SUPPLEMENTARY MATERIAL

PANDEMICS AND POLITICAL DEVELOPMENT
The Electoral Legacy of the Black Death in Germany

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A Supplementary Material

This supplementary material includes additional empirical evidence and further discussion of claims that were made in the article "Pandemics and Political Development: The Electoral Legacy of the Black Death in Germany" (*World Politics*, Vol. 73, No. 3, July 2021). In subsection A.1, we provide summary statistics for electoral districts in Imperial Germany. In subsection A.2, we show the results for two outcome variables in Imperial Germany when using Tobit models instead of OLS regression. In subsection A.3, we include additional control variables that were not in the main analysis because they may be subject to post-treatment bias. In subsection A.4, we provide a second empirical response to the argument that the Reformation (instead of the Black Death) could have been responsible for the observed patterns in nineteenth-century Germany. In subsection A.5, we exclude a number of observations when calculating the *BDEI score*. In subsection A.6, we provide results for the outcome variable *landholding inequality* conditional on the relevance of agriculture versus other sectors of the economy. In subsection A.7, we use the timing of Black Death outbreaks as an instrument in a two-stage least squares regression to more effectively isolate the exogenous component of local Black Death intensity. In subsection A.8, we show results when using dummy variables instead of absolute distances to geographic features. In subsection A.9, we account for historical information asymmetries in agricultural production potential. In subsection A.10, we introduce quasi-random spatial fixed effects to address the possibility of unobserved regional heterogeneity. In subsection A.11, we use two alternative datasets of Black Death outbreaks to check if our results hold when using a different set of underlying observations. In subsection A.12, we introduce spatial fixed effects based on pretreatment administrative units as an alternative method of accounting for unobserved regional heterogeneity in initial conditions. In subsection A.13, we extend our main analysis to (1) all conservative parties in the 1871 election, (2) all liberal/moderate parties in the 1871 election, and (3) Conservative Party vote shares in the subsequent 1874 election. In subsection A.14, we take cities' population sizes into account when computing the *BDEI score*. In subsection A.15, we manually limit the observations taken into account when computing the *BDEI score* to those that are inside or immediately neighbor Germany. In subsection A.16, we account for agricultural potential as a possible (co-)determinant of socioeconomic structures. In subsection A.17, we provide summary statistics for Weimar Germany's electoral districts. In subsection A.18, we show the results for both outcome variables in Weimar Germany when using Tobit models instead of OLS regression. In subsection A.19, we analyze the impact of the *BDEI score* on the combined vote share of the Weimar Republic's two major right-wing parties. In subsection A.20, we provide summary statistics for towns in pre-Reformation Germany. In subsection A.21, we measure the 'occurrence of' rather than 'changes in' participative elections in pre-Reformation Germany. In subsection A.22, we provide summary statistics for early nineteenth-century Prussia. In subsection A.23, we show the results for both outcome variables in early nineteenth-century Prussia when using Tobit models instead of OLS regression. In subsection A.24, we present additional maps with the geographic distribution of the *BDEI score*. In subsection A.25, we address potential objections related to the empirical design, including (1) our focus on the 1347–1351 pandemic, (2) possible divergence in preexisting political-economic institutions, and (3) the non-inclusion of the Free Conservative Party in our main analysis. Finally, in subsection A.26, we provide a detailed qualitative illustration of the mechanisms leading to the different political-economic equilibria that we outline in our theory.

A.1 Imperial Germany: Descriptive Summary Statistics

Table A.1 shows descriptive summary statistics for electoral districts in Imperial Germany.

Table A1: Descriptive Statistics — Imperial Germany

Variable	n	Min	q_1	$\bar{x}$	$\tilde{x}$	q_3	Max	IQR
BDEI score v1	397	-2.57	-0.67	0.00	0.21	0.86	1.39	1.54
BDEI score v2	397	-2.24	-0.74	0.00	0.16	0.86	1.45	1.61
BDEI score v3	397	-2.11	-0.76	0.00	0.17	0.85	1.49	1.61
BDEI score v4	397	-2.07	-0.78	0.00	0.28	0.82	1.45	1.59
BDEI score v5	397	-2.05	-0.76	0.00	0.37	0.82	1.34	1.58
Landholding inequality (Gini coefficient)	397	0.46	0.63	0.73	0.73	0.83	0.95	0.20
Conservative Party vote share 1871	382	0.00	0.00	0.16	0.00	0.29	1.00	0.29
Net electoral disputes 1871–1912	397	0.00	1.00	2.39	2.00	3.00	10.00	2.00
Urban density 1300 (standardized)	397	-3.06	-0.38	0.00	0.26	0.75	1.20	1.13
Distance to the nearest major port (km)	397	0.00	59.32	164.59	141.50	255.86	475.98	196.54
Distance to the nearest medieval trade city (km)	397	0.00	34.54	94.92	63.12	116.21	477.05	81.68
Distance to the ocean (km)	397	0.00	91.05	222.98	217.09	346.25	582.91	255.20
Distance to the nearest large river (km)	397	0.00	0.00	34.37	20.45	55.72	157.30	55.72
Elevation	397	-15.00	65.00	221.51	158.00	330.00	979.00	265.00
Population size (in 1000s)	391	32.06	91.67	103.30	104.40	114.34	208.00	22.67
Prussia	397	0.00	0.00	0.59	1.00	1.00	1.00	1.00
Proportion Catholic 1871	397	0.00	0.02	0.37	0.23	0.73	1.00	0.71
Dummy major port ($\leq$ 10km)	397	0.00	0.00	0.08	0.00	0.00	1.00	0.00
Dummy medieval trade city ($\leq$ 10km)	397	0.00	0.00	0.11	0.00	0.00	1.00	0.00
Dummy ocean ($\leq$ 10km)	397	0.00	0.00	0.11	0.00	0.00	1.00	0.00
Dummy large river ($\leq$ 10km)	397	0.00	0.00	0.39	0.00	1.00	1.00	1.00
Caloric variability	397	6.21	46.85	154.39	124.86	219.77	1449.68	172.93
Vote share of all liberal/moderate parties 1871	380	0.00	0.43	0.66	0.70	1.00	1.00	0.57
Vote share of all conservative parties 1871	382	0.00	0.00	0.25	0.11	0.48	1.00	0.48
Conservative Party vote share 1874	397	0.00	0.00	0.09	0.00	0.06	0.77	0.06
Caloric potential	397	6416.96	8673.28	9022.08	9078.08	9408.96	10109.44	735.68
BDEI score v1 (alternative version)	397	-2.66	-0.72	0.00	0.17	0.78	1.60	1.50
BDEI score v2 (alternative version)	397	-2.42	-0.75	0.00	0.22	0.77	1.66	1.52
BDEI score v3 (alternative version)	397	-2.31	-0.68	0.00	0.28	0.77	1.63	1.45
BDEI score v4 (alternative version)	397	-2.24	-0.67	0.00	0.36	0.73	1.54	1.40
BDEI score v5 (alternative version)	397	-2.17	-0.70	0.00	0.44	0.76	1.41	1.46
BDEI score v1 (2SLS)	397	-2.62	-0.69	0.00	0.22	0.86	1.34	1.56
BDEI score v2 (2SLS)	397	-2.28	-0.77	0.00	0.19	0.88	1.38	1.65
BDEI score v3 (2SLS)	397	-2.13	-0.75	0.00	0.20	0.88	1.36	1.64
BDEI score v4 (2SLS)	397	-2.06	-0.78	0.00	0.28	0.88	1.32	1.66
BDEI score v5 (2SLS)	397	-2.00	-0.82	0.00	0.33	0.83	1.24	1.65
BDEI score v1 (alt. data 1) (Büntgen et al.)	397	-2.71	-0.73	0.00	0.16	0.82	1.53	1.55
BDEI score v2 (alt. data 1) (Büntgen et al.)	397	-2.33	-0.81	0.00	0.11	0.82	1.72	1.62
BDEI score v3 (alt. data 1) (Büntgen et al.)	397	-2.13	-0.84	0.00	0.08	0.81	1.88	1.65
BDEI score v4 (alt. data 1) (Büntgen et al.)	397	-2.01	-0.87	0.00	0.06	0.79	2.02	1.66
BDEI score v5 (alt. data 1) (Büntgen et al.)	397	-1.96	-0.88	0.00	0.11	0.76	2.16	1.64
BDEI score v1 (alt. data 2) (Schmid et al.)	397	-2.86	-0.67	0.00	0.22	0.81	1.37	1.48
BDEI score v2 (alt. data 2) (Schmid et al.)	397	-2.45	-0.76	0.00	0.13	0.84	1.53	1.60
BDEI score v3 (alt. data 2) (Schmid et al.)	397	-2.19	-0.77	0.00	0.09	0.83	1.66	1.60
BDEI score v4 (alt. data 2) (Schmid et al.)	397	-2.03	-0.83	0.00	0.09	0.84	1.76	1.67
BDEI score v5 (alt. data 2) (Schmid et al.)	397	-1.92	-0.90	0.00	0.06	0.84	1.86	1.74
BDEI score v1 (weighted by population)	397	-2.58	-0.71	0.00	0.16	0.86	1.56	1.57
BDEI score v2 (weighted by population)	397	-2.23	-0.78	0.00	0.17	0.87	1.72	1.65
BDEI score v3 (weighted by population)	397	-2.11	-0.77	0.00	0.19	0.84	1.83	1.61
BDEI score v4 (weighted by population)	397	-2.09	-0.76	0.00	0.31	0.76	1.83	1.51
BDEI score v5 (weighted by population)	397	-2.07	-0.69	0.00	0.36	0.78	1.69	1.47
BDEI score v1 (neighboring regions only)	397	-2.58	-0.70	0.00	0.26	0.79	1.39	1.50
BDEI score v2 (neighboring regions only)	397	-2.38	-0.65	0.00	0.35	0.79	1.31	1.44
BDEI score v3 (neighboring regions only)	397	-2.25	-0.68	0.00	0.44	0.81	1.09	1.48
BDEI score v4 (neighboring regions only)	397	-2.09	-0.70	0.00	0.46	0.72	1.32	1.42
BDEI score v5 (neighboring regions only)	397	-1.94	-0.74	0.00	0.44	0.64	1.61	1.39

A.2 Imperial Germany: Tobit Models as an Alternative Specification

In our main empirical analysis we use OLS regression to estimate the impact of the *BDEI score* on *landholding inequality* and *Conservative Party vote share*. Because these two outcome variables are bounded from above and below, we also use Tobit models as an alternative empirical specification.

Table A2 shows the results with respect to *landholding inequality* when using Tobit models. Furthermore, Table A3 shows the results with respect to *Conservative Party vote share* when using Tobit models. In both cases, the direction, magnitude, and significance of the coefficients do not change in a way that would alter our previous interpretation.

Table A2: Landholding Inequality (Gini Coefficient) (Tobit)

	Dependent variable:									
	Landholding Inequality (Gini Coefficient)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.061***					−0.053***				
	(0.005)					(0.007)				
BDEI score v2		−0.061***					−0.049***			
		(0.005)					(0.007)			
BDEI score v3			−0.059***					−0.048***		
			(0.005)					(0.007)		
BDEI score v4				−0.057***					−0.046***	
				(0.005)					(0.007)	
BDEI score v5					−0.053***					−0.042***
					(0.005)					(0.007)
Urb. dens. 1300						−0.014	−0.017*	−0.019*	−0.019*	−0.021*
						(0.010)	(0.010)	(0.010)	(0.010)	(0.011)
Dist. maj. port						−0.001***	−0.001***	−0.001***	−0.001***	−0.001***
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. trade city						−0.0002***	−0.0002***	−0.0002**	−0.0001**	−0.0001**
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. ocean						0.0001	0.0001	0.0001	0.0001	0.0002
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. river						0.00000	0.00001	0.00002	0.00003	0.0001
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Elevation						−0.0001***	−0.0001***	−0.0001***	−0.0001***	−0.0002***
						(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)
Constant	0.726***	0.726***	0.726***	0.726***	0.726***	0.844***	0.844***	0.843***	0.843***	0.842***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Observations	397	397	397	397	397	397	397	397	397	397
Log Likelihood	338.781	337.299	334.267	328.939	321.554	481.971	482.407	480.764	477.418	472.479

Note: Tobit *p<0.1; **p<0.05; ***p<0.01

Table A3: Conservative Party Vote Share (Tobit)

	Dependent variable:									
	Conservative Party Vote Share									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.229***					−0.306***				
	(0.026)					(0.052)				
BDEI score v2		−0.230***					−0.283***			
		(0.026)					(0.047)			
BDEI score v3			−0.227***					−0.279***		
			(0.026)					(0.047)		
BDEI score v4				−0.220***					−0.290***	
				(0.026)					(0.048)	
BDEI score v5					−0.210***					−0.307***
					(0.026)					(0.051)
Urb. dens. 1300						0.188***	0.166***	0.167***	0.190***	0.223***
						(0.064)	(0.062)	(0.062)	(0.064)	(0.067)
Dist. maj. port						−0.0001	−0.0001	−0.0001	−0.00004	0.0001
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. trade city						0.0005	0.001	0.001	0.001*	0.001*
						(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Dist. ocean						−0.001*	−0.001*	−0.001*	−0.001*	−0.002**
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. river						−0.001	−0.001	−0.001	−0.001	−0.001
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Elevation						0.0001	0.0001	0.0001	0.0001	0.0001
						(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Constant	−0.080***	−0.081***	−0.081***	−0.080***	−0.079**	0.147*	0.140*	0.144*	0.160**	0.185**
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.077)	(0.076)	(0.076)	(0.077)	(0.079)
Observations	382	382	382	382	382	382	382	382	382	382
Log Likelihood	−213.050	−213.422	−214.693	−216.896	−219.913	−184.399	−184.203	−184.126	−183.781	−183.522

Note: Tobit *p<0.1; **p<0.05; ***p<0.01

A.3 Imperial Germany: Extension 1 — Including Additional Covariates

In the main body of the article we did not include any political or social control variables specific to nineteenth-century Germany in order to avoid introducing *posttreatment bias*. Nevertheless, in a limited number of cases the inclusion of further controls from this time period may be justified due to their substantive or technical relevance. We elaborate on two specific instances below. Importantly, these results can only be seen as complementary to our main results, not as a substitute for them.

