

Trade Competition and the Rise of the French Left: The Algerian Wine Shock, 1893–1914

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Abstract

Between 1893 and 1912, imports of Algerian wine quadrupled and discontent in France mounted. How did this Algerian shock reshape voting? We find that it pushed voting leftward. We interact département-level wine yields with this import surge to estimate the effect of trade exposure on commune-level election outcomes across six legislative elections. Exposed communes experienced a within-left substitution; the socialist vote share rose by 2 percentage points per standard deviation of exposure while the Radical share declined by a similar magnitude; the centre-right lost 5 to 6 percentage points; turnout increased.

Keywords: Import competition, Political radicalisation, Economic geography.

JEL classification: F14, D72, N43.

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1 Introduction

When trade shocks destroy livelihoods, do voters turn to radical alternatives – and if so, which ones? The answer matters in any democracy because whether economic losers shift toward the far left, the far right, or simply disengage from politics determines the political consequences of market integration.

This paper analyses how the surge in Algerian wine exports to early twentieth-century France affected the electoral behaviour of wine-growing communes. Between 1893 and 1912, French wine imports from Algeria quadrupled from roughly 1.8 million to 7.6 million hectolitres, flooding the metropolitan market with cheap table wine and putting pressure on domestic producers, particularly in the southern départements of the Midi. We exploit this shock to identify the causal effect of trade exposure on commune-level election outcomes across six legislative elections of the Third Republic (1893–1914).

A growing body of evidence shows that trade shocks shift votes toward political extremes. Autor et al. (2020) show that exposure to Chinese import competition increased political polarisation in the United States. In Europe, this shock appears to have benefited left-wing populist parties in the short run and populist parties more generally in the medium run, with a slight advantage for far-right parties (Backes and Mueller, 2024). In France, Malgouyres (2017) suggests that it primarily benefited far-right parties. Colantone and Stanig (2018a) link the losses from globalisation to support for Brexit, and Colantone and Stanig (2018b) to nationalist-party voting in western Europe. Crozet and Hinz (2023) find that the agricultural losses from Russian counter-sanctions boosted far-right candidates in France. Funke et al. (2016) and Bromhead et al. (2013) document that financial crises since 1870 are systematically followed by far-right gains, and Dippel et al. (2022) find the same pattern for trade shocks in contemporary Germany. The dominant pattern in these studies is rightward polarisation. Whether trade shocks can instead push voters *leftward* (and under what conditions) remains less analysed.

Our study is related to a broader literature that uses the phylloxera epidemic as a natural experiment to examine the economic consequences of agricultural shocks in nineteenth-century France, including their effects on health (Banerjee et al., 2010) and crime (Bignon et al., 2017). The Algerian wine crisis, which followed the recovery from phylloxera, has attracted sustained attention from historians (Smith, 1978; Frader, 1991; Smith, 2016; White, 2021). However, to our knowledge, no study has estimated its electoral effects using modern causal inference methods. We address this gap by exploiting the commune-level electoral database recently assembled by Cagé and Piketty (2023).

Our contribution is threefold. We provide the first quasi-experimental estimate of the electoral effects of the Algerian wine shock, interacting département wine

yields with the time-series import surge (Goldsmith-Pinkham et al., 2020). By decomposing outcomes at the political-nuance level (separately tracking socialist, radical, centre-right, and hard-right vote shares), we present evidence of a within-left substitution from the established Radical party to the socialists due to the trade shock. We show that the colonial trade shock eroded the centre-right establishment by 5 to 6 percentage points without producing the far-right surge that characterises the contemporary cases cited above. This leftward response, we argue, reflects the specific institutional context, namely the availability of a credible socialist alternative, the governing Radicals’ failure to protect wine-growers and actually their repression of wine-growers revolt, and the *interclassiste* (cross-class) character of the Midi revolt.

The remainder of the paper is organised as follows. Section 2 provides historical background. Section 3 describes the data. Section 4 presents the empirical strategy. Section 5 reports the main results and the economic and spatial mechanisms. Section 6 presents falsification and robustness checks. Section 7 concludes.

2 Historical background

2.1 Crisis, trade and production

The phylloxera epidemic that swept through French vineyards from the late 1860s to the 1880s ranks among the most devastating agricultural shocks of the nineteenth century, destroying roughly 40 per cent of the country’s vineyard area in little more than a decade. The severity of this disruption has been well documented by recent economic history. Banerjee et al. (2010) show that the income shock caused by phylloxera had long-run effects on adult height, while Bignon et al. (2017) find that it drove a significant increase in property crime, illustrating the depth of the economic distress. Recovery, when it came, proceeded through the grafting of French vines onto phylloxera-resistant American rootstock – a slow, costly process that reshaped the geography of French viticulture (Gale, 2011).

Nowhere was the transformation more consequential than in the *Midi* – the vast arc of southern France stretching from Languedoc through Roussillon. Growers in the Midi replanted massively with high-yield varieties, above all the Aramon grape, which could produce large quantities of cheap table wine (*vin ordinaire*) (Loubère, 1990). This strategy of volume over quality created a structural vulnerability. Having become more specialised than before, wine producers were more exposed to any source of price competition. As Meloni and Swinnen (2014) document, the post-phylloxera reconstruction effectively traded one form of fragility for another. This specialisation created the conditions for the next crisis.

This recovery reshaped the geography of production. Replanting was concentrated in the high-yield Midi plains and by 1900 the five largest wine-producing *départements* supplied 54% of national output, up from 35% in 1852, and four of them lay in the Languedoc-Roussillon Midi (Hérault, Aude, Gard, and Pyrénées-Orientales). The Herfindahl index of production across *départements* roughly doubled over the same period, from 0.04 to 0.08. This concentration compounded the Midi's specialisation, leaving these *départements* exposed to any common price shock.¹

During the phylloxera crisis, France turned to foreign suppliers. Spanish and Italian wine exports to France surged from negligible volumes in the 1860s to nearly 11 million hectolitres by the late 1880s, facilitated by the Franco-Spanish commercial treaty of 1882 (Pinilla and Ayuda, 2002) (Figure 1). These imports filled a gap. With domestic production at its lowest, foreign wine complemented rather than competed with French growers. The Méline tariff of 1892 ended this regime, imposing heavy duties on Spanish and Italian wine. The *loi cadenas* of 1897 reinforced the protectionist framework by authorising the government to raise duties by decree on named products. Spanish imports collapsed from over 5 million hectolitres to under 1 million within a few years. Italian imports, already smaller, virtually disappeared (Figure 1).

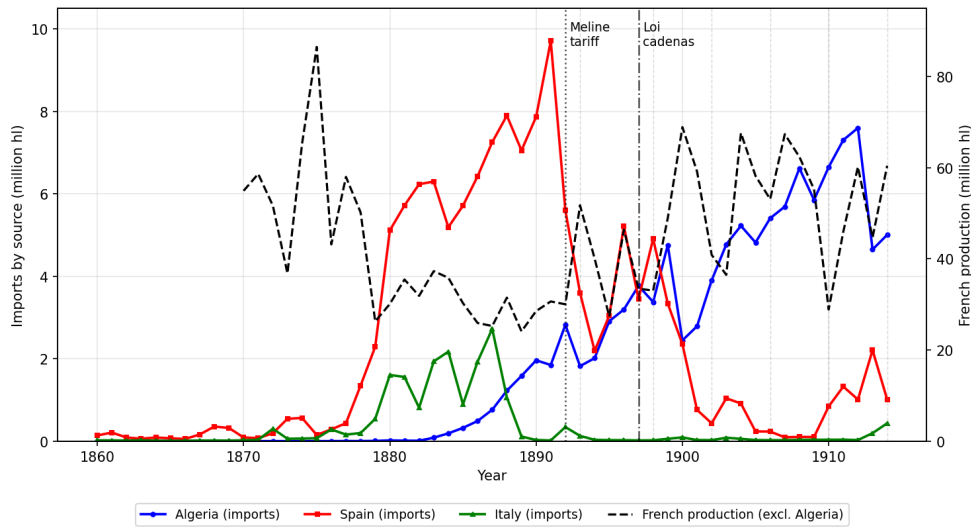
In the wake of phylloxera, roughly 50,000 settler families migrated from metropolitan France to Algeria between 1871 and 1900, drawn by cheap expropriated land and the favourable climate of the coastal plains (Isnard, 1959). They planted vineyards at scale, producing cheap, high-alcohol wine destined almost entirely for the metropolitan market. Algeria was legally part of France (its three northern *départements* sent deputies to the Chambre) and Algerian wine entered the metropole duty-free. Under this asymmetric trade regime, Algerian imports quadrupled between 1893 and 1912; by 1905–09, Algeria supplied nearly all of France's table wine imports and had become the world's largest wine exporter by volume (Anderson and Pinilla, 2024).

An inattentive reading of Figure 1 might suggest that Algerian wine merely replaced the Spanish and Italian volumes that the Méline tariff had excluded, with little net change in competitive pressure. This interpretation is however partially incorrect. The Spanish and Italian imports of the 1880s arrived during the phylloxera crisis, when domestic production had collapsed; they filled a supply deficit rather

¹These decades also produced an integrated national wine market that may have fostered the concentration and specialisation of production (Krugman, 1991; Gaigné, 2024). The *Plan Freycinet* (1879) extended secondary roads and railways, and Weber (1976, p. 264) describes how the rails turned Bas-Languedoc into a *wine factory*. Integration let the Midi ship bulk wine cheaply to national consumers, but it also transmitted price competition from imported wine directly to southern growers.

than displacing French growers. The Algerian surge, by contrast, coincided with the post-*phylloxera* recovery. As the production series in Figure 1 shows (right axis), metropolitan wine production had recovered to its pre-*phylloxera* level by the early 1900s. Algerian wine thus entered a market that was already abundantly supplied, generating genuine competitive pressure on domestic producers rather than substituting for missing output. The competition was concentrated in the low-quality segment, where Algerian *vin ordinaire* (coarse, high in alcohol, used for blending and bulk consumption) posed no threat to the quality vineyards of Bordeaux, Burgundy, or Champagne, but competed directly with the Aramon-based production of the Midi plains (Hérault, Gard, Aude, Pyrénées-Orientales). Combined with abundant metropolitan harvests in the early 1900s, the result was catastrophic oversupply, and wine prices fell by roughly 65 per cent from their 1880 peak (Meloni and Swinnen, 2014).²

²Isnard (1947) provides the classic geographic account of how Algerian viticulture displaced cereal farming on the colony's best land. As White (2021) documents, the friction between colonial producers and metropolitan wine-growers challenged the republican assumption that imperial possessions should complement rather than compete with the metropole.



Note: Annual figures from the global wine database of Anderson and Pinilla (2024). Left axis: French wine imports by source country (million hectolitres). Right axis (dashed): total metropolitan wine production, excluding Algeria (million hectolitres). The Méline tariff (1892) imposed heavy duties on Spanish and Italian wine while Algerian colonial wine entered duty-free; the *loi cadenas* (1897) authorised further tariff increases by decree. Spanish and Italian imports filled the supply gap left by the phylloxera collapse in production, whereas the Algerian surge came after production had recovered to its pre-phylloxera level.

Figure 1: French wine imports by source country and metropolitan production (excluding Algeria), 1860–1914

2.2 Political changes

These economic upheavals reached an electorate that was itself changing. While politics remained essentially “local” during the major part of the nineteenth century, this changed during its last decades. Voters in remote areas understood that national politics influenced their everyday life (for instance Weber, 1976, p. 329–330). In turn, this affected their political demands and attitudes. As Weber explains regarding the wine-growers’ revolt in 1907 (see below), they “did not revolt blindly; they were defending interests they fully grasped” (Weber, 1976, p. 330).

