

# Revolutionary Transition: Inheritance Change and Fertility Decline

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## Appendix A. Supplementary tables

Table A1: Summary statistics (women born in 1700–1803), Henry database.

	Mean	S.d.	Obs.
Outcomes and treatment			
Completed fertility (net)	2.35	2.37	20,332
Completed fertility of mothers (net)	3.40	2.13	14,066
Childlessness	0.31	0.46	20,332
Completed fertility (gross)	3.38	3.20	20,332
Age at marriage	26.45	7.82	20,331
Age at first birth	26.51	5.61	14,964
Age at last birth	35.28	6.63	14,966
Birth year	1749.35	27.58	20,332
Birth year (husband)	1748.14	28.22	17,829
Partible inheritance before reform	0.59	0.49	20,332
Impartible inheritance before reform	0.41	0.49	20,332
Women excluded before reform	0.46	0.50	20,332
Women included before reform	0.54	0.50	20,332
Inegalitarian before reform (treatment)	0.46	0.50	20,332
Egalitarian before reform (control)	0.54	0.50	20,332
Individual-level controls			
Wife's mother alive at marriage	0.56	0.50	20,332
Husband's mother alive at marriage	0.50	0.50	20,332
Wife's father alive at marriage	0.47	0.50	20,332
Husband's father alive at marriage	0.41	0.49	20,332
Literacy	0.18	0.39	20,332
Literacy of husband	0.39	0.49	20,332
Accuracy of Henry form	14.74	4.68	20,332
Age difference (husband-wife)	3.44	8.27	17,829
Municipality-level controls			
Wheat price (log)	0.95	0.30	20,332
Religiosity index	0.49	0.28	20,332
Distance to religious center	27.65	16.73	20,332
Distance to judicial district seat	13.12	10.02	20,332
Distance to territorial administration	12.10	7.70	20,332
Distance to political society	6.24	4.80	20,332
Distance to tax center	17.04	11.33	20,332
Distance to rebellion in 1780–89	23.32	18.47	20,332
Distance to paved road	1.72	1.98	20,332
Distance to horse-post relay	12.12	9.41	20,332

*Notes:* This table provides summary statistics for women in the Henry sample born between 1700 and 1803. *Completed fertility (gross)* includes all children ever born. *Completed fertility (net)* considers children who reached age 6. *Accuracy of Henry form* takes on 10 values in the range 11–15 and 21–25, depending on the availability of wives' birth dates and marriage end dates (see Appendix Table A2). Distances are in kilometers.

Table A2: Accuracy of Henry forms.

Value	Henry form	Woman's birth date	Marriage end date
11	MF1	Known	Known
21	M01	Known	Unknown
12	MF2a	Calculated based on age at marriage	Known
22	M02a	Calculated based on age at marriage	Unknown
13	MF2b	Calculated based on age at death	Known
23	M02b	Calculated based on age at death	Unknown
14	MF3	Unknown	Known
24	M03	Unknown	Unknown
15	MF	Calculated based on age at General Population Census	Known
25	M0	Calculated based on age at General Population Census	Unknown

*Notes:* This table lists the values taken on by the *Accuracy of Henry form* variable. It is based on the codebook of the nominative part of the Henry database (Séguy, Colençon, and Méric 1999, p. 22).

Table A3: Fertility control mechanisms, Henry database.

	(1)	(2)	(3)	(4)	(5)
<i>Dep. Variable:</i>	Age at marriage	Age at first birth	Time to first birth (years)	Years b/w first and last birth	Birth spacing (min)
Reformed inheritance × Years fertile post-reform	0.074*** (0.026)	0.018 (0.024)	0.009** (0.005)	−0.060* (0.030)	0.006 (0.014)
Observations	20,321	14,004	14,972	12,138	9,468
N clusters	39	39	39	39	39
Adjusted R-squared	0.255	0.134	0.053	0.159	0.037
Cohort FE	Y	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y	Y
Individual-level controls	Y	Y	Y	Y	Y
Flexible trends	Y	Y	Y	Y	Y

*Notes:* This table examines five mechanisms used to control fertility: age at marriage (Column 1), age at first birth (Column 2), years between marriage and first birth (Column 3), years between first and last birth (Column 4), and minimum years between two births (Column 5). All variables are based on mothers' completed fertility. The sample is women born in 1700–1803 in the Henry database. In Columns (2) and (3), the sample is restricted to mothers. In Columns (5) and (6), the sample is restricted to couples who completed their reproductive span (i.e., died after age 40) and who had at least two children. *Individual-level controls* are those in the full-specification in Table 2. *Flexible trends* include all trends in the full-specification in Table 3. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

Table A4: Inheritance reforms and child mortality, Henry database.

	(1)	(2)	(3)
	All	Girls	Boys
<i>Panel A. Dep. Variable is child died before age 6</i>			
Reformed inheritance × Child born after reforms	−0.043 (0.036)	−0.066 (0.045)	−0.050 (0.046)
Adjusted R-squared	0.123	0.116	0.114
Mean dep. variable	0.314	0.302	0.318
<i>Panel B. Dep. Variable is child died before age 6, using first-name repetition technique</i>			
Reformed inheritance × Child born after reforms	−0.031 (0.031)	−0.047 (0.048)	−0.034 (0.041)
Adjusted R-squared	0.118	0.140	0.140
Mean dep. variable	0.399	0.396	0.407
Cohort FE of child	Y	Y	Y
Parents FE	Y	Y	Y
Observations	48,308	21,112	22,550
N clusters	39	39	39

*Notes:* This table reports estimates of  $Y_{i,t,p} = I_p \times post_t + \mu_t + \mu_p + e_{i,t,p}$ , where  $i$  denotes children,  $t$  their birth year, and  $p$  their parents.  $I_p$  is an indicator variable equal to one if the child's parents were born in an inegalitarian municipality,  $post_t$  is an indicator variable equal to one if the child was born after the 1793 inheritance reforms, and  $\mu_t$  and  $\mu_p$  are birth year and parent fixed effects. The interaction  $I_p \times post_t$  captures the differential probability to die as a child in egalitarian- versus inegalitarian-areas after the 1793 reforms, net of cohort factors and of genetic, social, or environmental factors affecting fertility at the family level. In Panel A, the dependent variable is an indicator variable equal to one if child  $i$  died before age 6. In Panel B, the dependent variable is an indicator variable equal to one if child  $i$  died before age 6 or if they are not linked to a death record and their first name is the same as that of a younger sibling—an indication for child mortality (Cummins 2020). The sample is 48,308 children (Column 1), 21,112 girls (Column 2), and 22,550 boys (Column 3) born between 1700 and 1800 from the Henry database. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.



Table A5: Inheritance reforms and childlessness across samples, Henry database.

<i>Dep. variable = 1 if childless (net)</i>						
	Baseline sample			Willing to have children		
	(1)	(2)	(3)	(4)	(5)	(6)
Reformed inheritance $\times$ Years fertile post-reform						
Coefficient	0.067***	0.076***	0.046**	0.018**	0.027**	0.039*
Effect size ( $\beta/mean$ )	0.218***	0.247***	0.148**	0.534**	0.779**	1.141*
Std. error	(0.017)	(0.017)	(0.021)	(0.008)	(0.010)	(0.021)
Cohort FE	Y	Y	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y	Y	Y
Individual-level controls	.	Y	Y	.	Y	Y
Flexible trends	.	.	Y	.	.	Y
Observations	20,332	20,322	20,322	7,577	7,571	7,571
N clusters	39	39	39	39	39	39

*Notes:* This table examines the effect of the reforms on childlessness on different samples. In Columns (1) and (3), the sample is all women born in 1700–1803 in the Henry database. In Columns (4)–(6), the sample is restricted to couples who at some point aimed to have children. We define this sample as women who gave birth to one child (whether the child reached age 6 or not), who did not die before completing the reproductive span (age 40), and who married men who did not die before age 40. In this sample, childless women are those whose all children died before reaching age 6. The dependent variable is equal to one if the net completed fertility, excluding child deaths before age 6, was zero at the end of a woman’s reproductive span. *Individual-level controls* are those in the full-specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Constants are omitted. Standard errors in parentheses are clustered by municipality. \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

Table A6: List of sources describing local effects of the inheritance reforms for land fragmentation.

Place	Administrative unit	Source
Basses-Pyrénées	Département	<a href="#">de Serviez (1801)</a>
Orne	Département	<a href="#">Lycée d’Alençon (1800)</a>
Nivernais	Province	<a href="#">Le Play (1875)</a>
Franche-Comté	Province	<a href="#">Salitot (1988)</a>

Table A7: Heterogeneous effects by categories of soil textures, Henry database.

	(1)	(2)
	Completed fertility	Completed fertility of mothers
Reformed inheritance $\times$ Fertile post reform		
$\times$ Coarse soil (= sandy)	-0.062 (0.222)	0.103 (0.229)
$\times$ Medium soil	-0.793** (0.315)	-0.660* (0.357)
$\times$ Medium-fine soil	-0.455*** (0.158)	-0.537** (0.204)
$\times$ Fine soil	-0.736** (0.350)	-0.456 (0.463)
Cohort FE	Y	Y
Municipality FE	Y	Y
Individual-level controls	Y	Y
Flexible trends	Y	Y
Observations	20,322	14,057
N clusters	39	39

*Notes:* This table examines heterogeneous effects of the 1793 inheritance reforms by four soil texture categories from the soil geographical database of France (INRA 1998). Coarse soil textures (sandy soils) are associated with large farms, and have > 65 percent of sand and < 18 percent of clay. Medium, medium-fine, and fine soil textures are associated with smaller farms. Medium textures have 18–35 percent of clay and > 15 percent of sand, or < 18 percent of clay and 15–65 percent of sand; medium-fine textures, < 35 percent of clay and < 15 percent of sand; and fine textures, 35–60 percent of clay (see Appendix F.3 for details). The sample is women born in 1700–1803 in the Henry database. The dependent variable is the completed fertility at the end of the reproductive span of women (Column 1) and of mothers (Column 2), excluding child deaths before age 6. *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Constants are omitted. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

Table A8: Heterogeneous effects by soil conditions for small versus large farms, additional fertility outcomes, Henry database.

	(1)	(2)	(3)	(4)
	<i>Soil conditions based on:</i>			
	Soil texture		Terrain ruggedness	
	Completed fertility of mothers	= 1 if childless	Completed fertility of mothers	= 1 if childless
Reformed inheritance $\times$ Fertile post reform				
$\times$ Soil conditions for large farms	0.109 (0.231)	0.023 (0.037)	−0.120 (0.269)	0.022 (0.028)
$\times$ Soil conditions for small farms	−0.529** (0.207)	0.049** (0.019)	−0.568** (0.244)	0.056** (0.026)
<i>p</i> -value difference	0.008	0.431	0.152	0.313
Cohort and municipality FE	Y	Y	Y	Y
Individual-level controls	Y	Y	Y	Y
Flexible trends	Y	Y	Y	Y
Observations	14,057	20,325	14,057	20,325
N clusters	39	39	39	39

*Notes:* This table presents DD estimates based on extended versions of Equations (1) and (3), where we examine heterogeneous effects of the reform by soil conditions favoring small farms versus large farms. In Columns (1) and (2), soil conditions are based on soil texture, where sandy soils favor large farms and non-sandy soils favor small farms. In Columns (3) and (4), soil conditions are based on terrain ruggedness, where flat terrains favor large farms and rugged terrains favor small farms. Sandy soils are based on the classification of soils in the soil geographical database of France (see Appendix F.3 for details). Flat (rugged) terrains are those in which the municipality-average ruggedness index of Nunn and Puga (2012) is above (below) the median. The sample is women born in 1700–1803 in the Henry database. The dependent variable is the completed fertility at the end of the reproductive span of mothers (Columns 1 and 3), and an indicator variable equal to one for childless women (Columns 2 and 4). Both variables exclude child deaths before age 6. *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Constants are omitted. Standard errors in parentheses are clustered by municipality. \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

Table A9: Heterogeneous effects by soil conditions for small versus large farms, RD-DD, Geni database.

	(1)	(2)	(3)	(4)
	<i>Soil conditions based on:</i>			
	Soil texture		Terrain ruggedness	
	Completed fertility of mothers	Completed fertility of mothers	Completed fertility of mothers	Completed fertility of mothers
<hr/>				
$1[d_m > 0] \times$ Fertile post reform				
× Soil conditions for large farms	−0.794 (0.493)	−0.936 (0.689)	−0.680 (0.434)	−0.714 (0.613)
× Soil conditions for small farms	−0.987** (0.404)	−1.139** (0.567)	−1.241*** (0.433)	−1.561*** (0.601)
p-value difference	0.624	0.741	0.089	0.154
<hr/>				
Cohort FE	Y	Y	Y	Y
Border segment FE	Y	Y	Y	Y
Judicial district FE	Y	Y	Y	Y
Flexible trends	.	Y	.	Y
Observations	3,290	3,415	3,290	3,415
N clusters	828	767	828	767
Order polynomial	1	1	1	1
MSE-optimal bandwidth	18.77	18.77	18.77	18.77
Mean dep var	3.59	3.86	3.59	3.86

*Notes:* This table presents RD-DD estimates based on extended versions of Equation (5), where we examine the heterogeneous effects of the reform by soil conditions favoring small farms versus large farms. In Column (1), soil conditions are based on soil texture, where sandy soils favor large farms and non-sandy soils favor small farms. In Column (2), soil conditions are based on terrain ruggedness, where flat terrains favor large farms and rugged terrains favor small farms. Sandy (non-sandy) soils are those in which the share of sandy soils in the judicial district is above (below) the median. Flat (rugged) terrains are those in which the municipality-average ruggedness index of [Nunn and Puga \(2012\)](#) is above (below) the median. All regressions control for the municipality-level ruggedness and share of sandy soils. The sample is mothers whose Geni record satisfies the horizontal restriction, born in France (1700–1810) within a MSE-optimal bandwidth on each side of the inheritance border. We use local-polynomial fits of order 1 and triangular kernel functions for local-polynomial estimation.  $1[d_m > 0]$  is equal to one for mothers born on the side of the inheritance border where inheritance systems were treated by the reform. The dependent variable is the number of children ever born to mothers, excluding child deaths before age 6. *Flexible trends* include all trends in the full specification in Table 4. Constants are omitted. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

Table A10: Relationship between inheritance reforms and distribution factors determining women’s bargaining power in the household, Henry database.

	(1)	(2)	(3)	(4)
	Completed Fertility	Relative age (husb.-wife)	Relative literacy (1=same)	Husband literate (1=yes)
Reformed inheritance × Fertile post-reform	−0.434*** (0.154)	0.066 (0.291)	0.050 (0.047)	−0.027 (0.038)
Effect size ( $ \beta /mean$ )	0.185	0.020	0.066	0.069
Adjusted R-squared	0.182	0.021	0.229	0.412
Cohort FE	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y
Individual-level controls	Y	Y	Y	Y
Flexible trends	Y	Y	Y	Y
Mean dep var	2.35	3.28	0.75	0.39
Observations	20,322	17,691	20,322	20,322
N clusters	39	39	39	39

*Notes:* This table examines the relationship between the 1793 inheritance reforms and three distribution factors that determine women’s bargaining power in the household (see [Browning, Chiappori, and Weiss 2014](#), Table 5.1). Column (1) considers relative age, measured as husband’s – wife’s age. Columns (2) and (3) consider relative education, measured, respectively, as an indicator variable equal to one if wife and husband have the same literacy status (0/1) and an indicator variable equal to one if the husband is literate. Literacy is measured as signing one’s marriage certificate. Estimates are based on Equation (3). The sample is women born in 1700–1803 in the Henry database. In Column (2), it is restricted to women for which we know her and her husband’s birth year. *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

## Appendix B. Supplementary figures

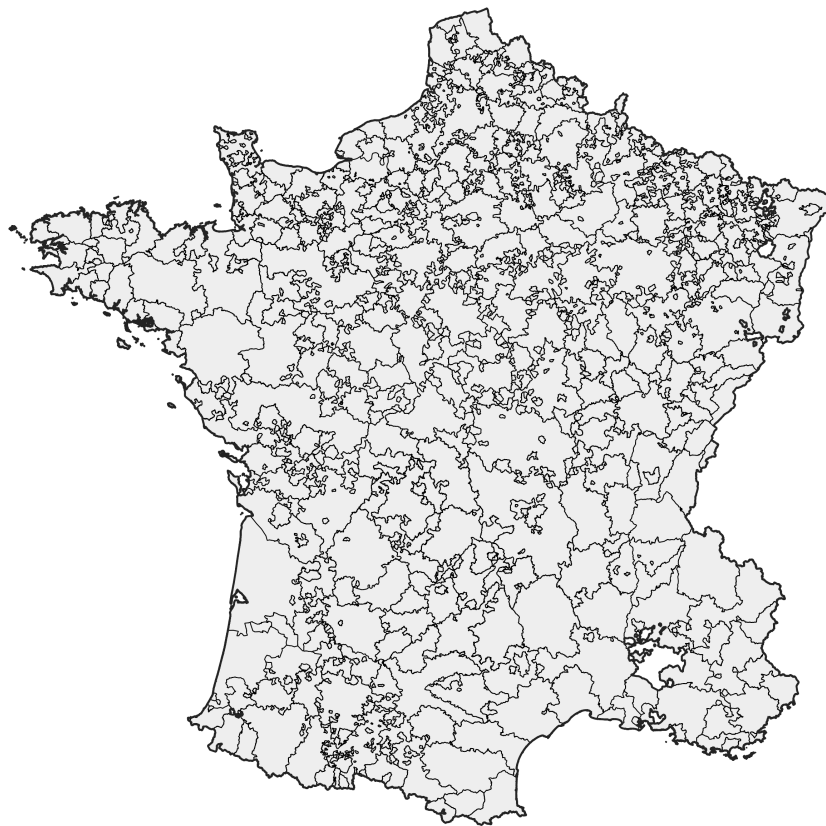


Figure B1: Judicial districts in Ancien Régime France.

*Notes:* This figure displays the spatial distribution of the 435 judicial districts in 1789. Shapefile from [Gay, Gobbi, and Goñi \(2023a\)](#).



Figure B2: Customary boundaries based on Klimrath (1837).

*Notes:* This figure reproduces the original map of customary boundaries in Klimrath (1837). It is available from Fourniel and Vendrand-Voyer (2017).

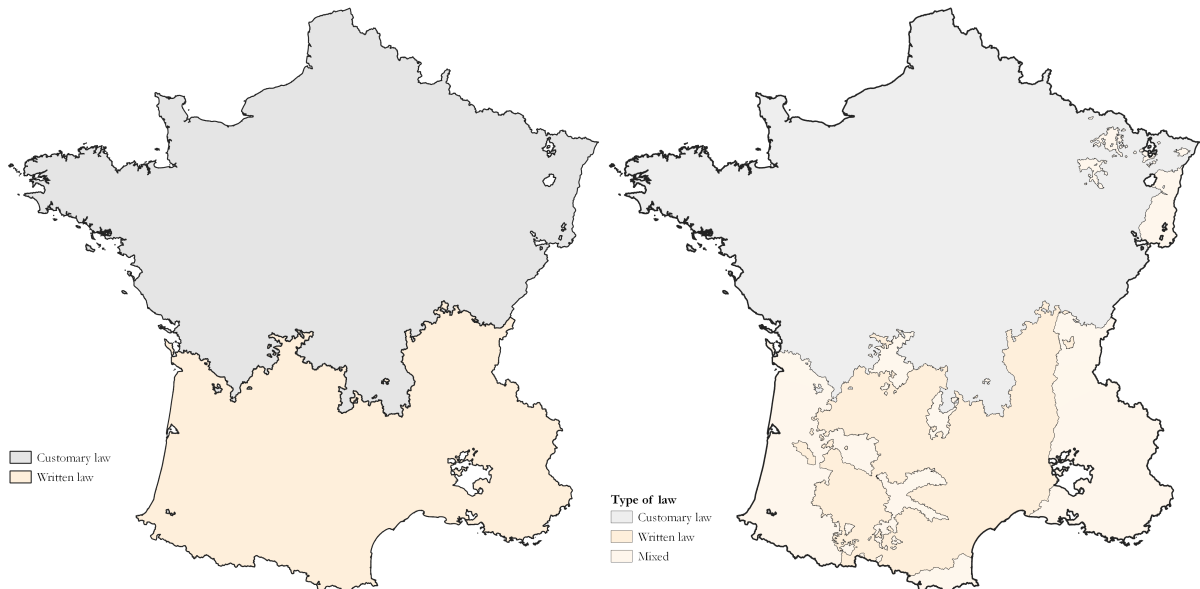


Figure B3: Written-law and customary-law areas.

*Notes:* The left panel displays the division of France into a written-law (brown) and customary-law (gray) country based on Klimrath (1837). The right panel displays the same division based on Gay, Gobbi, and Goñi (2024, 2023b). Because we focus on inheritance customs, our map differs from Klimrath’s (1837), who considers areas to follow written law even when this was only supplementary and applied only when a relevant customary rule was absent.



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Figure B4: Example of an entry in the nominative part of the Henry database.

Notes: Extract reproduced from [Séguy \(2001\)](#).

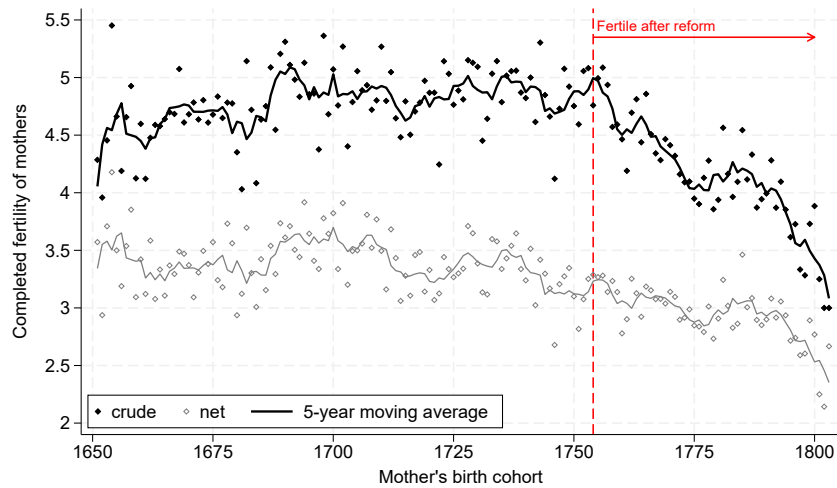


Figure B5: Crude and net completed fertility for women born in 1650–1800, Henry database.

Notes: This figure plots the completed fertility of 20,043 mothers born between 1650 and 1800 based on the Henry database. Gross completed fertility considers all children ever born; net completed fertility considers children who reached age 6. Here, mothers are women who had a child, independently of whether the child survived infancy. Moving averages include a mother's birth year, two lags, and two forward years. The vertical line indicates the cohort who completed its reproductive span immediately before the 1793 inheritance reform, i.e., women who were 40 in 1793.



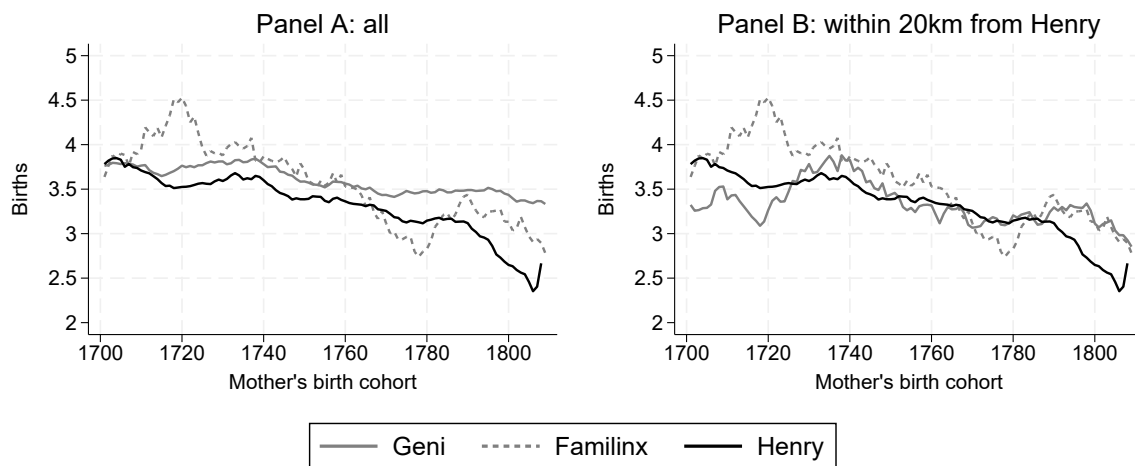


Figure B6: Trends in completed fertility of mothers, Geni versus Henry.

*Notes:* This figure plots the completed net fertility of mothers, i.e., the number of children who reached age 6, based on the Geni (gray), Familinx (dashed), and Henry (black) databases. Panel A uses the full Geni sample. Panel B restricts the Geni sample to locations within 20 kilometers to the municipalities in the Henry database. Moving averages include a mother's birth year, five lags, and five forward years. Geni and Familinx samples apply the horizontal sample restriction (Blanc 2024b).

Figure B6 displays the completed fertility of mothers, i.e., the number of children who survived to six years old, between 1700 and 1810. It is based on three databases: Geni (gray), Familinx (dashed gray), and Henry (black). The Familinx database is a sub-sample of the Geni database scrapped by Kaplanis et al. (2018) and used in Blanc (2024b). In Panel A, the Geni sample consists in all women born in France, to whom we could assign a latitude and a longitude given the birth location, and whose genealogy satisfies the horizontal restriction. In Panel B, this sample is restricted to women in locations within 20 kilometers from the municipalities in the Henry database. The figure shows that fertility levels and trends are consistent across these different data sources.