First, while most electoral districts were similar in population size (as they were based on the 1864 census), some were above or below the average, for example in cases in which migratory movements after 1864 had changed district sizes. Therefore, we control for the *population size* of electoral districts.

Second, historians often differentiate between Prussian and "non-Prussian" Imperial Germany, especially when it comes to electoral outcomes.[1] The Conservative Party originated in Prussia and did not have a significant degree of party organization in many other parts of the country. In fact, in many areas no comparable (conservatively-oriented) party was a viable competitor in elections. Of course, this is clearly *a result of* differing socioeconomic conditions and political norms/traditions that were also long-term outcomes of variation in Black Death intensities. Nevertheless, including a control variable for *Prussia* may be considered a more "conservative" empirical strategy.

The results we obtain can be found in Table A4. For the most part, they confirm previous findings and are in line with our theory. It is noticeable that Prussian districts experienced a significantly higher number of *electoral disputes* between 1871 and 1912.

[1]Sperber 1997, p. 29.

Table A4: Extension 1 — Including Additional Covariates

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1	−0.050***			−0.142***			−0.318**		
	(0.015)			(0.029)			(0.124)		
BDEI score v3		−0.045***			−0.129***			−0.290**	
		(0.013)			(0.026)			(0.113)	
BDEI score v5			−0.039***			−0.131***			−0.292**
			(0.013)			(0.030)			(0.120)
Population	0.0002	0.0002	0.0002	−0.001	−0.001	−0.001	0.006***	0.006***	0.006***
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Prussia	0.001	0.001	−0.0001	0.141***	0.140***	0.131***	0.290***	0.290***	0.275***
	(0.018)	(0.018)	(0.020)	(0.042)	(0.042)	(0.045)	(0.103)	(0.102)	(0.102)
Urb. dens. 1300	−0.018	−0.023	−0.027	0.159***	0.148***	0.157***	0.364***	0.342**	0.367**
	(0.018)	(0.018)	(0.018)	(0.058)	(0.054)	(0.055)	(0.141)	(0.137)	(0.146)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0004	0.0003	0.0004	0.001	0.001	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. trade city	−0.0002	−0.0002	−0.0002	0.001***	0.001***	0.001***	0.001	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0001	0.0001	0.0002	−0.0005	−0.001	−0.001	−0.002*	−0.002*	−0.002*
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. river	0.00001	0.00002	0.0001	−0.001	−0.001	−0.001	0.001	0.001	0.001
	(0.0001)	(0.0001)	(0.0002)	(0.0004)	(0.0004)	(0.0004)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0001***	0.00005	0.0001	0.00005	0.001	0.001	0.0005
	(0.00005)	(0.00005)	(0.00005)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.817***	0.816***	0.817***	0.120	0.119	0.137	0.147	0.142	0.190
	(0.042)	(0.043)	(0.045)	(0.086)	(0.086)	(0.090)	(0.334)	(0.331)	(0.346)
Observations	391	391	391	376	376	376	391	391	391
R^2	0.643	0.641	0.626	0.370	0.371	0.362			
Adjusted R^2	0.634	0.632	0.617	0.355	0.355	0.346			
Note: Clustered standard errors							*p<0.1; **p<0.05; ***p<0.01		

A.4 Imperial Germany: Extension 2 — Accounting for a Potential Effect of the Reformation

In this extension, we provide a second empirical response to the argument that the Reformation—and not the Black Death—could have been responsible for some of the variation in relevant outcome variables that we observe in Imperial Germany. During the Reformation, which began in 1517, many rulers of principalities across Germany turned away from the Catholic Church and embraced Protestantism. Of course, the emergence and diffusion of the Reformation itself could partially be a consequence of variation in the intensity of the Black Death. While we have already demonstrated that key changes in political institutions at the town level *predate* the Reformation period, we include additional models that account for the *proportion of an electoral district's population that is Catholic* (based on data by Sperber[2]). This control variable picks up differences between areas of Germany where Catholicism is strong and those where Protestantism is strong, which largely is a long-term outcome of the Reformation.

Table A5 shows the results of our extended analysis. The findings are again mostly in line with our theory and confirm previously obtained results. Only the effect of the *BDEI score* on *net electoral disputes* is no longer significant. However, as with extension 1 (subsection A.3), we caution the reader to carefully interpret these results due to the high probability of posttreatment bias.

[2]Sperber 1997.

Table A5: Extension 2 — Accounting for a Potential Effect of the Reformation

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1	−0.034*			−0.088**			0.011		
	(0.018)			(0.037)			(0.138)		
BDEI score v3		−0.030*			−0.080**			0.009	
		(0.016)			(0.032)			(0.125)	
BDEI score v5			−0.018			−0.075**			0.021
			(0.015)			(0.035)			(0.132)
Percent Catholic	−0.043*	−0.045*	−0.061***	−0.148***	−0.148***	−0.162***	−0.952***	−0.951***	−0.961***
	(0.024)	(0.024)	(0.023)	(0.055)	(0.054)	(0.054)	(0.203)	(0.201)	(0.201)
Population	0.0002	0.0002	0.0001	−0.001*	−0.001*	−0.001*	0.004*	0.004*	0.004*
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Prussia	0.006	0.006	0.008	0.158***	0.157***	0.153***	0.385***	0.385***	0.389***
	(0.019)	(0.020)	(0.020)	(0.044)	(0.044)	(0.047)	(0.115)	(0.114)	(0.115)
Urb. dens. 1300	−0.041*	−0.046**	−0.059***	0.080	0.073	0.070	−0.110	−0.108	−0.122
	(0.023)	(0.022)	(0.022)	(0.065)	(0.059)	(0.059)	(0.159)	(0.152)	(0.163)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0001	0.00004	0.00001	−0.001	−0.001	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. trade city	−0.0002*	−0.0002*	−0.0002	0.001***	0.001***	0.001***	0.0002	0.0002	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.0003)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0003	0.0003	0.0004**	−0.00004	−0.00005	−0.00003	0.001	0.001	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. river	0.00005	0.0001	0.0001	−0.001	−0.001	−0.001	0.001	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0001***	0.00004	0.00004	0.00004	0.0005	0.0005	0.0005
	(0.00005)	(0.00005)	(0.00005)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.826***	0.826***	0.827***	0.160*	0.159*	0.173*	0.384	0.385	0.379
	(0.044)	(0.045)	(0.047)	(0.090)	(0.090)	(0.093)	(0.316)	(0.314)	(0.332)
Observations	391	391	391	376	376	376	391	391	391
R^2	0.650	0.648	0.640	0.390	0.389	0.385			
Adjusted R^2	0.641	0.639	0.631	0.373	0.373	0.369			
Note: Clustered standard errors							*p<0.1; **p<0.05; ***p<0.01		

A.5 Imperial Germany: Extension 3 — Using an Alternative Version of the BDEI Score

The formula on which the *BDEI score* is based automatically and exponentially discounts the weight of outbreak observations according to their distance from a location under consideration. Therefore, observations inside and in the immediate vicinity of Germany have by far the largest impact on the score, while the weight of observations that are farther away approaches zero.

In spite of the score's technical features and despite the fact that sea travel was often much more efficient than land travel (which justifies the general inclusion of observations from the British Isles in our calculations),[3] we also present results based on an alternative *BDEI score* that systematically excludes all recorded outbreaks on the British Isles.[4]

The results can be found in Table A6 and are substantively almost identical to previously obtained results, even when including control variables. The fact that the results remain largely unchanged indicates that the formula that is the basis of the *BDEI score* already sufficiently discounts more distant observations and that the substantive interpretation of our results is robust across different approaches to computing the score.

[3]Cf. Benedictow 2004, p. 185.

[4]Excluding the British Isles may also be a more conservative strategy in part because we observe a relatively large number of outbreak observations there. This is likely related to the generally better survival of relevant source documents in England; Aberth 2021, pp. 38–39. Furthermore, in extension 13 (subsection A.15), we go one step further and manually exclude all but the neighboring regions (as well as Germany itself) from the calculation of the *BDEI score*.

Table A6: Extension 3 — Alternative Version of the BDEI Score

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1 (alt.)	−0.058***			−0.149***			−0.381**		
	(0.018)			(0.044)			(0.152)		
BDEI score v3 (alt.)		−0.052***			−0.150***			−0.356**	
		(0.017)			(0.046)			(0.141)	
BDEI score v5 (alt.)			−0.037***			−0.139***			−0.289**
			(0.014)			(0.047)			(0.134)
Urb. dens. 1300	−0.009	−0.007	−0.022	0.115*	0.138*	0.139*	0.241	0.275	0.237
	(0.021)	(0.022)	(0.022)	(0.064)	(0.071)	(0.074)	(0.164)	(0.173)	(0.178)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0002	0.0003	0.0003	−0.0003	−0.0001	−0.0004
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. trade city	−0.0001	−0.0001	−0.0001	0.001***	0.001***	0.001***	0.0005	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.0003)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0002	0.0002	0.0003	−0.0003	−0.001	−0.001	−0.001	−0.002	−0.002
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. river	−0.00002	0.00000	0.0001	−0.001	−0.001	−0.001	0.0005	0.001	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0002***	0.0001	0.0001	0.0001	0.001	0.001	0.0004
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.811***	0.816***	0.824***	0.119**	0.129**	0.164***	0.927***	0.965***	1.045***
	(0.025)	(0.024)	(0.023)	(0.053)	(0.052)	(0.052)	(0.139)	(0.147)	(0.168)
Observations	397	397	397	382	382	382	397	397	397
R^2	0.635	0.627	0.608	0.301	0.303	0.298			
Adjusted R^2	0.629	0.620	0.601	0.288	0.290	0.285			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.6 Imperial Germany: Extension 4 — Conditioning Landholding Inequality on the Size of the Agricultural Workforce

In this extension, we respond to the argument that *landholding inequality* is of the greatest socioeconomic relevance when agriculture is a key sector of the economy. The homogeneity/heterogeneity of an economy may influence the extent to which elites can use their dominant position to influence voting patterns.[5] Thus, we limit our analysis of land inequality patterns to districts that have a share of at least one third of workers engaged in the agricultural sector.[6] In other districts, where industry and services account for a greater share of labor force utilization, our measure of *landholding inequality* is less substantively meaningful.

We replicate all previous analyses with this new constraint and find that all our results still hold, with small changes to coefficient magnitudes. Table A7 shows these results for models without (1–5) and with (6–10) control variables. Moreover, when applying Tobit models, as shown in Table A8, we also find results similar to previous Tobit regressions.

[5] Mares 2015, pp. 23–24, chap. 4.

[6] Data on the agricultural workforce are by Reibel 2007, with Ziblatt 2009 offering a digitized version.