The price collapse hit the Midi hardest, and the question of which political forces would capture the resulting discontent is central to our analysis. Five families competed for votes, namely socialists (unified into the SFIO in 1905), radical-socialists (the dominant governing party through the *Bloc des gauches*, 1902–05), moderate

republicans, the centre-right (Progressistes, Ralliés), and the hard right (monarchists, nationalists). As Cagé and Piketty (2023) document, the period around 1910 marks a structural transition from a three-bloc system toward the modern left–right bipartition, as moderate republicans disappeared; our study period sits at this turning point.

From 1904, the crisis deepened into mass unemployment and destitution among agricultural workers and small growers, culminating in 1907 in the largest peasant uprising in twentieth-century France. Starting in March with a tax strike,³ the movement escalated through a series of massive demonstrations⁴. Clemenceau — the Radical *Président du Conseil* (prime minister) and minister of the interior, who had initially dismissed the movement — responded by ordering the arrest of its leaders and deploying 25,000 troops. The repression at Narbonne on June 19–20 caused several deaths and triggered the famous mutiny of the 17th line infantry regiment at Agde, whose soldiers marched to Béziers to fraternise with demonstrators (Smith, 1978; Smith, 2016; Frader, 1991).

At the *Chambre des députés*, the crisis provoked heated debates. Levêque and Petit (2022) use quantitative text analysis of the *Journal officiel* to show that it was the social consequences of the repression (the mutiny, the deaths, the spectacle of the army firing on citizens) that drove the strongest emotional reactions among parliamentarians. The revolt was *interclassiste* – it united small growers, agricultural wage-workers, and urban artisans across class lines, as Smith (2016) emphasises. The year 1907 became the founding myth of viticultural radicalism in the Languedoc (Smith, 2016). As Frader (1991) and Sagnes (1980) document for the Aude and Hérault respectively, the SFIO established a durable base among wine-growing communities in the Midi during these years, the origins of what would become known as the *Midi rouge* (Sagnes, 1982).

The revolt ended with the Caillaux fraud legislation of June 29, 1907, which targeted wine adulteration and sugar-chaptalisation. But crucially, no tariffs were imposed on Algerian wine, so the source of the shock was left unresolved. We argue that the crisis channelled popular discontent into support for the socialists. While we do not formally analyse the reasons for this shift, we hypothesise that the socialists' success owed much to the SFIO's sustained engagement with wine-growers' grievances. Under Jean Jaurès, the leading figure of French socialism, the party made the defence of the southern wine-growers a recurring cause.⁵ Where

³Organised by the *Comité d'Argeliers* under the leadership of Marcelin Albert, a winegrower and café owner from Argeliers in the Aude.

⁴Around 80,000 in Narbonne on May 5, 150,000 in Béziers on May 12, 170,000 to 200,000 in Perpignan on May 19, and a culmination of over 600,000 in Montpellier on June 9 (Smith, 1978; Sagnes et al., 1997).

⁵As Pech (2011) documents, Jaurès had recognised as early as 1893 that, with nineteen million

the governing Radicals offered only palliatives, the socialists advanced a structural response that combined a high level of regulation of the wine market, limits on large vineyards, but that defended the property of small wine-growers (Lynch, 1995; Planas, 2017).⁶

3 Data

Our analysis draws on a commune-level panel covering six legislative elections under the Third Republic: 1893, 1898, 1902, 1906, 1910, and 1914. We combine three data sources.

Election outcomes. Commune-level returns come from the historical electoral database of Cagé and Piketty (2023), which records vote totals by political nuance for each commune and each legislative election from 1848 onward. We construct five outcome variables. *Socialist share* is the ratio of socialist votes to expressed votes (valid ballots cast). *Radical share* is the vote for the *Parti radical et radical-socialiste* – the centre-left governing party of the *Bloc des gauches* – divided by expressed votes; we select nuance codes that maintain compositional stability across elections.⁷ *Centre-right share* is the Cagé-Piketty centre-right aggregate (Ralliés, Républicains libéraux, Progressistes, and Alliance républicaine démocratique) divided by expressed votes.

cultivators against nine million industrial workers, the socialist party “would be lost” if it appeared to favour urban over rural interests. He wrote extensively on wine policy throughout the 1890s and 1900s, advancing proposals of “impressive coherence” on the legal definition of wine, the repression of fraud, and the regulation of alcohol markets. In 1901 he cast the viticultural crisis as emblematic of “the anarchy of our social system” and urged that producer syndicates and cooperatives organise the wine market collectively. See Jaurès, “Viticulture et socialisme”, *La Dépêche*, 19 July 1901, and “Crise viticole et socialisme”, *La Dépêche*, 4 December 1901. Jaurès was not the sole socialist interested in agricultural questions. For instance, Compère-Morel – a socialist député after 1909, specialised in agricultural questions – published in 1897 an essay entitled *La Vérité aux paysans, par un campagnard*. For a general analysis of the adaptation of socialist doctrine to the particular conditions of rural France, see Lynch (1995).

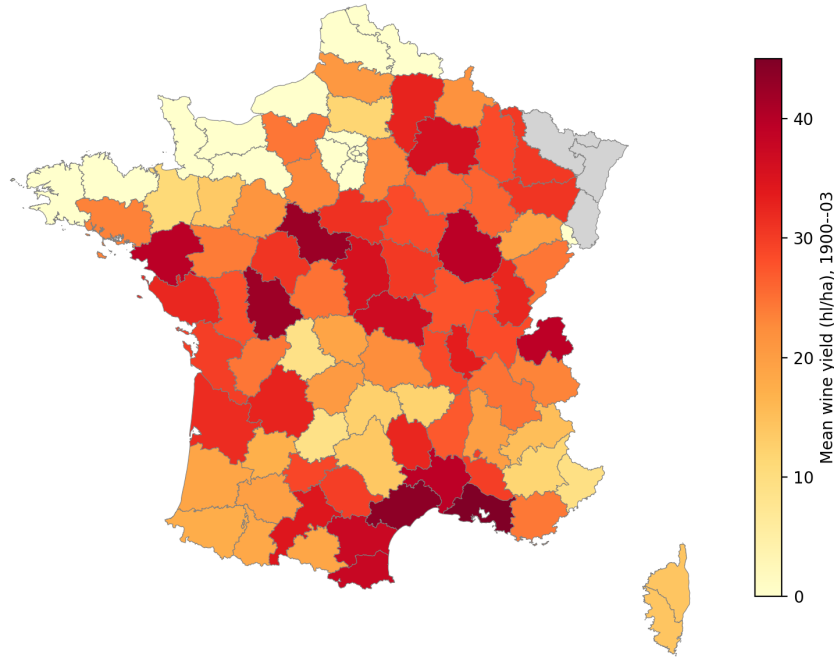
⁶When the 1907 revolt erupted, Jaurès and the socialist leader Jules Guesde deposited an alternative bill to the Caillaux fraud legislation that ultimately prevailed. This project was in favour of a socialist organisation of the wine industry, yet the authors still defended the property of small vineyards (*Journal officiel de la République française. Débats parlementaires*. 1907, June 11, 1907 – p.1287).

⁷We use the Cagé-Piketty nuance codes RADSOC + RAD for 1893–1906, and RADSOC alone from 1910 onward, when non-ratified radicals (RADDIV) were reclassified into the Centre bloc by Cagé and Piketty (2023). These codes identify the Radical and Radical-Socialist current, as distinct from the dissident radicals (RADDIV). The *Parti radical* was formally constituted only in 1901 and remained loosely organised thereafter; the label denotes the political family, not formal party membership. See the replication code for details.

Hard right share is the hard-right aggregate (reactionaries, monarchists, and nationalists) divided by expressed votes. *Turnout* is the ratio of voters to registered electors. These nuance-level outcomes, unlike the three-bloc aggregates (Gauches, Centres, Droites), maintain a stable political content across elections.⁸

Wine exposure. Département-level wine yields (hectolitres per hectare) come from Schauburger et al. (2022), who provide annual area, production, and yield data for French départements from 1900 onward. We compute the mean yield over 1900–1903 as a measure of each département’s structural exposure to wine-market conditions. Because these are the earliest years available, the yields are measured around the onset of the shock rather than strictly before it. Figure 2 displays the spatial distribution of this exposure measure. The highest yields (above 40 hl/ha) are concentrated in the Midi plains (Hérault, Gard, Aude, Pyrénées-Orientales) and Bouches-du-Rhône, precisely the départements most vulnerable to Algerian competition.

⁸The Centre bloc shifts from moderate republicans in 1893–1906 to independent radicals in 1910–1914, making the aggregate measure difficult to interpret over time.



Note: Darker shading indicates higher wine yield (hl/ha, 1900–03 average from Schaubberger et al. 2022). Grey départements have no yield data.

Figure 2: Spatial distribution of wine yield exposure across French départements

The annual volume of French wine imports from Algeria (in hectolitres) is drawn from the global wine trade database of Anderson and Pinilla (2024). We compute the shift as the change in Algerian imports relative to their 1892 level – the year before our first election.

We include two time-varying département-level controls, real GDP per capita and the literacy rate. In our preferred specification, we add the proportion of refractory clergy in 1791 (a standard proxy for historical religiosity) interacted with election-year dummies, to absorb differential trends in political behaviour between historically Catholic and secular areas.

The panel contains approximately 34,000 communes observed over six elections, yielding roughly 205,000 commune-year observations across 93 metropolitan départements.

Pre-phylloxera wine data. To address the concern that post-phylloxera 1900–03 yields may be endogenous, we exploit the *Enquête agricole de 1852*, a comprehensive agricultural census covering all 86 metropolitan départements.⁹ This survey records vine area and yield per département well before the phylloxera epidemic reached France in the late 1860s. The Spearman rank correlation between 1852 vine area and 1900–03 yield is $\rho = 0.66$ ($p < 0.001$, $N = 89$), indicating that historical viticultural specialisation persisted through the phylloxera upheaval. In other words, high-yield départements in 1900 were already wine-producing regions in 1852, which supports the view that the exposure measure captures structural viticultural specialisation rather than strategic post-phylloxera choices.

4 Empirical strategy

We estimate the effect of exposure to the Algerian wine import shock on commune-level political outcomes using a shift-share (Bartik) research design within a two-way fixed-effects framework.

4.1 Specification

Our baseline specification is:

$$y_{ct} = \alpha_c + \gamma_t + \beta \text{Exposure}_{d(c),t} + \mathbf{X}'_{d(c),t} \boldsymbol{\delta} + \varepsilon_{ct}, \quad (1)$$

where y_{ct} is a political outcome (vote share or turnout) in commune c at election t ; α_c and γ_t are commune and election-year fixed effects; $\text{Exposure}_{d(c),t}$ is the shift-share regressor defined below; and $\mathbf{X}_{d(c),t}$ is a vector of département-level controls. Standard errors are clustered at the département level, the unit at which the treatment varies.