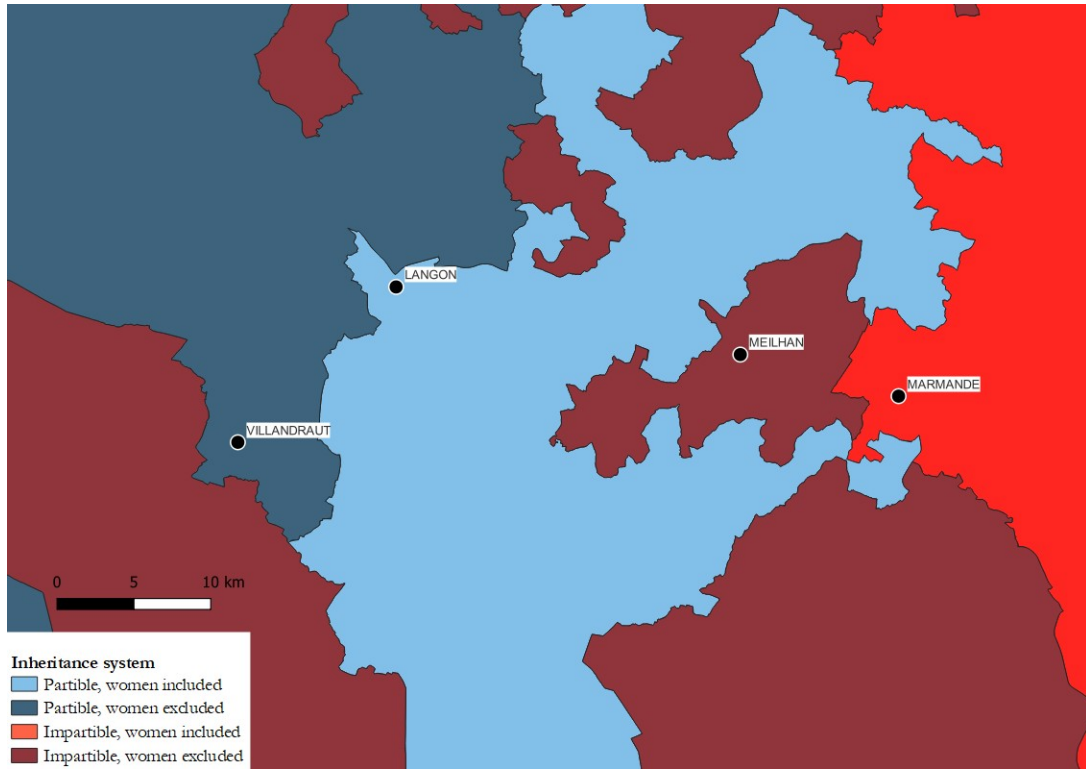


Figure B7: Inheritance systems in four administrative centers.

*Notes:* This figure displays inheritance systems around four administrative centers in the southwest of France based on Gay, Gobbi, and Goñi (2024, 2023b).

## Appendix C. Implications for the demographic transition

This appendix provides an overview of the data sources and methodology used to estimate the overall impact of the 1793 inheritance reforms on the French demographic transition.

All estimates across sources are based on our primary variable of interest: net completed fertility. In detail, we consider the completed fertility of women at the end of their reproductive span, excluding births who did not reach age 6. The evolution of fertility, as well as the estimates for the counterfactual fertility under a no-reform scenario, are summarized in Figure C1.

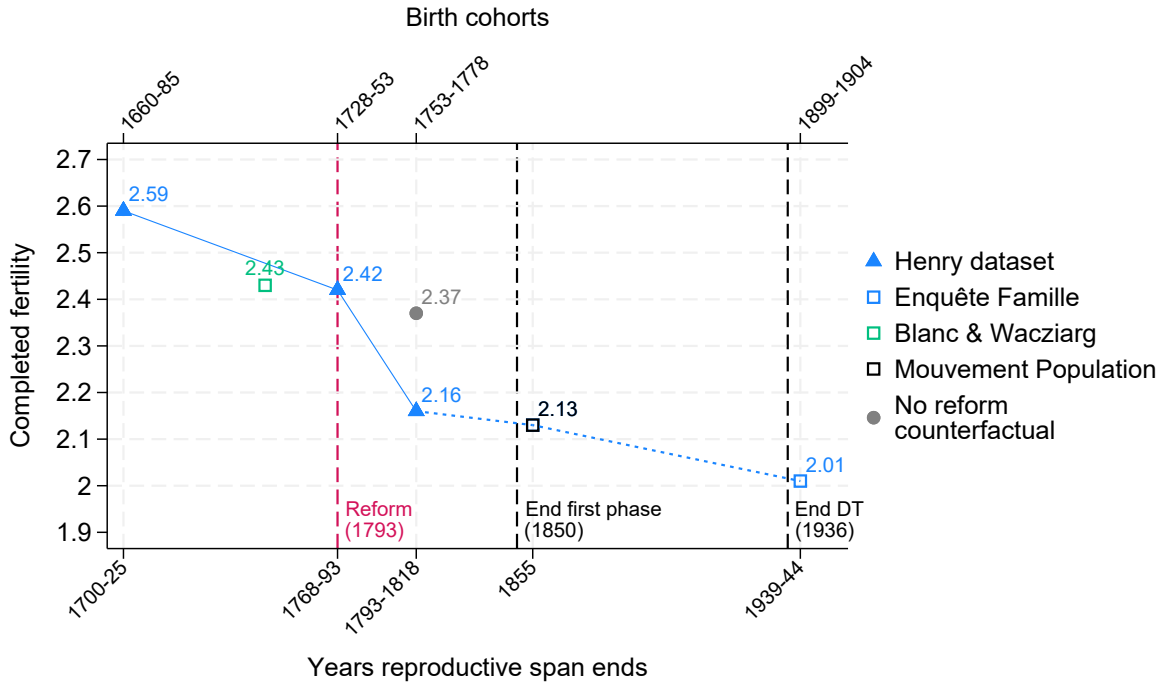


Figure C1: Overall implications of the inheritance reform for the demographic transition.

*Notes:* Blue triangles show average completed fertility for 25-years cohorts of women from the Henry database. The green squared data point is from [Blanc and Wacziarg \(2020, Table 2\)](#) and displays (net) completed fertility for the period 1740–89 for the French village of Saint-Germain-d’Anxure. The black squared point is from [SGF \(1861\)](#)’s vital statistics (*Mouvement de la population*) for 1855. The blue squared point is from the 1954 *Enquête famille* ([INSEE 1954](#)).

### The French demographic transition: sources, dates, and fertility estimates.

To measure fertility trends from the onset of the demographic transition until the early nineteenth century, we use the Henry database, as in our main analysis. Figure C1 shows three data points from this database, representing three cohorts of women (indicated by blue triangles). We consider cohorts of 25 years to encompass the full reproductive span of women.

The first Henry data point is for cohorts who completed their reproductive span in the early eighteenth century (1700–25). Given the lack of consensus on the exact starting date of the fertility transition ([Cummins 2009](#); [Delventhal, Fernández-Villaverde, and Guner](#)

2021; Blanc 2024a), we take a conservative approach and use this cohort as a starting point for our exercise. In detail, this cohort comprises women born between 1660 and 1685, who completed their reproductive span (i.e., reached the age of 40) between 1700 and 1725. Their average completed fertility was 2.59 children, which we use as the baseline fertility at the onset of the demographic transition in France.

The second Henry data point is for cohorts who completed their reproductive span just before the 1793 inheritance reforms. As before, we consider 25-year cohorts. In detail, we consider women born between 1728 and 1753, who completed their reproductive span between 1768 and 1793. This data point indicates that prior to the inheritance reforms, fertility had already declined to 2.42. This estimate aligns closely with Blanc and Wacziarg (2020, Table 2), which reports a net completed fertility of 2.43 for the period 1740–89 in the French village of Saint-Germain-d’Anxure.<sup>1</sup>

The third Henry data point is for the first 25-year cohort exposed to the reform. That is, it comprises women born between 1753 and 1778, who completed their reproductive span between 1793 and 1818. For this cohort exposed to the 1793 inheritance reforms, average fertility further declined to 2.16.<sup>2</sup>

Next, we consider two later sources to reconstruct how completed fertility evolved after the mid eighteenth century. Specifically, the literature divides France’s demographic transition into two distinct phases (van de Walle 1986; Diebolt and Perrin 2017). The first phase, which was primarily rural and during which inheritance reforms took place, ended in 1850. To estimate completed fertility at that time, we rely on SGF (1861)’s vital statistics (*Mouvement de la population*). These data provide the full count of numerous demographic events (births, marriages, deaths) in France for 1855–7 at the département level—1855 is the earliest year available to compute the number of children born to married women who reached age 6, in line with our measure of completed fertility.<sup>3</sup> In detail, focusing on average values across départements, the number of legitimate children per marriage in 1855 was 3; the number of legitimate births in rural areas, close to 7 thousand; and the number of children aged 0–5 who died in rural areas, close to 2 thousand.<sup>4</sup>

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<sup>1</sup>The net completed fertility measure of Blanc and Wacziarg (2020) includes children who reached age 5.

<sup>2</sup>The early decline displayed by completed fertility measures in the Henry database is also consistent with alternative measures of fertility, such as the crude birth rate from Chesnais (1992) and the  $I_g$  index of marital fertility from Weir (1994) (see Figure 1 in the main text).

<sup>3</sup>We rely directly on SGF (1861)’s original volumes because the corresponding tabular files provided by INSEE (INSEE 2010) are incomplete and exhibit multiple errors. This is specifically the case for the number of legitimate children per marriage (variable V46 in dataset MVTPop\_T92).

<sup>4</sup>We take the number of birth and death in rural areas given that the first phase of the demographic transition in France was a rural phenomenon (van de Walle 1986). The number of legitimate children per marriage corresponds to the *nombre de naissances légitimes pour 1 mariage* reported in *Tableau 25. Rapports des éléments annuels de la population* from SGF (1861, p. 62–5), which is calculated as the ratio of the number of annual births to the average number of marriages per year in the preceding five years (p. xxi); the number of legitimate births in rural areas, to the *population rurale, enfants, légitimes, total* reported in *Tableau 8. Naissance par sexe et par état civil* (pp. 24–7); and the number of children aged 0–5 who died in rural areas, to the number of deaths by age and gender in *Tableau 13. Décès par*

These numbers imply that of the 3 children born, 0.87 would die before reaching age 6, resulting in 2.13 children per marriage reaching age 6 by 1855. We take this number as the fertility at the end of the first phase of France’s demographic transition.

Finally, for the end date of the demographic transition in France, we take the estimate from [Delventhal, Fernández-Villaverde, and Guner \(2021\)](#), which places it at 1939. To calculate the average completed fertility at this date, we use data from the 1954 *Enquête famille* ([INSEE 1954](#)), which surveyed 52,459 ever married women born between 1899 and 1908, aged 45–54 in 1954, and residing in mainland France. The dataset provides detailed information on the number of children ever born to each married woman, including each child’s birth year and, if applicable, year of death. Using this information, we find that the average number of children ever born to married women in the 1899–1904 birth cohort who reached age 6 was 2.01. We consider this number as the completed fertility at the conclusion of the demographic transition in France.

In summary, completed fertility in France declined from 2.59 at the onset of the demographic transition to 2.13 by the end of the first phase, and further to 2.01 by the end of the transition.

**Aggregate effect of the reform.** To assess the aggregate effect of the 1793 inheritance reforms, we proceed as follows. First, we estimate Equation (3) using the full set of controls (Table 3, Column 3). We then predict the counterfactual completed fertility for each individual by setting the exposure indicator  $F_c$  to zero. Next, we use these predicted individual fertilities to calculate the counterfactual average fertility across France. Specifically, we estimate what the aggregate completed fertility would have been, had the reform not occurred, for the 25-year cohort of women affected by the reforms (those born between 1753 and 1778, who completed their reproductive span between 1793 and 1818). The counterfactual completed fertility is estimated at 2.37, represented by the gray dot in Figure C1.

Second, we evaluate the aggregate effect of the 1793 inheritance reforms by comparing the counterfactual fertility estimate with the observed average fertility for the same cohorts who were in their reproductive years following the reforms, i.e., born between 1753 and 1778, who completed their reproductive span between 1793 and 1818. Given that the observed average completed fertility of this cohort was 2.16, while the counterfactual predicted fertility in the absence of the reforms was 2.37, the reforms reduced fertility by 0.21 children per woman.

Note that this counterfactual estimate of 0.21 children is smaller than the difference-in-difference estimate in Table 3, Column (4). The difference stems from the fact that this counterfactual exercise captures the aggregate effect of the reforms across France,

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*âge. Sexe masculin* (pp. 40–3) and *Tableau 14. Décès par âge. Sexe féminin* (pp. 44–7). Consistent with our analysis, we exclude Corsica throughout.

including areas with egalitarian inheritance before 1793, which were not treated by the reform. In other words, it captures the average treatment effect across France. In contrast, our difference-in-difference estimates are larger as they capture average treatment effects on the treated. That is, they capture how fertility declined for women in areas treated by the reform.

Third, we assess the aggregate effect of the 1793 inheritance reforms by comparing the observed drop in fertility in the first and second phases of the transition to the difference between observed and counterfactual fertility after the reforms. Altogether, during the first phase of the demographic transition, completed fertility declined from 2.59 to 2.13. Over the entire duration of the transition, it decreased from 2.59 to 2.01. The difference between observed fertility after the reforms and counterfactual fertility had the reforms not occurred is 0.21 children per woman. This implies that the 1793 inheritance reforms account for 46 percent of the fertility reduction in the first phase of the demographic transition and 36 percent of the overall decline throughout the transition.

**Convergence.** Finally, we provide further quantitative support that the convergence across pre-reform egalitarian and inegalitarian areas persisted well after the inheritance reform. Using the two points in time highlighted in Figure C1 for the end of the first phase of France’s demographic transition and the end of the transition, we can compute the average fertility across egalitarian and inegalitarian areas. For this, we rely as before on SGF (1861)’s vital statistics and on the 1954 *Enquête famille* (INSEE 1954).

In details, to calculate mean net completed fertility across pre-reform inheritance areas in 1855, we assign to each département a weight equal to its population share relative to the entire population of its relevant pre-reform inheritance area per the 1851 census.<sup>5</sup> We then aggregate the département-level fertility data available in SGF (1861)’s vital statistics using these weights. We proceed in the same way to calculate mean net completed fertility across pre-reform inheritance areas in 1954, although in this case, we assign a population weight to each region available in the 1954 *Enquête famille*, as these are the geographical identifiers reported in this survey.<sup>6</sup>

Table C1 presents the weighted averages for completed fertility in pre-reform egalitarian and inegalitarian inheritance areas. The last column also shows the  $p$ -value of the difference between the two areas, confirming that the fertility convergence that existed

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<sup>5</sup>Specifically, we first intersect the shapefile of France divided into two treatment areas as in Figure 3 with a shapefile of the geography of départements as of 1855—we rely on Gay (2020b)’s départements shapefile for 1870, which we adapt to the geography of 1855: the territory of France then did not include the Duchy of Savoy nor the County of Nice, which integrated France in 1860. Consistent with the analysis in the main text, we exclude Corsica. We then match each intersection with its municipality-level population in the 1851 census based on data from Cristofoli et al. (2021). This enables us to calculate the population share of each treatment area-département intersection relative to the entire population of their relevant pre-reform area.

<sup>6</sup>Here, we rely on the municipality-level population data from the 1954 census based on data from Cristofoli et al. (2021) to calculate the population share of each treatment area-region intersection.

before the Revolution vanished due to the harmonization of inheritance in 1793.

Table C1: Fertility convergence after the inheritance reforms.

	Pre-reform Inheritance					
	France	Egalitarian		Inegalitarian		Difference
	Mean	Mean	S.d.	Mean	S.d.	<i>p</i> -value
End of the first phase of the DT	2.13	2.12	(0.57)	2.15	(0.37)	0.75
End of the DT	2.01	2.09	(0.27)	1.96	(0.50)	0.34

*Notes:* Means for the end of the first phase of the demographic transition (DT) and for the end of it are computed accounting for the population weights calculated following to the methodology described in Footnote 5. Standard deviations are in parenthesis.

## Appendix D. Robustness of DD results, Henry database

This appendix reports the details, tables, and figures of our robustness analysis for the difference in differences’ results, which are summarized in Section 5.2.

### D.1 Details

**Permutation tests.** We use a permutation test to reshuffle the pre-reform inheritance system across the 39 municipalities included in the Henry database. That is, we reshuffle the reform treatment status indicating whether the 1793 inheritance reforms altered the inheritance system in each municipality or not, keeping the total share of municipalities under each pre-reform inheritance system fixed. Specifically, Figure D1 reports 10,000  $\beta$ -coefficients from estimating a difference-in-differences specification:

$$Y_{icm} = \alpha + \beta I_{\tilde{m}} \times F_c + \mu_c + \delta_m + \mathbf{X}'_i \theta + \epsilon_{icm} , \quad (\text{D1})$$

and a difference-in-differences specification with flexible trends:

$$Y_{icm} = \alpha + \beta I_{\tilde{m}} \times F_c + \mu_c + \delta_m + \mathbf{X}'_i \theta + \gamma p_{md(c)} + \sum_t \mathbf{1}[c = t] \times \mathbf{Z}'_m \Gamma_t + \epsilon_{icm} , \quad (\text{D2})$$

where  $i$  indexes women,  $c$  indexes cohorts, and  $m$  and  $\tilde{m}$  index “true” and “reshuffled” municipalities, respectively. The main variable of interest,  $I_{\tilde{m}} \times F_c$ , is now the interaction between the reshuffled treatment indicator for women from municipalities with an inheritance system affected by the 1793 reforms ( $I_{\tilde{m}}$ ) and the true exposure indicator for cohorts of fertile age after 1793 ( $F_c$ ). As before,  $Y_{icm}$  is completed fertility excluding children deaths before age 6, and  $\mu_c$  and  $\delta_m$  are fixed effects for birth cohorts and municipalities, respectively.

Figure D1 reports 10,000  $\beta$ -coefficients from estimating Equation (D1) in Panel (a) and Equation (D2) in Panel (b). In addition, Panel (c) reports analogous permutation tests that reshuffle the treatment indicator  $I_{\tilde{m}}$  together with the full set of municipality-level flexible trends,  $p_{\tilde{m}d(c)}$  and  $\mathbf{Z}_{\tilde{m}}$ .<sup>7</sup> For comparison, our true estimate from Equations (1) and (3) is plotted as a vertical line in the histograms.

All the estimated coefficients from the permutations have a distribution centered around zero. Our baseline estimate is larger in magnitude than all but 0.07 percent of estimates from the permutations in the difference-in-differences specification (Panel a) and than all but 0.82 percent in our difference-in-differences specification with flexible trends (Panel b). Similarly, only 0.11 percent of estimates from the permutations are

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<sup>7</sup>Note that  $p_{md(c)}$  is the logarithm of the average wheat price in municipality  $m$  in the decade  $d(c)$  when women in cohort  $c$  turned 15. Because this control varies by decade, we reshuffle the rows of the matrix  $(I_m, p_{md(c)}, \mathbf{Z}_m)$  within decades.



larger than the true estimates when reshuffling the pre-reform inheritance system together with the full set of flexible time trends across municipalities (Panel c).

**Placebo test.** We conduct a placebo test using the set of cohorts that had all their children before the 1793 inheritance reforms. Specifically, we define the placebo sample and treatment as in our baseline specification, but for this set of cohorts whose fertility was unaffected by the actual reforms. To do so, we first identify the cohorts that had all their children before 1793. Although the average woman did not have children above age 40 (Appendix Table A1), the 1739 cohort was the last full cohort that had all their children before the 1793 inheritance reforms. Second, we construct a placebo sample of 103 cohorts by including the aforementioned 1739 cohort and the 102 preceding cohorts. We do this to match the number of cohorts in our baseline sample—103 cohorts born between 1700 and 1803. Third, we assume that a placebo reform was passed. Since our baseline specification uses a reform that was passed 10 years before the birth of the last cohort in the baseline sample, we assume that the placebo reform was passed 10 years before the birth of the last cohort in the placebo sample. Figure D3 visually compares the placebo sample and placebo exposure to that in our baseline specification. Fourth, we estimate Equations (1) and (3) using this placebo sample and reform. In the absence of pre-trends, the placebo reform should not significantly affect the completed fertility of women in inegalitarian-inheritance areas (treatment group) relative to those in egalitarian-inheritance areas (control group).

Table D1 presents the results from this placebo exercise. The coefficient on the interaction between inegalitarian-inheritance areas where inheritance was reformed and the placebo exposure indicator for cohorts fertile after the placebo reform is small and not significantly different from zero. This no effect is consistent across the parsimonious two-way fixed-effects specification without controls (Column 1), when we add individual-level controls (Column 2), and in the flexible trends specification (Column 3). Altogether, this suggests that our baseline estimation captures the effect of the 1793 inheritance reforms and not that of pre-trends in completed fertility.

**Alternative sample, treatment, and control group.** We examine the robustness of our results to alternative definitions of the sample, the cohorts exposed to the reform, and the treatment and control groups. The results of these robustness checks are presented in Table D2, which reports estimates of Equations (1) and (3) using as the dependent variable our main outcome of interest: the completed fertility of a woman, excluding children who did not reach age 6.

We begin by considering an alternative sample. Panel A of Table D2 restricts the sample to women born between 1720 and 1780 instead of using all women born in the eighteenth century (1700–1803) as in our baseline specifications. That is, it restricts the sample to cohorts whose reproductive span was closer to the 1793 inheritance reforms.

Note that the 1753 cohort was the last cohort that completed its reproductive span before 1793. Hence, we now derive our estimates by comparing the completed fertility of about 30 cohorts of fertile age to about 30 cohorts too old to be fertile when the inheritance reforms were passed. The resulting estimates are almost identical to our baseline estimates. This further suggests that the large drop in completed fertility observed in eighteenth-century France was carried by cohorts of fertile age during the reforms in areas where the inheritance system was altered.

Next, Panels B and C of Table D2 present estimates under different ways of defining which cohorts were exposed to the reforms. In our baseline specification in Equations (1) and (3), we capture exposure to the reforms with an indicator variable ( $F_c$ ) for cohorts of fertile age after 1793. We consider a woman’s biological reproductive span to be in ages 15–40, that is,  $F_c$  is equal to one for cohorts aged below 40 at the time of the reforms. This fits our data well, as the average woman had her last child at age 35 with a standard deviation of 6 years.

Nevertheless, here we consider two alternative reproductive spans: one covering ages 15–45 (Panel B), and another ages 15–30 (Panel C). That is,  $F_c$  equals one for cohorts aged below 45 and 30, respectively, at the time of the reforms (see Figure D4). Each of these exposure measures is appealing for different reasons. Considering a reproductive span from 15 to 45 has the advantage that it encompasses 97 percent of all births in our sample, as few women had children beyond age 40. The 15–30 span allows us to focus on peak fertility years.

We do not find significant differences between our baseline estimates and estimates based on the longer reproductive span from 15 to 45 or the shorter span from 15 to 30. This suggests that the fertility changes induced by the reforms were concentrated within the ages 15 to 40.

Panel D of Table D2 considers an alternative definitions of the treatment and control group based on the fact that the 1793 egalitarian inheritance reforms had two “treatments”: they imposed equal partition of assets among all children, but also extended inheritance rights to women. In our baseline specification, the reform treatment indicator is equal to one for municipalities with an inheritance system affected by the 1793 inheritance reforms. Hence, the treatment group comprises women born in municipalities with inegalitarian inheritance—that is, where assets were impartible and/or where women were excluded from inheritance before 1793; and the control group comprises women born in municipalities that already practiced egalitarian inheritance among all children, including women, before 1793. These treatment and control groups, as well as the break-down of observations, are illustrated in the cross-tabulation below:

Note that, in practice, most of our variation comes from comparing areas with impartible assets excluding women (N=8,240) to areas with partible assets including women (N=10,998). The Henry database does not cover any of the rare areas with impartible

	Women have right to inherit	
	No	Yes
Impartible assets	Treatment (N=8,240)	Treatment (N=0)
Partible assets	Treatment (N=1,094)	Control (N=10,998)

assets where women could inherit, and very few areas with partible assets but that excluded women from inheritance (N=1,094). That is, our estimates mostly capture the simultaneous effect of both reform treatments, i.e., partitioning inheritances equally and including women in inheritances.

An appealing alternative is to remove the 1,094 observations from municipalities where the reform extended the right to inherit to women, but which were already dividing assets equally among brothers. That is, to define treatment and control groups as follows:

	Women have right to inherit	
	No	Yes
Impartible assets	Treatment (N=8,240)	Excluded
Partible assets	Excluded	Control (N=10,998)

The results under this alternative definition of the treatment group are shown in Panel D. Our estimates are unchanged. This suggests that, indeed, our estimates potentially capture the simultaneous effect of both reform treatments, i.e., partitioning inheritances equally and including women in inheritances.