Table A7: Extension 4 — Conditioning Landholding Inequality on the Size of the Agricultural Workforce (OLS)

	Dependent variable:									
	Landholding Inequality (Gini Coefficient)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	-0.072^{***}					-0.071^{***}				
	(0.009)					(0.014)				
BDEI score v2		-0.073^{***}					-0.068^{***}			
		(0.009)					(0.013)			
BDEI score v3			-0.072^{***}					-0.066^{***}		
			(0.009)					(0.012)		
BDEI score v4				-0.069^{***}					-0.064^{***}	
				(0.009)					(0.012)	
BDEI score v5					-0.065^{***}					-0.059^{***}
					(0.009)					(0.012)
Urb. dens. 1300						0.009	0.006	0.004	0.004	0.0005
						(0.016)	(0.015)	(0.015)	(0.016)	(0.017)
Dist. maj. port						-0.0003^{**}	-0.0003^{**}	-0.0004^{**}	-0.0004^{**}	-0.0004^{**}
						(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Dist. trade city						−0.0001	−0.0001	−0.0001	−0.0001	−0.0001
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. ocean						−0.0001	−0.0001	−0.0001	−0.0001	−0.00003
						(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Dist. river						−0.0001	−0.0001	−0.0001	−0.0001	−0.00004
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Elevation						-0.0001^{**}	-0.0001^{**}	-0.0001^{**}	-0.0001^{**}	-0.0001^{**}
						(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00005)
Constant	0.708^{***}	0.708^{***}	0.708^{***}	0.708^{***}	0.708^{***}	0.829^{***}	0.828^{***}	0.827^{***}	0.827^{***}	0.827^{***}
	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)	(0.026)	(0.025)	(0.025)	(0.024)	(0.023)
Observations	307	307	307	307	307	307	307	307	307	307
R^2	0.389	0.389	0.377	0.351	0.312	0.716	0.718	0.714	0.705	0.692
Adjusted R^2	0.387	0.387	0.375	0.349	0.309	0.709	0.711	0.707	0.699	0.684

Note: OLS; clustered standard errors

$^{*}p<0.1$; $^{**}p<0.05$; $^{***}p<0.01$

Table A8: Extension 4 — Conditioning Landholding Inequality on the Size of the Agricultural Workforce (Tobit)

	Dependent variable:									
	Landholding Inequality (Gini Coefficient)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.072***					−0.071***				
	(0.005)					(0.008)				
BDEI score v2		−0.073***					−0.068***			
		(0.005)					(0.007)			
BDEI score v3			−0.072***					−0.066***		
			(0.005)					(0.007)		
BDEI score v4				−0.069***					−0.064***	
				(0.005)					(0.008)	
BDEI score v5					−0.065***					−0.059***
					(0.006)					(0.008)
Urb. dens. 1300						0.009	0.006	0.004	0.004	0.0005
						(0.011)	(0.011)	(0.011)	(0.012)	(0.012)
Dist. maj. port						−0.0003***	−0.0003***	−0.0004***	−0.0004***	−0.0004***
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. trade city						−0.0001**	−0.0001**	−0.0001*	−0.0001	−0.0001
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. ocean						−0.0001	−0.0001	−0.0001	−0.0001	−0.00003
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. river						−0.0001	−0.0001	−0.0001	−0.0001	−0.00004
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Elevation						−0.0001***	−0.0001***	−0.0001***	−0.0001***	−0.0001***
						(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)
Constant	0.708***	0.708***	0.708***	0.708***	0.708***	0.829***	0.828***	0.827***	0.827***	0.827***
	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.012)	(0.012)	(0.012)	(0.012)	(0.013)
Observations	307	307	307	307	307	307	307	307	307	307
Log Likelihood	289.820	289.667	286.787	280.515	271.454	407.344	408.308	406.289	401.734	394.650

Note: Tobit — *p<0.1; **p<0.05; ***p<0.01

A.7 Imperial Germany: Extension 5 — Two-Stage Least Squares Models

In our main analysis, we include a large number of geographic variables and *urban density 1300* to account for factors that could influence both local Black Death intensity and long-term political-economic outcomes. Despite our comprehensive attempts to control for these geographic variables, it would be desirable to more rigorously isolate the exogenous component of Black Death intensity. In this respect, we follow a similar strategy to that employed by Jedwab, Johnson, and Koyama, who use the timing of the onset of the plague to predict mortality rates in an instrumental-variable framework.[7]

As shown in Table A9, we use a combination of quarterly and yearly dummy variables to predict *local mortality rates* (LMR). The first-stage regressions show two interesting patterns. First, outbreaks that began in the second quarter (April, May, June) led to the highest mortality rates. Second, places that were hit in later years of the outbreak had significantly lower mortality rates than those hit in early years. These findings are fully consistent with the observations of historians that (1) the Black Death was most severe when it was able to spread in the late spring and summer months and (2) the overall intensity of the plague decreased over time.[8]

In a second step, we compute a new *BDEI score* based on the predicted rather than the actual values of local mortality rates. The results of the analysis for this second-stage *BDEI score* are in Table A10. The estimated effects of Black Death intensity are statistically significant and similar in magnitude to those reported in the main text. To the degree there is any change, the estimated impacts of the Black Death based on the 2SLS procedure are slightly larger for *Conservative Party vote shares* and *net electoral disputes* than the original OLS estimates.

[7] Jedwab, Johnson, and Koyama 2019b.

[8] Aberth 2021, p. 26; Benedictow 2004; Gottfried 1983; Campbell 2016.

Table A9: Predicting Outbreak Intensity Based on Timing (OLS)

	Dependent variable:
	Local Mortality Rate
First quarter	0.035
	(0.038)
Second quarter	0.087**
	(0.035)
Third quarter	−0.024
	(0.037)
1348	−0.157**
	(0.061)
1349	−0.215***
	(0.063)
1350	−0.301***
	(0.069)
Constant	0.584***
	(0.053)
Observations	178
R^2	0.188
Adjusted R^2	0.160
Note: OLS	*p<0.1; **p<0.05; ***p<0.01

Table A10: Extension 5 — Two-Stage Least Squares Models

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1 (2SLS)	−0.055***			−0.145***			−0.325**		
	(0.016)			(0.036)			(0.140)		
BDEI score v3 (2SLS)		−0.052***			−0.136***			−0.288**	
		(0.014)			(0.033)			(0.127)	
BDEI score v5 (2SLS)			−0.052***			−0.146***			−0.280**
			(0.014)			(0.036)			(0.130)
Urb. dens. 1300	−0.012	−0.014	−0.011	0.111*	0.105*	0.124**	0.194	0.167	0.180
	(0.020)	(0.019)	(0.019)	(0.058)	(0.054)	(0.057)	(0.158)	(0.154)	(0.161)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0002	0.0002	0.0002	−0.0005	−0.001	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. trade city	−0.0002	−0.0002	−0.0001	0.001**	0.001***	0.001***	0.0001	0.0003	0.0003
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0001	0.0001	0.0001	−0.001	−0.001	−0.001	−0.002	−0.002	−0.002
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. river	0.00000	0.00002	0.0001	−0.001	−0.001	−0.001	0.001	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0005)	(0.0005)	(0.0005)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0001***	0.0001	0.0001	0.0001	0.0005	0.0005	0.0005
	(0.00005)	(0.00005)	(0.00005)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.839***	0.841***	0.845***	0.193***	0.198***	0.215***	1.092***	1.090***	1.118***
	(0.025)	(0.025)	(0.025)	(0.063)	(0.063)	(0.061)	(0.149)	(0.149)	(0.161)
Observations	397	397	397	382	382	382	397	397	397
R^2	0.641	0.643	0.636	0.316	0.319	0.323			
Adjusted R^2	0.635	0.636	0.629	0.303	0.307	0.310			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.8 Imperial Germany: Extension 6 — Using Dummy Variables Instead of Absolute Distances to Geographic Features

In our main regression analysis, we use absolute distances to several geographic features (such as the ocean or large rivers) to account for variation in proximity to trade routes. An alternative approach is to use dummy variables that indicate if a feature is within a certain distance. This approach is motivated by the possibility that areas in close vicinity to the ocean or a large river could be disproportionately affected by trade levels. Accordingly, in this extension we replace all absolute distance measures with dummy variables indicating if any of our original geographic features are located at a distance of 10 km or less from the electoral district. The results can be found in Table A11 and are fully in line with previous findings (with small changes to the magnitude of coefficients).

Table A11: Extension 6 — Using Dummy Variables Instead of Absolute Distances to Geographic Features

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1	−0.054***			−0.119***			−0.272***		
	(0.012)			(0.031)			(0.095)		
BDEI score v3		−0.047***			−0.102***			−0.229***	
		(0.012)			(0.028)			(0.088)	
BDEI score v5			−0.043***			−0.094***			−0.209**
			(0.011)			(0.032)			(0.089)
Urb. dens. 1300	0.016	0.009	0.008	0.030	0.013	0.012	0.141*	0.098	0.096
	(0.010)	(0.009)	(0.010)	(0.037)	(0.034)	(0.036)	(0.078)	(0.071)	(0.076)
Dummy maj. port	0.079***	0.082***	0.089***	−0.058	−0.053	−0.039	0.103	0.113	0.144
	(0.018)	(0.018)	(0.019)	(0.042)	(0.043)	(0.042)	(0.107)	(0.104)	(0.103)
Dummy trade city	−0.025	−0.025	−0.025	−0.100***	−0.100***	−0.102***	−0.039	−0.038	−0.043
	(0.022)	(0.022)	(0.022)	(0.025)	(0.025)	(0.026)	(0.137)	(0.136)	(0.135)
Dummy ocean	−0.035**	−0.035**	−0.033**	0.009	0.005	0.010	0.176	0.168	0.176
	(0.015)	(0.015)	(0.015)	(0.054)	(0.057)	(0.058)	(0.135)	(0.132)	(0.132)
Dummy river	−0.018	−0.020*	−0.022*	−0.027	−0.032	−0.036	−0.167	−0.178	−0.188*
	(0.011)	(0.012)	(0.012)	(0.023)	(0.023)	(0.023)	(0.112)	(0.111)	(0.111)
Elevation	−0.0003***	−0.0003***	−0.0003***	−0.0003***	−0.0003***	−0.0003***	−0.001	−0.001*	−0.001*
	(0.00004)	(0.00003)	(0.00003)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.807***	0.808***	0.811***	0.238***	0.243***	0.249***	1.005***	1.019***	1.035***
	(0.014)	(0.014)	(0.014)	(0.042)	(0.042)	(0.045)	(0.129)	(0.128)	(0.126)
Observations	397	397	397	382	382	382	397	397	397
R^2	0.565	0.557	0.538	0.263	0.254	0.239			
Adjusted R^2	0.557	0.549	0.530	0.249	0.240	0.225			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.9 Imperial Germany: Extension 7 — Accounting for Historical Information Asymmetries

In their study on historical political development, Ali Ahmed and David Stasavage suggest that information asymmetries between rulers and the ruled contributed to the emergence of government by council. Councils, as an early form of political participation, helped mitigate information asymmetries that posed challenges to the setting of tax rates.[9]

Considering their historical focus, Ahmed and Stasavage construct and rely on a measure of *caloric variability* in agricultural production potential to quantify the aforementioned information asymmetries. Their indicator is based on the extent of local variation in the maximum caloric potential of crops grown in a given area.[10] Accordingly, the variable is related to the most fundamental economic activity in premodern societies, namely, agriculture. Given the arguments by Ahmed and Stasavage, *caloric variability* may be an important (co-)determinant of early democratic institutions, and thus an important variable to control for when analyzing the long-term influences on democratic practices. Therefore, we present an extended analysis below.

Following Ahmed and Stasavage, we use data by Oded Galor and Ömer Özak on maximum *caloric potential* (pre-1500) to calculate local variation based on the standard deviation of surrounding raster cells (*caloric variability*).[11] We then include this measure as an additional control variable in our regression analyses. We find that adding *caloric variability* does not affect the results in a way that would compromise our earlier interpretation. All details can be found in Table A12.

[9] Ahmed and Stasavage 2020.
[10] Ahmed and Stasavage 2020.
[11] Galor and Özak 2016.

Table A12: Extension 7 — Accounting for Historical Information Asymmetries

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1	−0.052***			−0.142***			−0.313**		
	(0.015)			(0.035)			(0.135)		
BDEI score v3		−0.047***			−0.130***			−0.283**	
		(0.014)			(0.032)			(0.123)	
BDEI score v5			−0.042***			−0.136***			−0.294**
			(0.013)			(0.035)			(0.127)
Caloric variability	−0.00002	−0.00002	−0.00002	0.00002	0.00002	0.00001	−0.00002	−0.00003	−0.00004
	(0.00003)	(0.00003)	(0.00003)	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.0003)
Urb. dens. 1300	−0.014	−0.019	−0.021	0.107*	0.097*	0.114**	0.183	0.160	0.198
	(0.019)	(0.019)	(0.019)	(0.057)	(0.053)	(0.057)	(0.156)	(0.151)	(0.161)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0002	0.0002	0.0002	−0.0005	−0.0005	−0.0004
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. trade city	−0.0002	−0.0002	−0.0001	0.001**	0.001***	0.001***	0.0001	0.0002	0.0003
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0001	0.0001	0.0002	−0.001	−0.001	−0.001	−0.002	−0.002	−0.002
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Dist. river	0.00000	0.00002	0.0001	−0.001	−0.001	−0.001	0.001	0.001	0.001
	(0.0001)	(0.0001)	(0.0002)	(0.0005)	(0.0005)	(0.0005)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0001***	0.0001	0.0001	0.0001	0.001	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0005)	(0.0005)	(0.0005)
Constant	0.845***	0.844***	0.843***	0.206***	0.206***	0.215***	1.123***	1.120***	1.152***
	(0.026)	(0.026)	(0.025)	(0.065)	(0.063)	(0.060)	(0.153)	(0.152)	(0.167)
Observations	397	397	397	382	382	382	397	397	397
R^2	0.641	0.639	0.623	0.318	0.318	0.315			
Adjusted R^2	0.633	0.631	0.616	0.303	0.304	0.301			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.10 Imperial Germany: Extension 8 — Introducing Quasi-Random Spatial Fixed Effects

In a response to Jonathan Homola, Miguel Pereira, and Margit Tavits,[12] Pepinsky, Goodman, and Ziller suggest that historical measures based on distance to locations can lead to incorrect inferences if researchers do not account for unobserved regional heterogeneity in their empirical specifications. Among other suggestions, they advocate for the use of spatial fixed effects to address this issue.[13]

In our case, the introduction of spatial fixed effects may be merited as well. However, there are two crucial differences between our article and the contribution by Homola, Pereira, and Tavits: First, while Homola, Pereira, and Tavits have precise data on all concentration camp locations (a central object of inquiry in their study) and distances to them, our *BDEI score* is an imperfect extrapolation based on the best available data. As such, it likely includes a random noise component. Due to the fact that our measure is an extrapolation that may include random noise (meaning that there likely is an unobserved component of Black Death intensity), it is possible that spatial fixed effects will absorb variation that may actually be due to differences in the historical intensity of plague outbreaks.

