76	0.64	0.72	0.65	0.46
Observations	25,012	25,012	25,012	25,012	25,012	25,012	25,012	25,012	25,012	25,012	25,012
Mean DepVar	2.12	1.27	0.34	0.41	0.16	1.03	1.01	0.22	0.91	0.51	0.00
Sd DepVar	1.16	1.92	1.32	1.52	1.29	1.84	1.95	1.37	1.78	1.34	1.01

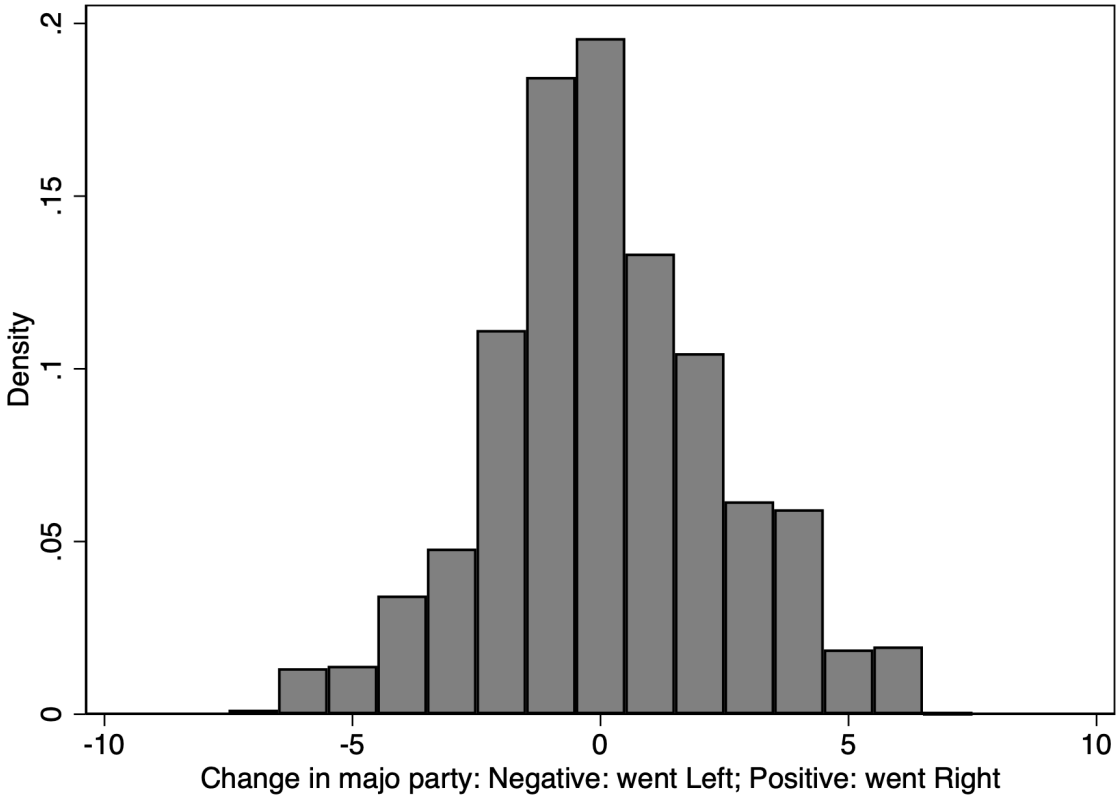
Notes: An observation is a municipality-boundary. *Exposure to RW Regiment* is an indicator equal to one if a municipality is on the side of the military boundary that was allocated to a right-wing bureau, defined as a bureau whose average vote share for the right in 1914 is higher than the mean (weighted by male adult population in 1914). Each Column provides the estimation results of Equation 1 for the treatment defined as *Exposure to RW Regiment* and for different dependent variables that consist of the (log) vote share for each party in the 1919 elections that gathered at least 2% of the vote, organized from left to right. Specifications use a 10km bandwidth. Robust standard errors two-way clustered at municipality and boundary level in parentheses.