4.2 Shift-share treatment variable

The treatment variable combines a cross-sectional exposure measure with a common time-series shock (Goldsmith-Pinkham et al., 2020; Borusyak et al., 2022):

$$\text{Exposure}_{d,t} = \underbrace{\bar{Y}_d^{1900-03}}_{\text{Wine yield}} \times \underbrace{\left(M_t^{\text{Alg}} - M_{1892}^{\text{Alg}} \right)}_{\text{Import shift}}, \quad (2)$$

⁹The census is fully digitised; see *Enquête agricole de 1852: Cultures diverses* (1852). Variable definitions and column mappings are documented in the replication code. We match the 1852 départements to those in the election panel, accounting for boundary changes over the period.

where $\bar{Y}_d^{1900-03}$ is the mean wine yield (hl/ha) in département d over 1900–1903 – the earliest years the Schauberger et al. (2022) data cover, so the shares are measured around the onset of the shock rather than strictly before it – and M_t^{Alg} is the volume of French wine imports from Algeria in the year preceding election t (i.e. the shift is lagged by one year). The shift is measured relative to the 1892 baseline – the year before the first election in our panel. We standardise the exposure variable to have mean zero and unit standard deviation across commune-years, so that β captures the effect of a one-standard-deviation increase in exposure to the Algerian shock.

The cross-sectional component captures the intensity of viticulture; départements like the Hérault, Aude, and Gard (the heartland of the Midi wine economy) have yields above 40 hl/ha, whereas northern départements with negligible wine production have yields near zero. The time-series component reflects the surge in Algerian imports, which rose roughly fourfold from their 1893 level of 1.8 million hectolitres to a peak of 7.6 million in 1912 – a surge driven by colonial expansion, not by metropolitan demand conditions. Figure A6 in Appendix A plots the Algerian import series alongside the distribution of the standardised exposure measure and binscatter evidence of the reduced-form relationship.

4.3 Identification

The recent shift-share econometrics literature distinguishes two identification strategies. Goldsmith-Pinkham et al. (2020) show that consistency requires the exogeneity of the cross-sectional shares (here, wine yields); Borusyak et al. (2022) show that, alternatively, it suffices for the common shift (here, Algerian imports) to be as-good-as-randomly assigned, provided shares are numerous and no single share dominates.

Our setting favours the shares-based perspective of Goldsmith-Pinkham et al. (2020): there is only one shift (the aggregate Algerian import series), so the Borusyak et al. (2022) framework, which requires many independent shocks, does not directly apply. Identification therefore rests on the conditional exogeneity of the shares:

$$E\left[\varepsilon_{ct} \mid \alpha_c, \gamma_t, \bar{Y}_d^{1900-03}, \mathbf{X}_{d,t}\right] = 0, \quad (3)$$

i.e. the wine yield affects political outcomes only through its interaction with the Algerian import shock, conditional on commune and year fixed effects and controls. Three threats to assumption (3) deserve discussion.

First, wine-growing départements may have been on different political trajectories for reasons unrelated to Algerian competition – for instance, because of pre-existing socialist organisation or secular political culture. We address this by

including the proportion of refractory clergy (1791) interacted with year dummies (Panel C)¹⁰ and by reporting an event study (Section 5).

Second, the exposure measure (wine yield) may correlate with other economic characteristics. We control for département GDP per capita and literacy rate. We also examine the economic channel directly through wine prices and test the specificity of the Algerian shock using alternative import shifts as a falsification exercise (Section 6).

Third, the 1900–03 yields themselves are endogenous to the post-phylloxera replanting decisions of the 1880s–90s. We address this using pre-phylloxera 1852 vine area as an alternative exposure measure and balance tests (Section 6), and within-département heterogeneity analysis (Section 5.3).

We note, following Roth (2022), that the event study has only one pre-period (1893), which limits the power to detect violations of the parallel-trends assumption. The balance tests and falsification exercises in Section 6 provide complementary evidence.

4.4 Event study

To assess the plausibility of the parallel-trends assumption and to trace the dynamic pattern of the treatment effect, we estimate an event-study specification:

$$y_{ct} = \alpha_c + \gamma_t + \sum_{s \neq 1898} \beta_s \left(\tilde{Y}_{d(c)} \times \mathbf{1}\{t = s\} \right) + \mathbf{X}'_{d(c),t} \boldsymbol{\delta} + \varepsilon_{ct}, \quad (4)$$

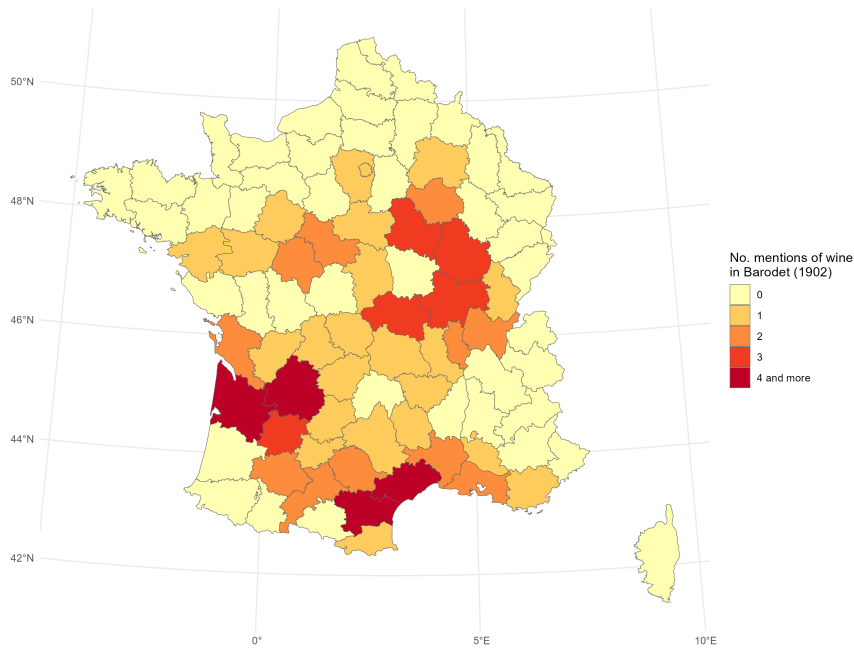
where $\tilde{Y}_{d(c)} \equiv \bar{Y}_d^{1900-03} / \sigma_Y$ is the wine yield normalised by its standard deviation, and 1898 is the omitted base year – the last pre-shock election. The coefficient β_{1893} tests for pre-existing differences between high- and low-exposure départements, while $\beta_{1902}, \dots, \beta_{1914}$ trace the post-shock trajectory.

The exact timing of the Algerian shock is difficult to determine. However, it is clear that French wine production reached exceptionally high levels during the first years of the twentieth century: average production amounted to 56.3 million kL between 1899 and 1908, compared with 34.5 million kL between 1889 and 1898. At the same time, Algerian wine exports almost always exceeded 300,000 kL after 1896, reaching levels approximately 6.6 to 10 times higher than those observed a decade earlier (see also Figure 1).

Moreover, winegrowers' difficulties were already apparent by 1904, when unemployment in the sector surged, and the issue had become politically salient by

¹⁰Approximately 15 per cent of communes lack 1791 religiosity data; we impute zero for the interactions in these cases, so the sample is not reduced.

1905 (see Figure 11 in the Appendix). Consequently, we consider that the shock occurred before the 1906 elections but most likely after the 1898 elections. Electoral manifestos from the 1902 elections already referred to the low price of wine, making 1902 a plausible starting point for the treatment period.¹¹ In Figure 3, we map the number of députés that make reference to wine in their manifestos in 1902. The map suggests that, as early as 1902, députés in the départements of the Midi (as well as in the Bordeaux area) made more frequent references to wine in their manifestos.¹²



Note: Darker shading indicates that more elected députés mention “wine” or related words in their manifestos in 1902.

Figure 3: Words related to wine in Manifestos of candidates in 1902

¹¹To the best of our knowledge, electoral manifestos from the 1898 elections are not available. In 1902, for example, the socialist député P. Constans wrote: “Peasants and cultivators, the fruits of your labor are becoming less and less sufficient to sustain you. Domestic and foreign competition drives down their value year after year; poor grain sales and poor wine sales have become a permanent affliction” (Barodet, 1902, p. 28).

¹²The data are drawn from the Barodet project. They present several limitations: in addition to missing manifestos, OCR errors complicate the accurate identification of words.

5 Results

5.1 Baseline results

Communes more exposed to the Algerian wine shock experienced a significant shift in political behaviour: voters moved from the Radical party toward the socialists, the centre-right lost ground, and turnout rose. Table 1 presents the main results across four specifications. Each reported coefficient gives the effect of a one-standard-deviation increase in the exposure measure.

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>Panel A: No controls</i>					
Algerian exposure	0.0220*** (0.0082)	−0.0210* (0.0125)	−0.0536* (0.0281)	−0.0053 (0.0116)	0.0074** (0.0032)
<i>N</i>	205,004	205,004	205,004	205,004	205,004
Clusters	93	93	93	93	93
<i>Panel B: With PIB & literacy controls</i>					
Algerian exposure	0.0216*** (0.0082)	−0.0211* (0.0128)	−0.0526* (0.0272)	−0.0049 (0.0115)	0.0075** (0.0032)
<i>N</i>	204,750	204,750	204,750	204,750	204,750
Clusters	93	93	93	93	93
<i>Panel C: With controls + religiosity × year</i>					
Algerian exposure	0.0203** (0.0086)	−0.0201 (0.0133)	−0.0584** (0.0268)	−0.0001 (0.0115)	0.0081** (0.0034)
<i>N</i>	204,750	204,750	204,750	204,750	204,750
Clusters	93	93	93	93	93
<i>Panel D: Wine départements, Panel C controls</i>					
Algerian exposure	0.0283* (0.0152)	−0.0330 (0.0249)	−0.0487 (0.0307)	0.0069 (0.0197)	0.0188*** (0.0057)
<i>N</i>	171,646	171,646	171,646	171,646	171,646
Clusters	77	77	77	77	77
Commune FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Note: Unit of observation is a commune-election year. Panel covers six legislative elections (1893, 1898, 1902, 1906, 1910, 1914). The treatment variable is the standardised exposure measure: département-level mean wine yield (1900–03) × change in French imports from Algeria relative to 1892. Socialist share = socialist votes / expressed votes. Radical share = (RADSOC + RAD) / expressed votes (the Radical and Radical-Socialist family). Centre-right share = voteCD / expressed votes (Ralliés, Républicains libéraux, Progressistes, ARD). Hard right share = voteD / expressed votes (monarchists, nationalists, reactionaries). Turnout = voters / registered electors. Panel B adds real GDP per capita and literacy rate. Panel C adds proportion of refractory clergy (1791) × year dummies. Panel D restricts to départements with positive wine yield in 1900–03 and uses the same controls as Panel C. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 1: Effect of Algerian wine shock on election outcomes

The most robust finding is the rise of the socialist vote. A one-SD increase in wine-shock exposure raises the socialist share by 2.2 percentage points in the base-

line specification without controls (Panel A, Column 1) and by 2.0 percentage points in our preferred specification with controls and religiosity interactions (Panel C). For context, the mean socialist share across all commune-years is approximately 6.5 per cent, so the Panel C effect represents a roughly 31 per cent increase relative to the mean. In the wine-départements subsample (Panel D), the effect is larger at 2.8 percentage points, consistent with the treatment being concentrated in viticultural areas.

The Radical share moves in the opposite direction. The magnitude and sign are stable across Panels A–C, although the coefficient loses statistical significance in Panel C when religiosity interactions absorb some of the cross-sectional variation. Taken together, these two effects are suggestive of a within-left substitution. The Algerian shock shifted viticultural communes from the established Radical party toward the more combative socialist alternative, although we note that the radical coefficient is not statistically significant in the preferred Panel C specification.