Second, our approach does not rely on the distance to the nearest outbreak location only. Instead, we take into account the entire set of outbreak locations weighted by their distance to the location under consideration. Therefore, our measure includes a spatial dependence component to begin with. These two factors make our analysis quite different from the analysis by Homola, Pereira, and Tavits. Although we present results with spatial fixed effects below, models that are limited to the spatial clustering of errors (as we use throughout the article) instead of spatial fixed effects are our preferred option.

[12] Homola, Pereira, and Tavits 2020b.
[13] Pepinsky, Goodman, and Ziller 2020.

To model unobserved spatial heterogeneity without introducing posttreatment bias[14], we create a quasi-random[15] global spatial grid consisting of 75x75 rectangular cells that—in the geographic area where Germany is located—are approximately 300 by 300 km in size.[16] The grid is presented in Figure A1. We observe that, without further modifications, the centroids of Imperial Germany's electoral districts are distributed across 16 rectangular cells. Cells with five or fewer observations are merged with the adjacent cell, which results in a total of 11 spatial groupings (fixed effect categories), with an average of 36.1 units per group.

Subsequently, we rerun our analysis with these spatial fixed effects as shown in Table A13. We find that the majority of our results still hold: With respect to *landholding inequality*, all versions of the *BDEI score* except for *v5* are significant at $p < 0.05$ (*v2* and *v4* are omitted from the table for space reasons). Furthermore, with respect to *Conservative Party vote share*, we can also confirm all previously obtained results. At the same time, introducing spatial fixed effects appears to weaken the results with respect to *net electoral disputes*: We no longer obtain results that are significant at $p < 0.05$. While there is a strong reduction in the significance of the *BDEI score's* effect on electoral disputes, we caution the reader again to consider the possibility that the spatial fixed effects absorb some of the unobserved (i.e., imperfectly extrapolated) impact of the Black Death.

[14]Posttreatment bias is a concern since the formal groupings of districts are non-random and instead constructed based on socioeconomic and political characteristics.

[15]The grid is only quasi-random because it is constructed based on the geographic coordinate system WGS84 and the international prime meridian.

[16]Due to the curvature of the earth, this is only a rough approximation. Actual size may vary by up to 30–40 km in east-west/north-south length depending on exact location.

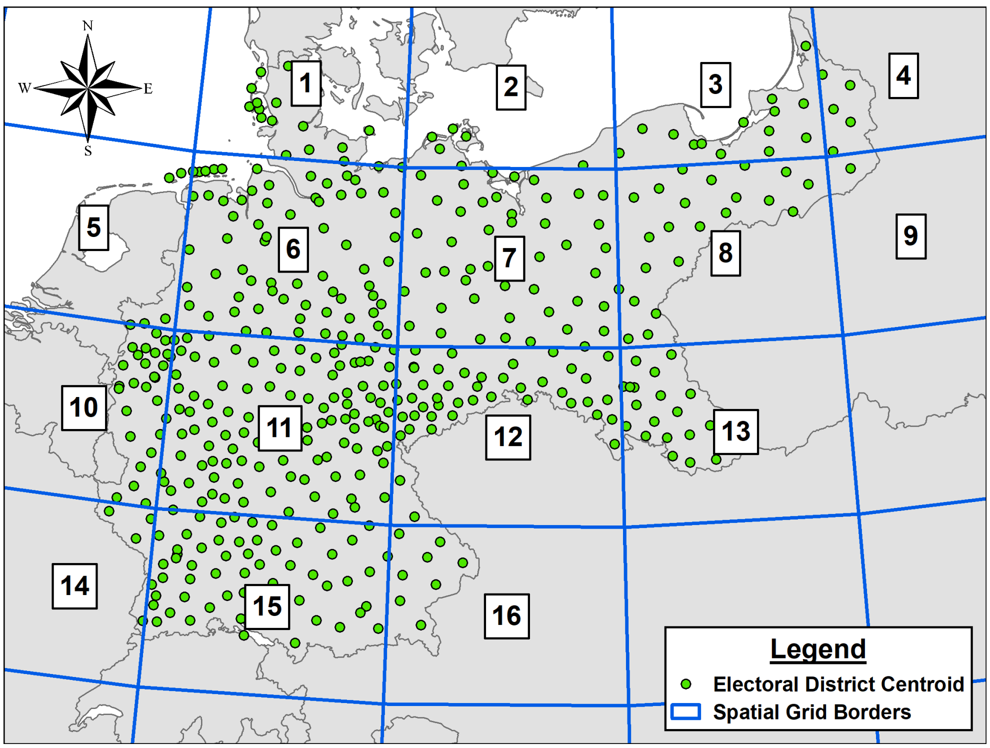

Figure A1: Quasi-Random Spatial Fixed Effects

Table A13: Extension 8 — Introducing Quasi-Random Spatial Fixed Effects

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1	−0.067***			−0.177***			−0.343		
	(0.021)			(0.048)			(0.217)		
BDEI score v3		−0.057***			−0.163***			−0.298	
		(0.020)			(0.043)			(0.210)	
BDEI score v5			−0.019			−0.155***			−0.246
			(0.024)			(0.050)			(0.237)
Urb. dens. 1300	−0.005	−0.011	−0.027	0.034	0.025	0.035	0.076	0.055	0.063
	(0.024)	(0.024)	(0.027)	(0.067)	(0.064)	(0.063)	(0.223)	(0.226)	(0.255)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0002	0.0001	−0.00001	−0.001	−0.001	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. trade city	−0.0001	−0.0001	−0.00003	−0.0002	−0.0002	−0.0001	0.001	0.001	0.001
	(0.0001)	(0.0002)	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.002)	(0.002)	(0.002)
Dist. ocean	0.0001	0.0001	0.0003	−0.001	−0.001	−0.001	−0.002	−0.002	−0.002
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.0005)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. river	0.0001	0.0002	0.0002	−0.0002	−0.0002	−0.0001	0.001	0.001	0.001
	(0.0001)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0001***	0.0001	0.0001	0.0001	0.0004	0.0004	0.0004
	(0.00005)	(0.00005)	(0.00005)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0005)
Quasi-random spatial fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	397	397	397	382	382	382	397	397	397
R^2	0.991	0.991	0.991	0.569	0.567	0.562			
Adjusted R^2	0.991	0.991	0.990	0.548	0.546	0.540			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.11 Imperial Germany: Extension 9 — Using Alternative Datasets of Plague Outbreaks

In the main empirical analysis, we use data by Jedwab, Johnson, and Koyama to construct different versions of the *BDEI score*.[17] We use these data because, to the best of our knowledge, they are the only data on the Black Death that do not simply record the occurrence of an outbreak but also its *intensity*. Accounting for the intensity of outbreaks is of crucial importance to our study for two reasons.

First, our theory is centered on explaining how *variation in intensity* accounts for different legacies of the Black Death. Therefore, measuring levels of intensity is necessary to properly test the theory.

Second, there were vast differences in local mortality rates across space and time. As we have shown in subsection A.7, places where the plague started at a later time experienced much milder outbreaks. This could help explain why the eastern parts of German-speaking Central Europe were less affected than other areas: For the most part, the Black Death only arrived there in 1351 (the last significant year of the plague's initial outbreak) or later.

While the data by Jedwab, Johnson, and Koyama on plague outbreaks have the crucial advantage of also including local mortality rates, readers of our article may be concerned about the lack of observations that are in the easternmost parts of Central Europe. Even though the lack of concrete data on mortality rates in these areas is likely due to the much lower severity of the outbreak there,[18] it would be desirable to identify alternative datasets that contain outbreaks in this part of Europe and check if our results hold when using them (recognizing that such datasets omit crucial information on outbreak intensity).

In this respect, we have identified two alternative datasets by Ulf Büntgen and colleagues

[17] Jedwab, Johnson, and Koyama 2019a.

[18] Myśliwski 2012, pp. 261–265.

(Figure A2) and Boris Schmid and colleagues (Figure A3).[19] These two datasets are closely related to each other. Specifically, Schmid and colleagues merge the original data by Büntgen and colleagues with another dataset to create a comprehensive record of plague outbreaks for the entire medieval period (this dataset also makes some corrections to previous data entries).

For reasons of transparency, we provide results using both of these alternative datasets as the underlying data to construct the *BDEI score*. Since both cover a longer time period of plague outbreaks, we restrict the analysis to outbreaks in 1347–1352. Furthermore, since these data do not include information on mortality rates, but on the number of years during which a location was affected by the Black Death, when constructing the *BDEI score*, we assign a mortality rate of "1" to areas that experienced an outbreak and subsequently account for every additional year in which the plague was present. Thus, observations that had outbreaks in two years are categorized as having twice the exposure as observations that only had an outbreak in one year. This means that these scores are based on recurrence of the plague rather than its severity, though the two are likely correlated.

The results are in Table A14, which based on data by Büntgen and colleagues, and Table A15, which is based on data by Schmid and colleagues. While there are minor differences with the main results, they are broadly in line with what we have found previously. In some cases, the magnitude of the effect is slightly larger, in others, it is slightly smaller. Most importantly, the coefficients of the *BDEI score* are consistently at the highest level of statistical significance ($p < 0.01$).

[19]Büntgen et al. 2012; Schmid et al. 2015.

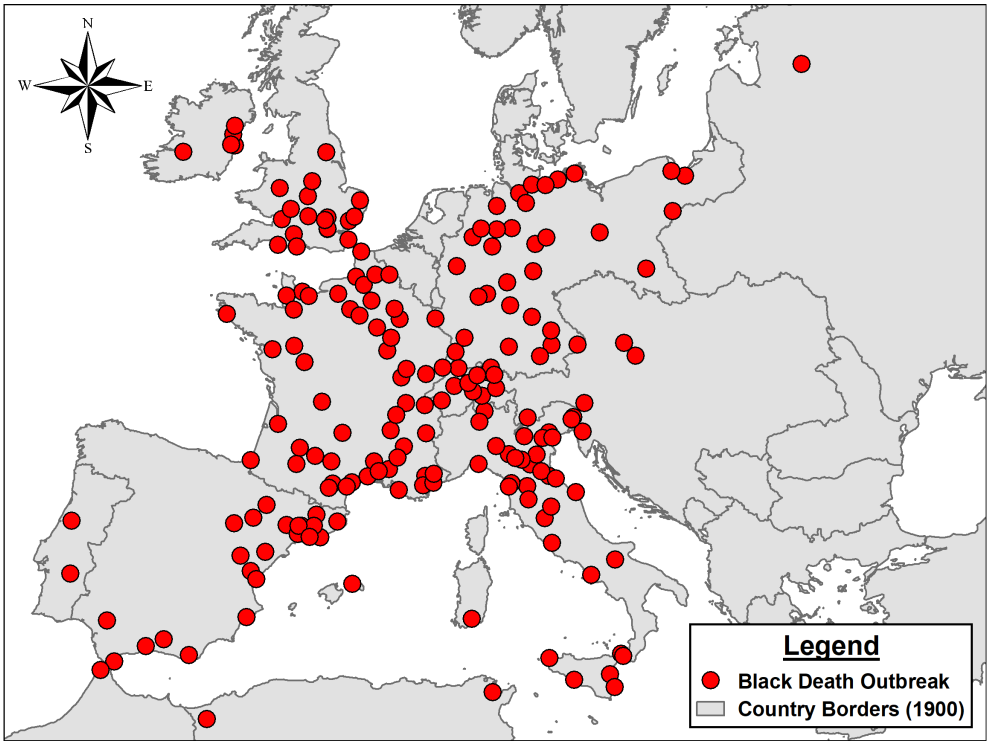

Figure A2: Recorded Black Death Outbreaks across Europe (Büntgen et al. 2012 Data)