Table A27: The role of officers vs peers: Regression Discontinuity Estimates

	Log. Left vote share in 1919	
	(1)	(2)
Exposure to Left-wing Regiment	0.375***	0.369***
	(0.116)	(0.125)
Prop. CO killed in reg	0.069	
	(0.283)	
Prop. CO X Expos. Left Wing	-0.448	
	(0.604)	
Prop. NCO killed in reg		-0.018
		(0.088)
Prop. NCO X Expos. Left Wing		0.007
		(0.202)
Bandwidth	10	10
Flex Polynomial	✓	✓
R-squared	0.68	0.68
Observations	11,174	11,174
Mean DepVar	1.96	1.96
Sd DepVar	0.96	0.96

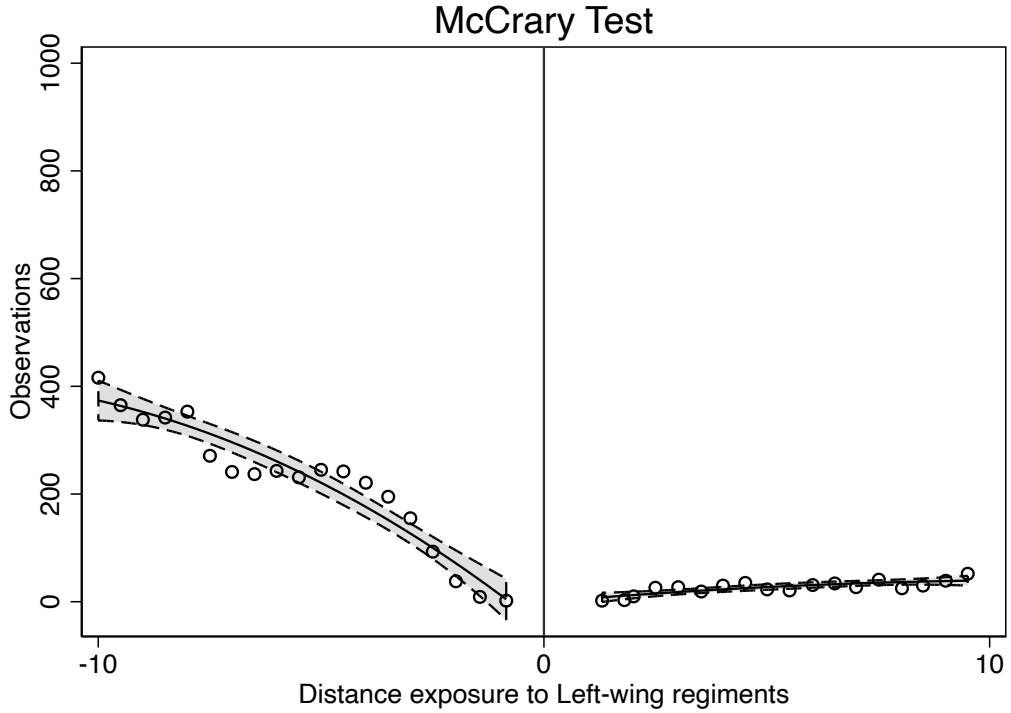
Notes: *Exposure to Left-wing Regiment* is an indicator with a value of one if a municipality is located on the side of the military boundary allocated to a left-wing bureau. A left-wing bureau is defined as a bureau whose average vote share for the socialist in 1914 is higher than the mean (weighted by the male adult population in 1914).. "Prop. CO (resp. NCOs) killed in reg" is the proportion of COs (resp. NCOs) among the deaths of the line infantry regiments raised in each bureau. The data is from Gay and Grosjean (2023). Specifications use a 10km bandwidth, as indicated. Robust standard errors, two-way clustered at municipality and boundary level, are reported in parentheses.