Unfortunately, the Henry database does not allow to fully disentangle the effect of imposing equal partition from the effect of including women in inheritances. The reason is, as illustrated by the cross-tabulations above, the strong spatial correlation between the partibility of inheritance and the inclusion of women in inheritances. That said, we can show that our results are robust to defining the treatment and control group based on each treatment of the reform separately, i.e., partitioning inheritances equally and including women in inheritances. In detail, we can compare pre-reform impartible-inheritance areas (treatment group) to pre-reform partible-inheritance areas (control group), regardless of women's inheritance rights:

	Women have right to inherit	
	No	Yes
Impartible assets	Treatment (N=8,240)	Treatment (N=0)
Partible assets	Control (N=1,094)	Control (N=10,998)

Table D3 presents our main results under this alternative treatment definition for com-

pleted fertility, childlessness, and age at marriage. Estimates comparing partible versus impartible areas are similar and statistically indistinguishable from our baseline estimates comparing areas affected versus not affected by the reforms. Similarly, Table D4 compares areas that, before the reform, excluded versus included women in inheritances, regardless of the impartibility of inheritance. That said, as explained above, the Henry database does not cover any of the rare areas with impartible assets where women could inherit. Because of that, this alternative treatment definition yields identical results to our baseline estimates by construction:

	Women have right to inherit	
	No	Yes
Impartible assets	Treatment (N=8,240)	Control (N=0)
Partible assets	Treatment (N=1,094)	Control (N=10,998)

Finally, because in our setting the reform treatment was not staggered, we have no negative weights for heterogeneous treatment effects in two-way fixed-effect estimators (de Chaisemartin and d’Haultfoeuille 2020). That said, we account for the possibility that the treatment effect may be heterogeneous across cohorts. In principle, being exposed to the reform could have a different effect at age 15 than at age 30. To address this concern, we replace our baseline dichotomous measure of reform exposure for cohorts aged below 40 at the time of the reforms,  $F_c$ , with a set of indicator variables for different age bins. If treatment effects are heterogeneous, we should observe larger effects for cohorts with more fertile years of exposure to the reforms. The resulting event-study estimates are summarized in Figure 4 in the main text. These estimates suggests that the 1793 inheritance reform had similar effects for all cohorts with 5 or more reproductive years remaining after 1793. In detail, the coefficients on cohorts aged 30–34, 25–29, 20–24, 15–19, 10–14, 5–9, and 0–4 in 1793 are similar and not statistically different from each other, suggesting that treatment effects are not heterogeneous. The effect size for older cohorts is biologically plausible and consistent with the demography literature showing that, at the start of the demographic transition, women at the end of their reproductive span limited their fertility by not having their “last child” (Knodel 1987; Cinnirella, Klemp, and Weisdorf 2017). In detail, completed fertility is a function of the last child born, so reducing it by 0.5–1 children only involves not having the “last child,” which was otherwise born on average at age 35.29 (see Appendix Table A1). That is why all age groups below 35 show a similar effect. This is also consistent with the results in Appendix Table A3, which shows that one fertility-control strategy used after the reform involved reducing the span between first and last birth.

**Migration and mortality.** As explained in Section 3.2, the Henry database is based on the family reconstitution method. This technique reconstitutes families by linking records of birth, marriage, and death within and between individuals. A well-known limitation of the family reconstitution method is that families that emigrate from their parish of birth are difficult to trace later in life. Such emigration can underestimate the completed fertility of women. Similarly, a woman’s completed fertility may be underestimated if she died before completing her reproductive span. Because the early stages of the demographic transition were characterized by changes in mortality, this potential issue is particularly relevant in our setting. If emigration or mortality evolved differently across areas with different pre-reform inheritance systems, our estimates would be biased.

Table D5 shows that this is not the case. It reports results from extended specifications of Equation (3), where samples are restricted to account for the emigration- and mortality-biases described above. We restrict the sample to women who were alive at age 40 in Column (2) and to women who were alive and whose husbands were alive at age 40 in Columns (3)–(5). Because the Henry database retrieves death dates from parish and hospital records – especially before 1792 – this restriction effectively captures women whose records were not missed because of migration. Similarly, completed fertility is not underestimated because we are certain that these women completed their reproductive span before dying. In addition, we include municipality-specific trends in mortality to account for its local evolution in the early stages of the demographic transition: we add the average longevity by municipality and birth decade in Column (4) and the share of women that reached age 40, i.e., who completed their reproductive span, by municipality and birth decade in Column (5). Across these different specifications, we find very similar effects to our baseline results. These results suggest that our estimates capture the local effects of the 1793 inheritance reforms on completed fertility and that they are not biased by migration patterns or by changes in mortality associated with the demographic transition.

**Adjusted fertility using the first-name repetition technique.** Our main measure of completed fertility is the number of children who reached age 6 ever born to a woman. However, it has been documented that the Henry database under-reports infant deaths from the burial registers (Houdaille 1984). To show that our results are not driven by these omissions, we apply the first-name repetition technique of Cummins (2020) to construct adjusted fertility measures. This technique is based on the fact that, in pre-industrial Europe, it was not uncommon that parents of a deceased child would name a newborn with the same first name. Hence, repeated first names within a family can be used to infer child mortality even when these children are not linked to a death record. We calculate the adjusted completed fertility as  $N_{born} - N_{dead} - N_{RN}$ , where  $N_{born}$  are the children born to a parental union,  $N_{dead}$  the number dying before age 6, and  $N_{RN}$  the

number of repeated first names that are not linked to a death record. To calculate  $N_{RN}$ , we use the information in the Henry database on the first three characters of children’s first name. Table D6 presents our main estimates based on Equations (1) and (3), using this adjusted fertility measure. Reassuringly, we find robust estimates for the effect of the 1793 inheritance reforms on adjusted completed fertility (Panel A), adjusted completed fertility of mothers (Panel B), and adjusted childlessness (Panel C).

**Soil, climate, and terrain characteristics.** Climate conditions and the soil suitability for different crops can determine the importance of land as a source of wealth—a hypothesized historical determinant of unequal inheritance (Bertocchi 2017). It is also a crucial aspect for average farm sizes (Bhalla 1988) and land indivisibilities—the key mechanism highlighted by Le Play, which we exploit when examining the mechanisms behind our results. In Section 5, we have already examined the balancedness of three important variables capturing soil, climate, and terrain characteristics: the post-1500 caloric yield index of Galor and Özak (2016) based on soil and climatic suitability for different crops, the terrain ruggedness index of Nunn and Puga (2012), and soil texture based on the share of sandy soils (see Appendix F.3 for more details).

Here we present an additional robustness test. We extend our difference-in-differences specifications by including the interaction between cohort fixed effects and these three land characteristics. This allows fertility trends to differ across municipalities with different post-1500 caloric yield index, terrain ruggedness, and soil texture.

Appendix Table D7 presents the results. In Panels A, B, and C, we consider each of these three land characteristics separately. In Panel D, we add them all together. Column (1) presents our baseline estimates for comparison. Column (2) includes the interaction between the land characteristic in question and cohort fixed effects. Finally, Column (3) examines the robustness of our results to excluding three villages in the Alps and Pyrenees with extreme ruggedness values—twice as large as the 90th percentile value.<sup>8</sup>

Our main estimates on the effect of the 1793 inheritance reforms are robust across these different extended specifications and sample restrictions. In detail, the estimates effect of the reform remains negative and statistically significant across specifications. Moreover, none of the estimates in this robustness checks (Columns 2 and 3) is statistically different from our baseline estimate (Column 1).

Finally, we also examine the robustness of our main estimates for the effect of the 1793 inheritance reforms based on Equations (1) and (3) to excluding the three villages in the Alps and Pyrenees with outlier ruggedness values. The estimates obtained from this restricted sample are presented in Table D8. As before, our estimates for the effect of

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<sup>8</sup>These villages are Cabris, Esbareich et Sost, and Tronche, and represent only 10 percent of the Henry observations.

the reforms on completed fertility and on completed fertility of mothers are almost indistinguishable in the full sample and in the restricted sample without these three villages. Only the estimate on childlessness becomes less precisely estimated and not significantly different from zero in the full difference-in-difference specification with flexible trends.

**Spatially-adjusted errors.** Given the spatial nature of our reform treatment, we correct for the possibility that standard errors are spatially correlated. In our baseline specifications, we do so by clustering the standard errors by municipality. In other words, we account for the possibility that error terms are spatially correlated within municipalities. Here, we consider alternative correction methods that allow for spatial correlation beyond municipality limits, for observations that are as far as 200 kilometers apart. In detail, we account for various degrees of spatial dependence in the error term using [Conley \(1999\)](#) standard errors under different distance cutoffs, which allow for spatial dependence within 50 to 200 kilometers, in 50-kilometer increments.

Figure [D5](#) reports the corresponding spatially-adjusted  $z$ -statistics for the effect of the reforms on completed fertility in our difference-in-difference specifications (Equations [1](#) and [3](#)). Spatially-adjusted errors are similar to our baseline errors and, under some cutoffs, our estimates, if anything, become more precise. This is consistent with the spatial autocorrelation adjustments proposed by [Kelly \(2020\)](#) for a range of persistence studies using spatial data. In short, his findings suggest that spatially-adjusted standard errors tend to fall for applications that, like ours, use longitudinal data with time and space fixed effects. This is because the two-way fixed effects absorb a substantial share of the unobserved heterogeneity that is potentially spatially correlated.

## D.2 Tables for DD robustness checks

Table D1: Placebo test.

	(1)	(2)	(3)
	<i>Dep. Var.: Completed fertility</i>		
Reformed inheritance × Fertile post-placebo reform	0.139 (0.200)	0.192 (0.230)	0.233 (0.219)
Adjusted R-squared	0.048	0.148	0.161
Observations	14,702	14,691	14,691
N clusters	39	39	39
Cohort FE	Y	Y	Y
Municipality FE	Y	Y	Y
Individual-level controls	.	Y	Y
Flexible trends	.	.	Y

*Notes:* The placebo sample and treatment are equivalent to those used in our base-line estimation, but for cohorts who had all their children before the 1793 inheritance reforms. See Section 5.2 for details. Completed fertility is based on the number of children who reached age 6. *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3 except for municipality-level wheat prices by decade, which are not available for the earlier cohorts in the placebo sample. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.



Table D2: Alternative definitions of sample, exposure, and treatment group.

	(1)	(2)	(3)
	<i>Dep. Var.: Completed fertility</i>		
<i>Panel A. Alternative sample: Women born in 1720–80</i>			
Reformed inheritance × Fertile post-reform	−0.340** (0.141)	−0.339** (0.135)	−0.384** (0.156)
Observations	13,290	13,285	13,285
N clusters	39	39	39
<i>Panel B. Alternative exposure based on 30-year reproductive span (ages 15–45)</i>			
Reformed inheritance × Fertile post-reform	−0.480*** (0.122)	−0.497*** (0.131)	−0.398*** (0.139)
Observations	20,332	20,322	20,322
N clusters	39	39	39
<i>Panel C. Alternative exposure based on 15-year reproductive span (ages 15–30)</i>			
Reformed inheritance × Fertile post-reform	−0.494*** (0.124)	−0.484*** (0.127)	−0.348** (0.140)
Observations	20,332	20,322	20,322
N clusters	39	39	39
<i>Panel D. Full treatment (abolishing impartible inheritance and including women)</i>			
Reformed inheritance × Fertile post-reform	−0.497*** (0.126)	−0.547*** (0.136)	−0.456** (0.204)
Observations	19,238	19,228	19,228
N clusters	35	35	35
Cohort FE	Y	Y	Y
Municipality FE	Y	Y	Y
Individual-level controls	.	Y	Y
Flexible trends	.	.	Y

*Notes:* This table reports estimates of the effect of the inheritance reforms on completed fertility under alternative definitions of the sample, the treatment, and the control group. In Panel A, the sample is restricted to cohorts born between 1720 and 1780, i.e., who entered or exited their reproductive span immediately around the time of the reforms. In Panel B, we consider a 30-year reproductive span between ages 15 and 45 for women. In Panel C, we consider a 15-year reproductive span between ages 15 and 30 for women. In Panel D, the treatment group is defined as women in municipalities where the pre-reform inheritance system had *both* impartible rules and rules excluding women from inheritances. *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

Table D3: Effects of abolishing impartible inheritance.

	(1)	(2)	(3)
<i>Panel A. Dep. Variable is completed fertility</i>			
Impartible inheritance $\times$ Fertile post-reform	-0.456*** (0.126)	-0.521*** (0.133)	-0.341* (0.172)
Observations	20,332	20,322	20,322
Adjusted R-squared	0.044	0.175	0.182
<i>Panel B. Dep. Variable is =1 if childless</i>			
Impartible inheritance $\times$ Fertile post-reform	0.055*** (0.018)	0.074*** (0.018)	0.052** (0.023)
Observations	20,332	20,322	20,322
Adjusted R-squared	0.023	0.186	0.190
<i>Panel C. Dep. Variable is age at marriage</i>			
Impartible inheritance $\times$ Fertile post-reform	0.680* (0.353)	1.504*** (0.485)	2.038*** (0.598)
Observations	20,331	20,321	20,321
Adjusted R-squared	0.083	0.249	0.255
Cohort FE	Y	Y	Y
Municipality FE	Y	Y	Y
Individual-level controls	.	Y	Y
Flexible trends	.	.	Y
N clusters	39	39	39

*Notes:* The sample is women born in 1700–1803 in the Henry database. The dependent variable is the number of children ever born to all women (Panel A), the probability to be childless (Panel B), and age at marriage (Panel C). Fertility variables are based on the number of children surviving until age 6. *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

Table D4: Effects of including women in inheritances.

	(1)	(2)	(3)
<i>Panel A. Dep. Variable is completed fertility</i>			
Women excluded $\times$ Fertile post-reform	-0.492*** (0.117)	-0.520*** (0.127)	-0.434*** (0.154)
Observations	20,332	20,322	20,322
Adjusted R-squared	0.044	0.175	0.182
<i>Panel B. Dep. Variable is =1 if childless</i>			
Women excluded $\times$ Fertile post-reform	0.067*** (0.017)	0.076*** (0.017)	0.046** (0.021)
Observations	20,332	20,322	20,322
Adjusted R-squared	0.023	0.186	0.190
<i>Panel C. Dep. Variable is age at marriage</i>			
Women excluded $\times$ Fertile post-reform	0.762** (0.356)	1.395*** (0.472)	1.938*** (0.572)
Observations	20,331	20,321	20,321
Adjusted R-squared	0.083	0.248	0.255
Cohort FE	Y	Y	Y
Municipality FE	Y	Y	Y
Individual-level controls	.	Y	Y
Flexible trends	.	.	Y
N clusters	39	39	39

*Notes:* The sample is women born in 1700–1803 in the Henry database. The dependent variable is the number of children ever born to all women (Panel A), the probability to be childless (Panel B), and age at marriage (Panel C). Fertility variables are based on the number of children surviving until age 6. *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Standard errors in parentheses are clustered by municipality. \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

Table D5: Robustness to migration and changes in mortality.

	(1)	(2)	(3)	(4)	(5)
<i>Sample:</i>	Baseline sample	Women alive at 40	Spouses alive at 40	Spouses alive at 40	Spouses alive at 40
Reformed inheritance × Fertile post-reform	−0.434*** (0.154)	−0.444*** (0.158)	−0.505*** (0.157)	−0.546*** (0.155)	−0.547*** (0.155)
Adjusted R-squared	0.182	0.222	0.241	0.241	0.241
Observations	20,322	18,022	17,012	16,927	16,927
N clusters	39	39	39	39	39
Cohort FE	Y	Y	Y	Y	Y
Municipality FE	Y	Y	Y	Y	Y
Individual-level controls	Y	Y	Y	Y	Y
Flexible trends	Y	Y	Y	Y	Y
Municipality trends in longevity	.	.	.	Y	Y
Municipality trends in share wom. who completed reproductive span	.	.	.	.	Y

*Notes:* This table reports estimates of Equation (3) on the Henry database of women born in 1700–1803 in Column (1), who were alive at the end of their reproductive span in Column (2), and whose husbands were also alive at the end of their reproductive span in Columns (3)–(5). The dependent variable is the number of children ever born to all women, based on the number of children surviving until age 6. The last columns include municipality-specific, time-varying trends by birth decade on longevity in Column (4) and on the share of women who died after completing their reproductive span in Column (5). *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Standard errors in parentheses are clustered by municipality. \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

Table D6: Adjusted fertility using the first-name repetition technique.

	(1)	(2)	(3)
<i>Panel A. Dep. Variable is Adjusted completed fertility</i>			
Reformed inheritance × Fertile post-reform	−0.424*** (0.087)	−0.451*** (0.088)	−0.378*** (0.110)
Adjusted R-squared	0.044	0.173	0.180
Observations	20,332	20,322	20,322
<i>Panel B. Dep. Variable is Adjusted completed fertility of mothers</i>			
Reformed inheritance × Fertile post-reform	−0.279*** (0.100)	−0.316*** (0.111)	−0.359** (0.152)
Adjusted R-squared	0.059	0.091	0.102
Observations	13,924	13,915	13,915
<i>Panel C. Dep. Variable is Adjusted childlessness</i>			
Reformed inheritance × Fertile post-reform	0.069*** (0.017)	0.077*** (0.017)	0.044** (0.021)
Adjusted R-squared	0.023	0.182	0.185
Observations	20,332	20,322	20,322
Cohort FE	Y	Y	Y
Municipality FE	Y	Y	Y
Individual-level controls	.	Y	Y
Flexible trends	.	.	Y
N clusters	39	39	39

*Notes:* This table examines the robustness of our results to adjusting fertility variables using the first-name repetition technique. The dependent variable is the number of children ever born to all women (Panel A), to mothers (Panel B), and the probability to be childless (Panel C), all based on the number of children surviving until age 6. To correct for infant death omissions in the Henry database, we apply the first-name repetition technique. This technique is based on the fact that it was not uncommon to name a newborn with the same first name as a deceased sibling. We calculate the adjusted completed fertility as  $N_{born} - N_{dead} - N_{RN}$ , where  $N_{born}$  are the children born to a parental union,  $N_{dead}$  the number dying before age 6, and  $N_{RN}$  the number of repeated names that are not linked to a death record. The sample is women born in 1700–1803 in the Henry database. *Individual-level controls* are those in the full specification in Table 2. *Flexible trends* include all trends in the full specification in Table 3. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

Table D7: Robustness controlling for soil, climate, and terrain characteristics.

	(1)	(2)	(3)
<i>Dep. Var.: Completed fertility</i>			
<i>Panel A. Controlling for caloric yield, based on soil and climatic suitability for post-1500 crops</i>			
Reformed inheritance × Fertile post-reform	−0.434*** (0.154)	−0.443*** (0.146)	−0.410*** (0.135)
Caloric suitability of land × Cohort FE	.	Y	Y
Sample excludes extreme rugged values	.	.	Y
<i>Panel B. Controlling for terrain ruggedness</i>			
Reformed inheritance × Fertile post-reform	−0.434*** (0.154)	−0.433*** (0.147)	−0.485*** (0.158)
Terrain ruggedness × Cohort FE	.	Y	Y
Sample excludes extreme rugged values	.	.	Y
<i>Panel C. Controlling for soil texture (share of sandy soils)</i>			
Reformed inheritance × Fertile post-reform	−0.434*** (0.154)	−0.362*** (0.121)	−0.311** (0.115)
Share sandy soils × Cohort FE	.	Y	Y
Sample excludes extreme rugged values	.	.	Y
<i>Panel D. Controlling for caloric yield index, ruggedness, and soil texture</i>			
Reformed inheritance × Fertile post-reform	−0.434*** (0.154)	−0.386*** (0.109)	−0.367*** (0.117)
Caloric suitability of land × Cohort FE	.	Y	Y
Terrain ruggedness × Cohort FE	.	Y	Y
Share sandy soils × Cohort FE	.	Y	Y
Sample excludes extreme rugged values	.	.	Y
Cohort FE	Y	Y	Y
Municipality FE	Y	Y	Y
Individual-level controls	Y	Y	Y
Flexible trends	Y	Y	Y
Observations	20,322	20,322	18,099
Clusters	36	36	36

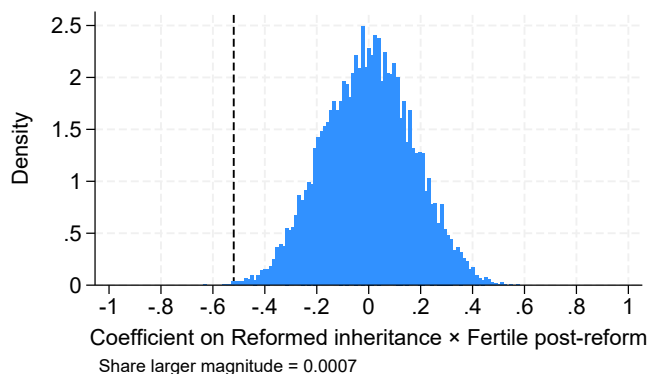
*Notes:* This table reports estimates of the effect of the 1793 inheritance reforms, based on extended specifications controlling for land characteristics. Panel A considers Galor and Özak (2016)'s post-1500 caloric yield index in each municipality, which is based on soil and climatic suitability for different crops. Panel B considers the average value of Nunn and Puga (2012)'s terrain ruggedness index within a municipality's borders. Panel C considers the soil texture (the share of sandy soils) within a municipality's borders (see Appendix F.3 for details). Panel D considers all three of these characteristics. Column (1) reports baseline estimates from the full flexible-trends specification in Equation (3). Column (2) adds the interaction between cohort fixed effects and land characteristics, hence allowing fertility to follow different trends in municipalities with different land characteristics. Column (3) restricts the sample by excluding three villages in the Alps and Pyrenees with extreme ruggedness values—twice as large as the 90th percentile value. All specifications include municipality and birth cohort fixed effects. *Individual-level controls* are from the full specification in Table 2. *Flexible trends* are from the full specification in Table 3. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

Table D8: Robustness to excluding three outliers in Alps and Pyrenees with extreme ruggedness.

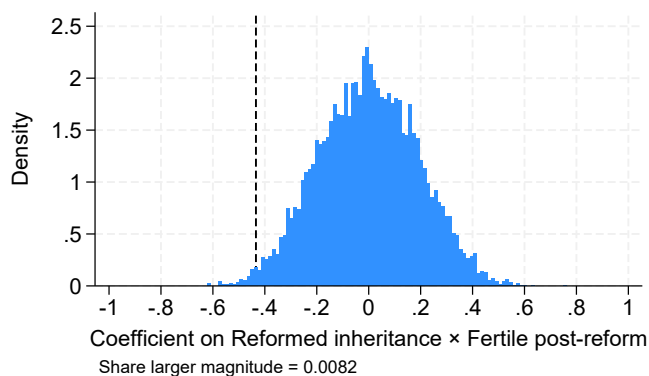
	(1)	(2)	(3)
<i>Panel A. Dep. Variable is completed fertility</i>			
Reformed inheritance × Fertile post-reform	−0.467*** (0.139)	−0.494*** (0.149)	−0.403*** (0.143)
Adjusted R-squared	0.043	0.174	0.179
Observations	18,105	18,099	18,099
<i>Panel B. Dep. Variable is completed fertility of mothers</i>			
Reformed inheritance × Fertile post-reform	−0.348** (0.167)	−0.375* (0.195)	−0.452** (0.168)
Adjusted R-squared	0.050	0.086	0.097
Observations	12,483	12,477	12,477
<i>Panel C. Dep. Variable is childlessness</i>			
Reformed inheritance × Fertile post-reform	0.064*** (0.020)	0.076*** (0.017)	0.035 (0.021)
Adjusted R-squared	0.026	0.188	0.189
Observations	18,105	18,099	18,099
Cohort FE	Y	Y	Y
Municipality FE	Y	Y	Y
Individual-level controls	.	Y	Y
Flexible trends	.	.	Y
N clusters	36	36	36

*Notes:* This table examines the robustness of our main results to excluding three outlier municipalities in the Alps and Pyrenees with extreme ruggedness values—twice as large as the 90th percentile value. These municipalities are Cabris, Esbareich et Sost, and Tronche and represent only 10 percent of the observations. The sample is women born in 1700–1803 in the Henry database, excluding these three villages. *Individual-level controls* are those in the full-specification in Table 2. *Flexible trends* include all trends in the full-specification in Table 3. Standard errors in parentheses are clustered by municipality. \*p<.10; \*\*p<.05; \*\*\*p<.01.

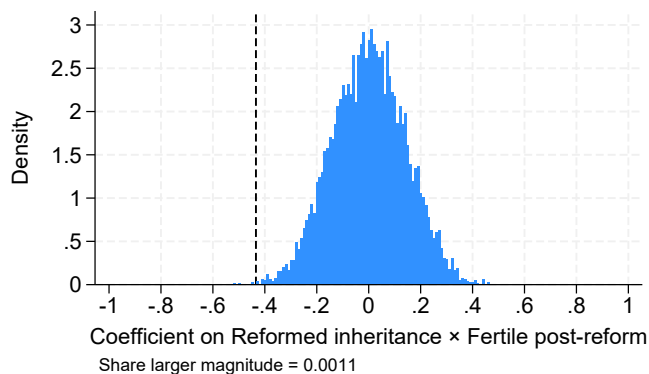
### D.3 Figures for DD robustness checks



(a) Reshuffling “Reformed inheritance”, DD



(b) Reshuffling “Reformed inheritance”, DD with flexible trends



(c) Reshuffling “Reformed inheritance” and vector of flexible trends

Figure D1: Permutation tests.

*Notes:* This figure plots 10,000 estimated coefficients for  $\beta$  in Equations (D1) in Panel (a) and (D2) in Panel (b), where we reshuffle the treatment indicator “Reformed inheritance” across the 39 municipalities in the Henry database. In Panel (c), the procedure reshuffles the treatment indicator together with the municipality-level characteristics used to estimate flexible trends. The dependent variable is the completed fertility of women, excluding children who did not reach age 6. Vertical lines indicate the “true”  $\beta$ -estimates from Equations (1) in Panel (a) and (3) in Panels (b) and (c).



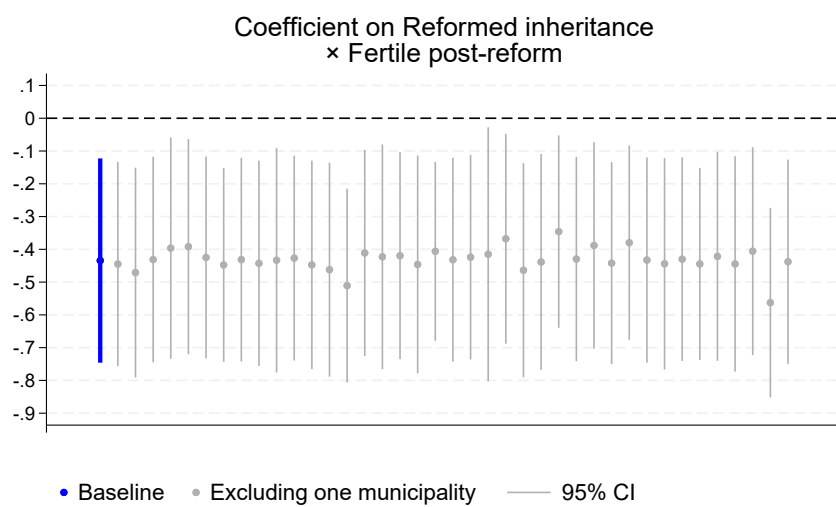


Figure D2: Sensitivity of main estimates to outliers.