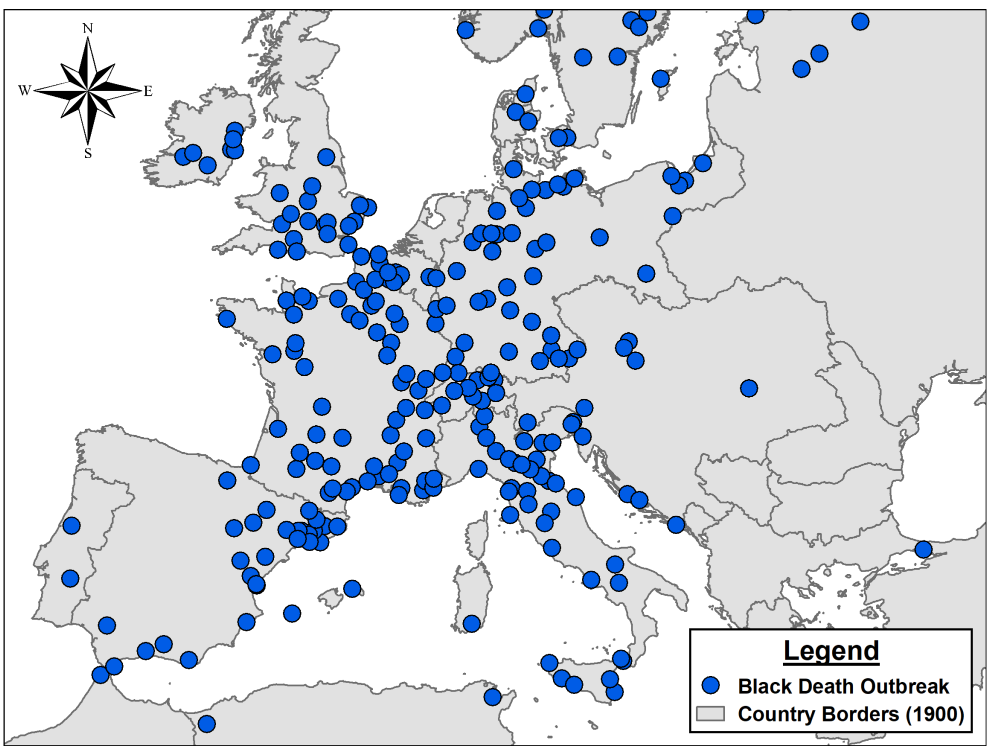

Figure A3: Recorded Black Death Outbreaks across Europe (Schmid et al. 2015 Data)

Table A14: Extension 9 — Using Alternative Datasets of Plague Outbreaks (Büntgen et al. 2012 Data)

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1 (alt. data 1)	−0.058***			−0.145***			−0.368**		
	(0.018)			(0.041)			(0.148)		
BDEI score v3 (alt. data 1)		−0.049***			−0.121***			−0.304**	
		(0.014)			(0.037)			(0.118)	
BDEI score v5 (alt. data 1)			−0.041***			−0.110***			−0.262**
			(0.012)			(0.036)			(0.102)
Urb. dens. 1300	−0.011	−0.016	−0.022	0.105*	0.092	0.087	0.214	0.171	0.143
	(0.020)	(0.018)	(0.017)	(0.061)	(0.059)	(0.059)	(0.158)	(0.149)	(0.147)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0001	0.0001	0.0002	−0.0004	−0.0005	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. trade city	−0.0001	−0.0001	−0.00004	0.001***	0.001***	0.001***	0.0003	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.0003)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0002	0.0002	0.0002	−0.0003	−0.0003	−0.0004	−0.001	−0.001	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. river	−0.00001	−0.00001	0.00001	−0.001	−0.001	−0.001	0.001	0.001	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0001***	0.0001	0.0001	0.0001	0.001	0.001	0.0005
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.814***	0.809***	0.811***	0.125**	0.112**	0.116**	0.940***	0.909***	0.926***
	(0.025)	(0.025)	(0.024)	(0.055)	(0.053)	(0.053)	(0.138)	(0.141)	(0.146)
Observations	397	397	397	382	382	382	397	397	397
R^2	0.638	0.637	0.629	0.302	0.300	0.298			
Adjusted R^2	0.632	0.631	0.622	0.289	0.287	0.284			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

Table A15: Extension 9 — Using Alternative Datasets of Plague Outbreaks (Schmid et al. 2015 Data)

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1 (alt. data 2)	−0.059***			−0.149***			−0.376**		
	(0.018)			(0.042)			(0.150)		
BDEI score v3 (alt. data 2)		−0.048***			−0.120***			−0.294**	
		(0.014)			(0.035)			(0.115)	
BDEI score v5 (alt. data 2)			−0.041***			−0.108***			−0.252***
			(0.011)			(0.032)			(0.098)
Urb. dens. 1300	−0.008	−0.015	−0.022	0.114*	0.095	0.084	0.235	0.173	0.134
	(0.020)	(0.018)	(0.016)	(0.063)	(0.058)	(0.055)	(0.163)	(0.149)	(0.143)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0001	0.0001	0.0001	−0.0004	−0.001	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
Dist. trade city	−0.0001	−0.0001	−0.0001	0.001***	0.001***	0.001***	0.0003	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.0003)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0002	0.0002	0.0002	−0.0003	−0.0004	−0.0005	−0.001	−0.001	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Dist. river	−0.00001	−0.00001	0.00000	−0.001	−0.001	−0.001	0.001	0.001	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0001***	0.0001	0.0001	0.0001	0.001	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.821***	0.819***	0.821***	0.143**	0.138**	0.145***	0.988***	0.971***	0.992***
	(0.025)	(0.025)	(0.025)	(0.057)	(0.056)	(0.056)	(0.138)	(0.139)	(0.143)
Observations	397	397	397	382	382	382	397	397	397
R^2	0.638	0.640	0.635	0.304	0.305	0.307			
Adjusted R^2	0.631	0.633	0.629	0.291	0.292	0.294			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.12 Imperial Germany: Extension 10 — Introducing Pretreatment Spatial Fixed Effects

In subsection A.10, we introduce quasi-random spatial fixed effects to address the possibility of unobserved regional heterogeneity. Yet quasi-random fixed effects are not the only approach to dealing with heterogeneity in initial conditions. A viable alternative is to use the borders of regions that existed *prior* to the observed treatment. Unlike including fixed effects based on "contemporary borders," including pretreatment spatial fixed effects does not run the risk of introducing posttreatment bias. This issue is also discussed in more detail by Homola, Pereira, and Tavits, who respond to criticism by Pepinsky, Goodman, and Ziller.[20] With this point in mind, we use data by Nüssli and Nüssli on the geographic borders of second-level administrative units within the Holy Roman Empire to create pretreatment fixed effects.[21]

Based on these geographic data, we obtain 40 different spatial fixed effects categories (Figure A4). As shown in Table A16, we find partial confirmation of our results. Specifically, we still find a significant effect of Black Death intensity on *Conservative Party vote share*. At the same time, we cannot confirm some other previous results.

While using these pretreatment spatial fixed effects could be seen as preferable to quasi-random fixed effects from a substantive perspective, there are severe empirical problems with them. Specifically, with a total of 40 categories, the average number of observations per category is only ten. Such a small average number of observations per category creates two problems for inference. First, it is likely that spatial fixed effects will absorb at least part of the variation that is due to other variables. Second, the within-unit comparisons made possible by fixed effects are unlikely to have sufficient statistical power to identify existing

[20] Homola, Pereira, and Tavits 2020a; Pepinsky, Goodman, and Ziller 2020.

[21] Nüssli and Nüssli 2008.

associations.[22]

A circumstance that further aggravates the latter problem is that, because of the Holy Roman Empire's high level of political fragmentation, most states are assigned to the larger political category of "small states of the Holy Roman Empire." Considering that many units are assigned to this broad category, the number of observations in other jurisdictions is often significantly below the average of ten. Indeed, the median number of units per jurisdiction is only three. Under such circumstances, it becomes increasingly unlikely to find any statistical association due to low levels of statistical power. This is visible in the fact that, when analyzing *Conservative Party vote share* and *electoral disputes*, all variables (other than the *BDEI score* in the case of *Conservative Party vote share*) lose their statistical significance. Thus, while we still find partial confirmation of previous results, we caution the reader to be careful when interpreting the results in Table A16.

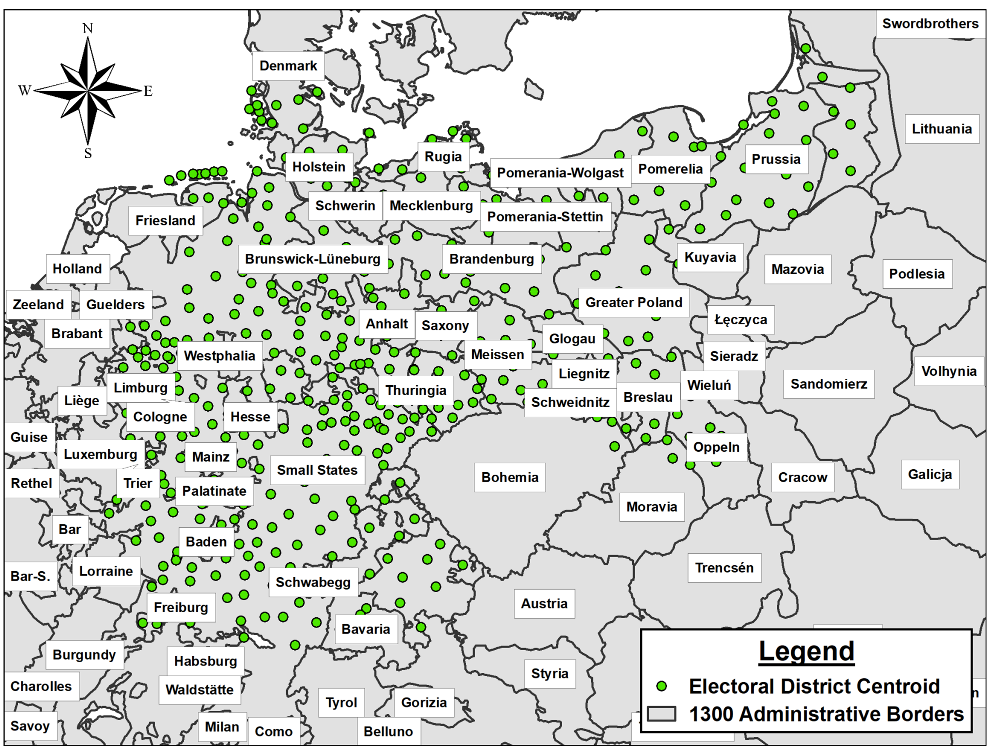

Figure A4: Pretreatment Spatial Fixed Effects

[22]Homola, Pereira, and Tavits 2020b.

Table A16: Extension 10 — Introducing Pretreatment Spatial Fixed Effects

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1	−0.010			−0.144**			−0.246		
	(0.024)			(0.071)			(0.240)		
BDEI score v3		−0.001			−0.121*			−0.247	
		(0.023)			(0.066)			(0.220)	
BDEI score v5			0.027			−0.099			−0.258
			(0.026)			(0.065)			(0.227)
Urb. dens. 1300	−0.037	−0.038	−0.045*	0.022	0.013	0.023	0.056	0.053	0.103
	(0.027)	(0.026)	(0.026)	(0.053)	(0.052)	(0.056)	(0.206)	(0.205)	(0.238)
Dist. maj. port	−0.001***	−0.001***	−0.001***	−0.00003	−0.0001	−0.0002	−0.001	−0.001	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. trade city	0.00005	0.0001	0.0001	−0.00004	−0.00001	0.00003	0.001	0.001	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.0004)	(0.0004)	(0.0004)	(0.002)	(0.002)	(0.002)
Dist. ocean	0.0005***	0.001***	0.001***	−0.0004	−0.0004	−0.0003	−0.001	−0.001	−0.002
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. river	0.0002	0.0003	0.0004*	−0.0005	−0.0004	−0.0003	0.001	0.001	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.0005)	(0.0005)	(0.0005)	(0.002)	(0.002)	(0.002)
Elevation	−0.0001**	−0.0001**	−0.0001***	0.0001	0.0001	0.0001	0.0004	0.0004	0.0004
	(0.0001)	(0.0001)	(0.00005)	(0.0001)	(0.0001)	(0.0001)	(0.0005)	(0.0005)	(0.0005)
Pretreatment spatial fixed effects	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	389	389	389	374	374	374	389	389	389
R^2	0.992	0.992	0.992	0.617	0.614	0.608			
Adjusted R^2	0.991	0.991	0.991	0.563	0.560	0.553			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.13 Imperial Germany: Extension 11 — Extending the Analysis to Other Parties and Elections

For a number of reasons, our main analysis of political outcomes in Imperial Germany focuses on the Conservative Party in the year 1871. The rationale underlying this choice of the dependent variable was that the Conservative Party's political goals, socioeconomic basis, and electoral strategies nearly perfectly encapsulate the legacies we expect in areas that had low levels of Black Death exposure. Furthermore, our main analysis is limited to the year 1871 because, in subsequent decades, the confounding effect of national-level developments in terms of politics and socioeconomic transformations likely became larger.