D Additional Figures



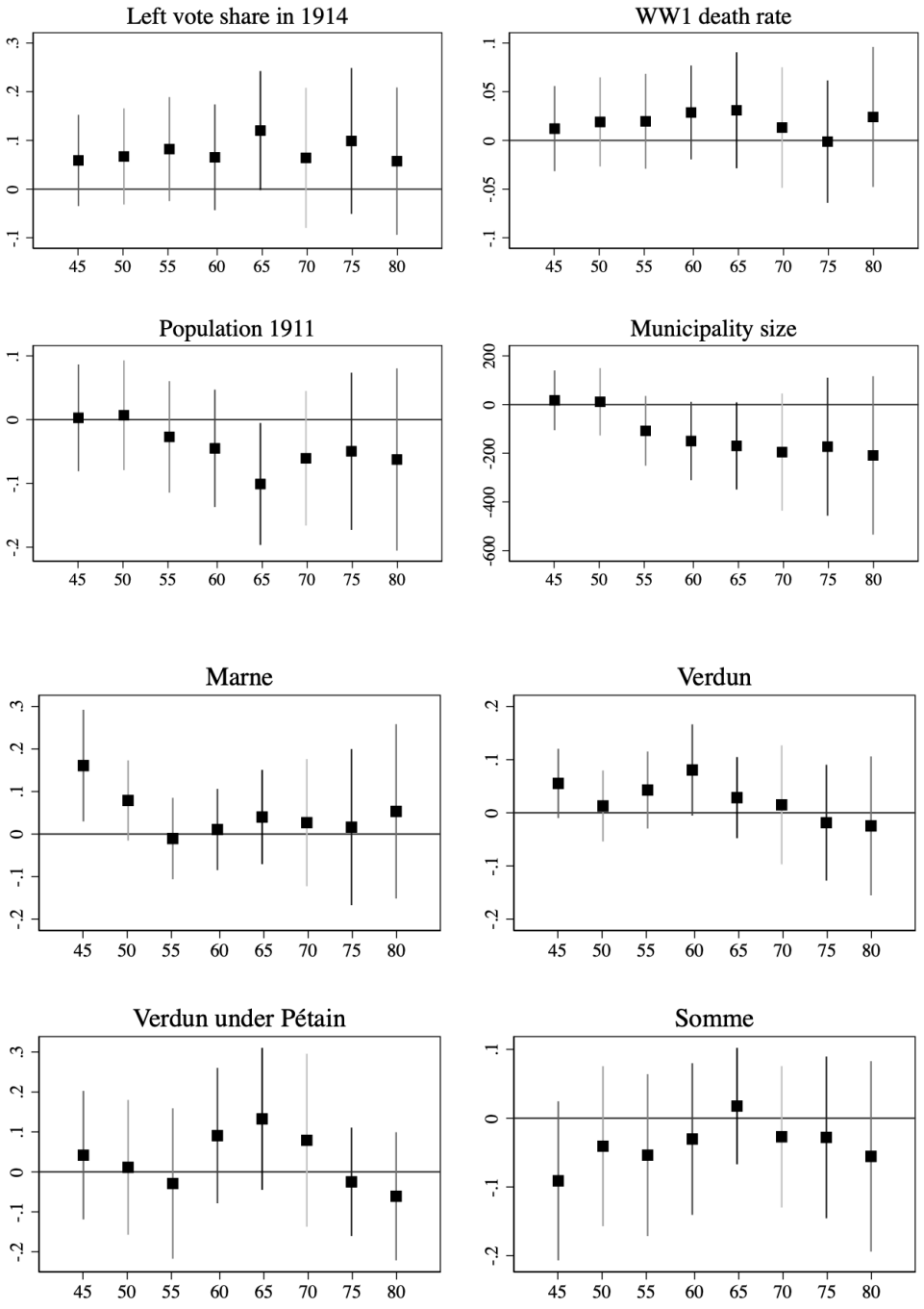
Notes: Histogram of swing in top party in the municipality (unweighted).