To gauge the magnitude, the four Midi départements most affected by the crisis (Hérault, Gard, Aude, Pyrénées-Orientales) had an average exposure 1.7 standard deviations above the rest of France in 1910. Applying the Panel C coefficient yields a predicted extra socialist share of approximately 3.5 percentage points, or roughly 11,000 additional socialist votes – equivalent to the total electorate of a medium-sized Languedocian city such as Narbonne.¹³

The centre-right share falls by 5 to 6 percentage points per one-SD increase in exposure, depending on the specification (Table 1, Column 3). The economic shock eroded the moderate conservative establishment – Ralliés, Progressistes, Républicains libéraux. As for the far right, the point estimates are essentially zero across all specifications.

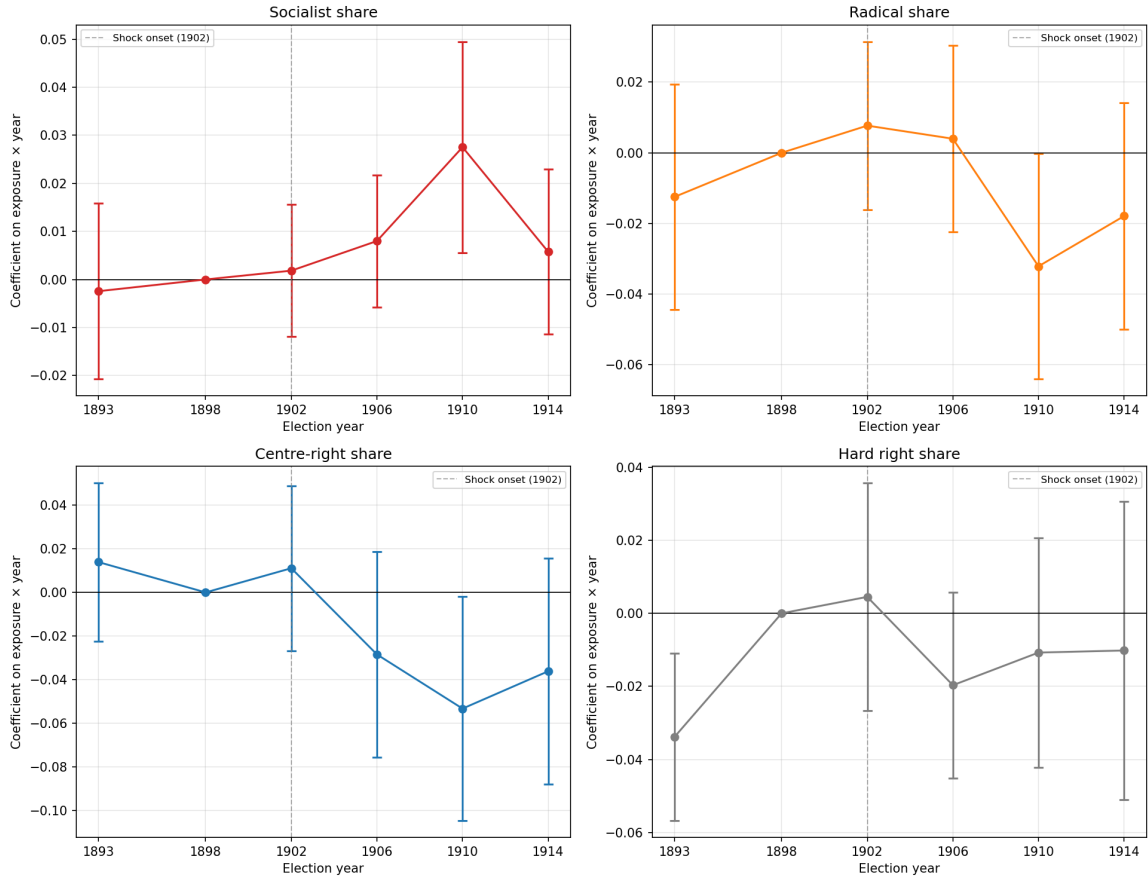
A vote-accounting puzzle deserves mention. The centre-right loses 5 to 6 percentage points, but the socialist gain and radical loss do not fully account for this decline. Several factors may explain the residual. First, rising turnout (0.7–1.9 pp) brought new voters to the polls; to the extent that these entrants favoured the socialists over the centre-right, incumbent shares fall even without individual vote-switching. Second, the centre-right category itself underwent compositional change over this period, as the moderate republican families that dominated it in the 1890s gradually dissolved into the broader left–right realignment documented by Cagé and Piketty (2023). Third, minor candidates and local notables (who do not map cleanly onto any of our four nuance categories) may have absorbed part of the centre-right decline.

¹³ $0.0203 \times 1.7 \approx 0.035$; multiplying by the 323,000 expressed votes cast in the four Midi départements in 1910 gives $\approx 11,000$ votes. The year fixed effects absorb the common component of the Algerian shock, so this estimate captures only the differential impact of higher vs. lower exposure.

Finally, exposure to the wine shock increased turnout by 0.7 to 0.8 percentage points in the full sample (Panels A–C), rising to 1.9 percentage points in wine départements (Panel D). This mobilisation effect is consistent with the mass demonstrations and political ferment that the price collapse provoked in the Midi.

5.2 Event study

Figure 4 plots the year-specific coefficients from the event-study specification (4). For the socialist share, the single available pre-period coefficient (1893) is close to zero and statistically insignificant, and the post-shock coefficients rise steadily from 1902 to a peak in 1910; the 1914 coefficient remains positive but smaller and imprecisely estimated, mirroring the retreat of Algerian imports in 1913, the year entering the 1914 exposure measure. This pattern is consistent with a treatment effect that built up as the crisis deepened and peaked in the aftermath of the 1907 revolt. For the Radical share, the pre-trend is similarly flat, and the negative effect is concentrated in 1910–1914. The centre-right panel shows a large decline that emerges by 1910–1914, though the pre-period point estimate for 1893 is noisier. The hard right panel exhibits a problematic pre-trend: the 1893 coefficient is negative and significant, confirming that high-exposure départements already had structurally different hard-right vote shares before the Algerian shock. This violation of parallel trends means that the hard-right null result cannot be given a causal interpretation.



Note: Each panel plots $\hat{\beta}_s$ from equation (4), with 1898 as the omitted base year. Vertical bars are 95% confidence intervals. The specification includes commune and year fixed effects, real GDP per capita, literacy rate, and proportion of refractory clergy (1791) $\times$ year dummies (the controls from Panel C of Table 1). The vertical dashed line marks 1902, the first post-shock election.

Figure 4: Event study: wine exposure and nuance-level outcomes

It is revealing that the 1910 election drives a substantial part of our results. On the one hand, this election followed the massive 1907 revolt and its repression under a Radical government. Thus, voters in wine-growing regions had legitimate grievances against the incumbent Radical party. On the other hand, Socialists had strategic reasons to oppose the Radicals: first, because they were the incumbent party; second, because the Radical government repressed workers not only in 1907 but also in 1906, 1908, and other years; and third, because the relative calm on the religious cleavage provided weaker incentives to unite against the right.

This fact, however, calls for caution when interpreting our main findings. An economic shock such as the Algerian one certainly generates grievances against established parties. Grievances that opposition parties may attempt to capitalize on. That said, this process may take time, and may require policy failures by incumbent parties (e.g. the initial poor handling of the 1907 revolt by Clemenceau) before electoral effects become noticeable.

5.3 Mechanisms

We examine the price channel using département-level wine prices from the *Statistique agricole annuelle* (Table 2). Across all départements, yield does not predict the 1900–1906 price change (Column 1), because high-yield regions include both cheap and quality wine producers. But when we split départements at the median initial price (23.9 fr/hl), a clear pattern emerges. Among cheap-wine départements (the segment that competed directly with Algerian imports) a one-standard-deviation increase in yield predicts a 15 per cent larger price decline ($p < 0.001$, Column 3). The interaction between yield and the cheap-wine indicator confirms that the effect differs significantly across market segments ($p = 0.01$, Column 2). Vine area and production at the département level show no significant response in an annual panel over 1900–1914 (Table 5 in Appendix A). Growers maintained production even as prices collapsed, consistent with the historical narrative of distress *without* exit.

	(1) All	(2) Interaction	(3) Cheap only
Yield (std.)	−0.0232 (0.0492)	0.0712 (0.0731)	−0.1477*** (0.0450)
Cheap wine		0.1447* (0.0768)	
Yield × Cheap		−0.2189** (0.0858)	
<i>N</i>	76	76	38
Sample	All	All	Cheap

Note: Cross-sectional OLS of the change in log wine price (1900 to 1906) on standardised département wine yield (1900–03). Price data from the *Statistique agricole annuelle*. “Cheap wine” départements are those with an initial (1900) price at or below the median (23.9 fr/hl). Column 1 pools all départements; yield does not predict price changes in the full sample because high-yield regions include both cheap (*vin ordinaire*) and quality wine producers (Champagne, Burgundy). Column 2 interacts yield with a cheap-wine indicator; Column 3 restricts to cheap-wine départements. Heteroskedasticity-robust standard errors. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 2: Economic channel: wine price response (1900–1906)

To probe the spatial precision of the mechanism, we exploit within-département variation at the arrondissement level (Table 6 in Appendix A), using historical boundaries from Gay (2021). We interact the exposure measure with two arrondissement-level variables: agricultural employment share (1896 census) and vine area (1852 *Enquête agricole*). The vine-area interaction is positive and significant for the socialist share ($p_{\text{adj}} < 0.001$ after Bonferroni correction for ten tests), while the agricultural employment interaction is insignificant. The contrast is informative. The political response was specific to viticultural communities rather than driven by generic agricultural distress, consistent with the SFIO’s targeted engagement with wine-growers (Pech, 2011).

6 Falsification and robustness

6.1 Alternative import shifts

If the exposure measure captures a genuine trade channel, then replacing the Algerian import surge with imports that moved in the opposite direction should reverse the sign of the coefficients. Table 3 performs this test. The Méline tariff of

1892 imposed heavy duties on Spanish and Italian wine while Algerian colonial wine entered duty-free; consequently, Spanish and Italian imports collapsed while Algerian imports surged. When we substitute the Spanish or Italian shift into the exposure measure (keeping the same wine yield component) the key coefficients reverse sign. The Spanish shift flips the socialist and centre-right effects and reverses turnout, all significantly. The Italian shift moves in the same direction but more weakly, its socialist and centre-right reversals falling short of significance.¹⁴ This reversal for the dominant foreign competitor confirms that the political effects are specific to the direction of the trade shock, not to a spurious correlation between wine yields and political trends.

¹⁴Italian wine imports to France were considerably smaller than Spanish throughout the period (Section 2), so the Italian shift carries far less import variation and its weaker reversals are correspondingly less informative.