Despite these substantive/theoretical reasons for limiting our main analysis to the Conservative Party in 1871, it is desirable to verify if our results hold if we consider different dependent variables or election years. Therefore, as detailed below, we present three new analyses in this extension. The underlying data are from Sperber.[23]

Part I — *Combined vote share of all conservative parties 1871*: Specifically, in part one of this extension we look at the *combined vote share of both major conservative parties* of early Imperial Germany: the Conservative Party and the Free Conservative Party (*Freikonservative Partei, FKP*, also known as German Empire Party, *Deutsche Reichspartei, DRP*, its label in the 1871 election). As we elaborate below (subsection A.25), while the Free Conservative Party was also a conservative party, it was less radical in its goals than the Conservative Party and was made up of members of the industrial elite. Therefore, it is a less than ideal representation of what we intend to measure, which is why we omit it from the main analysis. Figure A5 shows the geographic distribution of this outcome variable.

Part II — *Combined vote share of all major liberal and moderate parties 1871*: Furthermore, in part two of this extension, we look at our theory's flip side: the electoral

[23]Sperber 1997.

success of liberal and moderate parties. Our theory predicted that conservative parties that represent the traditional elites would do well in areas that had weak outbreaks of the Black Death. At the same time, we also predicted that more liberal parties would do well in areas that had extensive outbreaks of the Black Death. Thus, in this extension, we look at the *combined vote share of the major liberal and moderate parties* in the German Empire. Specifically, this includes (1) the National Liberal Party (*Nationalliberale Partei, NLP*), (2) the German Center Party (*Deutsche Zentrumspartei* or *Zentrum*),[24] (3) the Liberal Reich Party (*Liberale Reichspartei, LRP*), and (4) the German Progress Party (*Deutsche Fortschrittspartei, DFP*). Figure A6 shows the geographic distribution of this outcome variable.

Part III — *Conservative Party vote share in the election of 1874:* Finally, a reasonable concern that readers may have about limiting the analysis to the year 1871 is that there could be a strong effect of Germany's military victory (or other idiosyncratic factors) in the same year on electoral outcomes. The military victory could have especially pronounced short-term effects on political behavior. Therefore, in part three of this extension, we consider *Conservative Party vote shares* in the subsequent 1874 election. Importantly, although it would have been possible to consider additional elections after 1874 (for which we would expect to observe similar patterns), we decided to not extend our analysis further because, in 1876, the Conservative Party reorganized itself as German Conservative Party (*Deutschkonservative Partei, DkP*). While the Conservative Party of the early 1870s had still embraced an "estate society," the incompatibility of this stance with capitalist development led it to give up on it through its 1876 reorganization.[25] Therefore, from a substantive perspective, the reorganized party's electoral outcomes after 1876 provide a weaker fit with

[24]The German Center Party had the common denominator of Catholicism, but it consisted of a wide variety of socioeconomic groups, sometimes with diverging political goals. While this meant that it also had a conservative wing, as a whole it is best categorized as a moderate party. This is particularly apparent when the Center Party is compared to the Conservative Party, with the latter embracing an extremely hierarchical and illiberal vision of society.

[25]Berdahl 1972, pp. 2–3.

our theoretical predictions regarding the different political-economic equilibria caused by the Black Death.[26] Figure A7 shows the geographic distribution of this outcome variable.

As shown in Table A17, the results we obtain in each of these three extensions are in full accordance with our theoretical predictions. In the case of liberal and moderate parties, this means the expected positive effect of Black Death intensity. The results broadly confirm previous findings and suggest that our theory's validity is not limited to a specific choice of political party/parties or election year(s).

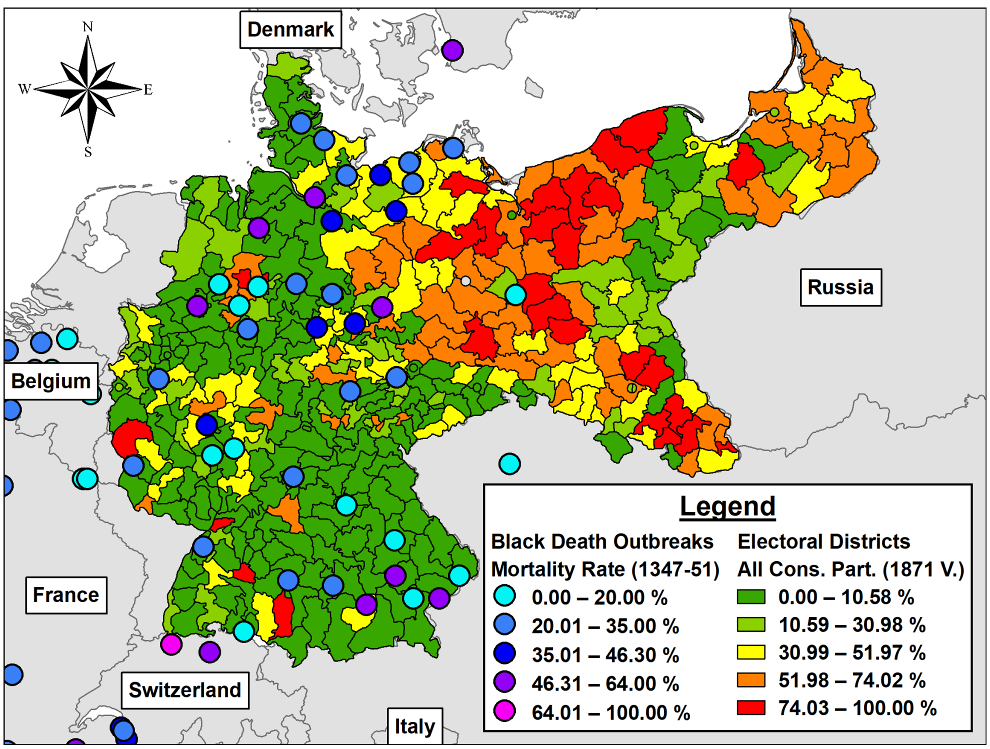

Figure A5: Combined Vote Share of All Conservative Parties by Electoral District (1871)

[26]While the 1876 reorganization was not a complete break with conservative traditions (see Retallack 1988, p. 13), it represented an important move away from the *extremely* hierarchical vision of society that the party had previously embraced; Berdahl 1972, pp. 2–3. Additionally, after 1890, other national parties became more active in rural areas, fundamentally affecting the electoral landscape there; Eley 1986, pp. 239–240.

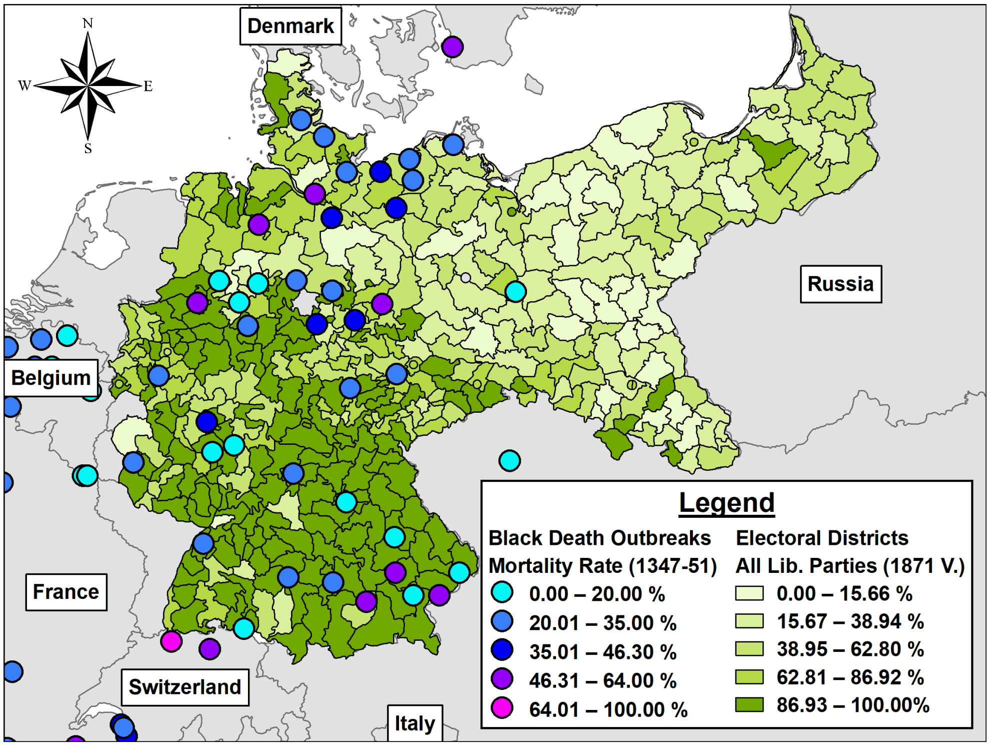

Figure A6: Combined Vote Share of All Major Liberal and Moderate Parties by Electoral District (1871)

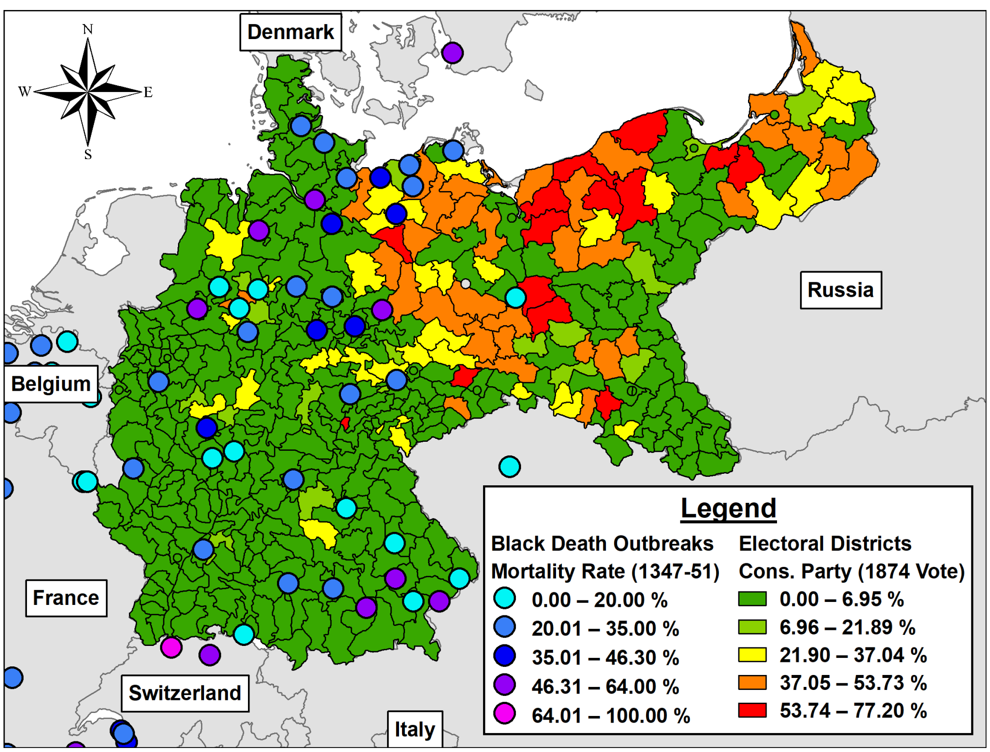

Figure A7: Conservative Party Vote Share by Electoral District (1874)

Table A17: Extension 11 — Extending the Analysis to Other Parties and Elections (OLS)

	Dependent variable:								
	All Conservative Parties Vote Share 1871			All Liberal/Moderate Parties Vote Share 1871			Conservative Party Vote Share 1874		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1	−0.161***			0.218***			−0.095***		
	(0.046)			(0.038)			(0.020)		
BDEI score v3		−0.152***			0.210***			−0.089***	
		(0.041)			(0.034)			(0.018)	
BDEI score v5			−0.169***			0.229***			−0.097***
			(0.044)			(0.037)			(0.019)
Urb. dens. 1300	0.074	0.067	0.097	−0.018	−0.012	−0.047	0.087**	0.082**	0.096***
	(0.068)	(0.064)	(0.068)	(0.055)	(0.052)	(0.055)	(0.034)	(0.032)	(0.033)
Dist. maj. port	0.001	0.001	0.001	−0.001	−0.001	−0.001	0.0003	0.0003	0.0003
	(0.001)	(0.001)	(0.001)	(0.0005)	(0.0004)	(0.0005)	(0.0004)	(0.0003)	(0.0003)
Dist. trade city	−0.00001	0.00004	0.0001	0.001**	0.001**	0.001**	0.001***	0.001***	0.001***
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0002)	(0.0002)	(0.0002)
Dist. ocean	−0.001	−0.001	−0.001*	0.001**	0.001***	0.001***	−0.0005	−0.001	−0.001*
	(0.001)	(0.001)	(0.001)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0003)	(0.0003)
Dist. river	−0.001	−0.001	−0.001	0.0004	0.0004	0.0005	−0.0004	−0.0004	−0.0005
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.0003)	(0.0003)	(0.0003)
Elevation	−0.0001	−0.0001	−0.00003	0.00002	−0.00000	−0.00002	0.00003	0.00003	0.00004
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	0.339***	0.341***	0.359***	0.431***	0.425***	0.405***	0.112***	0.113***	0.122***
	(0.079)	(0.077)	(0.072)	(0.055)	(0.054)	(0.056)	(0.041)	(0.040)	(0.038)
Observations	382	382	382	380	380	380	397	397	397
R^2	0.233	0.238	0.244	0.392	0.405	0.409	0.289	0.292	0.291
Adjusted R^2	0.219	0.224	0.230	0.381	0.394	0.398	0.276	0.279	0.279

Note: OLS; clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.14 Imperial Germany: Extension 12 — Weighting the BDEI Score by Population Sizes

In our main analysis, we use the proportion of casualties from the Black Death weighted by the inverse of the distance to the location under consideration (i) to calculate the *BDEI score*. When computing the original *BDEI score*, we do not take the population size of cities affected by the Black Death (j) into account. However, one could argue that any given outbreak may be more significant and impactful, especially with respect to surrounding areas, when the affected city is very large. Therefore, in this extension, we weight the influence of observations on the *BDEI score* by the respective city's population size.