Figure A1: Swing over the war



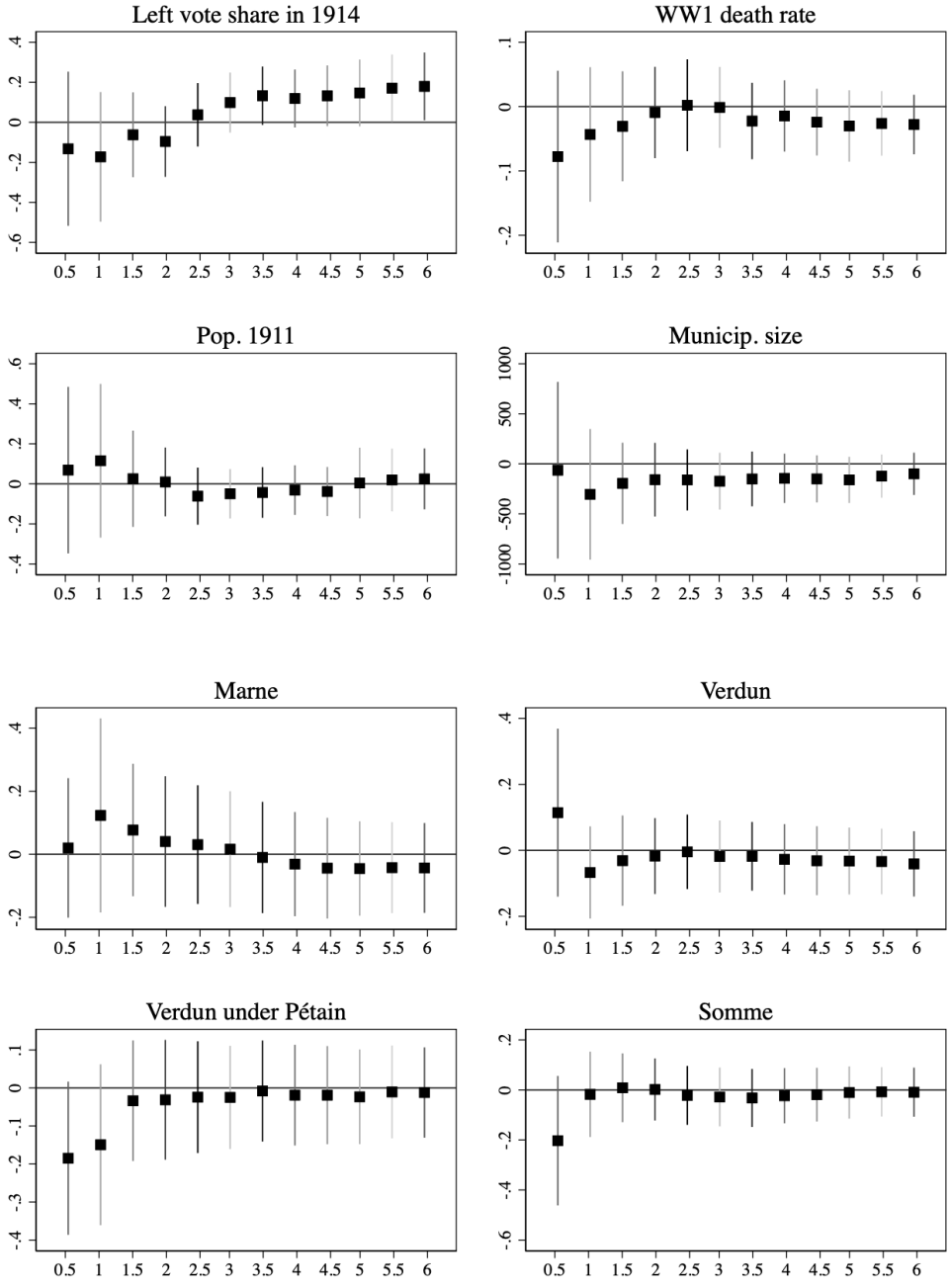
Notes: Underlying observations are at the municipality level (averaged across municipality-boundary observations). The sample is restricted to observations within 10km of a regimental catchment boundary. Dots correspond to average values of each variable aggregated into 0.5-km (0.3-mile) bins for visualization. The solid line plots a local linear regression and the shaded area shows 95% confidence intervals.