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>Algeria import shift</i>					
Algerian exposure	0.0203** (0.0086)	−0.0201 (0.0133)	−0.0584** (0.0268)	−0.0001 (0.0115)	0.0081** (0.0034)
N	204,750	204,750	204,750	204,750	204,750
Clusters	93	93	93	93	93
<i>Spain import shift</i>					
Spanish exposure	−0.0181* (0.0094)	−0.0005 (0.0164)	0.0425** (0.0197)	−0.0162 (0.0130)	−0.0175*** (0.0049)
N	204,750	204,750	204,750	204,750	204,750
Clusters	93	93	93	93	93
<i>Italy import shift</i>					
Italian exposure	−0.0111 (0.0082)	−0.0119 (0.0169)	0.0210 (0.0157)	−0.0263** (0.0122)	−0.0166*** (0.0048)
N	204,750	204,750	204,750	204,750	204,750
Clusters	93	93	93	93	93
Commune FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Panel C controls	Yes	Yes	Yes	Yes	Yes

Note: Same specification as Panel C of Table 1. The first row reproduces the baseline result. The second and third rows replace the Algerian import shift with Spanish and Italian import shifts, respectively, while keeping the same cross-sectional exposure (département wine yield 1900–03). The Méline tariff (1892) imposed heavy duties on Spanish and Italian wine while Algerian colonial wine entered duty-free; consequently, Spanish and Italian imports to France collapsed while Algerian imports surged. The reversed signs confirm that the political effects are specific to the direction of the trade shock. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 3: Falsification test: alternative import shifts (Spain and Italy)

6.2 Political discourse

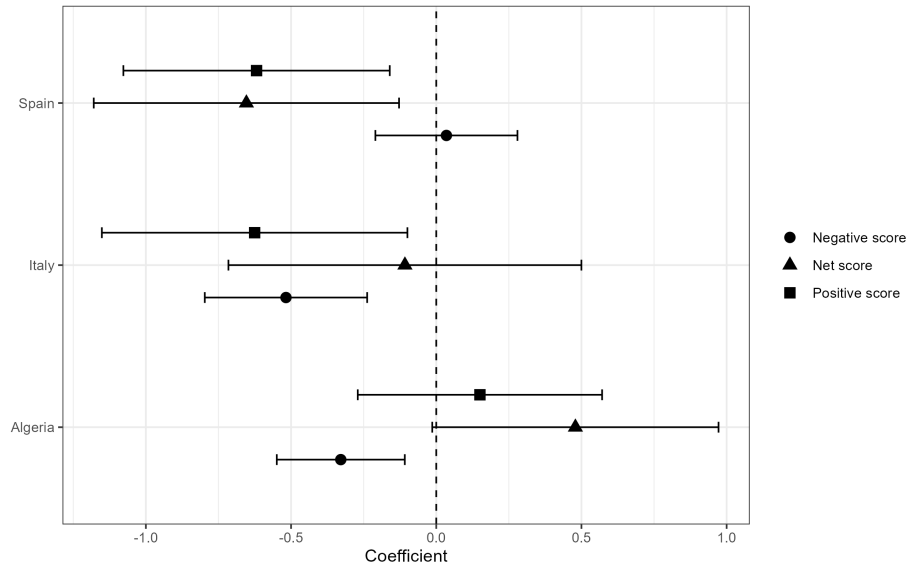
The falsification test rests on the political system having treated Algerian wine differently from its foreign competitors. We corroborate this asymmetric treatment directly, by analysing how parliamentarians themselves spoke about each. Our source is the digitised record of the French Chamber of Deputies, whose debates were published in the *Journal officiel*. We process every sitting from 1890 to 1914 and extract each passage containing a wine-related keyword (*vigne*, *vin*, *vinification*,

and cognates), keeping a window of 300 characters on either side of the match.¹⁵ Within each passage we record which producing origin it invokes (Algeria, Spain, Italy, or other countries) and score the emotional charge of its language with the French Expanded Emotion Lexicon (FEEL) of Abdaoui et al. (2017). The lexicon assigns a *valence* to a dictionary of French words (approximately 14 000 words): a positive sign for words expressing favourable valence and a negative sign for words expressing unfavourable valence. For each passage we count its positive- and negative-valence words; their difference is its net valence.

To compare origins, we regress these scores on indicators for the origin a passage invokes, with year fixed effects. We use “Other countries” as baseline and limit the sample to extracts where one – but no more than one – region between “Algeria”, “Spain”, “Italy” or “Other” is detected. Thus, each coefficient measures the valence of the language used about an origin relative to the category “other countries.”¹⁶

¹⁵In each extract, we match words with a French dictionary and keep only the matched words. This limits issues with OCR historical texts even if the percentage of remaining words is low (around 36% of initial extracts). We then remove stopwords and lemmatise the extracts.

¹⁶16.9% of the extracts deal with other countries. Respectively 12.1%, 31.2% and 39.8% deal with Italy, Spain and Algeria. “Other countries” refers to Portugal, Greece, Hungary, Chile, America, Germany, UK and Brittany.



Note: Coefficients from regressions of the number of positive, negative, and net (positive minus negative) FEEL valence words in a passage on indicators for the origin it mentions, with year fixed effects. Estimates are relative to passages that concern the “Other countries”. Passages invoking Algeria use more positive language, less negative language and carry a positive net valence. To the contrary, Spain is associated to less positive language.

Figure 5: Emotional valence of parliamentary wine passages, by origin

Parliamentarians framed colonial wine and foreign wine differently. Passages invoking Algeria carry more positive language even if it is not statistically significant. It contains less negative words and a positive net valence (significant at the 10% level), whereas passages invoking Spain are generally perceived as less positive relative to other foreign countries (Figure 5). The gap between Algeria and Spain is large. The net-valence coefficient is roughly +0.48 for Algeria and -0.65 for Spain.¹⁷ This favourable framing, however, erodes as the shock intensifies. Before 1900, parliamentary passages invoke Algeria in markedly positive terms; after 1900, that favourable tone reverses (Appendix D, Table 15). The timing fits our mechanism – as Algerian imports surged and the overproduction crisis deepened, colonial wine became an object of political grievance, the same grievance that moved voters in exposed communes toward the socialists.

¹⁷In the appendix, we report the table associated to our analysis. We also show that using the dependent variable in log (+1, as we could have 0 score values) or in Poisson models lead to similar results Appendix D.

These passages rest on unevenly OCR-ed scans and cannot be reliably attributed to individual speakers, so we read them as descriptive corroboration rather than independent identification.¹⁸ Three further patterns, reported in [Appendix D](#), point the same way. They concern when wine was salient, how attention shifted from the Spanish and Italian competitors toward the Midi and Algeria, and how the debate drifted from tariffs toward the domestic regulation of fraud and quality.

6.3 Pre-phylloxera robustness and additional checks

The 1900–03 yields could be endogenous to post-phylloxera replanting decisions. We address this in three ways. First, controlling for 1852 vine area interacted with year dummies ([Table A7](#) in [Appendix B](#)) barely changes the coefficient. Second, replacing the 1900–03 yield with 1852 vine area as the exposure share ([Table A8](#)) produces correctly signed but attenuated coefficients. Third, commune-level balance tests ([Table A9](#)) show that 1852 vine area does not predict the 1893–1898 *change* in any of the five outcomes, indicating no differential pre-trends. A leave-one-out diagnostic confirms that no single département drives the socialist result (coefficient range: 0.016 to 0.023; [Figure A8](#)). The Cagé–Piketty three-bloc classification ([Table 10](#)) confirms the within-left substitution. The left bloc (Gauches) as a whole barely moves, because the socialist gain and radical loss cancel out. The three-bloc *Centres* aggregate is not the same object as the nuance-level centre-right; from 1910 it absorbs the non-ratified radicals reclassified by Cagé and Piketty (2023) (Section 3), so it does not track the centre-right decline, which is why we rely on nuance-level outcomes throughout. Adding département-specific linear time trends ([Table 11](#)) leaves the main coefficients virtually unchanged. Splitting the sample at the 1910 nuance-coding boundary ([Table 12](#)) reveals that the socialist effect is smaller and insignificant in 1893–1906 but larger and significant in 1910–1914, consistent with the event study’s dynamic pattern. The electoral effects of the Algerian shock took time to materialise, reaching their political peak after the 1907 revolt. A leave-one-election-out exercise ([Table 13](#)) sharpens this timing. Excluding any single election other than 1910 leaves the socialist coefficient essentially unchanged; excluding 1910 halves it (0.010, s.e. 0.008). This concentration is informative rather than mechanical. The 1910 election follows the import peak of 1909 and accounts for roughly 40 per cent of the identifying time-series variation, but under a constant per-unit effect excluding even a high-leverage year would leave the point estimate unchanged in expectation; formally, an interaction between the exposure measure and a 1910 indicator is positive and significant (0.015, $p = 0.017$). The socialist response is thus

¹⁸On average, we were able to match only 36% of the words in the texts to French dictionary entries.

concentrated in, though not exclusively identified from, the first election after the 1907 revolt. The centre-right erosion, by contrast, is robust to excluding any single election, including 1910. Finally, permutation inference (randomly reassigning wine yields across départements 1,000 times) confirms that the actual socialist coefficient lies far in the right tail of the permutation distribution (Figure 7).

6.4 Geographic exposure: a gravity-based port-exposure measure

The exposure measure varies across départements (through wine yields) and over time (through the national Algerian import surge), but the time-series component is common to all communes. We construct an alternative exposure measure that introduces commune-level geographic variation, exploiting the fact that Algerian wine entered metropolitan France (in part) through specific Mediterranean ports.

We use the Montesquieu database (Becuwe et al., 2019), which digitises foreign trade data from the annual *Tableau général du commerce de la France avec ses colonies et les puissances étrangères* (1836–1938). We extract wine import volumes for the two main Mediterranean ports, Cette (modern Sète) and Marseille. A complication is that French customs statistics classified Algeria as a foreign country at the port level, then port-level tables record total wine imports from all origins, without distinguishing Algerian from other foreign origins (mainly Spain and Italy for our purposes). To isolate the Algerian component, we subtract an estimated foreign (Spanish and Italian) flow from each port’s total. National imports from Spain and Italy are known from Anderson and Pinilla (2024); we estimate the share transiting through Cette and Marseille from the pre-Méline period (1890–91), when foreign wine dominated and the ratio of the two ports’ combined imports to national Spanish-plus-Italian imports can be calibrated (approximately 57 per cent). Subtracting this estimated foreign component yields an imputed Algerian series for each port. The imputation is approximate, but post-1900, when Spanish and Italian imports had collapsed to less than 3 per cent of port volumes, the raw port totals are themselves close proxies for Algerian wine.

For each commune c and election t , we define a gravity-based port-exposure measure:

$$\text{Gravity}_{c,t} = \frac{\Delta \hat{A}_t^{\text{Cette}}}{\text{dist}(c, \text{Cette})} + \frac{\Delta \hat{A}_t^{\text{Marseille}}}{\text{dist}(c, \text{Marseille})}, \quad (5)$$

where $\Delta \hat{A}_t^p$ is the change in estimated Algerian wine imports through port p relative to 1892, and $\text{dist}(c, p)$ is the haversine distance from commune c to port p . The measure is standardised to have mean zero and unit standard deviation. Unlike the shift-share measure, this gravity measure varies at the commune level (through distance) and draws its time-series variation from two port-specific import series

rather than the single national aggregate. Commune-to-port distances are computed from commune centroids using modern administrative boundaries; 96 per cent of the estimation sample is matched. The correlation between the gravity measure and the shift-share exposure is $r = 0.35$, indicating that the two measures draw on partly independent variation.

Table 4 reports Panel C regressions using the gravity measure alongside the baseline shift-share measure. All five coefficients have the same sign as the main specification: the socialist share rises, the centre-right falls, and turnout increases. The centre-right and turnout effects are statistically significant ($p = 0.03$ and $p < 0.001$, respectively); the socialist coefficient is positive but smaller than the baseline estimate and does not reach conventional significance ($p = 0.10$).