*Notes:* This figure shows estimates and 95-percent confidence intervals for the effect of the 1793 inheritance reforms on women's completed fertility. Estimates and confidence intervals are derived from the full-specification of Equation (3), estimated using the full sample (blue), and samples that sequentially omitting one of the 39 municipalities in the Henry database (gray).

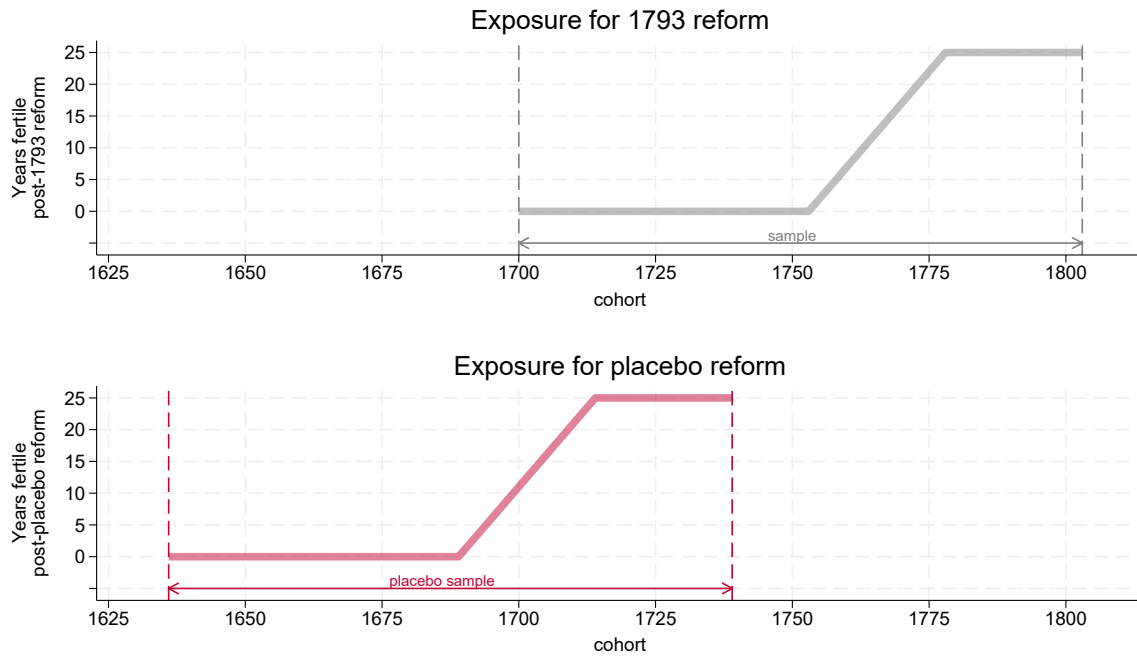


Figure D3: Baseline versus placebo exercise

*Notes:* The placebo sample and treatment are equivalent to those used in our baseline estimation, but for cohorts who had all their children before the 1793 inheritance reforms.

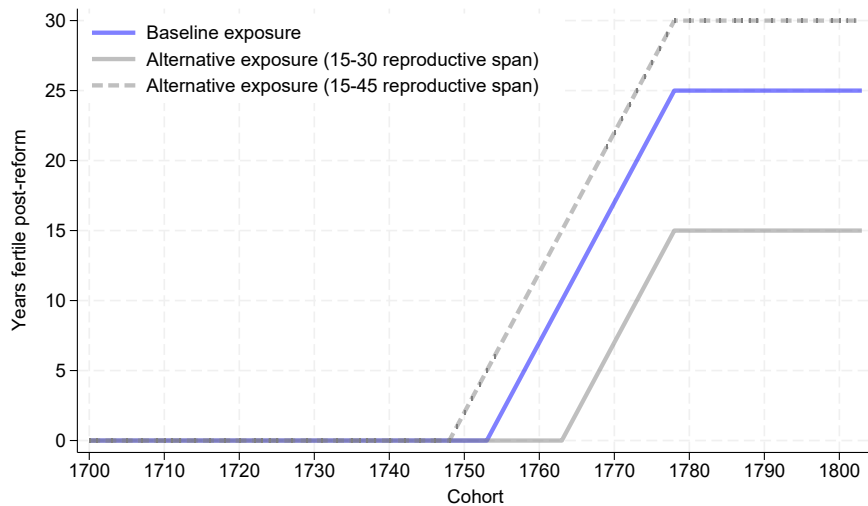
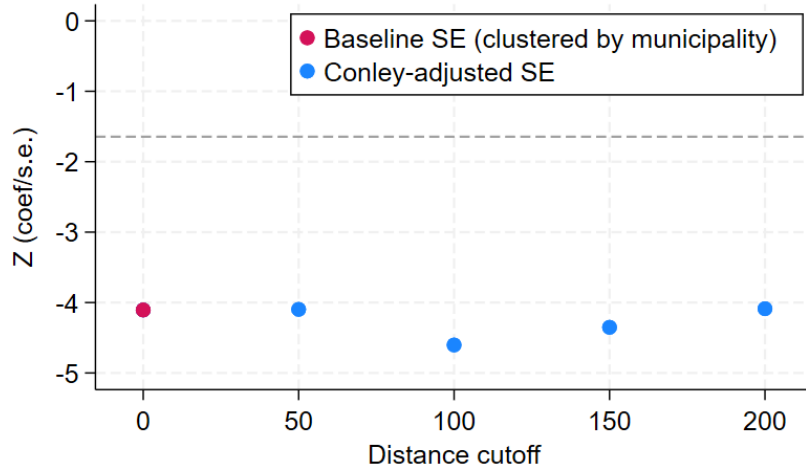
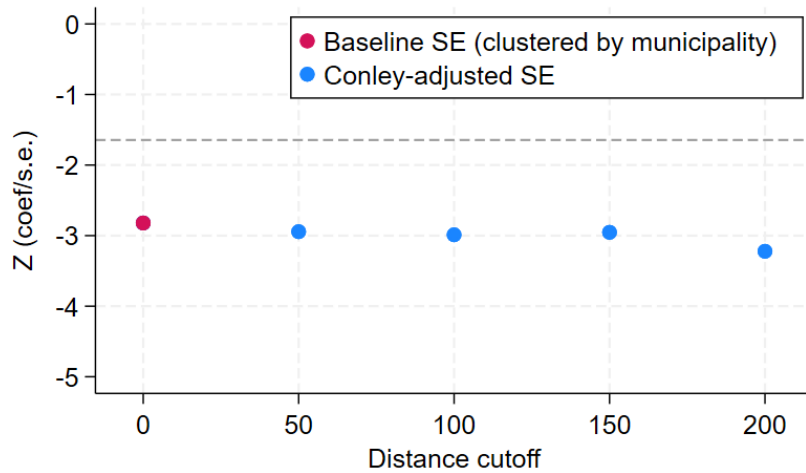


Figure D4: Alternative definitions of treatment.

*Notes:* Baseline years fertile post-reform (blue line) are based on a 25-year reproductive span between ages 15 and 40. Alternative years fertile post-reform are based on a 15-year reproductive span between ages 15 and 30 (gray solid line) and on a 30-year reproductive span between ages 15 and 45 (gray dashed line).



(a) Baseline DD



(b) DD + flexible trends

Figure D5: Conley adjusted standard errors with different distance cutoffs.

*Notes:* This figure shows spatially-adjusted  $z$ -statistics for the effect of the inheritance reforms on completed fertility in our baseline difference-in-differences in Panel (a) and difference-in-differences with flexible-trends specifications in Panel (b). Panel (a) includes the full set of fixed effects and individual-level controls in the full-specification in Table 2 and Panel (b) with the full set of fixed effects, individual-level controls, and flexible trends in the full-specification in Table 3. The distance cutoffs are the points at which the spatial error correlation is assumed to be 0. Estimates calculated using the `acreg` Stata command (Colella et al. 2020; Colella et al. 2023).

# Appendix E. Robustness of RD-DD results, Geni database

Table E1: Covariate balance test for spatial regression-discontinuity analysis.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Wheat prices 1780s		Refractory clergy 1791	Population density 1793	Religious center < 15km	Pol. soc. 1789-93 < 15km	Rebellion 1780s < 15km	Legal center < 15km	Admin center < 15km	Tax center < 15km	Horse-post relay < 15km	Paved road < 7.5km
		1791	1793	< 15km	< 15km	< 15km	< 15km	< 15km	< 15km	< 15km	< 7.5km
<i>Panel A. Linear polynomial</i>											
RD estimate	-0.001 (0.005)	1.777 (1.118)	-0.032 (0.064)	0.008 (0.024)	0.046*** (0.016)	0.024 (0.036)	-0.009 (0.036)	0.016 (0.037)	0.029 (0.037)	0.014 (0.019)	-0.004 (0.012)
Observations	14,554	1,012	1,122	1,122	1,122	1,122	1,122	1,122	1,122	1,122	1,122
N clusters	1,333	.	.	.	.	.	.	.	.	.	.
MSE bandwidth	17.49	17.49	17.49	17.49	17.49	17.49	17.49	17.49	17.49	17.49	17.49
<i>Panel B. Quadratic polynomial</i>											
RD estimate	-0.006 (0.005)	1.361 (1.220)	-0.044 (0.072)	-0.013 (0.029)	0.054*** (0.015)	-0.011 (0.040)	-0.015 (0.041)	0.014 (0.040)	0.026 (0.041)	0.013 (0.021)	-0.006 (0.012)
Observations	20,268	1,446	1,659	1,659	1,659	1,659	1,659	1,659	1,659	1,659	1,659
N clusters	1,884	.	.	.	.	.	.	.	.	.	.
MSE bandwidth	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53	30.53
Border segment FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cohort FE	Y	.	.	.	.	.	.	.	.	.	.
Kernel	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular	Triangular
Unit of observation	Individual	Locality	Locality	Locality	Locality	Locality	Locality	Locality	Locality	Locality	Locality

*Notes:* This table reports RD estimates of  $\beta$  Equation (4) for a set of balancing variables using a linear (Panel A) and quadratic (Panel B) polynomial. In Column (1), the unit of observation is mothers whose Geni record satisfies the horizontal restriction and who were born in France (1700–1810) within the MSE-optimal bandwidth on each side of the inheritance border. In Columns (2)–(10), the unit of observation is their birthplaces. All specifications use triangular kernel functions and include cohort and border-segment fixed effects. MSE bandwidths in Panels A and B are from Table 4, Columns (3) and (5), respectively. Standard errors in parentheses are clustered by municipality. \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

Table E2: Sensitivity to additional RD-DD specifications.

	(1)	(2)	(3)	(4)	(5)
<i>Panel A. Two-dimensional running variable in latitude, longitude, latitude <math>\times</math> longitude</i>					
Reformed inheritance $\times$ fertile post-reform	-1.153*** (0.345)	-2.849 (3.041)	-0.902*** (0.335)	-1.144*** (0.417)	-0.820** (0.417)
N observations	8,884	8,884	8,852	7,969	7,937
N clusters	2,261	2,261	2,229	2,000	1,969
Bandwidth	100 km	100 km	100 km	100 km	100 km
<i>Panel B. Running variable in distance varies by years fertile post-reforms</i>					
Reformed inheritance $\times$ fertile post-reform	-0.880** (0.365)	-1.042** (0.410)	-0.958** (0.384)	-1.170** (0.482)	-1.235** (0.556)
N observations	4,325	6,143	3,797	4,076	3,527
N clusters	959	1,390	862	872	778
MSE optimal bandwidth	19.47 km	36.28 km	16.91 km	20.6 km	17.49 km
<i>Panel C. Uniform kernel</i>					
Reformed inheritance $\times$ fertile post-reform	-1.046** (0.430)	-0.921** (0.460)	-1.219*** (0.438)	-1.042* (0.564)	-1.061* (0.583)
N observations	3,258	5,607	2,598	3,345	3,391
N clusters	834	1,257	721	760	760
MSE optimal bandwidth	15.36 km	30.17 km	13.18 km	16.24 km	16.89 km
<i>Panel D. Henry sample - eighteenth-century cohorts</i>					
Reformed inheritance $\times$ fertile post-reform	-0.715* (0.389)	-0.824* (0.434)	-0.794** (0.389)	-0.916* (0.528)	-1.148** (0.573)
N observations	3,818	5,613	4,230	3,471	3,247
N clusters	875	1,278	914	785	733
MSE optimal bandwidth	17.79 km	33.95 km	20.23 km	18.4 km	17.12 km
<i>Panel E. Henry sample - rural municipalities (&lt;20,000 inhabitants)</i>					
Reformed inheritance $\times$ fertile post-reform	-0.779** (0.361)	-1.020** (0.405)	-0.959** (0.379)	-0.841* (0.453)	-1.006** (0.502)
N observations	4,497	6,204	3,993	4,242	3,872
N clusters	1,002	1,419	907	923	832
MSE optimal bandwidth	21.09 km	38.18 km	18.35 km	22.6 km	20.07 km
Cohort FE	Y	Y	Y	Y	Y
Border segment FE	Y	Y	Y	Y	Y
Reformed inheritance FE	Y	Y	.	Y	.
Bailliage FE	.	.	Y	.	Y
Flexible trends	.	.	.	Y	Y
Order polynomial	Linear	Quadratic	Linear	Linear	Linear

Table E2: Sensitivity to additional RD-DD specifications (continued).

	(1)	(2)	(3)	(4)	(5)
<i>Panel F. Henry sample – no arrondissement chief-lieux</i>					
Reformed inheritance × fertile post-reform	−0.801** (0.369)	−1.005** (0.414)	−0.864** (0.419)	−0.646 (0.452)	−0.882* (0.531)
N observations	4,212	5,994	2,598	4,262	3,586
N clusters	930	1,335	733	935	783
MSE optimal bandwidth	19.79 km	36.54 km	14.02 km	24.61 km	19.00 km
<i>Panel G. 100-kilometer border-segment fixed effects</i>					
Reformed inheritance × fertile post-reform	−0.854** (0.392)	−0.976** (0.428)	−0.998** (0.395)	−1.039** (0.485)	−0.967* (0.553)
N observations	3,273	5,446	3,244	3,761	3,358
N clusters	847	1,251	824	859	764
MSE optimal bandwidth	15.42 km	28.87 km	15.35 km	19.27 km	16.55 km
Cohort FE	Y	Y	Y	Y	Y
Border segment FE	Y	Y	Y	Y	Y
Reformed inheritance FE	Y	Y	.	Y	.
Bailliage FE	.	.	Y	.	Y
Flexible trends	.	.	.	Y	Y
Order polynomial	Linear	Quadratic	Linear	Linear	Linear

*Notes:* This table reports estimates of  $\beta$  from Equation (5) under different specifications. Panel A considers a two-dimensional running variable. The linear polynomial is  $x + y + x \cdot y$  and the quadratic polynomial,  $x + y + x \cdot y + x^2 + y^2 + x^2 \cdot y + x \cdot y^2$ , where  $x$  is longitude and  $y$  is latitude. To avoid scale-effects related to using polynomials in degrees instead of in euclidean distances (kilometers), we report the coefficient on “Reformed inheritance × fertile post-reform” relative to the coefficient on “Reformed inheritance,” so that the estimate is scale-invariant and captures the reduction of fertility relative to the pre-reform fertility gap. Panel B considers running variables in distance to the border interacted with 26 indicator variables for cohorts with 0, 1, . . . , 25 years fertile after the reforms. Panel C uses a uniform kernel. Panels D–F restrict the sample to that used in the design of the Henry database: eighteenth-century cohorts from rural municipalities. Specifically, Panel D considers cohorts born in 1700–1805 as in the Henry database, eliminating Geni entries born before 1705 and after 1795 if the birth date is labeled uncertain. Panels E and F consider only rural municipalities by, respectively, removing towns with more than 20,000 inhabitants in 1793 and the list of *arrondissement* chief-lieux in the *Statistique de la France* 1837 (pp. 7–10) per the definition in the Henry database (Séguy and Méric 1997, p. 10, ft. 19). Panel F uses 100-kilometer border-segment fixed effects. The base sample and flexible trends are as in Table 4. All specifications use MSE-optimal bandwidths (except Panel A), triangular kernels (except Panel C), and 50-kilometer border segment fixed effects (except Panel F). The dependent variable is the number of children ever born to mothers, excluding infant deaths before age 6. Standard errors in parentheses are clustered by municipality. \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

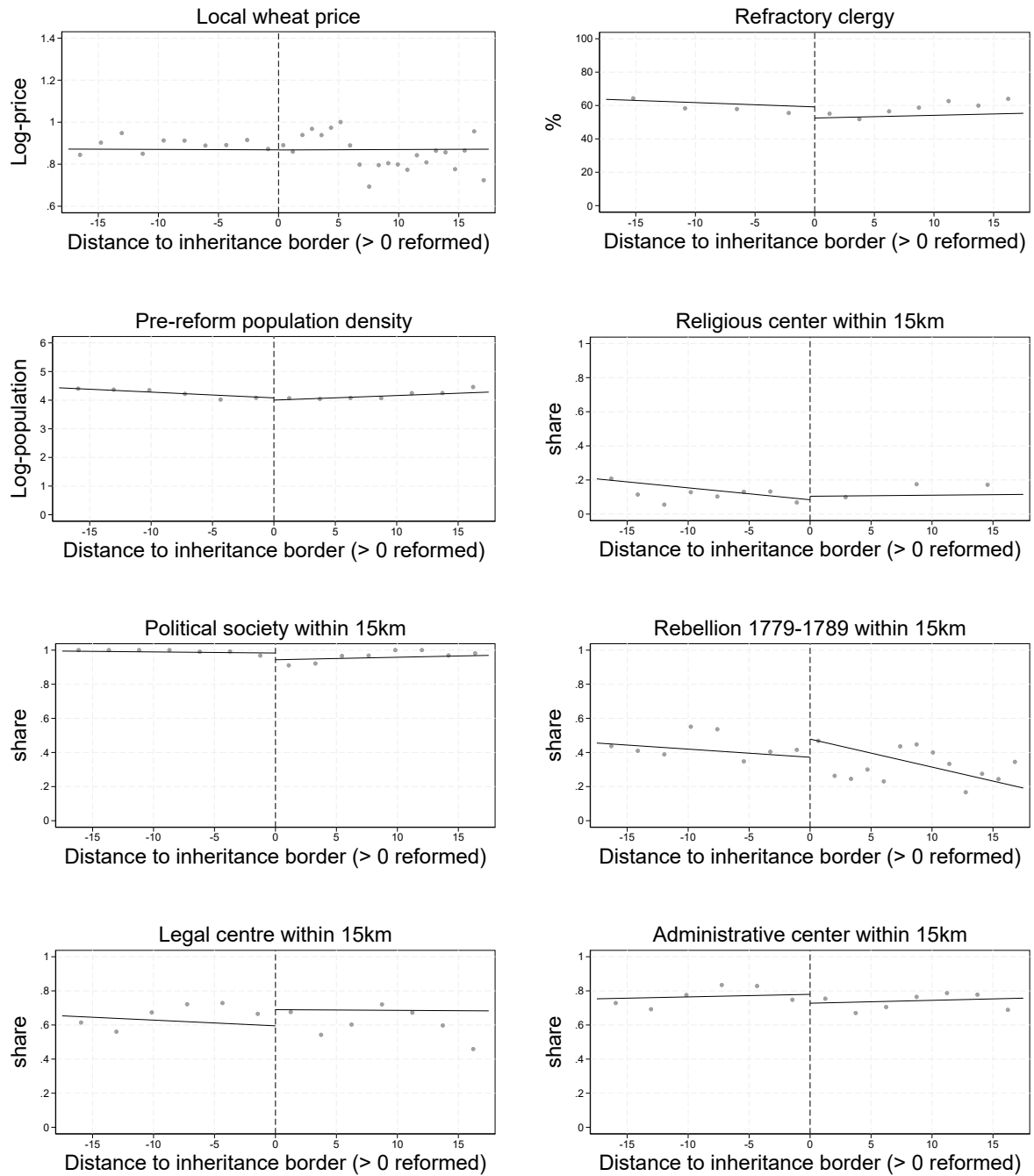


Figure E1: Balance RD plots.

*Continued on next page.*

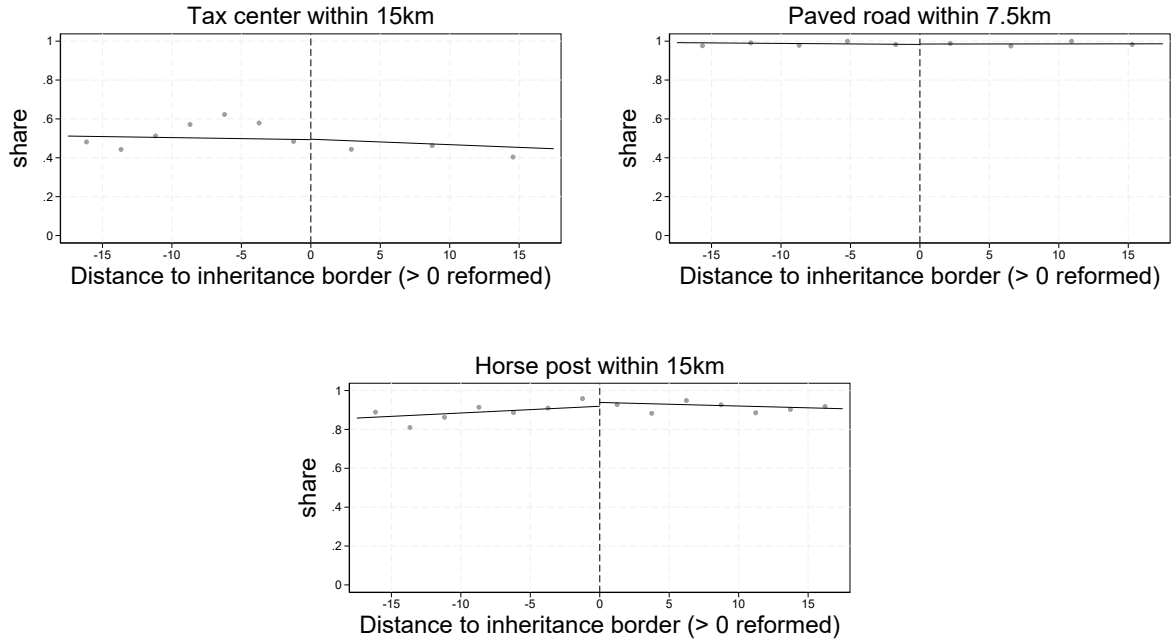


Figure E1: Balance RD plots (continued).

*Notes:* This figure shows RD plots for various covariates, akin to Figure 5. The border is normalized at 0, with positive values for areas where the inheritance system was affected by the 1793 inheritance reforms. Circles show average values of each covariate within bins, where the number of bins are based on the IMSE-optimal evenly-spaced selector. Lines show a polynomial fit of order 1. The bandwidth is based on the MSE optimal bandwidth selector of Table 4, Column (3). The unit of observation is mothers born in France (1700–1810) within 15 kilometers of the inheritance border and whose Geni record satisfies the horizontal restriction (first panel) or their birthplaces (remaining panels).