Figure A2: Regression Discontinuity: McCrary Test



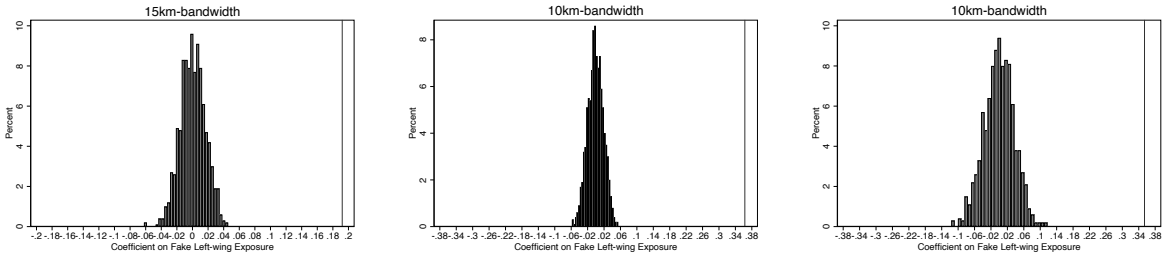
Notes: Each coefficient plot shows coefficients estimated from different estimations of Equation 1, with each covariate (or baseline outcome) as the dependent variable and alternative definitions of the spatial RD treatment: exposure to left-wing regiment. As indicated on the x-axis, we consider alternative definitions of the treatment as exposure to regiments in which the average left-wing vote share (weighted by male population of voters) is higher than: the 45th percentile, the 50th percentile, etc., until the 80th percentile (in increments of 5 percentile points). We plot each coefficient and its confidence interval at the 95th confidence level.

Figure A3: Robustness Regression Discontinuity: Baseline vote and covariates – Alternative definitions of the treatment



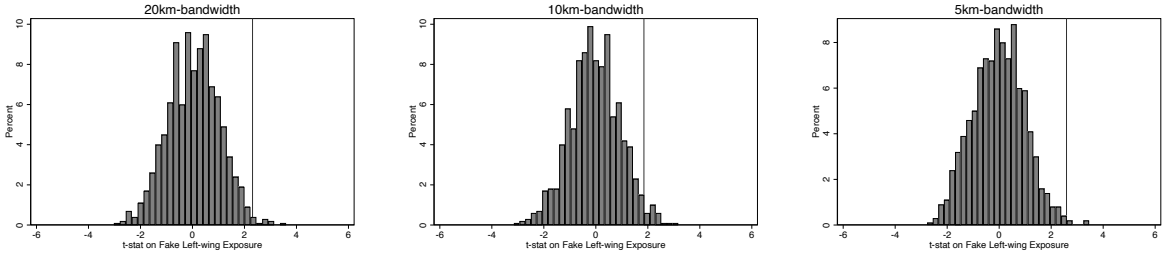
Notes: Each coefficient plot shows coefficients estimated from different estimations of Equation 1, with each covariate (or baseline outcome) as the dependent variable and alternative definitions of the cutoff for initial SFIO vote shares, as indicated as indicated on the x-axis: from 0.5 to 6pp, in increments of 0.5pp. We plot each coefficient and its confidence interval at the 95th confidence level.

Figure A4: Robustness Regression Discontinuity: Baseline vote and covariates – Alternative definitions of the estimation sample



Notes: The histograms show the distribution of coefficients obtained from permutation inference based on 1,000 replications. The distribution of t-statistics is shown in Figure A6. We perform permutation inference by reassigning treatment status across municipalities within the 15-km, 10-km, or 5-km bandwidths (as indicated) around each regimental boundary. The specification is otherwise identical to specifications displayed in Columns 2, 4, and 6 of Table 3 and specified in Equation 1. The vertical bars indicate the coefficients obtained from the real border (see Columns 2, 4, and 6 of Table 3).