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>Algerian import exposure (baseline)</i>					
Algerian exposure	0.0203** (0.0086)	−0.0201 (0.0133)	−0.0584** (0.0268)	−0.0001 (0.0115)	0.0081** (0.0034)
N	204,750	204,750	204,750	204,750	204,750
Clusters	93	93	93	93	93
<i>Gravity port-exposure measure</i>					
Exposure (gravity)	0.0161 (0.0099)	−0.0001 (0.0118)	−0.0163** (0.0075)	−0.0076 (0.0072)	0.0062*** (0.0017)
N	196,930	196,930	196,930	196,930	196,930
Clusters	92	92	92	92	92
Commune FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Panel C controls	Yes	Yes	Yes	Yes	Yes

Note: Same specification as Panel C of Table 1. The first panel reproduces the baseline result. The second panel replaces the shift-share exposure with a gravity-based port-exposure measure (equation 5), constructed from estimated Algerian wine imports through Certe and Marseille, weighted by the inverse distance from each commune to each port. The Algerian component is imputed by subtracting estimated Spanish and Italian flows (calibrated from the pre-Méline period) from observed port totals. The imputation is approximate; see text for discussion. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 4: Gravity-based port-exposure measure

These results should be interpreted with caution. The imputation of Algerian

flows rests on the assumption that Cette and Marseille’s share of national Spanish and Italian imports remained stable after the Méline tariff. This is unlikely to hold exactly: the tariff-induced collapse of Spanish wine probably affected Mediterranean ports differentially, and the reallocation of Algerian trade from Cette to Marseille over the period means that the proportional split between ports is itself endogenous. The gravity measure is therefore best viewed as a suggestive robustness check rather than as an independent identification strategy. That said, the sign consistency across all five outcomes, obtained from a source of variation that is only modestly correlated with the shift-share measure ($r = 0.35$), provides additional – if not definitive – support for the main findings.

7 Conclusion

This paper provides the first quasi-experimental estimate of the electoral effects of the Algerian wine import shock on early twentieth-century France. Using a shift-share design that exploits cross-département variation in wine yield exposure and the time-series surge in Algerian imports, we find that exposed communes shifted from the Radical party toward the socialists, while the centre-right fell and turnout rose. We find no evidence that the far right benefited, though the identification is weaker for this outcome due to a pre-trend violation.

Three features of these results deserve emphasis. First, the dominant political response to this trade shock was a *within-left* substitution (from the established governing Radicals to the more combative socialists), a pattern that contrasts with the far-right surges documented for many contemporary trade and financial shocks (Autor et al., 2020; Funke et al., 2016). The SFIO’s deliberate engagement with wine-growers’ grievances, documented by Pech (2011), and the Radicals’ inability to deliver structural protection help explain why discontent flowed leftward rather than rightward. Second, the effect operated through the cheap-wine segment of the market. Wine prices collapsed in *vin ordinaire* départements while quality-wine regions were insulated, yet growers maintained production – a pattern of economic distress without exit that fuelled political radicalisation. Third, within-département heterogeneity analysis shows that the socialist response was strongest in the most viticultural arrondissements, suggesting that the political mobilisation was rooted in viticultural communities rather than driven by generic agricultural distress.

These findings contribute to the literature on trade and politics by showing that the political direction of a trade shock depends not only on its magnitude but on the institutional context in which it is received. In early twentieth-century France, the availability of a credible left-wing alternative (the SFIO), the failure of the governing party (the Radicals), and the *interclassiste* character of the wine crisis combined to

channel discontent toward the socialist left.

Several limitations suggest directions for future research. Our event study has only one pre-treatment election (1893), limiting the power of pre-trend tests. Annual wine price data for the full 1900–1914 period would strengthen the economic channel analysis. Finally, exploiting within-département variation at the canton or arrondissement level, using finer employment or production data, could shed further light on the local mechanisms of political mobilisation.

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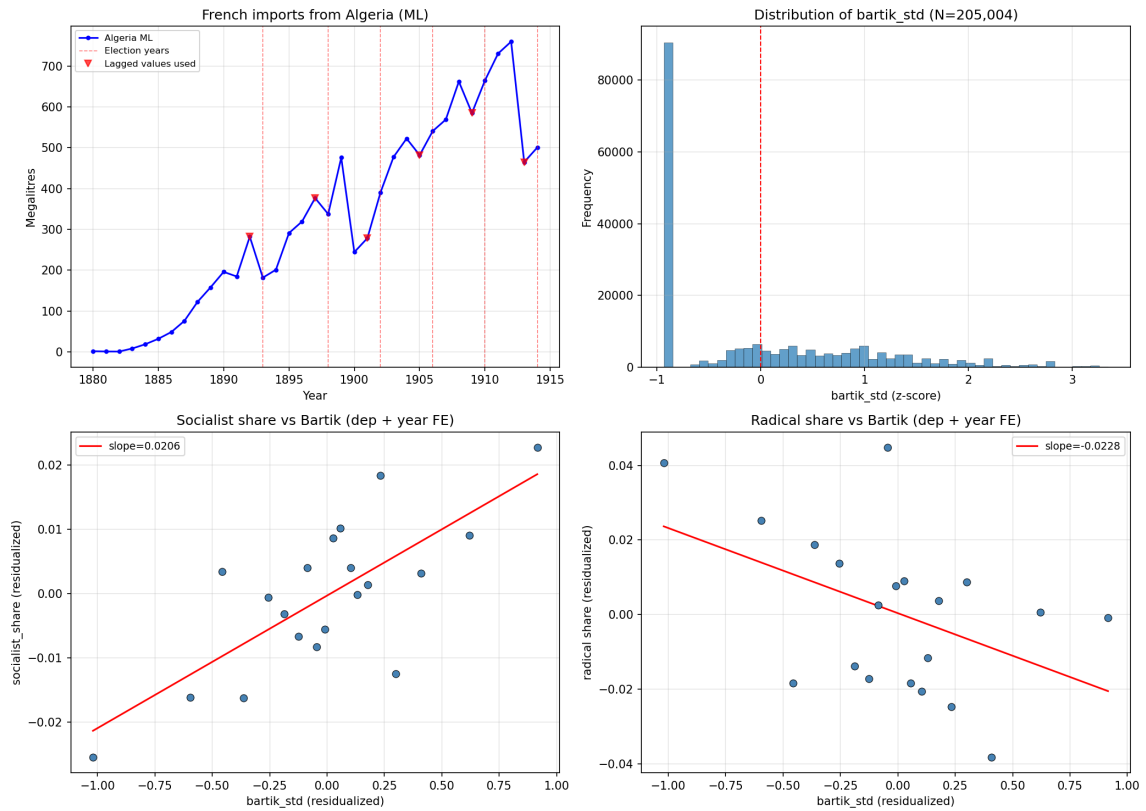
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Appendix A: Descriptive evidence and economic channel



Note: Top left: French wine imports from Algeria (megalitres), 1880–1914; red dashed lines mark election years, red triangles mark the lagged values used in the Bartik construction. Top right: distribution of the standardised exposure measure across commune-years. Bottom panels: binscatter plots of the residualised exposure against the residualised socialist share (left) and Radical share (right), after absorbing département and year means. The fitted slopes provide visual evidence of the reduced-form relationship.

Figure 6: Shift-share exposure measure: descriptive validation

	(1)	(2)
	Log vine area	Log production
Bartik (std.)	0.0348 (0.0342)	−0.1069 (0.0898)
<i>N</i>	1,127	1,097
Clusters	77	77
Dépt. FE	Yes	Yes
Year FE	Yes	Yes

Note: Annual département-level panel (1900–1914, data from Schaubberger et al. 2022). The regressor is the standardised exposure measure (département wine yield 1900–03 $\times$ annual change in Algerian imports relative to 1892). Growers maintained production even as prices collapsed, consistent with a crisis of economic distress without structural exit. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 5: Vine area and production response to the Algerian shock (1900–1914)

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>Agricultural employment (1896, standardized)</i>					
Algerian exposure	0.0211** (0.0095)	−0.0257* (0.0140)	−0.0407* (0.0221)	−0.0005 (0.0128)	0.0064* (0.0033)
Algerian exposure × Agri. share	−0.0030 (0.0041)	0.0112 (0.0102)	−0.0031 (0.0091)	−0.0025 (0.0072)	−0.0012 (0.0019)
N	182,532	182,532	182,532	182,532	182,532
Clusters	86	86	86	86	86
<i>Vine area (1852, standardized)</i>					
Algerian exposure	0.0209** (0.0095)	−0.0256* (0.0140)	−0.0405* (0.0221)	−0.0006 (0.0128)	0.0064* (0.0033)
Algerian exposure × Vine area	0.0123*** (0.0028)	−0.0072 (0.0073)	−0.0087 (0.0066)	0.0024 (0.0043)	0.0009 (0.0011)
N	182,532	182,532	182,532	182,532	182,532
Clusters	86	86	86	86	86
Commune FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Panel C controls	Yes	Yes	Yes	Yes	Yes

Note: Same specification as Panel C of Table 1, augmented with an interaction between the exposure measure and an arrondissement-level variable (standardised across arrondissements, demeaned within département; level absorbed by commune FE). Both panels use the same sample of communes with non-missing values for both interaction variables. Communes are assigned to 1906 arrondissements via a spatial join using boundaries from Gay (2021). Panel A uses agricultural employment share from the 1896 census (*culture + élevage + culture-élevage*, three disjoint sub-groups). Panel B uses vine area (hectares) from the 1852 *Enquête agricole*. The null on agricultural employment indicates that the political response was specific to viticultural communities rather than driven by generic agricultural distress. *p*-values for interaction terms are Bonferroni-adjusted for 10 tests. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 6: Heterogeneity: within-département variation by arrondissement

Appendix B: Robustness to historical viticulture

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>Panel C (1852 sample)</i>					
Algerian exposure	0.0199** (0.0088)	−0.0202 (0.0134)	−0.0616** (0.0271)	0.0020 (0.0114)	0.0075** (0.0034)
<i>N</i>	199,737	199,737	199,737	199,737	199,737
Clusters	89	89	89	89	89
<i>Panel C + 1852 vine area × year</i>					
Algerian exposure	0.0184* (0.0098)	−0.0166 (0.0147)	−0.0610** (0.0292)	0.0078 (0.0136)	0.0080* (0.0042)
<i>N</i>	199,737	199,737	199,737	199,737	199,737
Clusters	89	89	89	89	89

Note: Same specification as Panel C of Table 1, estimated on the subsample of départements with 1852 agricultural census data (89 of 93 départements). The first panel reproduces Panel C on this restricted sample. The second panel adds 1852 vine area (hectares, standardised across départements) interacted with election-year dummies, absorbing differential trends between historically viticultural and non-viticultural départements. The R^2 of regressing the exposure measure on the vine-area- $\times$ -year interactions and commune and year FE is 0.059, indicating low collinearity. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 7: Robustness: controlling for 1852 vine area $\times$ year

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>Panel A: No controls</i>					
Algerian exposure (1852 share)	0.0085 (0.0058)	−0.0078 (0.0076)	−0.0162 (0.0198)	−0.0092 (0.0085)	0.0019 (0.0018)
<i>N</i>	199,991	199,991	199,991	199,991	199,991
Clusters	89	89	89	89	89
<i>Panel B: With PIB & literacy controls</i>					
Algerian exposure (1852 share)	0.0080 (0.0058)	−0.0104 (0.0079)	−0.0186 (0.0177)	−0.0064 (0.0084)	0.0017 (0.0019)
<i>N</i>	199,737	199,737	199,737	199,737	199,737
Clusters	89	89	89	89	89
<i>Panel C: With controls + religiosity × year</i>					
Algerian exposure (1852 share)	0.0075 (0.0059)	−0.0099 (0.0080)	−0.0191 (0.0177)	−0.0055 (0.0084)	0.0017 (0.0019)
<i>N</i>	199,737	199,737	199,737	199,737	199,737
Clusters	89	89	89	89	89
<i>Panel D: Wine départements, with controls</i>					
Algerian exposure (1852 share)	0.0056 (0.0061)	−0.0088 (0.0089)	−0.0081 (0.0166)	−0.0058 (0.0091)	0.0018 (0.0021)
<i>N</i>	167,237	167,237	167,237	167,237	167,237
Clusters	74	74	74	74	74
Commune FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Note: Same four-panel structure as Table 1, but the treatment variable is an alternative exposure measure constructed as (standardised 1852 vine area × change in Algerian imports). The 1852 vine area comes from the *Enquête agricole de 1852*, measured 15 years before phylloxera reached France. Four départements without 1852 data (Savoie, Haute-Savoie, Alpes-Maritimes, Territoire de Belfort) are excluded. Coefficients have the expected sign but are attenuated relative to Table 1. Attenuation may reflect measurement noise from the 50-year lag (Spearman $\rho = 0.66$), or genuine heterogeneity: pre-phylloxera vine area captures a broader viticultural geography (including quality-wine regions less exposed to Algerian competition) while the 1900–03 yield isolates the post-phylloxera cheap-wine specialisation that drove vulnerability. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 8: Robustness: 1852 pre-phylloxera vine area as exposure share