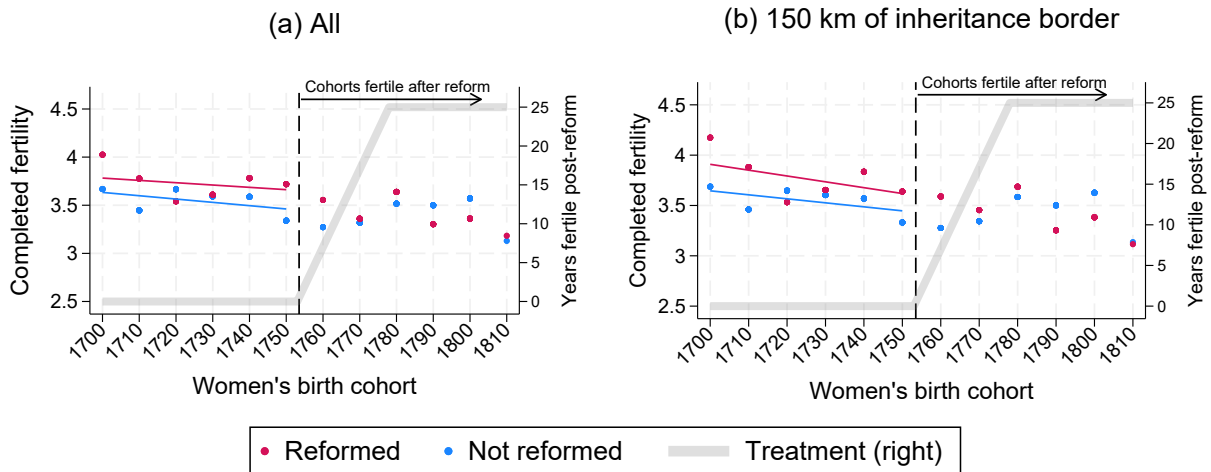
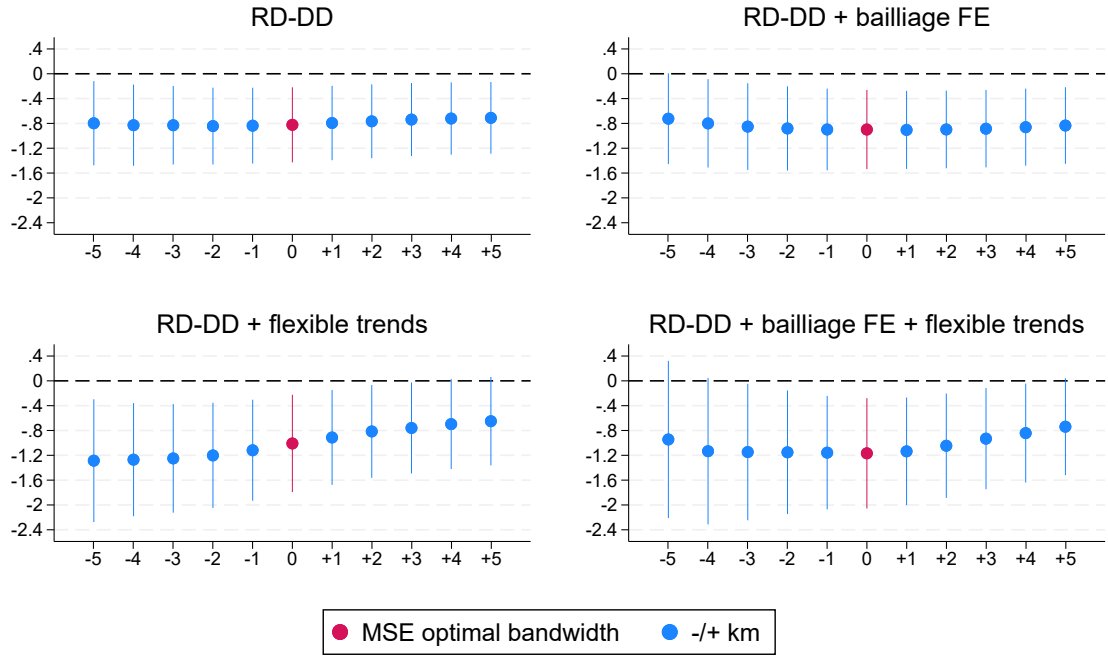


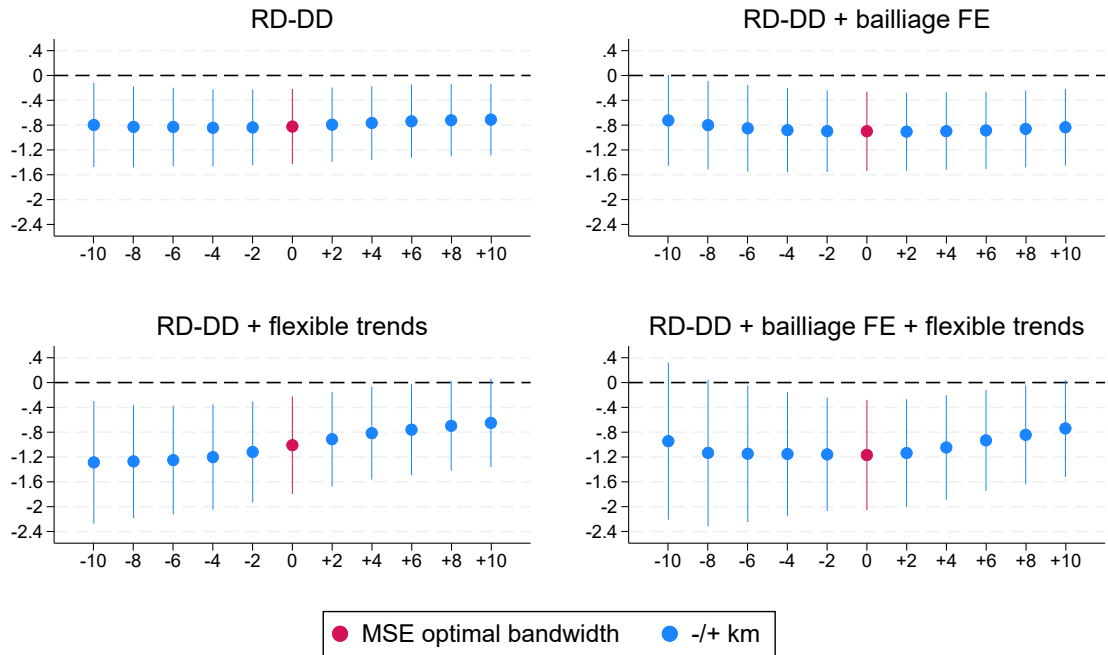
Figure E2: Trends in completed fertility under reformed and not reformed inheritance.

*Notes:* Dots represent the average completed fertility of mothers by birth decade. Pre-reform trends (lines) are calculated from a linear regression on each side of the inheritance border. The vertical dashed line indicates the cohort who completed her reproductive span immediately before the 1793 inheritance reforms, i.e., who were aged 40 in 1793. The gray line shows the remaining fertile years after the 1793 inheritance reforms for each cohort (right axis). Panel (a) considers the full Geni sample, i.e., all mothers satisfying the horizontal restriction and who were born in France. Panel (b) restricts the sample to women born within 150 kilometers of the inheritance border.





(a) Linear polynomial



(b) Quadratic polynomial

Figure E3: Sensitivity to bandwidth choice for spatial RD-DD.

*Notes:* This figure shows coefficients and 90-percent confidence intervals from estimating Equation (5) using different bandwidths equal to the MSE-optimal bandwidth  $\pm x$  kilometers. Panel (a) considers a linear distance polynomial with an MSE-optimal bandwidth between about 15 and 20 kilometers (see Table 4, Columns 1–3) and  $x \in \{-5, -4, \dots, 4, 5\}$ . Panel (b) considers a quadratic distance polynomial with an MSE-optimal bandwidth between about 30 and 35 kilometers (see Table 4, Columns 1–3) and  $x \in \{-10, -8, \dots, 8, 10\}$ . The sample is mothers born in France (1700–1810) whose Geni record satisfies the horizontal restriction and who were within these bandwidths on each side of the inheritance border. The dependent variable is the number of children ever born to mothers, excluding children who died before age 6. Flexible trends are defined as in Table 4. All specifications use triangular kernel functions for local-polynomial estimation.

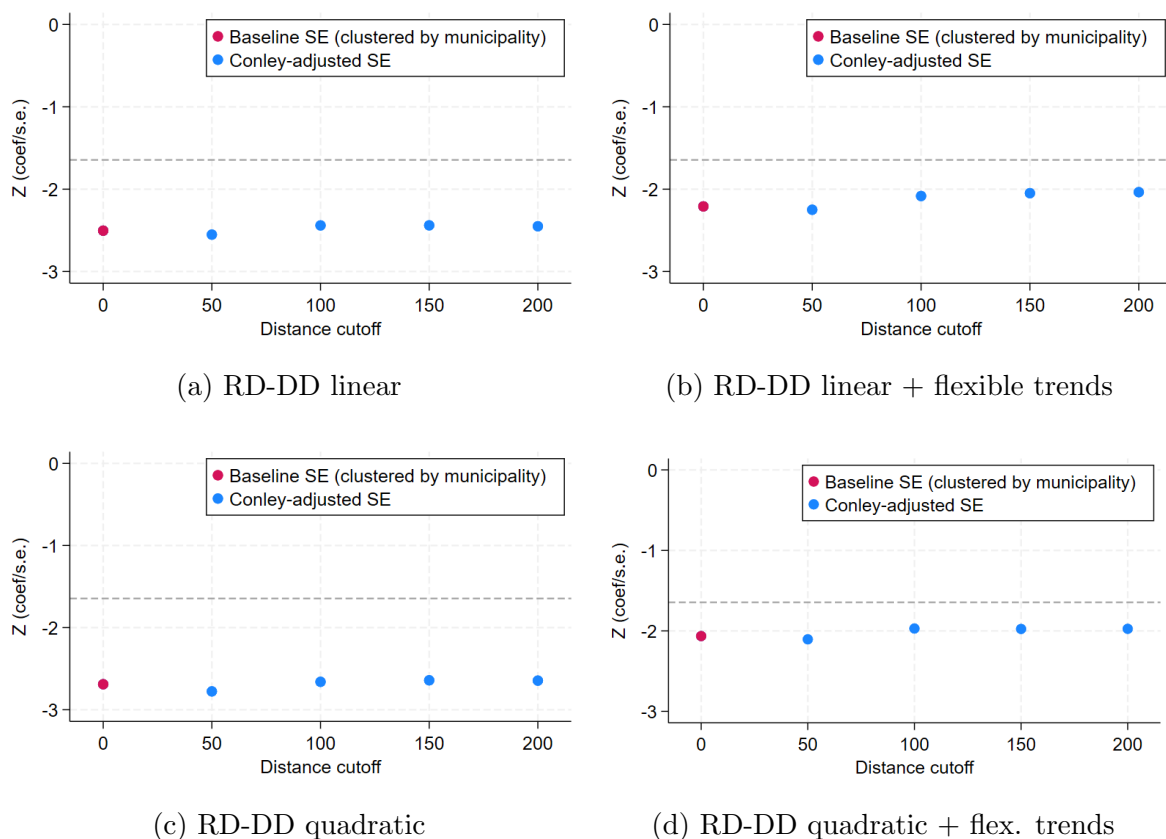


Figure E4: Conley adjusted standard errors with different distance cutoffs.

*Notes:* This figure shows spatially-adjusted  $z$ -statistics for the effect of the 1793 inheritance reforms on completed fertility based on our four main RD-DD specifications using the Geni database. In detail, Panel (a) is for RD-DD with a linear polynomial (Table 4, Column 1), Panel (b), for RD-DD with flexible trends and a linear polynomial (Table 4, Column 2), Panel (c), for RD-DD with a quadratic polynomial (Table 4, Column 3), and Panel (d), for RD-DD with flexible trends and a quadratic polynomial (Table 4, Column 4). The distance cutoffs are the points at which the spatial error correlation is assumed to be 0. Estimates calculated using the `acreg` Stata command (Colella et al. 2020; Colella et al. 2023).

## Appendix F. Land structure in Ancien Régime France

This appendix presents quantitative evidence related to land structure in Ancien Régime France. In Section F.1, we provide estimates of the share of the population that owned non-movable assets based on the TRA database (Bourdieu, Kesztenbaum, and Postel-Vinay 2013). Then, in Section F.2, we discuss how plot-level Napoleonic cadastre data suggests that productive land was more fragmented under egalitarian inheritance than under inegalitarian inheritance. Finally, in Section F.3, we support our assertion that soil characteristics are a good predictor of land concentration in France using data from the 1852 agricultural census.

### F.1 Land ownership based on the TRA database

The consensus in the historiography is that France was predominantly composed of small landholding farmers on the eve of the Revolution (de Brandt 1901; Allen 1992). Specifically, de Brandt (1901, p. 56) estimates that there were 4.6 million landowners in France. Out of a population of 28.6 million in 1785 (Lepetit et al. 1995), and assuming households of five members (Dupâquier 1979), at least 80 percent of the population owned their property. Such estimate can however be an overestimation of reality since it is based on counting owners in a municipality and then aggregating them all, which double counts owners of large, or several, parcels of land.

More accurate estimates can be obtained through the TRA database (Bourdieu, Kesztenbaum, and Postel-Vinay 2013). These data are based on civil marriage records and succession acts between 1793 and 1902 for individuals whose surname starts by the letters “Tra.” The choice of such three letters was carefully selected based on the stability of surnames, having a good regional representation, and the tractability of the sample size.

The individual sample of the TRA database recomposes the wealth at death based two sources: the *Tables de Successions et Absences* (TSA), which contains information on the belongings of all deceased individuals, and the *Registres de mutations par décès* (RMD), which contains the details of the wealth composition for those who have some. Based on these primary sources, 73.6 percent of TRA male individuals born in the eighteenth century who died after the age of 30 left some inheritance. Information on whether the succession contained non-movable assets is available for 62.5 percent of them—of which 92.1 percent left non-movable assets. Hence, the overall share of the population who died with non-movable assets depends on whether we assume that – among the 47.5 percent for whom we do not have the information on whether they left non-movable assets or not – either none of them had non-movable assets or they all had non-movable assets. The share of individuals under each assumption is 42.5 and 69.9 percent, respectively.

## F.2 Land distribution based on parcel-level cadastre data

We now provide descriptive evidence that land was more fragmented under pre-reform egalitarian inheritance than under pre-reform inegalitarian inheritance. No study to date has quantified these aspects, since data on landownership before the Revolution only exists for a very limited sample of towns, mostly for the area around Paris (Brunet 1960; Moriceau 1994; Boudjaaba 2008). We bridge that gap by relying on parcel-level data from the Napoleonic cadastre for a subset of the 39 municipalities in the Henry database.

**The Napoleonic cadastre.** The French Revolution enacted several reforms in addition to those concerning inheritance. One of these was the creation of a proportional income tax based on landholding—the *contribution foncière* (Degrave 2024, pp. 10–2). But while a few local cadastres had been collected in some regions before the Revolution, most landholdings were not properly documented (Kain and Baigent 1992; Touzery 2013). To make accurate and fair estimates of the newly enacted tax, Napoleon Bonaparte decided to conduct a nationwide cadastre starting in 1807 (Clergeot 2007). Cadastral operations were implemented *canton by canton* and took nearly 40 years to complete.<sup>9</sup>

The Napoleonic cadastre produced two types of documents for each municipality section—municipalities were usually divided into sections to facilitate cadastral operations: cadastral maps (*plans cadastraux*) and section tables (*états de section*). Cadastral maps display all of the parcels of a section along with their identifiers. As an example, Figure F1 reproduces the cadastral map of section D of the municipality of Échevronne in the département of Côte-d’Or—this section contains about a thousand parcels, which is close to the average number of parcels per section in our sample. Section tables are divided into two parts: a first part provides, for each parcel, the name of its owner, an identifier, a type (*nature*), a size (*contenance*), a class (*classement*), and a value (*revenu*). A second part regroups some of this information by parcel type: each parcel’s identifier, size, and value. As an example, the left-hand side of Figure F2 reproduces the first page of the first part of the section table of section D of Échevronne, and the right-hand side, the first page of its second part. The latter lists parcels classified as arable land (*terres labourables*).

**Parcel-level cadastre data.** To assess the distribution of land in the 39 municipalities of the Henry database we analyze, we searched for their Napoleonic cadastre in their respective départemental archives—we list our archival sources at the end of this appendix. While the cadastral maps for 37 of them were available, we could only find the

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<sup>9</sup>The operations of the Napoleonic cadastre are detailed in the *Recueil méthodique* drafted by the Ministry of Finance (Hennet 1811). They consisted of two steps: first, a survey step in which each parcel was delineated and assigned a type (building, cultivated land, . . .), and second, a valuation step in which appointed external experts classified each parcel into one of five classes according to the agricultural productivity of the land, after which a value was calculated for each class based on local land rental rates and food prices (Degrave 2024, pp. 28–9).

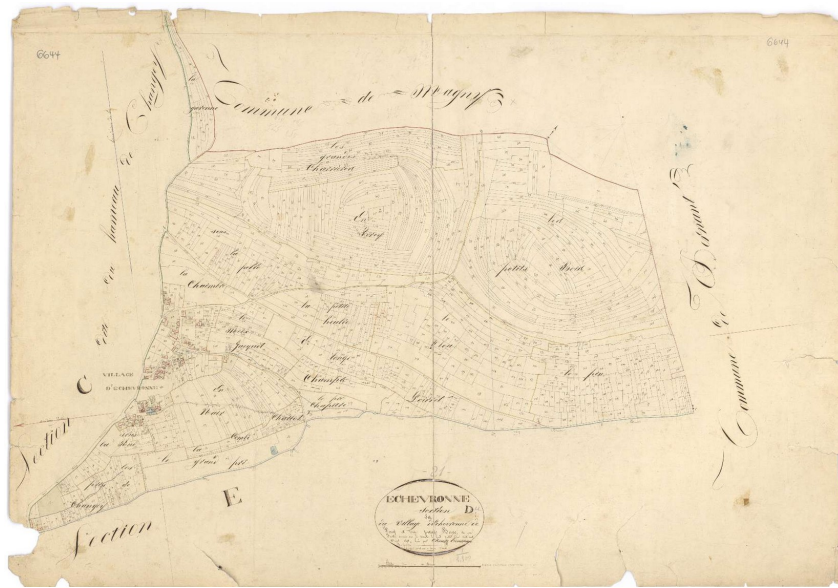


Figure F1: Cadastral map of section D of Échevronne.

Notes: This reproduces displays the cadastral map of section D of the municipality of Échevronne in the département of Côte-d'Or drawn in 1829. This section contains about a thousand parcels. Source: départemental archives of Côte-d'Or, *Plans et états de section du cadastre napoléonien* (3 P 249/6).

Figure F2: Parcel-level table of section D of Échevronne.

Notes: This figure reproduces the first page of each part of the parcel-level table of section D of the municipality of Échevronne in the département of Côte-d'Or drawn in 1829. This section contains about a thousand parcels. Source: départemental archives of Côte-d'Or, *Plans et états de section du cadastre napoléonien* (3 P ES 249-1/4).



section tables for 9 of them. Nevertheless, these 9 municipalities are balanced in terms of pre-reform inheritance systems, as 4 of them were under impartible inheritance and 5 of them excluded women from inheritance. As a result, 4 of them were under egalitarian inheritance and 5 of them, under inegalitarian inheritance. For each of these 9 municipalities, we collected information on all productive parcels, which includes arable land (*terres labourables*), olive trees (*oliviers*), and vines (*vignes*). Our sample of 36,225 parcels is summarized in Table F1.<sup>10</sup>

Table F1: Sample of parcel-level cadastral information.

Municipality		Inheritance			Cadastre	
Identifier	Name	Treatment	Partibility	Women	Year	Parcels
89074	Champigny	Egalitarian	Partible	Included	1816	15,453
79133	Germond-Rouvre	Egalitarian	Partible	Included	1835	2,289
29073	Guimaëc	Egalitarian	Partible	Included	1827	2,757
87204	Videix	Egalitarian	Partible	Included	1828	2,329
14394	Maizières	Inegalitarian	Partible	Excluded	1811	1,447
06026	Cabris	Inegalitarian	Impartible	Excluded	1824	4,399
21241	Échevronne	Inegalitarian	Impartible	Excluded	1829	4,302
39263	Grozon	Inegalitarian	Impartible	Excluded	1834	3,059
71386	Saint-André-en-B.	Inegalitarian	Impartible	Excluded	1837	190

We consider this sample an appropriate basis for evaluating our theory about of fragmentation for two reasons: first, our theory makes predictions about the distribution of *productive* land under different inheritance systems, and second, while cadastral information is from the 1810s to the 1830s, it likely provides a very good idea of the distribution of land in the 1790s – when inheritance reforms were enacted – since most individuals alive then were likely still alive by the early nineteenth century and had not yet bequeathed their land.<sup>11</sup>

**Distribution of land.** First, we display in Table F2 average parcel sizes across inheritance systems in both absolute and relative terms. Parcels are on average *much* larger under inegalitarian inheritance (2.33 hectares) than under egalitarian inheritance (0.19 hectares). This difference is not driven by municipalities having more parcels under inegalitarian inheritance, as it remains substantial when comparing municipal averages (1.70 versus 0.32 hectares). We further account for the possibility that municipalities

<sup>10</sup>The section tables of two municipalities – Champigny and Maizières – report parcels as bundles. Specifically, these tables report the 15,453 parcels of Champigny in the form of 3,254 bundles, and the 1,447 parcels of Maizières in the form of 349 bundles. We transform these tables into parcel-level data by assigning the average size and value to all parcels in the same bundle. Dropping these two municipalities from the sample does not change the results.

<sup>11</sup>Due to the sheer size of the data, we did not collect landowner information—this would have required a substantial effort to link tens of thousands of owners across parcels. Thus, our data do not capture the distribution of land ownership. It does, however, capture land fragmentation well, an important factor for land indivisibilities.

under inegalitarian inheritance are simply larger overall. Specifically, we report relative average parcel sizes across inheritance systems, where the size of a parcel is defined as the share of the productive land of its municipality. Similarly, we find that parcels are on average larger under inegalitarian inheritance (0.04 percent) than under egalitarian inheritance (0.02 percent). Again, this difference is not driven by municipalities having more parcels under inegalitarian inheritance, as it remains substantial when comparing municipality averages (0.13 versus 0.03 percent). Overall, these facts are consistent with our theory that land is more fractionalized under egalitarian inheritance systems.

Table F2: Average land size.

<i>Unit:</i>	Hectares				Share of municipal land (%)			
	Parcel		Municipality		Parcel		Municipality	
<i>Level:</i>	Mean	Obs.	Mean	Obs.	Mean	Obs.	Mean	Obs.
Egalitarian	0.19	22,828	0.32	4	0.02	22,828	0.03	4
Inegalitarian	2.33	13,397	1.70	5	0.04	13,397	0.13	5

*Notes:* This table provides the average size of productive land across inheritance systems. For the *municipality* level, parcel sizes are averaged among each municipality. *Share of municipal land* corresponds to the share of a parcel relative to the whole productive land in a municipality.

Next, in Panel (a) of Figure F3, we display the distribution of parcels across absolute size bins. Land is dominated by *very* small parcels under egalitarian inheritance: while more than 61 percent of parcels under this system are smaller than 0.1 hectare, this is the case for only 36 percent of parcels under inegalitarian inheritance. In contrast, 7 percent of parcels under inegalitarian inheritance are larger than 5 hectares, while nearly none reach that size under egalitarian inheritance. This distribution is not driven by the larger size of municipalities under inegalitarian inheritance. Indeed, we show in Panel (b) that it is similar when considering relative size bins in terms of share of municipalities' productive land: while more than 67 percent of parcels under egalitarian inheritance are smaller than 0.1 per thousand of their municipality area, this is the case for only 43 percent of parcels under inegalitarian inheritance. In contrast, 1 percent of parcels under inegalitarian inheritance are larger than 5 per thousand of their municipality area, while nearly none reach this size under egalitarian inheritance.

In addition, we compute percentile ratios and Gini coefficients for the distribution of land sizes in hectares and land values in francs. We report these inequality measures in Table F3. For both land size and value, land is more unequally distributed under inegalitarian inheritance than under egalitarian inheritance. For instance, while a parcel in the 90th percentile of the land size distribution is 56 times larger than a parcel in the 10th percentile under inegalitarian inheritance, a parcel in the 90th percentile is only 17 times larger than a parcel in the 10th percentile under egalitarian inheritance.

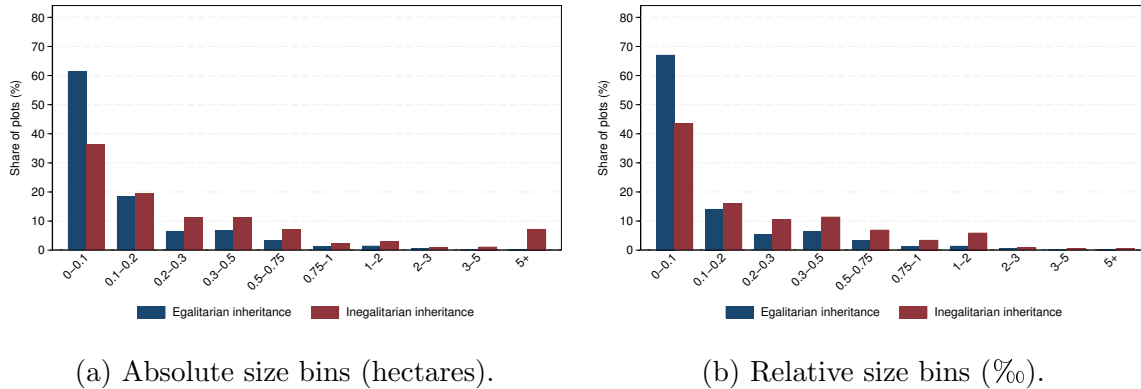


Figure F3: Distribution of parcels across size bins.

*Notes:* This figure displays the distribution of parcels across size bins in hectares in Panel (a) and in perthousand of the total area of productive land of a municipality in Panel (b).

Likewise, Gini indices are larger under inegalitarian inheritance than under egalitarian inheritance.

Table F3: Inequality indices in the distribution of land.

Hectares							
Inheritance	p90/p10	p90/p50	p10/p50	p75/p25	p75/p50	p25/p50	Gini
Egalitarian	17.20	5.33	0.31	3.75	2.18	0.58	0.65
Inegalitarian	56.23	9.06	0.16	6.81	2.57	0.38	0.91
Francs							
Inheritance	p90/p10	p90/p50	p10/p50	p75/p25	p75/p50	p25/p50	Gini
Egalitarian	18.41	3.66	0.20	3.61	1.79	0.50	0.58
Inegalitarian	42.23	6.82	0.16	5.99	2.41	0.40	0.68

*Notes:* This table provides percentile ratios and Gini coefficients for the distribution of land size in hectares and land value in Francs. These indices are calculated using Jenkins' (1999) `ineqdeco` Stata command.

Finally, we plot the cumulative distributions of parcel sizes across inheritance systems in Figure F4. It shows that the distribution of parcel sizes under inegalitarian inheritance first-order stochastically dominates that under egalitarian inheritance. That is, at every percentile, parcels are larger under inegalitarian inheritance than under egalitarian inheritance. A Kolmogorov-Smirnov test confirms this visual impression ( $p < 0.001$ ).

**Cadastre data sources.** We collected the Napoleonic cadastre section tables of 8 communes in their respective départemental archives. Their sources are:

- **Cabris.** Départemental archives of Alpes-Maritimes. *Plans et états de section du cadastre napoléonien*, 3 P 235.
- **Champigny.** Départemental archives of Yonne. *Plans et états de section du cadastre napoléonien*, 3 P 1554.