Specifically, for this extension, the *BDEI score* is computed in the following way:

$$Raw\ BDEI\ Score_i = \sum_{j=1}^{n} LMR_j * \pi_j * (1 - DIST_{ij})^k \tag{1}$$

where $\pi_j \in (0, 1]$ is the weight that is given to observation j in the calculation of the *BDEI score*. π_j is determined by the relative value of the natural logarithm of city j's population size. Furthermore, just as with the regular *BDEI score*, we standardize the values to achieve a mean of $\mu = 0$ and a standard deviation of $\sigma = 1$.

As shown in Table A18, our results are robust to the use of the new weighted measure of Black Death intensity. Specifically, as in previous models, the *BDEI score* shows a persistently significant negative effect on *landholding inequality*, *Conservative Party vote share*, and *electoral disputes*.

Table A18: Extension 12 — Weighting the BDEI Score by Population Sizes

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1 (weighted)	−0.053***			−0.140***			−0.336**		
	(0.016)			(0.037)			(0.138)		
BDEI score v3 (weighted)		−0.042***			−0.122***			−0.292**	
		(0.013)			(0.032)			(0.120)	
BDEI score v5 (weighted)			−0.023**			−0.110***			−0.255**
			(0.011)			(0.034)			(0.119)
Urb. dens. 1300	−0.014	−0.023	−0.042**	0.103*	0.094*	0.088	0.195	0.175	0.165
	(0.019)	(0.019)	(0.019)	(0.058)	(0.055)	(0.055)	(0.155)	(0.150)	(0.158)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0002	0.0002	0.0001	−0.0004	−0.0003	−0.0005
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Dist. trade city	−0.0001	−0.0001	−0.0001	0.001***	0.001***	0.001***	0.0002	0.0004	0.0003
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0002	0.0002	0.0003*	−0.0004	−0.001	−0.001	−0.001	−0.002	−0.002
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Dist. river	−0.00001	0.00000	0.0001	−0.001	−0.001	−0.001	0.001	0.0005	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0002***	0.0001	0.0001	0.0001	0.001	0.001	0.0004
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.825***	0.832***	0.834***	0.155***	0.177***	0.225***	1.013***	1.072***	1.195***
Observations	397	397	397	382	382	382	397	397	397
R^2	0.638	0.628	0.601	0.309	0.308	0.294			
Adjusted R^2	0.632	0.621	0.594	0.296	0.295	0.281			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.15 Imperial Germany: Extension 13 — Considering Only Neighboring Regions in Computing the BDEI Score

In computing the main *BDEI score*, we do not make discretionary choices as to which European regions to include. Instead, we rely on the smooth discount function to greatly reduce the weight of distant observations in calculating the score's overall value. Because of possible concerns about the extent to which certain observations should influence the score's value, we already manually exclude observations from the British Isles in an earlier extension (subsection A.5).

While in our main analysis we refrain from making these kinds of discretionary choices, in the interest of showing that our results are robust to a variety of distinct empirical approaches, it is worthwhile to restrict attention to the German-speaking lands of Central Europe and the European regions that immediately border them.[27] Therefore, in this extension we limit the universe of considered outbreaks accordingly.

Table A19 shows the results. They are nearly identical to previously obtained results. While *BDEI score v5* does not show statistical significance in two cases, exposure intensity remains highly significant in all other regressions. The results imply that the function employed in the computation of the *BDEI score* sufficiently discounts observations at a greater distance, meaning that the inclusion or exclusion of specific European regions does not dramatically alter the results, particularly our central result regarding *Conservative Party vote share*.

[27]This procedure includes the regions (with recorded outbreaks) that are labeled Austria, Belgium, Czechia, France, Germany itself, and Switzerland. Note that many of these names are the result of modern state building processes and were not used in the same way at the time when the Black Death devastated Europe in the fourteenth century.

Table A19: Extension 13 — Considering Only Neighboring Regions in Computing the BDEI Score

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1 (alt. 2)	−0.058***			−0.157***			−0.362**		
	(0.018)			(0.043)			(0.153)		
BDEI score v3 (alt. 2)		−0.047***			−0.180***			−0.307**	
		(0.017)			(0.051)			(0.151)	
BDEI score v5 (alt. 2)			−0.015			−0.118***			−0.147
			(0.014)			(0.044)			(0.116)
Urb. dens. 1300	−0.004	−0.010	−0.049**	0.134**	0.182**	0.111*	0.254	0.253	0.078
	(0.022)	(0.024)	(0.021)	(0.066)	(0.076)	(0.066)	(0.172)	(0.189)	(0.164)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0002	0.0004	0.0001	−0.0004	−0.0005	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
Dist. trade city	−0.0001	−0.0001	−0.0001	0.001***	0.001***	0.001***	0.0004	0.001	0.001
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0002)	(0.0003)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0002	0.0002	0.0004**	−0.0005	−0.001*	−0.001	−0.001	−0.002	−0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Dist. river	−0.00001	0.0001	0.0002	−0.001	−0.001	−0.0004	0.001	0.001	0.002
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.0005)	(0.0005)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0002***	−0.0002***	0.0001	0.0001	−0.00000	0.0005	0.0004	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0004)	(0.0004)	(0.0004)
Constant	0.824***	0.837***	0.824***	0.154***	0.213***	0.210***	1.006***	1.104***	1.060***
	(0.025)	(0.024)	(0.026)	(0.058)	(0.057)	(0.058)	(0.141)	(0.173)	(0.195)
Observations	397	397	397	382	382	382	397	397	397
R^2	0.636	0.615	0.594	0.308	0.314	0.288			
Adjusted R^2	0.629	0.608	0.586	0.295	0.301	0.275			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.16 Imperial Germany: Extension 14 — Accounting for Agricultural (Caloric) Potential

In subsection A.9, we account for an important measure of agricultural production: *caloric variability*. The rationale behind the inclusion of this measure is introduced in that subsection and discussed in significant detail by Ahmed and Stasavage.[28]

In addition to our prior analysis, it would be desirable to provide an extended analysis specifically accounting for the underlying measure of *caloric potential* (pre-1500) that was used to compute the variable *caloric variability*. The measure of *caloric potential* was introduced by Galor and Özak and refers to the local "maximum potential caloric yield attainable given the set of crops that are suitable for cultivation in the pre-1500 period."[29] Importantly, this measure does not reflect the actual use of the land but merely its maximum potential, making it a plausibly exogenous measure.[30]

We rerun all our analyses using this additional measure of *agricultural potential*. The detailed results can be found in Table A20. They do not substantially differ from previous results, indicating that the *BDEI score's* explanatory power is not compromised by the introduction of *agricultural potential* as an additional covariate.

[28] Ahmed and Stasavage 2020.

[29] Galor and Özak 2015, p. 3. To account for the technology available at this time, the authors assume "low level of inputs and rain-fed agriculture"; Galor and Özak 2015, p. 4. For a study that uses these measures, see also Galor and Özak 2016.

[30] Galor and Özak 2015, p. 2.

Table A20: Extension 14 — Accounting for Agricultural (Caloric) Potential

	Dependent variable:								
	Landholding Inequality (Gini Coeff.)			Conservative Party Vote Share			Net Electoral Disputes		
	OLS			*OLS*			*Quasi-Poisson*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
BDEI score v1	−0.052***			−0.129***			−0.322**		
	(0.016)			(0.035)			(0.135)		
BDEI score v3		−0.047***			−0.118***			−0.291**	
		(0.014)			(0.031)			(0.123)	
BDEI score v5			−0.041***			−0.125***			−0.300**
			(0.014)			(0.033)			(0.126)
Caloric potential	0.00001	0.00001	0.00001	0.0001*	0.0001*	0.0001**	−0.0001	−0.00005	−0.00004
	(0.00001)	(0.00001)	(0.00001)	(0.00004)	(0.00004)	(0.00004)	(0.0001)	(0.0001)	(0.0001)
Urb. dens. 1300	−0.015	−0.020	−0.023	0.085	0.076	0.092*	0.196	0.171	0.207
	(0.020)	(0.019)	(0.020)	(0.057)	(0.053)	(0.055)	(0.154)	(0.149)	(0.158)
Dist. maj. port	−0.001***	−0.001***	−0.001***	0.0001	0.0001	0.0001	−0.0004	−0.0004	−0.0003
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.0005)	(0.002)	(0.002)	(0.002)
Dist. trade city	−0.0002*	−0.0002	−0.0002	0.0005**	0.001**	0.001**	0.0001	0.0003	0.0003
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.001)
Dist. ocean	0.0001	0.0001	0.0002	−0.001	−0.001	−0.001*	−0.002	−0.002	−0.002
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.001)	(0.0005)	(0.001)	(0.001)	(0.002)
Dist. river	0.00001	0.00003	0.0001	−0.001	−0.001	−0.001	0.001	0.001	0.001
	(0.0002)	(0.0002)	(0.0002)	(0.001)	(0.0005)	(0.0005)	(0.001)	(0.001)	(0.001)
Elevation	−0.0001***	−0.0001***	−0.0001**	0.0003**	0.0003**	0.0003**	0.0004	0.0004	0.0004
	(0.00005)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.001)	(0.001)	(0.001)
Constant	0.796***	0.790***	0.752***	−0.540	−0.549	−0.585	1.594*	1.559*	1.480*
	(0.141)	(0.142)	(0.145)	(0.407)	(0.399)	(0.397)	(0.833)	(0.828)	(0.845)
Observations	397	397	397	382	382	382	397	397	397
R^2	0.641	0.639	0.624	0.330	0.331	0.330			
Adjusted R^2	0.633	0.631	0.616	0.316	0.317	0.315			

Note: Clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.17 Weimar Germany: Descriptive Summary Statistics

Table A.1 shows descriptive summary statistics for towns, cities, and counties in Weimar Germany's 1930 and July 1932 federal parliamentary elections.[31]

Table A21: Descriptive Statistics — Weimar Germany

Variable	**n**	**Min**	$\mathbf{q_1}$	$\bar{\mathbf{x}}$	$\widetilde{\mathbf{x}}$	$\mathbf{q_3}$	**Max**	**IQR**
BDEI score v1	6304	-3.49	-0.51	0.00	0.21	0.85	1.34	1.36
BDEI score v2	6304	-3.00	-0.57	0.00	0.19	0.85	1.47	1.42
BDEI score v3	6304	-2.81	-0.57	0.00	0.20	0.82	1.53	1.39
BDEI score v4	6304	-2.79	-0.56	0.00	0.26	0.77	1.50	1.33
BDEI score v5	6304	-2.81	-0.53	0.00	0.35	0.73	1.38	1.27
NSDAP vote share 1930	4849	0.00	0.10	0.18	0.17	0.25	0.78	0.14
NSDAP vote share July 1932	1037	0.06	0.29	0.39	0.40	0.50	0.83	0.21
NSDAP & DNVP comb. vote share 1930	4849	0.01	0.14	0.25	0.23	0.33	0.85	0.19
NSDAP & DNVP comb. vote share July 1932	1037	0.10	0.32	0.45	0.46	0.57	0.93	0.25
Urban density 1300 (standardized)	6304	-4.29	-0.37	0.00	0.19	0.70	1.20	1.08
Distance to the nearest major port (km)	6304	0.00	65.01	168.35	133.89	247.00	521.10	181.99
Distance to the nearest medieval trade city (km)	6304	0.27	51.49	96.22	75.51	112.70	507.58	61.21
Distance to the ocean (km)	6304	0.16	115.11	239.26	230.84	351.89	667.46	236.78
Distance to the nearest large river (km)	6304	0.01	19.31	56.91	48.67	84.96	177.74	65.65
Elevation	6299	-15.00	60.00	196.10	139.00	290.00	1178.00	230.00

[31] For the analysis of 1930 election results, we use town- and city-level observations as they represent the most fine-grained data available to us. For the analysis of July 1932 election results, we are restricted to the county level as no official city/town-level election data was disseminated at the time; Selb and Munzert 2018.