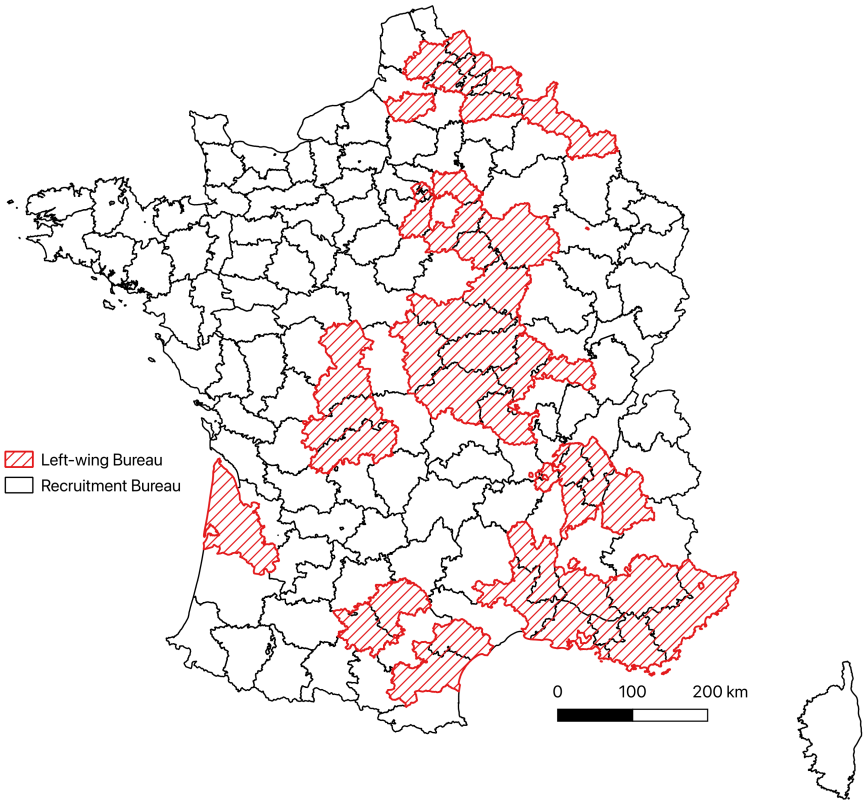
Figure A5: Permutation Inference with Fake Regimental Boundaries: Distribution of Coefficients



Notes: See notes to Table A5. The vertical bars indicate the coefficients obtained from the real border (see Columns 2, 4, and 6 of Table 3).

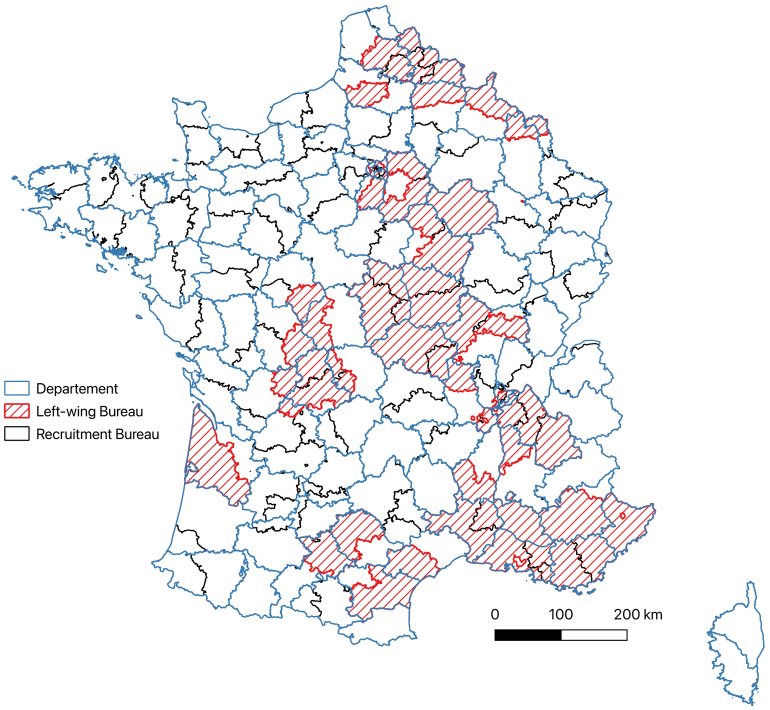
Figure A6: Permutation Inference with Fake Regimental Boundaries: Distribution of t-statistics