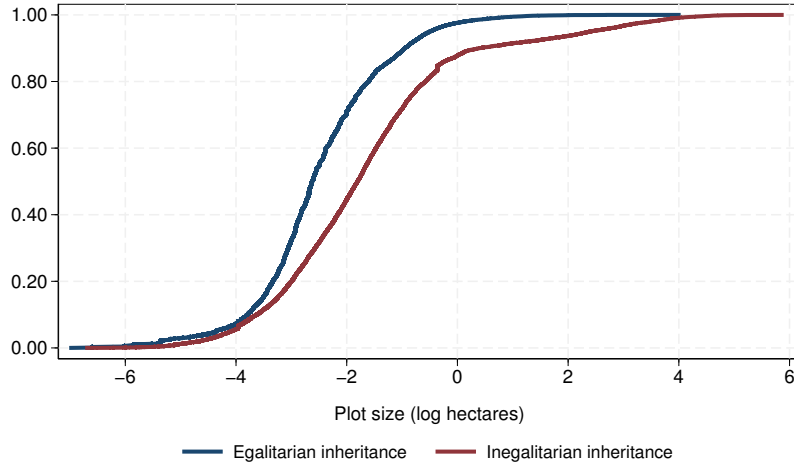


Figure F4: Cumulative distributions of parcel sizes.

*Notes:* This figure plots the cumulative distributions of parcel sizes across inheritance systems. Parcel sizes are converted to  $\log(1 + \text{hectares})$ .

- **Échevronne.** Départemental archives of Côte-d’Or. *Plans et états de section du cadastre napoléonien*, 3 P ES 249–1.
- **Germond-Rouvre.** Départemental archives of Deux-Sèvres. *Plans et états de section du cadastre napoléonien*, 3 P 1264.
- **Guimaëc.** Départemental archives of Finistère. *Plans et états de section du cadastre napoléonien*, 3 P 76/2.
- **Grozon.** Départemental archives of Jura. *Plans et états de section du cadastre napoléonien*, 3 P 1933.
- **Maizières.** Départemental archives of Calvados. *Plans et états de section du cadastre napoléonien*, 3 P 5027.
- **Saint-André-en-Bresse** Départemental archives of Saône-et-Loire. *Plans et états de section du cadastre napoléonien*, 3 P MA 386.
- **Videix.** Départemental archives of Haute-Vienne. *Plans et états de section du cadastre napoléonien*, 3 P 214.

### F.3 Land structure based on agricultural censuses

In this section, we support our assertion that the geological composition of the soil (soil texture) and terrain ruggedness are good predictors of the average farm size in France. We first discuss in detail the theoretical relationship between these two soil characteristics and farm size, as well as evidence from other settings. Next, we describe the data sources

used to validate this relationship in our setting. Finally, we present the corresponding empirical results.

### F.3.1. Theory

Several studies in agricultural economics endorse our strategy of using soil texture and terrain ruggedness as a source of variation in farm size. Indeed, the relationship between these two soil characteristics and farm size is an empirical regularity in agricultural economics.<sup>12</sup> However, this relationship stems from different reasons for soil texture than for ruggedness.

Soil texture affects farm size through the historical demand for land. In detail, the texture of a soil is determined by its relative composition in sand, silt, and clay. Sand particles are relatively round as compared to silt and clay. Hence, soils with a relatively large sand component have a coarser texture and, since the space between sand particles is larger, these soils do not retain storm water as well as silty or clayey soils (Leeper and Uren 1993). In turn, areas where the soil does not retain storm water well, i.e., with a large sand component, are prone to drought. These areas were historically settled late, were subject to lower population pressure, and experienced a lower demand for land. As a consequence, farms tend to be larger in these areas. In contrast, areas where the soil texture allows for better storm-water retention, i.e., with a smaller sand component, historically experienced a stronger demand for land, which resulted in more land fragmentation.

The association between sandy soils and larger farms is an empirical regularity in agricultural economics across space and time. Using modern, farm-level data from India (Bhalla 1988; Bhalla and Roy 1988), Java (Benjamin 1995), and Madagascar (Barrett, Bellemare, and Hou 2010), several studies find that the inverse relationship between farm size and farm productivity disappears after controlling for soil texture. This implies that variation in farm size that was attributed to differences in productivity actually reflects differences in soil texture. Similarly, in historical contexts, several studies find a positive relationship between sandy soils and farm size, e.g., for nineteenth-century England (Clark and Gray 2014; Goñi 2023), Prussia (Cinnirella and Hornung 2016), and 1945 Italy (Martinelli and Pellegrino 2024). Specifically, for Prussia, Cinnirella and Hornung (2016, Table 2, p. 144) use county-level census data from the nineteenth century to show a strong association between farm size and loamy soils, a soil with higher sand content compared to clay soils. For England, based on parish-level data from the 1831 census, Clark and Gray (2014, Table 1, p. 1048) find a negative relationship between Clark (1998)'s measure of the share of chalk and gravel soil and the ratio of farm owners to (landless) farm laborers. Likewise, based on county-level data from Bateman (1883),

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<sup>12</sup>See, e.g., Bhalla (1988), Bhalla and Roy (1988), Benjamin (1995), Barrett, Bellemare, and Hou (2010), Clark and Gray (2014), Cinnirella and Hornung (2016), Goñi (2023), Montalbo (2023), Martinelli and Pellegrino (2024).

Goñi (2023, Table 2, p. 143) finds a positive relationship between the share of sandy soils and the share of land owned by large landowners in 1870—landowners with more than 2,000 acres. Finally, for Italy in the 1940s, Martinelli and Pellegrino (2024, Table 2, p. 16) use cadastre data to document that silty soils are strongly and negatively associated with the Gini index, confirming that soils with a smaller sand component favor the presence of small farms.

Terrain ruggedness is also associated with the farm size distribution, but for reasons different than soil texture. Terrain ruggedness can affect farm size through the historical appropriation of land by local elites. In detail, a higher terrain ruggedness substantially hinders the exploitation of large farms, which, in the historical context of France, “deterred local elites from cornering large proportions of land” (Montalbo 2023, p. 220). This is consistent with the idea put forward by Nunn and Puga (2012) that ruggedness can shield local populations from elite extraction, in their case, from raids during the slave trades.<sup>13</sup> In detail, Montalbo (2023) shows that terrain ruggedness is a strong predictor of farm size in mid nineteenth-century France.<sup>14</sup> Relying on département-level data from the 1862 agricultural census, he finds a positive relationship between Nunn and Puga (2012)’s measure of ruggedness and the share of farms smaller than 5 hectares (Montalbo 2023, Figure 3, p. 221).

Importantly for our exercise, note that these two soil characteristics – soil texture and terrain ruggedness – also affect land productivity. That said, they do so in opposite directions: flat terrains are generally of better quality than sandy soils, even if both are associated with large farms. Hence, by using these two distinct proxies for farm size, we can address concerns that any differential effects of the reform that we find are just driven by variation in land quality.

### F.3.2. Data

We link spatial information on the distribution of sandy soils and terrain ruggedness with measures of farm size calculated from the 1852 agricultural census.<sup>15</sup> This census represents the earliest systematic source of information on the distribution of farming land in France. Moreover, it provides statistical information at the level of *arrondissements*, a level of aggregation more granular than *départements*.<sup>16</sup> We thus map soil and farming

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<sup>13</sup>Other studies showing that ruggedness offers protection to local populations from extractive elites include Gooch (2019) for China during the Great Leap Forward.

<sup>14</sup>Moreover, Montalbo (2023) shows that ruggedness was not associated with several measures of development, such as the literacy rate, urbanization, industrial production, or agriculture mechanization in mid nineteenth-century France—as proxied by the number of plows, scarifiers, steam-powered threshing machines, and the total number of agricultural machines.

<sup>15</sup>We rely on Marin and Marraud (2011)’s dataset based on the original agricultural census published by the Ministry of agriculture (1858, 1860).

<sup>16</sup>An agricultural census was also conducted in 1862 but it only provides information at the level of départements. See Montalbo (2023) for an analysis of the relationship between farming land size and terrain ruggedness based on this census.

land data to this level of aggregation using Gay (2020a)’s arrondissements shapefile for 1870, adapted to the geography of 1852 (Gay 2021).<sup>17</sup>

**Soil characteristics.** As explained above, we focus on two soil characteristics: terrain ruggedness and soil texture. Because soil texture (and terrain ruggedness) does not change over time and cannot be altered by human intervention, we can use modern-day geological data to measure these characteristics.

For terrain ruggedness, we rely on Nunn and Puga (2012)’s index, which measures elevation differences in hundreds of meters for grid points 30 arc-seconds – 926 meters on a meridian – apart based on EROS (2018)’s GTOPO30 dataset (Nunn and Puga 2012, p. 22). We display the raw terrain ruggedness measure on a base shapefile of contemporary France in Panel (a) of Figure F5. Ruggedness ranges from 0 to 18, for a country-wide average of 1.1.

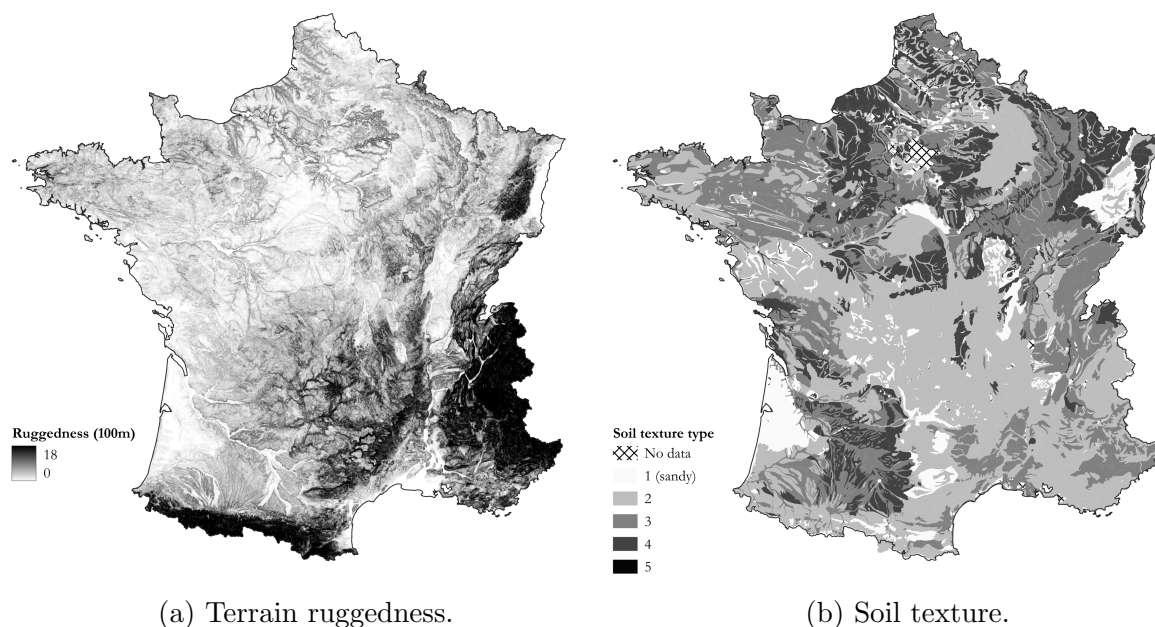


Figure F5: Terrain and soil characteristics.

*Notes:* In Panel (a), this figure displays terrain ruggedness based on the rescaled `tri` raster file of Nunn and Puga (2012) in hundreds of meters. Darker areas indicate greater terrain ruggedness. In Panel (b), it displays the dominant surface texture class by soil mapping unit based on the soil geographical database of France (INRA 1998). Darker areas indicate finer soil texture, i.e., a lower composition of sand and a higher composition of clay. See the text for a description of each soil texture class. The underlying shapefile of contemporary France is from IGN (2021).

For soil texture, we rely on the soil geographical database of France (INRA 1998). It provides the dominant surface textural class across 318 soil mapping units along 5 categories: 1 coarse soil (clay < 18 percent and sand > 65 percent); 2 medium soil

<sup>17</sup>The territory of France in 1852 did not include the Duchy of Savoy nor the County of Nice, which integrated France in 1860. Consistent with the analysis in the main text, we exclude Corsica. As a result, our shapefile for 1852 includes 358 arrondissements, excluding the 5 arrondissements of Corsica.

(18 percent < clay < 35 percent and sand > 15 percent, or clay < 18 percent and 15 percent < sand < 65 percent); 3 medium fine soil (clay < 35 percent and sand < 15 percent); 4 fine soil (35 percent < clay < 60 percent); 5 very fine soil (clay > 60 percent).<sup>18</sup> These categories are typically illustrated in a soil texture triangle. Figure F6 shows the USDA soil texture triangle, which displays the distribution of soil types across their composition of sand, clay, and silt. Coarse soils (sandy soils) roughly correspond to the bottom left of the triangle, medium and medium-fine soils are located in the bottom center and bottom right, while fine and very fine soils comprise the top of the triangle. Of these five soil categories, we expect coarse (sandy) soils to be associated with larger farms, and the remaining categories with a relatively small percentage of sand particles to be associated with smaller farms. We display the raw soil texture data we use on a base shapefile of contemporary France in Panel (b) of Figure F5, where we denote coarse soils as sandy.<sup>19</sup>

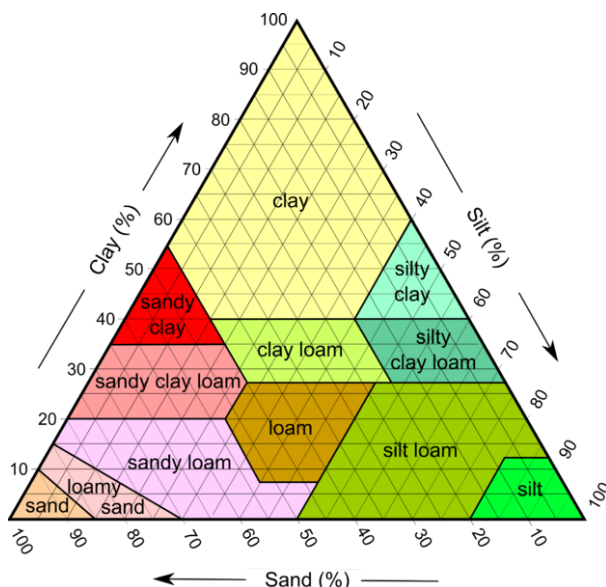


Figure F6: Soil texture diagram.

We then match these soil characteristics to 1852 arrondissements.<sup>20</sup> Specifically, we intersect soil characteristics and administrative-level shapefiles, then calculate area-weighted averages for each arrondissement. For terrain ruggedness, we first polygonize

<sup>18</sup>Specifically, we rely on the `text1` variable in the `stu` dataset. In details, we match the `stu` dataset, which describes the dominant surface textural class at the level of 917 soil typological units (`stu`), to the `stuorg` dataset, which maps soil typological units into 318 soil mapping units (`smu`) together with the proportion of the area of soil mapping units covered by each soil typological unit (`pcarea`). We then calculate a relative surface textural class for each soil mapping unit using the `pcarea` variable as weights. Finally, we match these data to the `30169_L93` shapefile of the 318 soil mapping units.

<sup>19</sup>Note the soil geographical database of France (INRA 1998) does not provide soil texture data for a small area around Paris. For our analysis in Section 6.1, this affects one Henry municipality: Rosny-sous-Bois. Because it lies close to the edge of this missing-data area, we impute the soil texture value of 4 to Rosny-sous-Bois, which corresponds to the soil texture value of the closest municipality with non-missing information—Les Pavillons-sous-Bois, located 4 kilometers away from Rosny-sous-Bois.

<sup>20</sup>For heterogeneity analyses with the DD and RD-DD designs, we proceed in the same way, except that we match soil texture characteristics to municipality polygons based on IGN (2021)’s shapefile.



and rescale the `tri` raster file of [Nunn and Puga \(2012\)](#) in hundreds of meters. For soil texture, we further calculate the share of each `arrondissement` that is composed of sandy soils, which we define as soils with an average texture class below 1.5. We display the resulting data at the `arrondissement` level in [Figure F7](#).<sup>21</sup> We also provide summary statistics in Panel A of [Table F4](#).

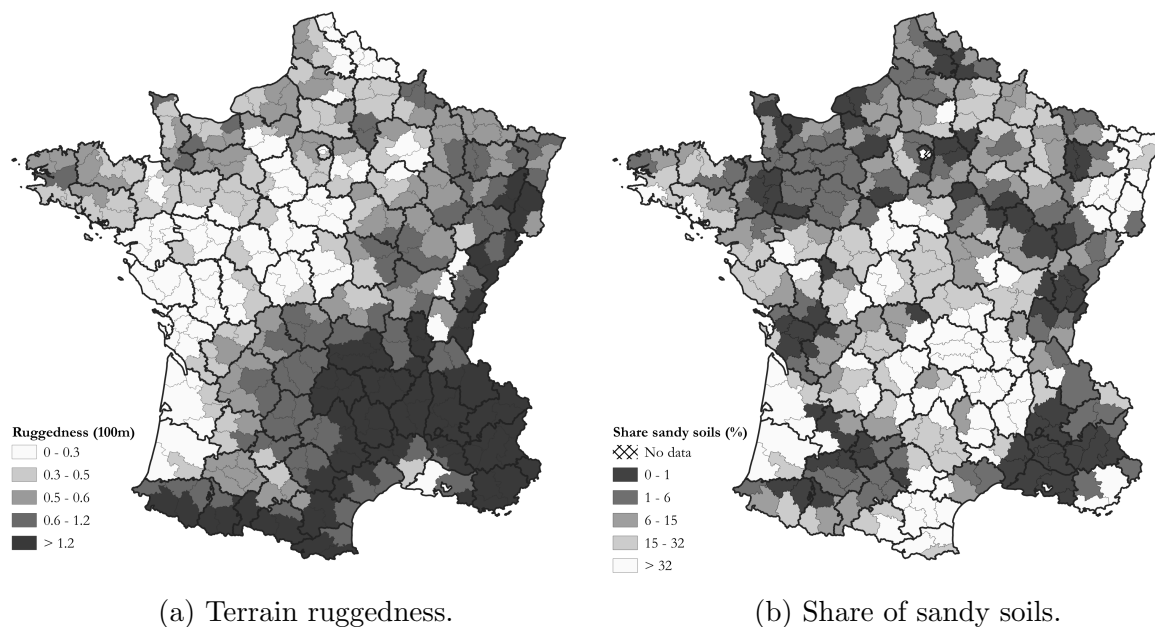


Figure F7: 1852 `arrondissement`-level terrain and soil characteristics.

*Notes:* In Panel (a), this figure displays the average terrain ruggedness by `arrondissement`. Darker areas indicate greater terrain ruggedness. In Panel (b), it displays the share of sandy soils by `arrondissement`. Darker areas indicate a lower share of sandy soils. Classifications represent quintiles in the distribution of each variable. Darker lines indicate `départements`. The underlying `arrondissement`-level shapefile is from [Gay \(2020a\)](#).

**Land structure.** To measure land structure, we rely on the agricultural census of 1852. It does not provide direct information on farm sizes but on the number of landowners of farming land as well as on the size of arable (*labourable*) and cultivated (*cultivée*) land by `arrondissement`.<sup>22</sup> From there, we build two different proxies of the average farm size by calculating the ratio of the number of landowners of farming land to the size arable or cultivated land in hectares. Both measures provide a different view of the distribution of land and its degree of fragmentation depending on their use. We display the distribution

<sup>21</sup>The resulting `arrondissement`-level shapefile for soil texture has missing information for two `arrondissements` (Paris and Sceaux).

<sup>22</sup>Specifically, it provides the number of landowners who own farming land on the territory but do not reside therein (*nombre de propriétaires ayant des propriétés sur le territoire sans y demeurer*), the number of landowners of farming land who reside on the territory but do not cultivate them themselves (*nombre de propriétaires demeurant sur le territoire sans cultiver eux-mêmes*), and the number of landowners who cultivate their farming land for themselves (*nombre de propriétaires ne cultivant que pour eux-mêmes*). It further provides information on the number of laborers who do not possess farming land, but we do not use these measures since we focus on landowners who would pass down their farms as inheritance.

of both variables in Figure F8 and provide summary statistics in Panel B of Table F4.

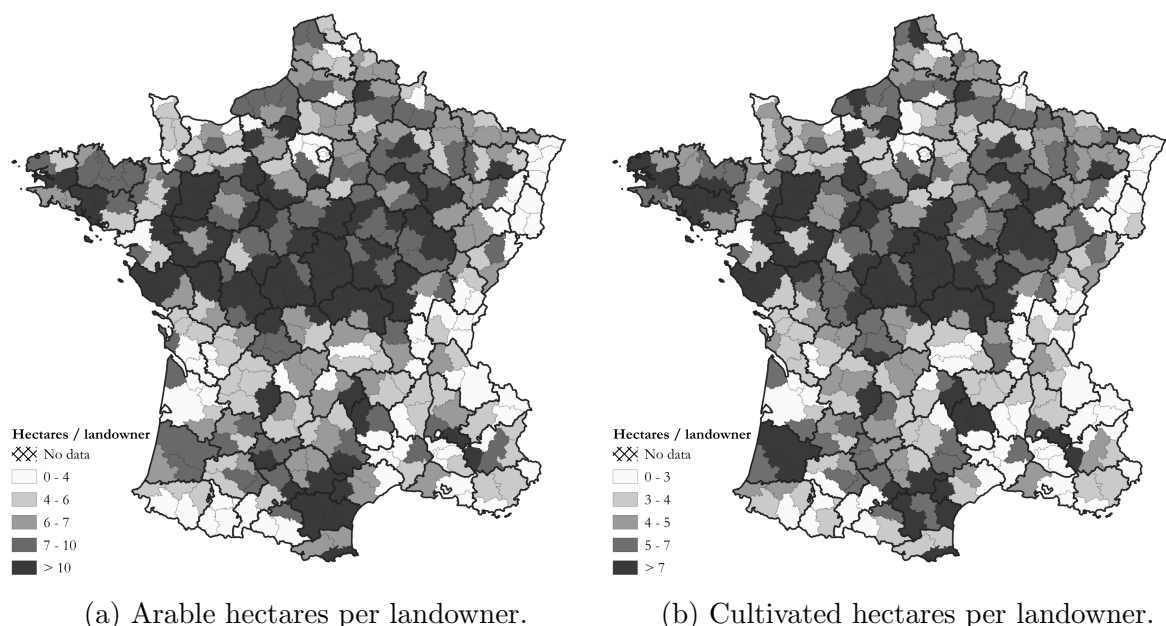


Figure F8: 1852 arrondissement-level farming land structure.

*Notes:* In Panel (a), this figure displays the average arable hectares per landowner of farming land. In Panel (b), it displays the average cultivated hectares per landowner of farming land. Darker areas indicate a larger farming land sizes. Classifications represent quintiles in the distribution of each variable. Darker lines indicate départements. The underlying arrondissement-level shapefile is from [Gay \(2020a\)](#).

**Other characteristics.** Our analyses include other geographic characteristics of the land that may affect its structure: an indicator variable for whether an arrondissement is on the coast, an indicator variable for whether it is mountainous, and an indicator variable for whether it is crossed by one of France’s main rivers – the Loire, the Seine, the Garonne, the Rhône, or the Rhin – where the shapefile of France’s waterways is from [SANDRE \(2017\)](#), and where we classify an area as mountainous if its ruggedness value is above 3.

### F.3.3. Analysis

We now show that soil texture and terrain ruggedness are a good predictors of land fragmentation in mid nineteenth-century France. Consistent with the empirical regularities documented in agriculture studies in other settings, we find that in nineteenth-century France sandy soils and flat terrains also favored large farms, while non-sandy soils and rugged terrains were associated with a smaller average farm size. This relationship is evident in Figure F9, where we plot our two measures of average farm size by twenty bins of the share of sandy soils (right panels) and by twenty bins of terrain ruggedness (left panels).

Table F4: Summary statistics for soil and land characteristics.

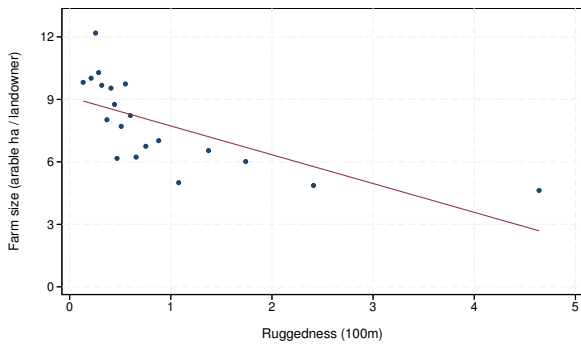
	Mean	S.d.	Min.	Max.	Obs.
<i>Panel A. Soil characteristics</i>					
Ruggedness (100m)	0.89	1.04	0.07	6.9	358
Share sandy soil	0.12	0.18	0	1	356
<i>Panel B. Land structure</i>					
Farm size (arable ha / landowner)	7.85	5.67	1.39	47.03	357
Farm size (cultivated ha / landowner)	5.29	3.55	0.91	30.44	357
<i>Panel C. Other characteristics</i>					
Coast (indicator)	0.17	0.38	0	1	358
River (indicator)	0.23	0.42	0	1	358
Mountain (indicator)	0.05	0.22	0	1	358

*Notes:* This table provides soil and land characteristics in the geography of 1852 arrondissements. Farm sizes are in hectares per farm. Terrain ruggedness data are based on [Nunn and Puga \(2012\)](#), soil texture data, on [INRA \(1998\)](#), land structure data, on the agricultural census of 1852 published by the Ministry of agriculture ([1858](#), [1860](#)), and river data, on [SANDRE \(2017\)](#). The sample excludes the arrondissements of Paris and Sceaux, for which information on soil texture and farm size is missing. See the main text for variables definitions.

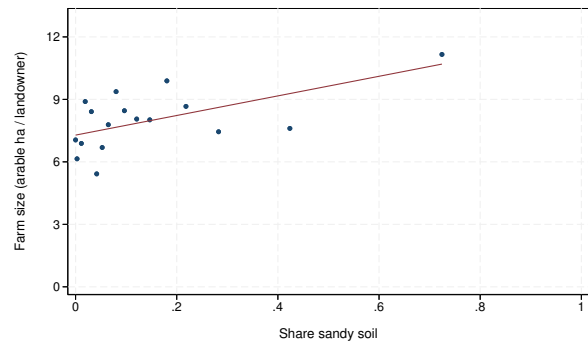
This relationship is also relatively strong when turning to regression analysis. Specifically, we present OLS fixed-effects estimates in [Table F5](#), where we regress our two measures of farm size on soil characteristics and département fixed effects. In other words, we use within-département variation to examine the association between soil characteristics and land fragmentation. Panel A uses arable hectares per landowners as the dependent variable, and Panel B, the number of cultivated hectares per landowner. We examine the association of these proxies of farm size with ruggedness in Column (1), with the share of sandy soils in Column (2), and with both of these soil characteristics simultaneously in Column (3). Column (4) further controls for mountainous regions and for the presence of major rivers or the coast. Standard errors are clustered at the département level.