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>1893 levels (unconditional)</i>					
1852 vine area	0.0043 (0.0041)	0.0265 (0.0209)	0.0023 (0.0158)	−0.0293* (0.0161)	−0.0149** (0.0060)
<i>N</i>	33,577	33,577	33,577	33,577	33,577
Clusters	89	89	89	89	89
<i>1893 levels (with controls)</i>					
1852 vine area	0.0055 (0.0037)	0.0250 (0.0217)	0.0091 (0.0149)	−0.0293** (0.0149)	−0.0141** (0.0062)
<i>N</i>	29,137	29,137	29,137	29,137	29,137
Clusters	83	83	83	83	83
<i>1893→1898 change (pre-trend)</i>					
1852 vine area	0.0079 (0.0073)	−0.0194 (0.0126)	0.0020 (0.0188)	0.0205 (0.0137)	0.0054 (0.0051)
<i>N</i>	33,473	33,473	33,473	33,473	33,473
Clusters	89	89	89	89	89

Note: Commune-level OLS regressions of election outcomes on standardised 1852 vine area. The first panel tests whether 1852 vine area predicts 1893 outcome *levels* (unconditional). The second panel adds controls (GDP per capita, literacy, 1791 religiosity). The third panel regresses the 1893→1898 *change* in each outcome on 1852 vine area, directly testing for differential pre-trends. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 9: Balance test: 1852 vine area and pre-shock election outcomes

Appendix C: Additional robustness and diagnostics

	(1) Gauches	(2) Centres	(3) Droites	(4) Soc./left	(5) Turnout
Algerian exposure	0.0027 (0.0144)	0.0558** (0.0219)	-0.0585** (0.0254)	0.0361* (0.0203)	0.0081** (0.0034)
<i>N</i>	204,750	204,750	204,750	162,785	204,750
Clusters	93	93	93	93	93
Within R^2	0.0116	-0.1107	-0.1226	0.0244	0.0094
PIB, literacy controls	Yes	Yes	Yes	Yes	Yes
Religiosity $\times$ Year	Yes	Yes	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Note: Same specification as Panel C of Table 1 (commune and year FE, GDP per capita, literacy, and 1791 religiosity $\times$ year controls). Gauches = voteG + voteCG; Centres = voteC; Droites = voteD + voteCD (three-bloc classification of Cagé and Piketty, 2023). Socialist/left = socialist votes / total left votes (voteGCG). The composition of the Centre bloc shifts over time (from moderate republicans in 1893–1906 to independent radicals in 1910–1914), making this aggregate difficult to interpret. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 10: Robustness: Cagé–Piketty three-bloc classification

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>Panel C (reference)</i>					
Algerian exposure	0.0203** (0.0086)	−0.0201 (0.0133)	−0.0584** (0.0268)	−0.0001 (0.0115)	0.0081** (0.0034)
<i>N</i>	204,750	204,750	204,750	204,750	204,750
Clusters	93	93	93	93	93
Dept. trends	No	No	No	No	No
<i>Panel C + dept. trends</i>					
Algerian exposure	0.0218** (0.0095)	−0.0233* (0.0139)	−0.0455* (0.0259)	−0.0154 (0.0176)	−0.0049 (0.0047)
<i>N</i>	204,750	204,750	204,750	204,750	204,750
Clusters	93	93	93	93	93
Dept. trends	Yes	Yes	Yes	Yes	Yes
Commune FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Panel C controls	Yes	Yes	Yes	Yes	Yes

Note: Same specification as Panel C of Table 1. The second panel adds département-specific linear time trends (92 trend interactions). Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 11: Robustness: département-specific linear time trends

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right	(5) Turnout
<i>1893–1906 (RADSOC + RAD)</i>					
Algerian exposure	0.0104 (0.0085)	0.0061 (0.0190)	−0.0512 (0.0317)	−0.0066 (0.0136)	0.0138*** (0.0043)
<i>N</i>	137,177	137,177	137,177	137,177	137,177
Clusters	93	93	93	93	93
<i>1910–1914 (RADSOC only)</i>					
Algerian exposure	0.0442* (0.0246)	−0.0449 (0.0401)	−0.0152 (0.0483)	−0.0103 (0.0467)	−0.0072 (0.0101)
<i>N</i>	67,573	67,573	67,573	67,573	67,573
Clusters	93	93	93	93	93
Commune FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Panel C controls	Yes	Yes	Yes	Yes	Yes

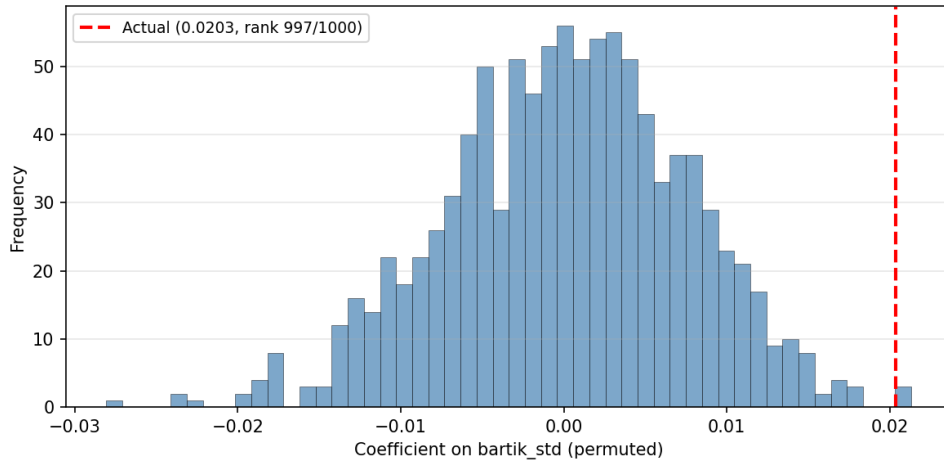
Note: Same specification as Panel C of Table 1, estimated separately on elections before and after the 1910 nuance-coding boundary. The Radical definition switches from RADSOC + RAD (1893–1906) to RADSOC alone (1910–1914), when non-ratified radicals (RADDIV) were reclassified into the Centre bloc by Cagé and Piketty (2023). Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 12: Robustness: pre- and post-1910 subsamples

	(1) Socialist	(2) Radical	(3) Centre-right	(4) Hard right
All six elections	0.0203** (0.0086)	−0.0201 (0.0133)	−0.0584** (0.0268)	−0.0001 (0.0115)
Excluding 1893	0.0208** (0.0081)	−0.0298* (0.0153)	−0.0580** (0.0294)	−0.0157 (0.0127)
Excluding 1898	0.0196** (0.0087)	−0.0193 (0.0134)	−0.0577** (0.0270)	0.0017 (0.0116)
Excluding 1902	0.0249** (0.0115)	−0.0158 (0.0168)	−0.0609** (0.0276)	0.0129 (0.0146)
Excluding 1906	0.0218** (0.0094)	−0.0261* (0.0146)	−0.0591** (0.0286)	0.0025 (0.0133)
Excluding 1910	0.0099 (0.0079)	−0.0056 (0.0174)	−0.0603* (0.0329)	−0.0021 (0.0137)
Excluding 1914	0.0215** (0.0090)	−0.0188 (0.0128)	−0.0555** (0.0256)	−0.0012 (0.0114)
Commune FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Panel C controls	Yes	Yes	Yes	Yes

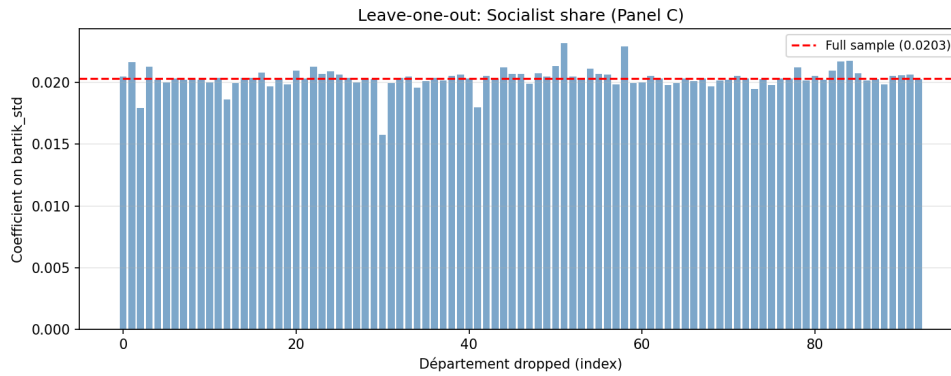
Note: Same specification as Panel C of Table 1 (commune and year FE, GDP per capita, literacy, and 1791 religiosity $\times$ year controls). Each row re-estimates the model on the sample excluding one of the six elections. The religiosity interaction of the excluded year is dropped from the specification; when the base year 1898 is excluded, the interactions are re-based on 1893. Full-sample $N = 204,750$; each exclusion removes roughly one sixth of the observations; all regressions retain 93 département clusters. Standard errors clustered at the département level in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 13: Robustness: leave-one-election-out



Note: Distribution of the Panel C coefficient on the socialist share from 1,000 random permutations of département wine yields. The dashed red line marks the actual estimate. If the actual coefficient lies in the right tail of the permutation distribution, the result is unlikely to arise from a spurious correlation between yields and political trends.

Figure 7: Permutation inference: socialist share (Panel C)



Note: Each bar shows the Panel C coefficient on the exposure measure for the socialist share when one département is dropped. The dashed red line marks the full-sample estimate. No single département drives the result; the coefficient ranges from 0.016 to 0.023.