E Additional Maps



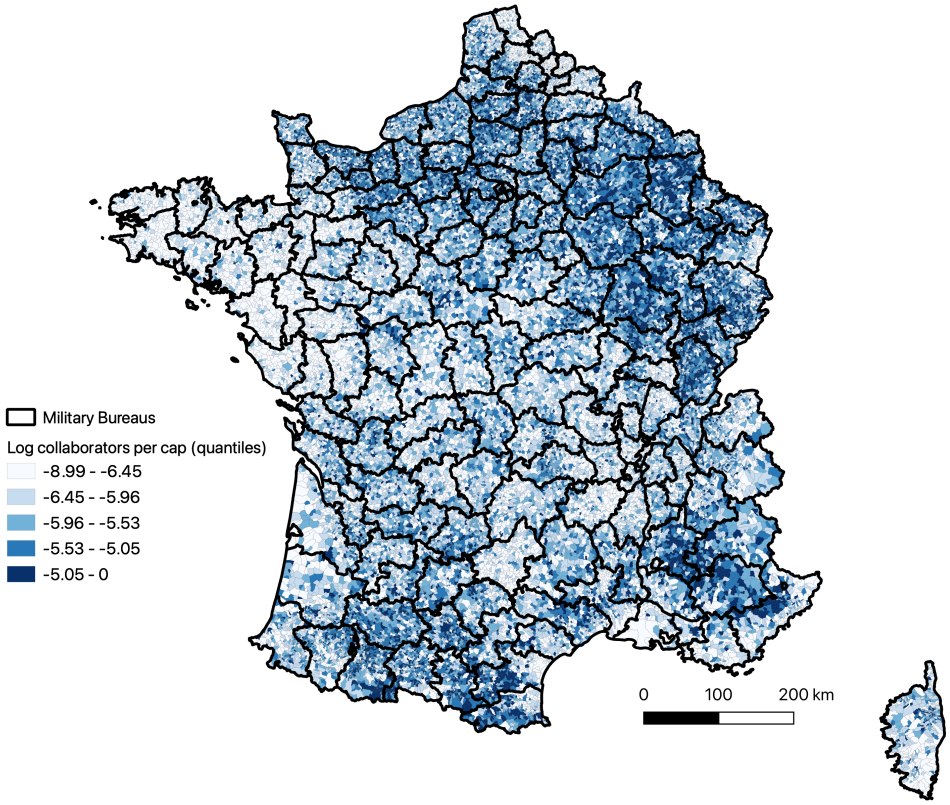
Notes: Black lines delineate department bureaus. Hashed red areas indicate left-wing recruitment bureaus, defined as bureaus in which the average vote share for the left in 1914 was higher than the national average (weighted by voting population).

Figure A7: Exposure to left-wing regiments



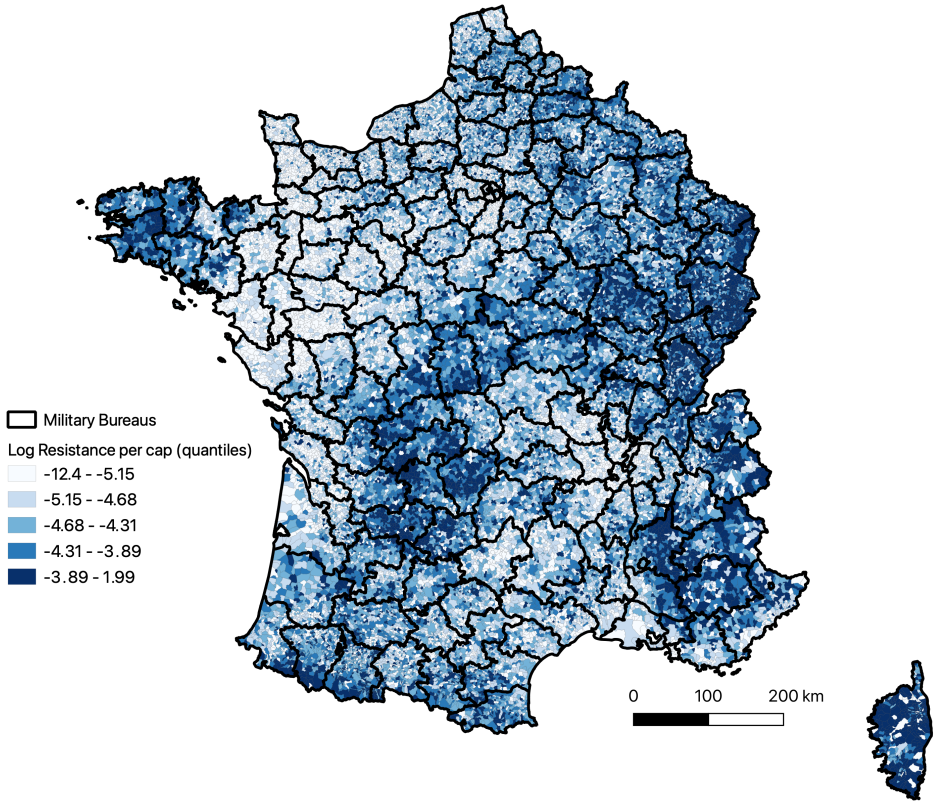
Notes: The map portrays the identifying variation in our main specification with the addition of department fixed effects. Black lines delineate department bureaus. Hashed red areas indicate left-wing recruitment bureaus, defined as bureaus in which the average vote share for the left in 1914 was higher than the national average (weighted by voting population). Blue lines delineate department. The red borders separate left-wing bureaus from others within a departement.