Across all these specifications, we find a strong association between soil characteristics and farm size. In detail, for both measures of land fragmentation, we find that arrondissements that are more rugged and/or less sandy exhibited smaller farm sizes than arrondissements with flatter terrains and a larger share of sandy soils (Columns 1–3). For example, the estimates in Column (3) imply that a reduction in the share of sandy soils by 20 percentage points (or an increase in ruggedness by 100 meters) was associated with about one more hectare per landowner (Column 3, Panel B). This relationship also holds when accounting for other geographical characteristics, namely, whether an arrondissement is on the coast, whether it is mountainous, and whether it is crossed by one of France’s main rivers (Column 4).

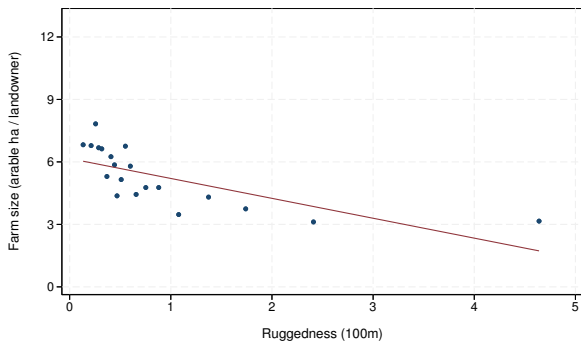




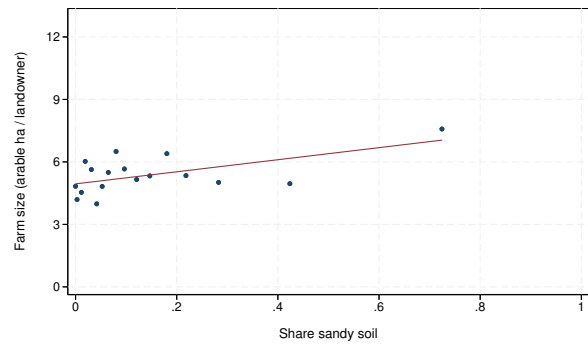
(a) Arable land and ruggedness.



(b) Arable land and sandiness.



(c) Cultivated land and ruggedness.



(d) Cultivated land and sandiness.

Figure F9: Farming land structure and soil characteristics.

*Notes:* This figure displays the bivariate relationship between 1852 arrondissement-level farming land structure and soil characteristics. These figures are generated using Stepner's (2013) `binscatter` Stata command.

Table F5: Soil characteristics and farm size in 1852.

	(1)	(2)	(3)	(4)
<i>Panel A. Dep. Variable is Arable hectares per landowner</i>				
Ruggedness (100m)	-0.92*** (0.32)		-1.13*** (0.37)	-2.10*** (0.63)
Share sandy (0-1)		7.37* (4.23)	8.01* (4.10)	9.62** (4.19)
Adjusted R-squared	0.283	0.304	0.316	0.341
<i>Panel B. Dep. Variable is Cultivated hectares per landowner</i>				
Ruggedness (100m)	-0.67*** (0.204)		-0.80*** (0.24)	-1.53*** (0.43)
Share sandy (0-1)		4.51 (2.80)	4.96*** (2.71)	6.06** (2.77)
Adjusted R-squared	0.252	0.268	0.284	0.311
Département FE	Y	Y	Y	Y
Controls	.	.	.	Y
N observations	354	354	354	354
N clusters	84	84	84	84

*Notes:* This table examines the relationship between soil characteristics and land concentration. The dependent variable is the average number of arable hectares per landowner of farming land in Panel A and the average number of cultivated hectares per landowner of farming land in Panel B. The sample is arrondissements in the 1852 agricultural census. Controls include an indicator variable for whether an arrondissement is on the coast, an indicator variable for whether it is mountainous, and an indicator variable for whether it is crossed by one of France's main rivers. Standard errors in parentheses are clustered by département. Estimates are calculated using Correia's (2014) `reghdfe` Stata command. \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .

## Appendix G. Conceptual framework

Based on the observations of [Le Play \(1875\)](#), and the qualitative and quantitative evidence provided in [Section 6](#), we present a parsimonious model of endogenous fertility under different inheritance rules. We show that when production is characterized by a minimum land input threshold, fertility is higher under inegalitarian than under egalitarian inheritance.

**Le Play’s hypothesis.** Frédéric Le Play (1806–82) was one of the first social scientists to link inheritance rules to family organization. He claimed that extended and high-fertility families prevailed where generations succeeded one another within an undivided family house. The father’s testament, in which he named the heir, was “the supreme law of the family” ([Le Play 1875](#), p. 30). It ensured that the heir’s priority was the conservation of the house and lineage, and that family norms were respected across generations. In contrast, nuclear families prevailed where inheritance was partitioned among all offspring. Each offspring’s share of inheritance enabled them to form their own household and live independently. The abolition of testamentary rights in 1793 disrupted the long-established equilibrium of fecund families. These reforms destroyed the *pater-familias* authority that enabled extended families to perpetuate ([Le Play 1875](#), pp. 75–6). A key mechanism on how the French Revolution “destroyed” the extended, fecund family, was the fragmentation of land under the new inheritance laws ([Le Play 1875](#), p. 26). By partitioning family domains, the new inheritance laws made it impossible for large, traditional families to cohabit and to sustain high fertility. We formalize Le Play’s hypothesis and derive testable implications.

**Model setup.** Consider an economy populated by adults who make decisions for their household. Households differ with respect to the inheritance rule  $i$  of the location they reside in. A share  $\theta$  of households lives under the inegalitarian-inheritance rule, while  $1 - \theta$  lives under the egalitarian-inheritance rule. Adults care about household consumption,  $c$ , and the total endowments of their children. Their utility function is given by:

$$u(c_i, n_i) = \ln c_i + \beta \ln (n_i y'_i), \quad (\text{G1})$$

where  $n \geq 1$  is the number of children of the household, and  $y'$ , the children’s income.  $\beta > 0$  is the weight attached to utility derived by the next generation. We assume a “warm glow” type of altruism whereby households care directly about their children’s endowments, as in [de la Croix and Doepke \(2003\)](#).

Consumption depends on the number of children that a household decides to have and on the household’s income:

$$c_i = (1 - \phi n_i) y_i, \quad (\text{G2})$$

where  $\phi \in (0, 1)$  is a fixed cost of raising children and  $y$  is the household's income, which depends on household production.<sup>23</sup>

Total household production is determined by the size of the land,  $L$ , and labor,  $N$ . These two inputs are combined using a Stone-Geary production function  $f$ :

$$f(L, N_i) = \begin{cases} 0 & \text{for } L \leq \bar{L} \\ (L - \bar{L})^{1-\alpha} N_i^\alpha & \text{otherwise,} \end{cases} \quad (\text{G3})$$

where  $\alpha \in (0, 1)$  is the relative importance of labor with respect to productive land and  $\bar{L} > 0$ , a fixed amount of land required for the land to be productive. This threshold captures land indivisibilities behind our main hypothesis, i.e., that is unlikely that a positive level of agricultural output is obtained with only a minuscule amount of land input.<sup>24</sup> Stone-Geary technology is natural in agricultural economics (Beattie and Aradhyula 2015). In our historical setting, the existence of a land threshold is consistent with the reactions of the French farmers who blamed the forced partition of properties in the aftermath of the Revolution for pushing families into ruin (de Brandt 1901, p. 93).

We now introduce the two types of inheritance rules: egalitarian ( $i = E$ ) and inegalitarian ( $i = I$ ) inheritance. This distinction follows two assumptions. First, we assume that there is no functioning land market so that land can only be acquired by a bequest,  $L'_i$ . This is a simplifying assumption to the fact that transaction costs over property were formidable (Finley, Franck, and Johnson 2021). Second, we follow Le Play's hypothesis that inheritance and the structure of households go hand in hand. That is, egalitarian inheritance is associated to nuclear families, inegalitarian inheritance, to extended families, and the family is the main source of labor. In detail, under egalitarian inheritance, land is transmitted equally to each child who forms a new household. Each child is hence a laborer on their own plot of land. Income is equal to the output of the production. Under inegalitarian inheritance, land remains constant across generations.<sup>25</sup> The household consists of an extended family, which includes the heir as well as his siblings,  $n_I$ , who serve as laborers in the family farm,  $N'_I$ .<sup>26</sup> Total production is shared among all the

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<sup>23</sup>Assuming a budget constraint of the type  $c_i = y_i - \phi n_i$ , where children represent a direct cost in terms of consumption, leads to equivalent predictions.

<sup>24</sup>Decisions across inheritance rules are identical if  $\bar{L} = 0$ .

<sup>25</sup>For simplicity, we set aside the gender dimension. This amounts to assuming a model economy composed solely of men.

<sup>26</sup>We assume that all the offspring stay at the family farm. Assuming that a certain number,  $\mu$ , of them leave the household does not change the results. Indeed, the optimal fertility under inegalitarian inheritance assuming that  $N'_I = n_I - \mu$  is increasing in  $\mu$ . Hence, accounting for the possibility of leaving the household makes the inegalitarian–egalitarian fertility differentials larger.

adults of the extended family.<sup>27</sup> This implies that

$$L'_E = \frac{L}{n_E}, N'_E = 1, y'_E = f\left(\frac{L}{n_E}, 1\right), L'_I = L, N'_I = n_I, \text{ and } y'_I = \frac{f(L, n_I)}{n_I}. \quad (\text{G4})$$

The model assumes that, under inegalitarian inheritance, the marginal labor productivity of heirs and non-heirs is the same. Although, for simplicity, we abstract from the distribution of resources among members of the extended family, this implicitly assumes that output is divided in a way such that non-heirs are compensated and exert the same effort, i.e., have the same labor productivity as the heir. The historical narrative supports this assumption in the context of extended families practicing inegalitarian inheritance in eighteenth-century France. Specifically, according to [Le Play \(1875\)](#), incentives were aligned among members of the extended families. All family members endorsed the “duty of daily work” ([Le Play 1875](#), p. 114) and the heir ensured “the fair distribution of benefits and burdens among members of the same generation” ([Le Play 1875](#), p. 36). Moreover, given the small size of French farms in France (see, e.g., [Bourdieu, Kesztenbaum, and Postel-Vinay 2013](#)) and, more specifically, in areas under inegalitarian inheritance (see [Appendix Table F2](#) and [Figure F3](#)), it was easy to monitor the work of all the family workers, making free-riding behavior unlikely.<sup>28</sup>

Before solving the model, we make the following assumption ensuring that fertility is above one in the interior case:

**ASSUMPTION 1** *The cost of a child is relatively low:*

$$\phi < \frac{\alpha\beta}{\alpha\beta + 1}. \quad (\text{G5})$$

[Assumption 1](#) reflects the fact that, in pre-industrial societies, fertility was higher than in modern societies and above replacement rates ([Chesnais 1992](#), p. 122).

**Maximization problem under inegalitarian inheritance.** The maximization problem under inegalitarian inheritance writes as follows

$$\max_{n_I} \ln((1 - \phi n_I)y_I) + \beta \ln\left((L - \bar{L})^{1-\alpha} n_I^\alpha\right),$$

<sup>27</sup>Note that we do not need to specify how the total production is shared as households care about total output and not its distribution ([Equation G1](#)).

<sup>28</sup>That said, relaxing the assumption that heirs and non-heirs exert the same level of effort – that they have the same labor productivity – does not significantly alter our model’s predictions under plausible parameter conditions. Specifically, assuming that  $N'_I = 1 + \gamma(n_I - 1)$ , where  $\gamma \in (0, 1]$  denotes the effort of the non-heirs relative to the heir, and  $n_I - 1$  is the number of non-heirs, leads to a higher fertility under inegalitarian inheritance ([Proposition 1](#)) if  $\gamma > 1/[1 + (1 + \alpha\beta)(\tilde{n}_I - \tilde{n}_E)]$ . For example, setting the parameters to the values used in [Figure G1](#) and allowing for a large productivity difference of  $\gamma = 0.5$  does not alter the main predictions that fertility is higher under inegalitarian inheritance and that the fertility differences are larger for families endowed with small farms.

which can be rearranged as

$$\max_{n_I} \ln(1 - \phi n_I) + \ln(y_I) + \alpha\beta \ln(n_I) + (1 - \alpha)\beta \ln(L - \bar{L}) ,$$

and is only defined for  $0 < n_I < \frac{1}{\phi}$ .

The first order condition writes as follows

$$\begin{aligned} -\frac{\phi}{1 - \phi n_I} + \frac{\alpha\beta}{n_I} &= 0 \\ \iff \tilde{n}_I &= \frac{\alpha\beta}{(1 + \alpha\beta)\phi} , \end{aligned} \tag{G6}$$

where  $\tilde{n}_I$  is the solution to the maximization problem with inequalitarian inheritance. Taking the derivative of Equation (G6) with respect to  $n_I$ , we have

$$-\frac{\phi^2}{(1 - \phi n_I)^2} - \frac{\alpha\beta}{n_I^2} < 0 ,$$

which satisfies the second order condition for a maximum.

**Maximization problem under egalitarian inheritance.** The maximization problem under egalitarian inheritance writes as follows

$$\max_{n_E} \ln((1 - \phi n_E)y_E) + \beta \ln\left(n_E \left(\frac{L}{n_E} - \bar{L}\right)^{1-\alpha}\right) ,$$

which can be rearranged as

$$\max_{n_E} \ln(1 - \phi n_E) + \ln(y_E) + \alpha\beta \ln(n_E) + (1 - \alpha)\beta \ln(L - \bar{L}n_E) ,$$

and is only defined for  $0 < n_E < \min\left\{\frac{1}{\phi}, \frac{L}{\bar{L}}\right\}$ .

The first order condition writes as follows

$$\begin{aligned} -\frac{\phi}{1 - \phi n_E} + \frac{\alpha\beta}{n_E} - \frac{(1 - \alpha)\beta\bar{L}}{L - \bar{L}n_E} &= 0 \\ \iff \frac{\alpha\beta}{n_E} - \left(\frac{\phi}{1 - \phi n_E} + \frac{(1 - \alpha)\beta\bar{L}}{L - \bar{L}n_E}\right) &= 0 \\ \iff \alpha\beta(1 - \phi n_E)(L - \bar{L}n_E) - n_E [\phi(L - \bar{L}n_E) + (1 - \alpha)\beta\bar{L}(1 - \phi n_E)] &= 0 , \end{aligned} \tag{G7}$$

where the left hand side of the first order condition is a second order polynomial and is negative for  $n_E = \min\left\{\frac{1}{\phi}, \frac{L}{\bar{L}}\right\}$ . This implies that out of the two solutions to Equation (G7) (respectively below and above  $\min\left\{\frac{1}{\phi}, \frac{L}{\bar{L}}\right\}$ ), only the one below, denoted  $\tilde{n}_E$ , is a solution

to the maximization problem and equal to

$$\tilde{n}_E = \frac{\beta\bar{L} + (1 + \alpha\beta)\phi L - \sqrt{(\beta\bar{L} + (1 + \alpha\beta)\phi L)^2 - 4\alpha\beta(1 + \beta)\phi\bar{L}L}}{2(1 + \beta)\phi\bar{L}}. \quad (\text{G8})$$

Taking the derivative of Equation (G7) with respect to  $n_E$ , we have

$$-\frac{\phi^2}{(1 - \phi n_E)^2} - \frac{\alpha\beta}{n_E^2} - \frac{(1 - \alpha)\beta\bar{L}^2}{(L - \bar{L}n_E)^2} < 0,$$

which satisfies the second order condition for a maximum.

**Equilibrium.** The equilibrium fertility decisions under inegalitarian and egalitarian inheritance rules are given by  $n_I^*$  and  $n_E^*$ , respectively. These are the optimal fertility choices that maximize the utility function in Equation (G1) subject to the budget constraint in Equation (G2), the production function in Equation (G3), the inheritance rules (G4), and the condition  $n \geq 1$ . In detail,  $n_I^*$  and  $n_E^*$  depend on the amount of land:

$$\text{If } L \leq \bar{L}; \quad n_I^* = n_E^* = 1. \quad (\text{G9})$$

$$\text{If } \bar{L} < L < \tilde{L}; \quad n_I^* = \tilde{n}_I \quad \text{and} \quad n_E^* = 1. \quad (\text{G10})$$

$$\text{If } L \geq \tilde{L}; \quad n_I^* = \tilde{n}_I \quad \text{and} \quad n_E^* = \tilde{n}_E, \quad (\text{G11})$$

$$\text{where } \tilde{L} \equiv \frac{((1 + \beta)\phi - \beta)\bar{L}}{\phi - \alpha\beta(1 - \phi)}.$$

The model's equilibrium is illustrated in Figure G1. It shows the relationship between fertility and land under egalitarian and inegalitarian inheritance. When the landholdings transmitted across generations is below  $\bar{L}$ , land is unproductive and the number of children is restricted to the minimum independently of the inheritance regime. When landholdings are large enough to be productive, but small enough such that the indivisibility constraints are binding, i.e.,  $\bar{L} < L < \tilde{L}$ , fertility is higher under inegalitarian than under egalitarian inheritance and the gap is at its maximum. The reason is that, under egalitarian inheritance, dividing such landholdings among several heirs can result in production falling below the subsistence level, which provides a powerful incentive to limit fertility. In contrast, under inegalitarian inheritance, land is passed down unbroken, ensuring the maintenance of a productive land even when fertility is high. The egalitarian-inegalitarian fertility gap becomes smaller as the amount of land increases, i.e., in the  $L \geq \tilde{L}$  region. This is because, as the size of the landholdings increase, the indivisibility constraint is less binding, in the sense that landholdings will remain above the productive threshold. That said, the incentive to limit fertility in order to avoid the fragmentation of land still exists, and the fertility gap between inegalitarian and egalitarian households remains positive.

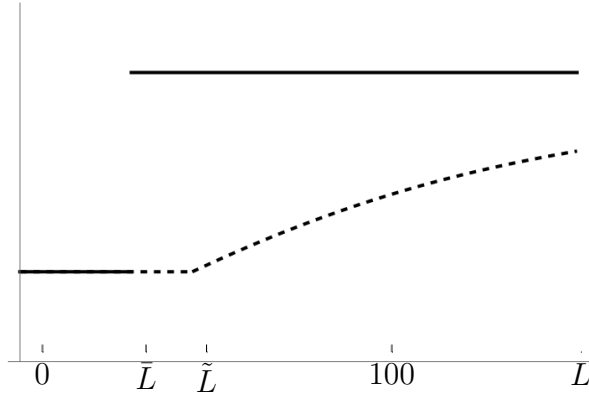


Figure G1: Relationship between fertility and land under egalitarian (dotted line) and inegalitarian inheritance (solid line), with  $\alpha = 0.7$ ,  $\beta = 0.9$ ,  $\phi = 0.12$ , and  $\bar{L} = 30$ .

Note that, for simplicity, the model assumes that cooperation between siblings occurs only under inegalitarian inheritance. Allowing for cooperation under egalitarian inheritance would not alter the model’s main mechanism for two reasons. The first reason is that cooperation requires an enforceable coordination device, which is inherent in inegalitarian inheritance through solo land ownership. In egalitarian inheritance, where every child owns a share of the land, enforceable mechanisms (e.g., mutual care or trust) are likely weaker. This is highlighted by [Grieco and Ziebarth \(2015\)](#), who argue that unigeniture (i.e., a unique heir) emerged as an efficient coordination device to provide insurance among siblings, highlighting the fact that coordination is easier under inegalitarian inheritance, as we assume in the model. More generally, this argument is further supported by the broader literature on contract theory ([Holmström 1982](#)). This literature shows that a partnership system (the egalitarian family), where there are only “agents” (siblings), no “principal” (no solo heir), and agents imperfectly observe individual production (because of some specialization in domestic activities), leads to inefficiencies due to moral hazard. Efficiency can only be reached through a “principal” (an heir) who acts as “budget breaker,” as is the case under inegalitarian inheritance in our model. The second reason is that the objective of the household, given in Equation (G1), is to maximize the children’s *total* endowments, and not the *individual* income of a child ( $y'_i$ ). Hence, although pooling resources maximizes total output in our model, it also increases fertility, so that the individual income per children in the second generation may be *ex ante* higher without cooperation—reducing their incentive to *ex ante* commit to coordinate.

Proposition 1 generalizes the equilibrium and derives a testable implication for the empirical analysis.

**PROPOSITION 1** *Fertility is higher under inegalitarian than under egalitarian inheritance.*

*Proof:* When  $L \leq \bar{L}$ ,  $n_I^* = n_E^* = 1$ . When  $\bar{L} < L < \tilde{L}$ ,  $n_E^* = 1$  and  $n_I^* > 1$  by



Assumption 1. When  $L \geq \tilde{L}$ ,  $n_I^* - n_E^* > 0$ . ■

The French Revolution abolishes inegalitarian inheritance. Hence, the share of households under inegalitarian inheritance,  $\theta$ , becomes nil and the average fertility in the economy equal to  $n_E^*$ .

## Appendix H. Data appendix

Our DD and RD-DD analyzes include a host of municipality-level control variables to capture local cultural, economic, and political conditions. This appendix provides details on their construction and sources.

**Religiosity.** We construct two variables to capture religiosity at the municipality level: the proximity to Church authorities (*évêchés*) and the proportion of marriages during lent and advent between 1792 and 1815. The latter exploits the fact that the Catholic Church did not perform marriages during lent and advent. In contrast, the new civil marriage contract introduced in 1792 imposed no such calendar restrictions. Hence, marriages enacted during lent and advent were mostly civil marriages, so that their prevalence or absence indicates how religious or secularized a given municipality was. Based on the 6,472 marriage dates after 1792 available in the Henry database, we construct a religiosity index  $R$  for each municipality  $m$  as follows:

$$R_m = \frac{\text{Lent and advent marriages}}{\text{All marriages}} \times \frac{365.25}{46 + \text{days advent}} . \quad (\text{H1})$$

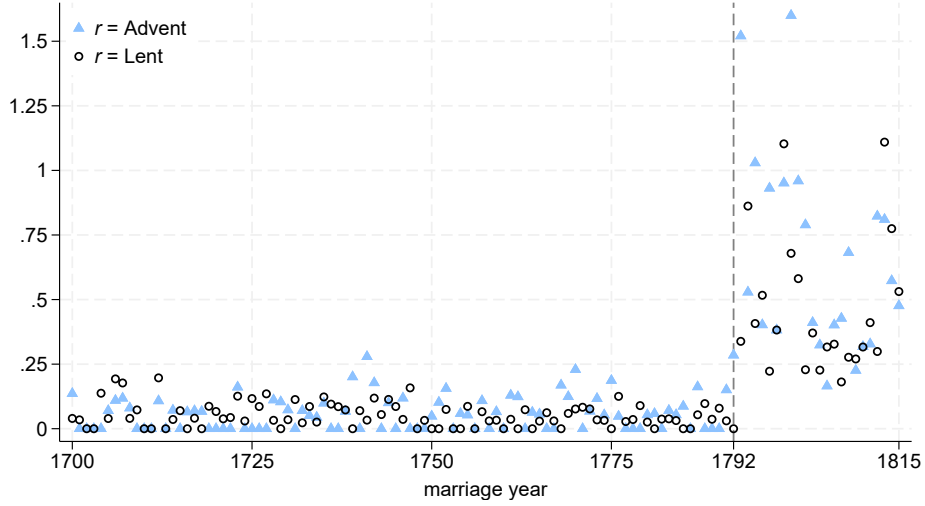
This index is the proportion of lent and advent marriages in municipality  $m$  relative to the proportion predicted by a random distribution of marriages throughout the year.<sup>29</sup> Larger values indicate lower religiosity (or higher secularization). Because lent and advent marriages were only possible after the introduction of the civil marriage in 1792, our index captures variation in religiosity across municipalities around the time of inheritance reforms. Appendix Figure H1 displays a time series for the religiosity index calculated separately for each year from 1700 to 1815. Lent and advent marriages sharply increased after 1792, from a 1/5- to a 3/4-proportion of the expected number had marriages been evenly distributed throughout the year. The increase was parallel in municipalities with different inheritance systems (see Table 1 and Figure H2 for balance tests).

In the RD-DD analysis, we further proxy for religiosity with the *district*-level share of refractory clergy who refused the oath of loyalty to the state in 1791. Specifically, we use Squiciarrini’s (2020) shapefile of 552 districts in 1791 and input data of the number of clergy members who took an oath in Spring 1791 directly from Tackett (1986).