Figure 8: Leave-one-out diagnostic: socialist share (Panel C)

Appendix D: Wine in parliamentary debates

Model:	Positive score (1)	Negative score (2)	Net score (3)
<i>Variables</i>			
Italie	-0.6255** (0.2684)	-0.5175*** (0.1427)	-0.1079 (0.3101)
Algerie	0.1504 (0.2147)	-0.3288*** (0.1125)	0.4792* (0.2515)
Espagne	-0.6188*** (0.2340)	0.0350 (0.1248)	-0.6538** (0.2682)
<i>Fixed-effects</i>			
year	Yes	Yes	Yes
<i>Fit statistics</i>			
Observations	3,696	3,696	3,696
R ²	0.07236	0.03711	0.06051
Within R ²	0.00431	0.00825	0.00605

Heteroskedasticity-robust standard-errors in parentheses

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Note: The unit of observation is an extract containing a wine-related keyword from parliamentary speeches. We focus on extracts in which a country or Algeria is mentioned. The dependent variables are the number of positive valence keywords detected (column 1), negative valence keywords detected (column 2) or net score. The explanatory variables are dummy variables taking the value of 1 when a given country is detected. We use “other countries” (i.e., countries other than Spain, Italy, or Algeria) as the baseline category. Robust standard errors are reported in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 14: Parliamentary discourses – Positive or negative valence in wine related extracts

Model:	(1)	(2)	(3)	(4)
<i>Variables</i>				
Italie	-0.3819 (0.3540)	0.3259 (0.3852)	-0.8495*** (0.1969)	-0.0366 (0.2348)
Algerie	1.139*** (0.3645)	-0.3983 (0.2646)	-0.7157*** (0.2043)	-0.1216 (0.1339)
Espagne	0.3616 (0.2874)	-2.472*** (0.4551)	-0.1485 (0.1778)	0.0191 (0.1973)
<i>Fixed-effects</i>				
year	Yes	Yes	Yes	Yes
<i>Fit statistics</i>				
Observations	1,857	1,839	1,857	1,839
R ²	0.04490	0.08928	0.04738	0.03178
Within R ²	0.01218	0.02238	0.02128	0.00075
<i>Heteroskedasticity-robust standard-errors in parentheses</i>				
<i>Signif. Codes: ***: 0.01, **: 0.05, *: 0.1</i>				

Note: The unit of observation is an extract containing a wine-related keyword from parliamentary speeches. We focus on extracts in which a country or Algeria is mentioned. The dependent variables are the number of positive valence keywords detected (columns 1 & 3), negative valence keywords detected (columns 2 & 4). We split samples according to periods: before 1900 (columns 1 & 2) and (columns 3 & 4). The explanatory variables are dummy variables taking the value of 1 when a given country is detected. We use “other countries” (i.e., countries other than Spain, Italy, or Algeria) as the baseline category. Robust standard errors are reported in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 15: Parliamentary discourses – Positive or negative valence in wine related extracts – before and after 1900

Model:	(1)	(2)	(3)	(4)
	OLS	OLS	Poisson	Poisson
<i>Variables</i>				
Italie	-0.0466*** (0.0167)	-0.1125*** (0.0351)	-0.0385** (0.0165)	-0.1441*** (0.0396)
Algerie	0.0029 (0.0135)	-0.0822*** (0.0266)	0.0096 (0.0133)	-0.0885*** (0.0299)
Espagne	-0.0532*** (0.0150)	0.0135 (0.0287)	-0.0384*** (0.0145)	0.0099 (0.0327)
<i>Fixed-effects</i>				
year	Yes	Yes	Yes	Yes
<i>Fit statistics</i>				
Observations	3,696	3,696	3,696	3,696
Squared Correlation	0.09077	0.03714	0.07119	0.03714
Pseudo R ²	0.30173	0.02529	0.01513	0.01036
BIC	1,043.9	5,621.3	21,468.5	15,813.5

Heteroskedasticity-robust standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Note: The unit of observation is an extract containing a wine-related keyword from parliamentary speeches. We focus on extracts in which a country or Algeria is mentioned. The dependent variables are the log of positive valence keywords detected (+1 due to 0 - column 1), negative valence keywords detected (+1 due to 0 - column 2). We also apply Poisson models in column 3 (positive keywords) and 4 (negative keywords). The explanatory variables are dummy variables taking the value of 1 when a given country is detected. We use “other countries” (i.e., countries other than Spain, Italy, or Algeria) as the baseline category. Robust standard errors are reported in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

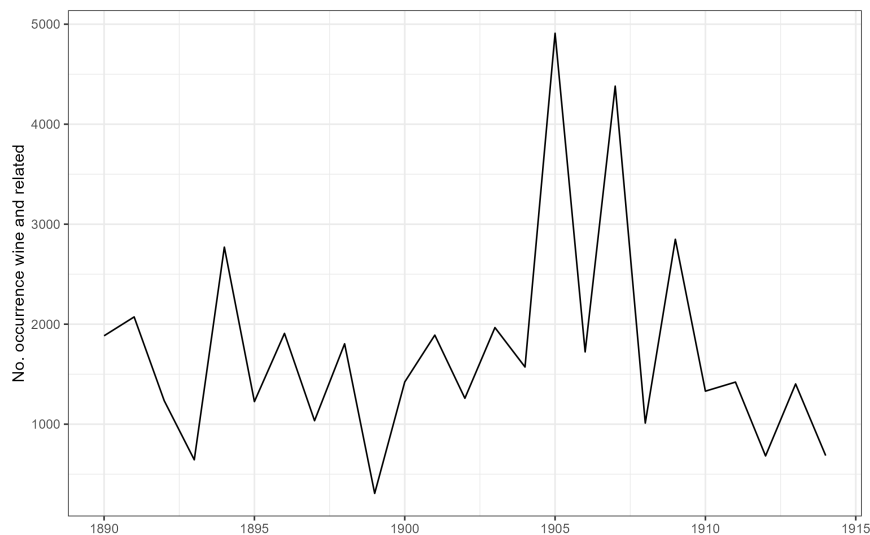
Table 16: Parliamentary discourses – Positive or negative valence in wine related extracts (log and Poisson)

The main text describes the corpus of parliamentary wine passages and the valence scoring behind [Figure 5](#). [Table 14](#) displays our main results, [Table 15](#) splits the sample before and after 1900, and [Table 16](#) reproduces the analysis with log dependent variables and Poisson models.

From the same passages we detect references to a producing origin (Algeria, the Midi, Spain, Italy) and recover latent themes with a latent Dirichlet allocation topic model (Blei et al., 2003). The source is imperfect. The underlying scans are unevenly OCR-ed, which prevents reliable attribution of passages to individual speakers and adds noise to the keyword windows. We therefore read these results as descriptive

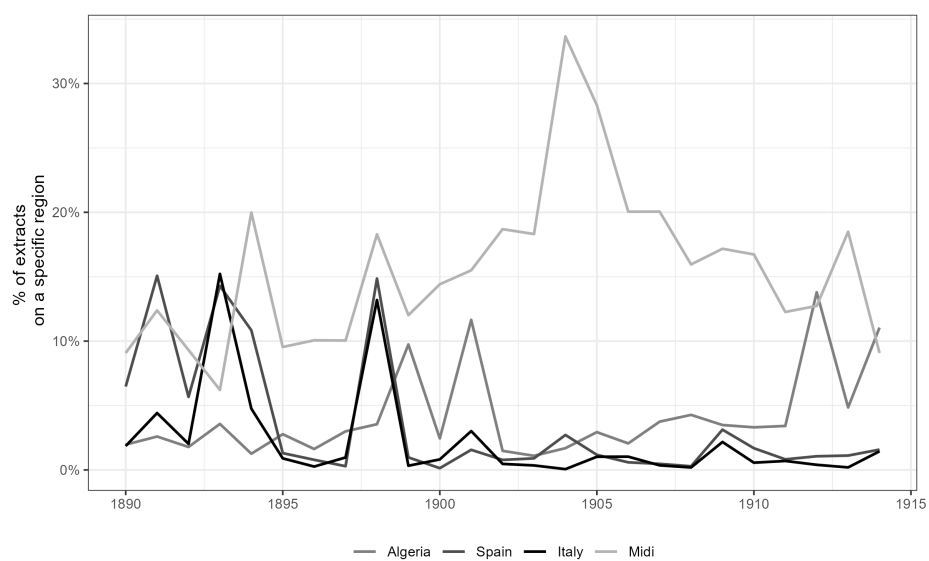
corroboration rather than independent identification.

Three patterns emerge. First, wine was a recurrent parliamentary concern whose salience tracked the trade shock, peaking during the 1894 tariff conflict and again during the 1905–07 overproduction crisis (Figure 9). Second, the geography of attention shifted. If Midi obtained an important share of the attention during the entire period, Spanish and Italian wine dominated the debate while the Méline tariff was being negotiated, then faded as the tariff took hold. To the contrary, references to the Midi and to Algeria rose through the 1900s (Figure 10). Third, the thematic content of the debate moved from external protection (tariffs, commerce, exports) toward the domestic regulation of quality and fraud (*mouillage, sucrage*), a shift that intensified during the post-1905 crisis (Figure 11). This last pattern fits the legislative record. The response to oversupply targeted the integrity of French wine rather than the colonial imports that entered duty-free.



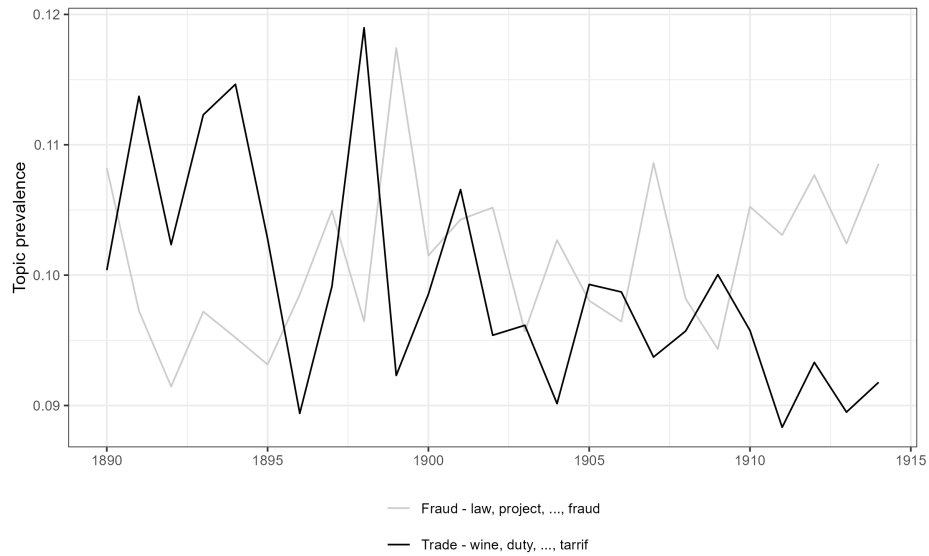
Note: Number of wine-related passages extracted from the debates of the Chamber of Deputies each year, 1890–1914. Salience peaks during the 1894 tariff conflict and the 1905–07 overproduction crisis.

Figure 9: Wine in parliamentary debates: annual salience



Note: Share of wine-related passages that mention each producing origin, by year. Spanish and Italian references dominate around the Méline tariff negotiations and then decline; references to the Midi and Algeria rise through the 1900s. Shares need not sum to one, as a passage may mention several origins or none.

Figure 10: Share of wine passages mentioning each origin



Note: Average prevalence among wine passages of two latent Dirichlet allocation topics, by year. The first topic loads on trade vocabulary (*vins, commerce, tarif, exportation*); the second on fraud and quality vocabulary (*sucre, fraude, fabrication, vente*). The trade topic dominates early; the fraud-and-quality topic gains ground during the post-1905 crisis.

Figure 11: Prevalence of two debate themes over time

Topic	French keywords	English translation
Trade	vin, droit, hectolitre, million, prendre, tarif, consommation, chiffre, payer, douane, raison, exportation, arriver, actuel, production, espagnol, entrer, proportion, transport, compter, importation	wine, duty, hectolitre, million, levy, tariff, consumption, figure, pay, customs, reason, export, arrive, current, production, Spanish, enter, proportion, transport, count, import
Fraude	loi, projet, jour, discussion, proposition, commission, fraude, rapport, porter, public, tendre, suite, ordre, interpellation, scrutin, budget, mouillage, sucrage, article, nombre	law, bill, day, discussion, proposal, committee, fraud, report, bring, public, extend, continuation, order, interpellation, vote, budget, watering, chaptalization, article, number

Table 17: Most representative words associated with the two LDA topics.