Figure A8: Military bureaus and Department boundaries



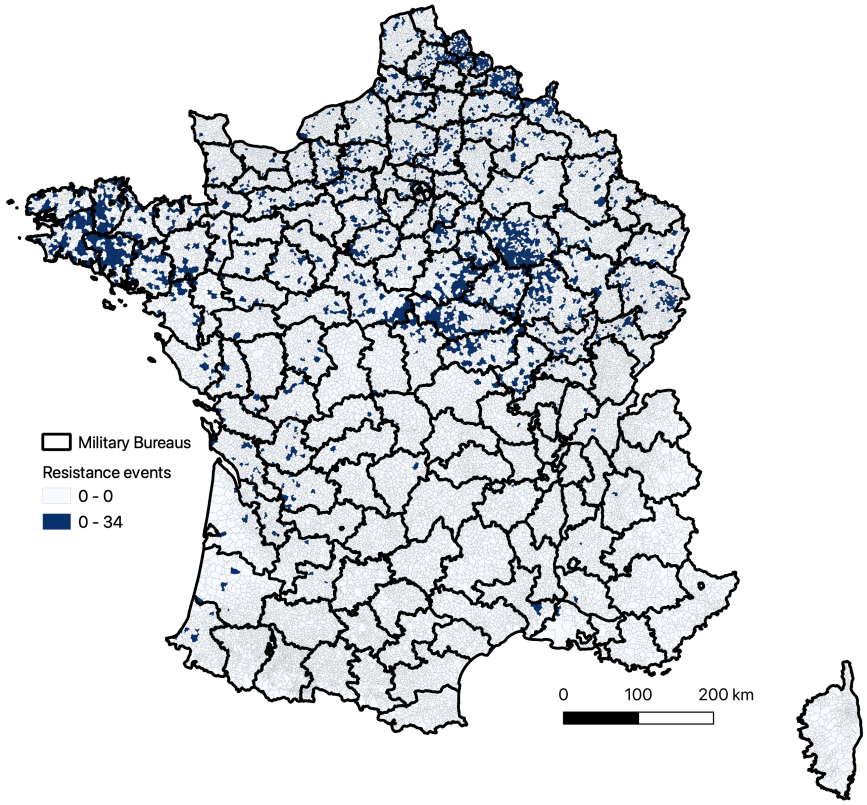
Notes: Source: Cagé et al. (2023a).

Figure A9: Collaborators per capita in each municipality



Notes: Source: Cagé et al. (2023b).

Figure A10: Resistance members per capita in each municipality



Notes: Source: Cagé et al. (2023b).

Figure A11: Activity by the Resistance

F Electoral data

The French political system is characterized by a lot of entries and exits of parties, and parties regularly change their name. One of the main empirical challenges is therefore to classify the different political parties from the extreme left to the extreme right over such a long period of time. We use the coding of all political parties on an extreme left to extreme right axis developed in Cagé et al. (2023a), which relied mainly on Agrikoliansky (2016), Poirmeur (2014), and Haegel (2007) for this pre-WWII period (see the Online Appendix in Cagé et al. (2023a)).