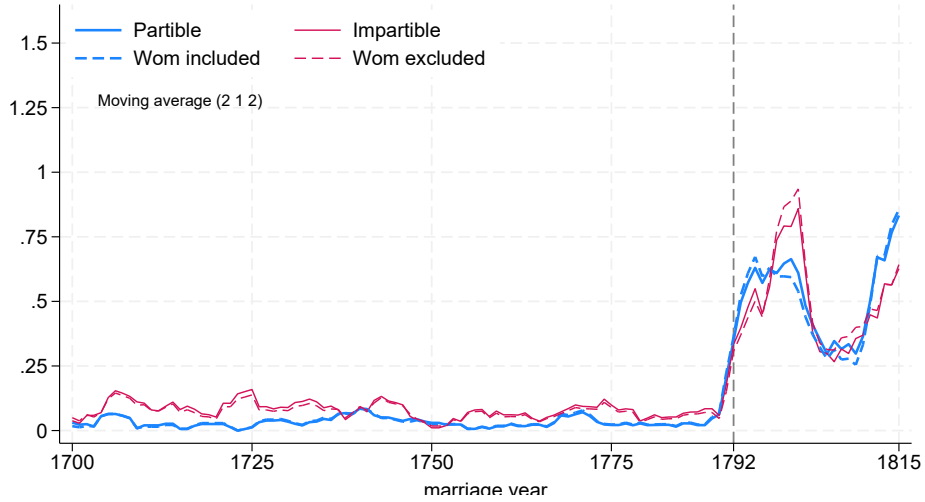
**Wheat prices.** To capture local economic conditions, we attribute a decade-average wheat price to each municipality based on 8,616 quotes (in *sous tournois* per liter) over 117 locations in France between 1700 and 1800, collected from 51 secondary sources by

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<sup>29</sup>The average number of days in a year 365.25, the number of days of lent is 46 – including Sundays – and advent varies from 21 to 28 days. We calculate lent dates in 1700–1819 from [tlarsen2.tripod.com](http://tlarsen2.tripod.com) and advent dates based on which day of the week November 30 was in each year. Because the advent period comprises four Sundays before Christmas, starting on the closest Sunday to November 30, it varies from 21 to 28 days.



$$(a) \frac{r \text{ marriages}_{m,t}}{\text{All marriages}_{m,t}} \times \frac{365.25}{\text{days } r_t}.$$



$$(b) \frac{\text{Lent} + \text{Advent marriages}_{m,t}}{\text{All marriages}_{m,t}} \times \frac{365.25}{46 + \text{days advent}_t}.$$

Figure H1: Lent and advent marriages between 1700 and 1815.

*Notes:* In the formulae,  $m$  indexes municipalities and  $t$ , years of marriage. Panel (a) shows yearly averages of  $\frac{r \text{ marriages}_{m,t}}{\text{All marriages}_{m,t}} \times \frac{365.25}{\text{days } r_t}$  for  $r=\text{lent}$  and  $r=\text{advent}$ ; and Panel (b) a 5-year moving average of  $\frac{\text{Lent} + \text{Advent marriages}_{m,t}}{\text{All marriages}_{m,t}} \times \frac{365.25}{46 + \text{days advent}_t}$  in municipalities with pre-reform partible (blue) and impartible (red) inheritance, and for municipalities with pre-reform inheritance systems including (blue dash) and excluding (red dash) women. The vertical dashed line indicates the year 1792, when civil marriage was introduced.

Ridolfi (2019).<sup>30</sup> Specifically, we first compute decade-average wheat prices in each of these locations. We then generate decade-specific rasters of wheat prices through spatial

<sup>30</sup>We are grateful to Leonardo Ridolfi for sharing his raw price series data with us.

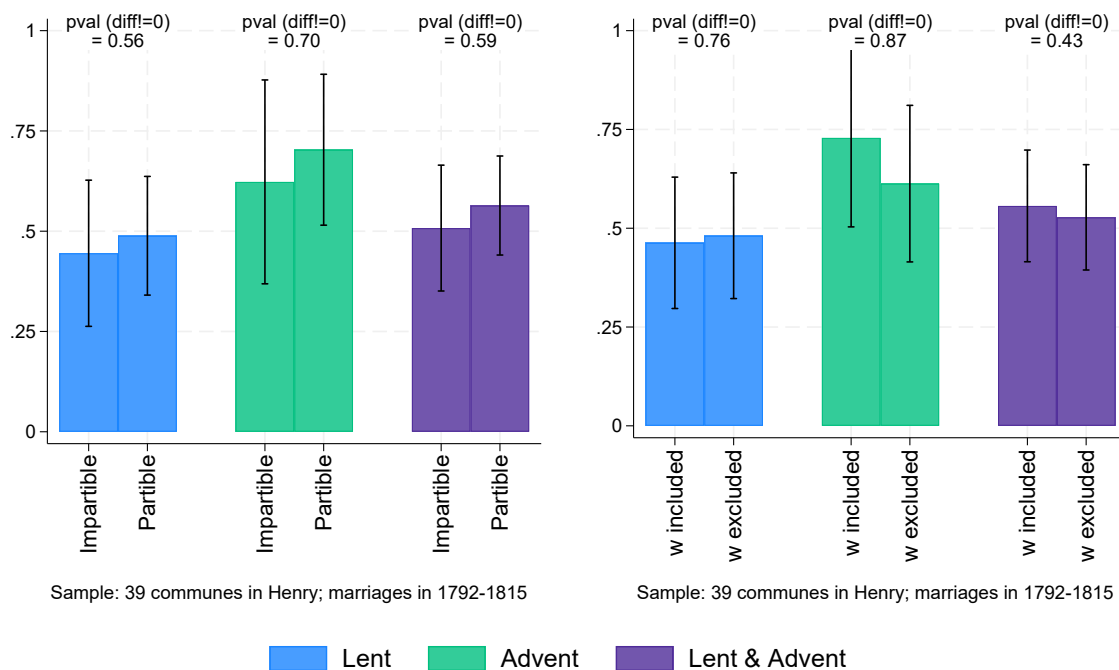


Figure H2: Balancedness on the religiosity index.

*Notes:* This figure shows means and 95-percent confidence intervals for  $R_m$  in Equation (H1), estimated separately in municipalities ( $m$ ) with pre-reform impartible versus partible inheritance, and municipalities with pre-reform inheritance systems that included versus excluded women.  $R_m$  is calculated based on lent marriages only (blue), advent marriages only (green), and lent and advent marriages (turquoise). Estimates are based on 6,472 marriages celebrated between 1792 and 1815 in the 39 municipalities in the Henry database.

interpolations over a 135-by-146 grid dividing France’s territory, where we use an inverse-probability weighting procedure. Finally, we compute spatially weighted averages for each municipality polygon—Figure H3 displays the corresponding raster for prices in the 1780s along with the locations of price quotes and municipalities in the Henry database. In the analysis dataset, we attribute the resulting wheat price to the decade in which a woman in our sample reached 15 years old, i.e., the beginning of her reproductive span.

Controlling for municipality- and decade-specific wheat prices is appropriate to capture changing economic conditions. In our historical setting, higher wheat prices should generally capture negative supply shocks driven by adverse weather conditions. Indeed, there was little available substitutes to wheat as a source of food (Chambru 2019, p. 9), despite the introduction of New World crops such as buckwheat in the mid sixteenth century (Nassiet 1998) and maize in the mid seventeenth century (Ponsot 2005), potatoes being mostly used for livestock feeding (Morineau 1970). The demand for wheat was therefore highly inelastic. Moreover, the grain market was still not integrated due to customs barriers and high transportation and storing costs, which limited the possibility that local supply shocks could have been alleviated through internal trade (Daudin 2010). And while rising urban demand was pushing prices up, empirical research suggests that

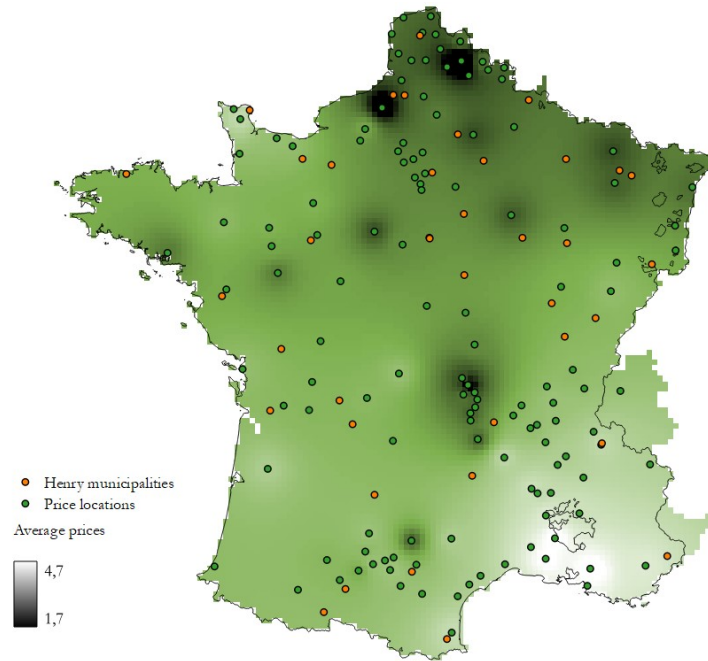


Figure H3: Raster map of wheat prices in the 1780s.

*Notes:* Raster map based on wheat price quotes from [Ridolfi \(2019\)](#). Prices are in *sous tournois* per liter. The underlying shapefile of the Kingdom of France as of 1789 is from [Gay, Gobbi, and Goñi \(2023a\)](#).

grain prices in Ancien Régime France were mostly driven by weather conditions ([Grenier 1996](#); [Chambru 2019](#)). In particular, [Boyer, Jaoul-Grammare, and Rivot \(2019\)](#) show that annual rainfall was the main contributor to wheat price variation over the eighteenth century.<sup>31</sup>

**Population density.** To compute municipality-level population densities, we combine information on population in the 1793 census – the first census available in France – based on data in [Cristofoli et al. \(2021\)](#) together with information on municipality sizes in kilometer squares, which we take from IGN’s ([2021](#)) shapefile of France’s municipalities.

**Distances to administrative centers.** Our analysis flexibly controls for the proximity of municipalities in the Henry database to various administrative centers. In particular, for each municipality, we calculate the distance to the closest center for Church administration (*évêché* capitals), judicial district seat (*bailliage* capitals), tax collection (*recettes des finances* capitals), and territorial administration (*subdélégation* capitals). We collect the locations of these administrative centers from [Nordman, Ozouf-Marignier, and Laclau \(1989, pp. 74–80\)](#) and display their spatial distributions in [Figure H4](#).

<sup>31</sup>Another contributor to wheat price variation was positive supply shocks under the form of productivity gains ([Goy and Le Roy Ladurie 1982](#); [Hoffman 2000](#)). However, [Boyer, Jaoul-Grammare, and Rivot \(2019\)](#) show that there was little relationship between grain prices and land rents, a proxy for agricultural productivity.

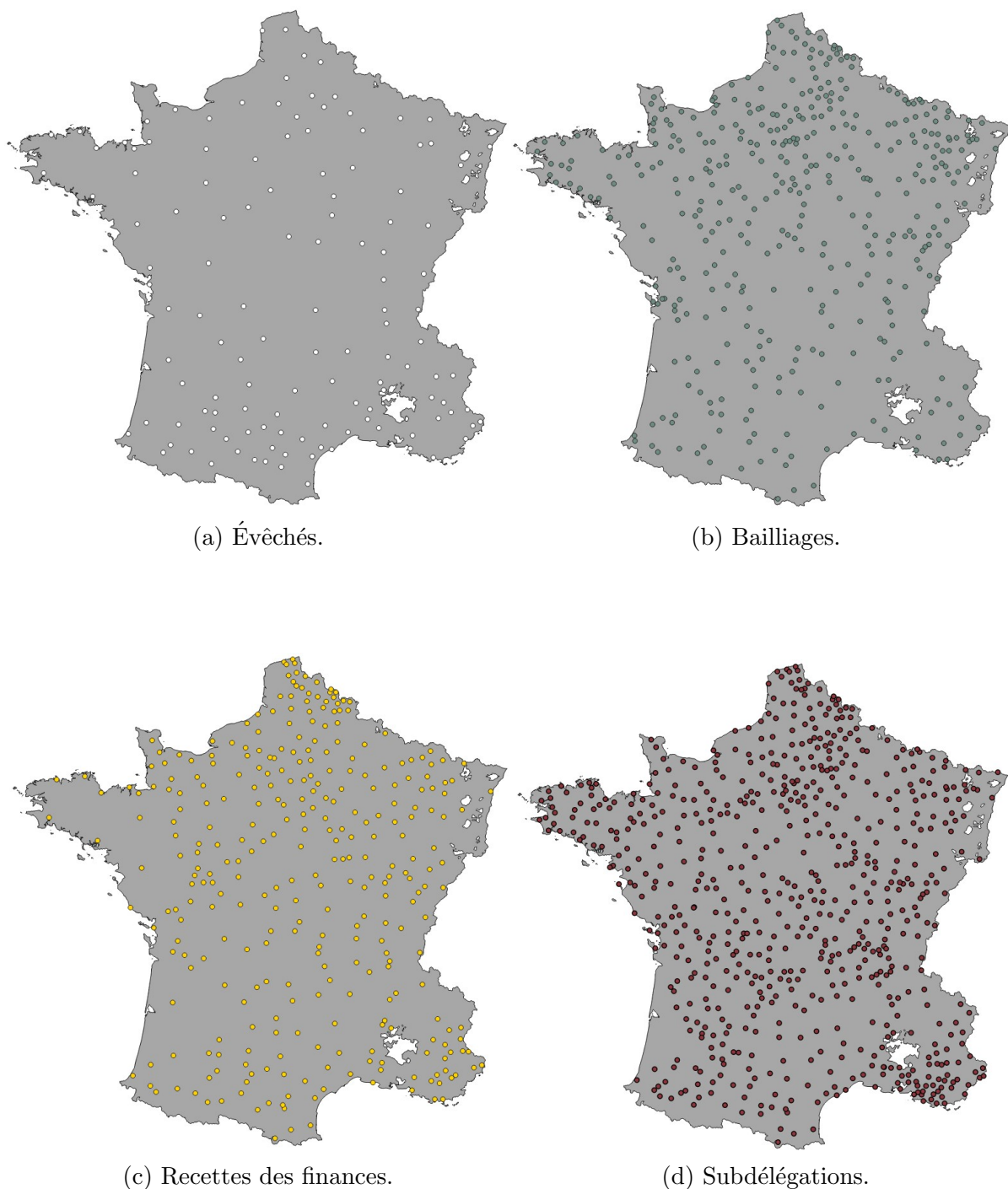


Figure H4: Spatial distribution of administrative centers in 1789.

*Notes:* This figure displays the locations of évêché centers in Panel (a), bailliage centers in Panel (b), recettes des finances centers in Panel (c), and subdélégation centers in Panel (d). Data are from [Nordman, Ozouf-Marignier, and Laclau \(1989, pp. 74–80\)](#). The underlying shapefile of the Kingdom of France as of 1789 is from [Gay, Gobbi, and Goñi \(2023a\)](#).

**Political societies.** To capture the local adherence to the principles of the Revolution and the availability of information about revolutionary events, we control for the proximity of municipalities to a political society (*société politique*) in 1793. Between 1789 and 1793, about six thousand political societies were created. These were associations in



which citizens met to discuss political affairs, social issues, and the reforms passed by the National Convention—including the 1793 inheritance reforms. They played a critical role in the diffusion of the ideas of the Revolution: the famous eminent Saint-Just qualified these societies as “temples for the principle of equality” (Boutier, Boutry, and Bonin 1992, p. 10). These were also groups that had privileged access to information regarding the events of the Revolution, for instance through the *Bulletin de la Convention*, which was sent to all political societies. We gather the locations of these political societies from Boutier, Boutry, and Bonin (1992, pp. 77–101) and display their distribution in Panel (a) of Figure H5.

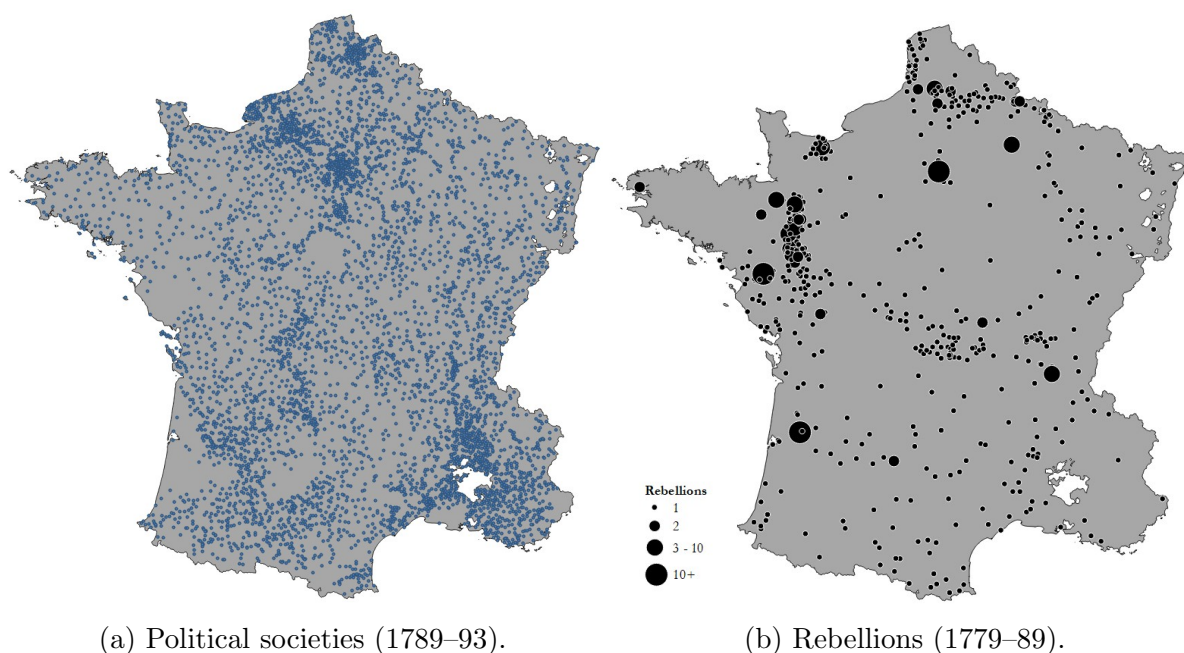


Figure H5: Spatial distribution of political societies and rebellions.

*Notes:* In Panel (a), this figure displays the spatial distribution of political societies created between 1789 and 1793 based on Boutier, Boutry, and Bonin (1992, pp. 77–101). In Panel (b), it displays the spatial distribution of 734 rebellions against state authorities across 510 municipalities from Albertus and Gay (2024), based on archival material assembled by Nicolas (2002). The underlying shapefile of the Kingdom of France as of 1789 is from Gay, Gobbi, and Goñi (2023a).

**Rebellions against state authorities.** To further capture the extent of local support for the Revolution, we consider the proximity of municipalities in the Henry database to rebellions against state authorities that occurred in the decade preceding the Revolution—the historiography highlights that support for the Revolution was relatively stronger in locations where such rebellions occurred (Nicolas 2002). Here, we use the rebellions database constructed by Albertus and Gay (2024) based on archival material assembled by Jean Nicolas over the course of 30 years (Nicolas 2002). In particular, we extract the 734 rebellions that occurred over 510 municipalities between 1779 and 1789

and that concerned disputes over state taxation, the judiciary, or the military. We display the distribution of these rebellions in Panel (b) of Figure H5.

**Paved roads.** To capture the proximity of municipalities with respect to economic and information flows, we control for their distance to a paved road. We display the distribution of such roads in Panel (a) of Figure H6. The shapefile of this paved roads network is from [Perret, Gribaudi, and Barthelemy \(2015\)](#), which proceeded with a manual vectorization of Cassini’s map of France surveyed between 1756 and 1789 ([de Dainville 1955](#); [Pelletier 1990](#)).

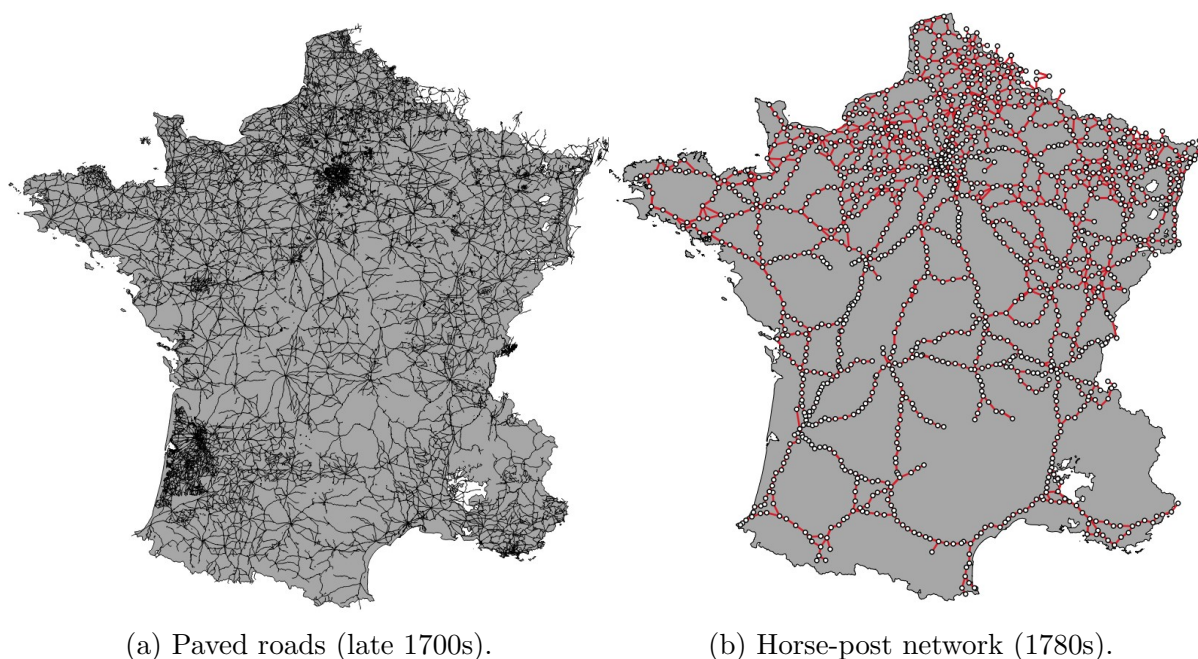


Figure H6: Spatial distribution of paved roads and horse posts.

*Notes:* In Panel (a), this figure displays the spatial distribution of paved roads in the late eighteenth century based on [Perret, Gribaudi, and Barthelemy \(2015\)](#). In Panel (b), it displays the spatial distribution of horse posts (white dots) as well as postal roads linking these posts (red lines). The network of horse posts in 1780 was vectorized based on the *Livre de poste* of 1780 ([Albertus and Gay 2024](#)). The underlying shapefile of the Kingdom of France as of 1789 is from [Gay, Gobbi, and Goñi \(2023a\)](#).

**Horse-post network.** To further capture the proximity of municipalities with respect to information networks, we control for their distance to a horse-post relay in the 1780s based on data constructed by [Albertus and Gay \(2024\)](#). We display the distribution of horse posts in Panel (b) of Figure H6. This network of horse-post relays was first created in the sixteenth century, then gradually expanded over time, especially in the eighteenth century as close to 1,800 posts existed in the mid-1780s. This network was instrumental in the monarchy’s apparatus for disseminating information through a tight network of postal relays that enabled the integration of peripheral areas into national networks ([Arbellot 1973](#); [Bretagnolle and Franc 2020](#)).



**Land characteristics.** To capture geographical features of the land, we calculate two different measures at the level of municipalities: land suitability for agriculture and terrain ruggedness. More precisely, we use the post-1500 average caloric suitability index developed by Galor and Özak (2016) based on FAO (2012)’s GAEZ dataset and the terrain ruggedness index developed by Nunn and Puga (2012) based on EROS (2018)’s GTOPO30 dataset—see Figure H7.

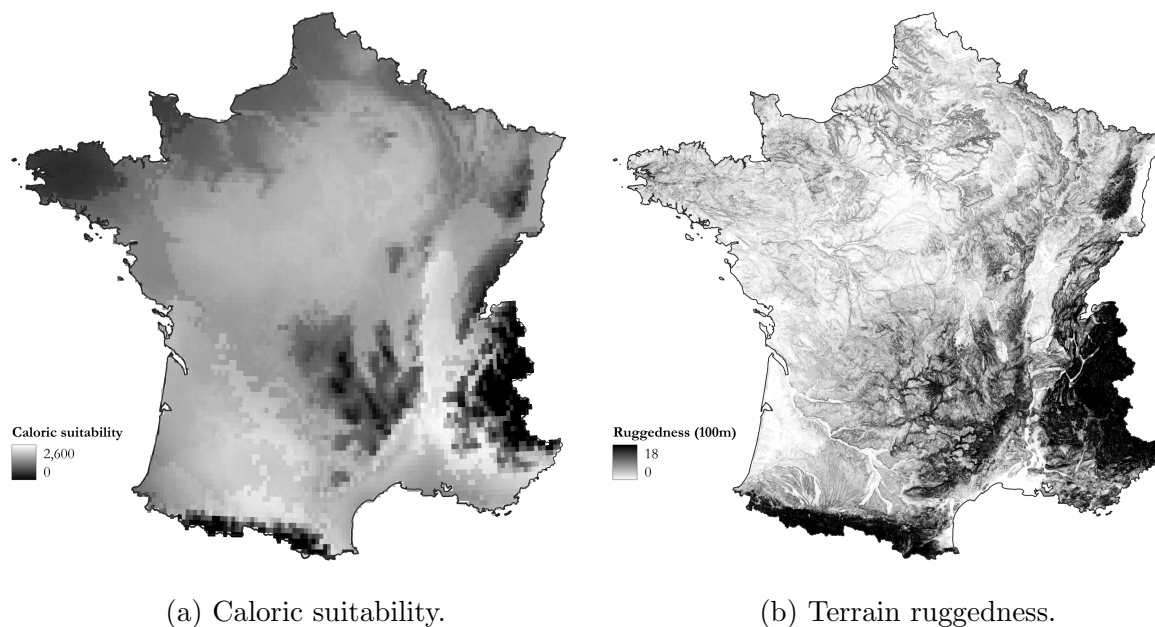


Figure H7: Land characteristics.

*Notes:* In Panel (a), this figure displays the post-1500 average caloric suitability index based on the `post1500AverageCalories` raster file of Galor and Özak (2016). Darker areas indicate lower caloric suitability. In Panel (b), it displays terrain ruggedness index based on the rescaled `tri` raster file of Nunn and Puga (2012) in hundreds of meters. Darker areas indicate greater terrain ruggedness. The underlying shapefile of contemporary France is from IGN (2021).

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