A.18 Weimar Germany: Tobit Models as an Alternative Specification

In our main empirical analysis, we use OLS regression to estimate the *BDEI score's* impact on *NSDAP vote share 1930* and *NSDAP vote share July 1932*. Because these two outcome variables are bounded, we also use Tobit models as an alternative empirical specification.

Table A2 shows the results with respect to *NSDAP vote share 1930* when using Tobit models. Furthermore, Table A3 shows the results with respect to *NSDAP vote share July 1932* when using Tobit models. In both cases, the direction, magnitude, and significance of the coefficients do not change in a way that would alter our previous interpretation.

Table A22: NSDAP Vote Share 1930 (Tobit)

	Dependent variable:									
	NSDAP Vote Share 1930									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.019***					−0.028***				
	(0.002)					(0.003)				
BDEI score v2		−0.020***					−0.028***			
		(0.002)					(0.003)			
BDEI score v3			−0.020***					−0.028***		
			(0.002)					(0.003)		
BDEI score v4				−0.019***					−0.028***	
				(0.002)					(0.003)	
BDEI score v5					−0.017***					−0.026***
					(0.002)					(0.003)
Urb. dens. 1300						0.032***	0.031***	0.030***	0.031***	0.031***
						(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Dist. maj. port						0.0003***	0.0003***	0.0002***	0.0002***	0.0002***
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. trade city						0.0001***	0.0001***	0.0001***	0.0001***	0.0002***
						(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00004)
Dist. ocean						−0.0004***	−0.0004***	−0.0004***	−0.0004***	−0.0004***
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. river						−0.00004	−0.00004	−0.00003	−0.00003	−0.00000
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Elevation						0.0001***	0.0001***	0.0001***	0.0001***	0.0001***
						(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Constant	0.184***	0.184***	0.184***	0.184***	0.184***	0.205***	0.206***	0.206***	0.206***	0.204***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Observations	3,347	3,347	3,347	3,347	3,347	3,346	3,346	3,346	3,346	3,346
Log Likelihood	2,730.987	2,733.324	2,732.725	2,727.438	2,717.827	2,809.582	2,813.133	2,814.595	2,812.536	2,805.780

Note: Tobit   *p<0.1; **p<0.05; ***p<0.01

Table A23: NSDAP Vote Share July 1932 (Tobit)

	Dependent variable:									
	NSDAP Vote Share July 1932									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.037***					−0.085***				
	(0.004)					(0.007)				
BDEI score v2		−0.038***					−0.082***			
		(0.004)					(0.007)			
BDEI score v3			−0.039***					−0.084***		
			(0.004)					(0.007)		
BDEI score v4				−0.037***					−0.087***	
				(0.004)					(0.007)	
BDEI score v5					−0.034***					−0.088***
					(0.004)					(0.007)
Urb. dens. 1300						0.085***	0.080***	0.081***	0.087***	0.092***
						(0.009)	(0.009)	(0.009)	(0.009)	(0.010)
Dist. maj. port						0.001***	0.001***	0.001***	0.001***	0.001***
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. trade city						−0.0001	−0.00005	−0.00004	−0.00004	−0.00002
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. ocean						−0.001***	−0.001***	−0.001***	−0.001***	−0.001***
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. river						−0.0001	−0.0001	−0.0001	−0.0001	−0.0001
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Elevation						0.0002***	0.0002***	0.0002***	0.0002***	0.0002***
						(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00004)
Constant	0.387***	0.387***	0.387***	0.387***	0.388***	0.488***	0.487***	0.489***	0.494***	0.498***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Observations	1,037	1,037	1,037	1,037	1,037	1,036	1,036	1,036	1,036	1,036
Log Likelihood	562.126	563.685	564.228	561.960	556.707	657.591	660.040	663.904	667.058	665.638

Note: Tobit *p<0.1; **p<0.05; ***p<0.01

A.19 Weimar Germany: Combined Vote Share of Both Major Right-Wing Parties

In the main body of the article, because of the NSDAP's historical relevance as the key party that turned Germany into a fascist state, we limit our analyses to its specific vote share. However, similar to the situation in 1870s Imperial Germany, there was not just a single antidemocratic/illiberal right-wing party in the Weimar Republic.

In the two elections that we analyze—the 1930 and July 1932 elections—a second party with antidemocratic orientation called German National People's Party (*Deutschnationale Volkspartei*, DNVP) had significant electoral successes across Weimar Germany. Similar to the NSDAP, it openly rejected the constitutional order of Weimar Germany. In its place, it sought to reestablish a monarchical form of government. The DNVP also ultimately supported Hitler as chancellor, sealing the Weimar Republic's fate and ushering in the darkest chapter of German history.

Considering these circumstances, an analysis of the *combined* vote shares of NSDAP and DNVP would be a meaningful extension. Based on our framework, we expect both parties to perform well in areas with low historical Black Death exposure intensities.

Our findings confirm these predictions. As shown in Table A24 and Table A25, the *BDEI score* has a significant relationship with the combined vote share of the NSDAP and DNVP, one that is similar to the relationship between the *BDEI score* and the NSDAP by itself. These results provide further support for our theory.

Table A24: NSDAP and DNVP Combined Vote Share 1930 (OLS)

	Dependent variable:									
	NSDAP and DNVP Combined Vote Share 1930									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.049***					−0.048***				
	(0.009)					(0.013)				
BDEI score v2		−0.049***					−0.046***			
		(0.009)					(0.012)			
BDEI score v3			−0.048***					−0.046***		
			(0.010)					(0.012)		
BDEI score v4				−0.047***					−0.046***	
				(0.010)					(0.013)	
BDEI score v5					−0.044***					−0.044***
					(0.010)					(0.014)
Urb. dens. 1300						0.024*	0.021	0.021	0.022	0.022
						(0.014)	(0.014)	(0.014)	(0.015)	(0.017)
Dist. maj. port						0.0002	0.0002	0.0002	0.0002	0.0002
						(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Dist. trade city						0.0002*	0.0002*	0.0002*	0.0003**	0.0003**
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. ocean						−0.0004***	−0.0004***	−0.0004***	−0.0004***	−0.0004**
						(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Dist. river						−0.00004	−0.00003	−0.00002	−0.00001	0.00002
						(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Elevation						0.0001	0.0001	0.0001	0.0001	0.0001
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	0.242***	0.241***	0.241***	0.241***	0.241***	0.271***	0.272***	0.272***	0.271***	0.268***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.028)	(0.027)	(0.028)	(0.029)	(0.030)
Observations	3,347	3,347	3,347	3,347	3,347	3,346	3,346	3,346	3,346	3,346
R^2	0.137	0.134	0.131	0.124	0.111	0.200	0.203	0.204	0.201	0.195
Adjusted R^2	0.137	0.134	0.131	0.124	0.111	0.199	0.201	0.202	0.199	0.193

Note: OLS; clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

Table A25: NSDAP and DNVP Combined Vote Share July 1932 (OLS)

	Dependent variable:									
	NSDAP and DNVP Combined Vote Share July 1932									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.057***					−0.102***				
	(0.013)					(0.020)				
BDEI score v2		−0.059***					−0.100***			
		(0.013)					(0.019)			
BDEI score v3			−0.059***					−0.102***		
			(0.013)					(0.018)		
BDEI score v4				−0.057***					−0.104***	
				(0.013)					(0.018)	
BDEI score v5					−0.053***					−0.105***
					(0.014)					(0.019)
Urb. dens. 1300						0.088***	0.083***	0.084***	0.090***	0.095***
						(0.020)	(0.019)	(0.019)	(0.020)	(0.021)
Dist. maj. port						0.001***	0.001***	0.001***	0.001***	0.001***
						(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
Dist. trade city						−0.00003	−0.00001	−0.00001	0.00000	0.00002
						(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Dist. ocean						−0.001***	−0.001***	−0.001***	−0.001***	−0.001***
						(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)
Dist. river						−0.0001	−0.0001	−0.0001	−0.0001	−0.0001
						(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Elevation						0.0002	0.0002*	0.0002*	0.0002*	0.0002*
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Constant	0.445***	0.444***	0.444***	0.445***	0.446***	0.571***	0.572***	0.574***	0.579***	0.582***
	(0.019)	(0.019)	(0.019)	(0.019)	(0.020)	(0.032)	(0.031)	(0.031)	(0.033)	(0.036)
Observations	1,037	1,037	1,037	1,037	1,037	1,036	1,036	1,036	1,036	1,036
R^2	0.122	0.125	0.125	0.118	0.103	0.304	0.310	0.315	0.318	0.313
Adjusted R^2	0.121	0.124	0.124	0.117	0.102	0.299	0.305	0.311	0.313	0.308

Note: OLS; clustered standard errors

*p<0.1; **p<0.05; ***p<0.01

A.20 Pre-Reformation Germany: Descriptive Summary Statistics

Table A26 shows descriptive summary statistics for towns in pre-Reformation Germany.

Table A26: Descriptive Statistics — Pre-Reformation Germany

Variable	**n**	**Min**	$\mathbf{q_1}$	$\bar{x}$	$\tilde{x}$	$\mathbf{q_3}$	**Max**	**IQR**
BDEI score v1	325	-2.78	-0.71	0.00	0.18	0.86	1.92	1.57
BDEI score v2	325	-2.52	-0.72	0.00	0.12	0.79	2.45	1.52
BDEI score v3	325	-2.46	-0.69	0.00	0.10	0.73	3.01	1.42
BDEI score v4	325	-2.52	-0.63	0.00	0.15	0.62	3.51	1.24
BDEI score v5	325	-2.65	-0.52	0.00	0.21	0.52	3.87	1.05
Introduction of participative elections 1300–1500	325	0.00	0.00	0.15	0.00	0.00	1.00	0.00
Occurrence of participative elections 1500	325	0.00	0.00	0.24	0.00	0.00	1.00	0.00
Elevation	86	2.72	79.33	227.90	187.22	357.24	852.91	277.91
Distance to river	86	0.13	12.69	51.90	50.53	78.28	143.05	65.59
Roman road	86	0.00	0.00	0.26	0.00	0.75	1.00	0.75
Coast	86	0.00	0.00	0.08	0.00	0.00	1.00	0.00
Agricultural suitability	86	0.00	19.25	35.91	37.33	50.42	69.27	31.17
Population (log)	86	6.91	7.70	8.57	8.70	9.28	10.90	1.58
Ruggedness	86	2.21	11.14	34.75	25.91	46.03	342.94	34.89
Urban potential 1300	86	2252.19	4437.69	5147.74	4998.34	5852.00	8224.76	1414.31
Trade city 1300	86	0.00	0.00	0.06	0.00	0.00	1.00	0.00
Proto-industrial city 1300	86	0.00	0.00	0.05	0.00	0.00	1.00	0.00

A.21 Pre-Reformation Germany: Measuring the 'Occurrence of' Instead of 'Changes in' Participative Elections

In our main empirical analysis of institutional development in pre-Reformation Germany, we measure *changes* in participative elections between 1300 and 1500. In addition to this main analysis, it would be worthwhile to investigate if the mere occurrence of participative elections in the year 1500 can also shown to be spatially associated with Black Death intensities. Accordingly, in Table A27 and Table A28, we present the results of such an analysis. The results hold. Furthermore, in some cases, they are even stronger than in our initial analysis. All details can be found below.

Table A27: Occurrence of Participative Elections 1500 (Logit)

	Dependent variable:				
	Occurrence of Participative Elections 1500				
	(1)	(2)	(3)	(4)	(5)
BDEI score v1	0.748***				
	(0.162)				
BDEI score v2		0.699***			
		(0.154)			
BDEI score v3			0.643***		
			(0.149)		
BDEI score v4				0.585***	
				(0.147)	
BDEI score v5					0.519***
					(0.145)
Constant	−1.292***	−1.273***	−1.253***	−1.234***	−1.217***
	(0.147)	(0.144)	(0.141)	(0.139)	(0.137)
Observations	325	325	325	325	325
Log Likelihood	−166.325	−167.132	−168.505	−170.145	−171.960
Akaike Inf. Crit.	336.650	338.265	341.011	344.291	347.919
Note: Logit			*p<0.1; **p<0.05; ***p<0.01		

Table A28: Occurrence of Participative Elections 1500 (With Controls) (Logit)

	Dependent variable:				
	Occurrence of Participative Elections 1500				
	(1)	(2)	(3)	(4)	(5)
BDEI score v1	3.411***				
	(1.130)				
BDEI score v2		3.148***			
		(1.057)			
BDEI score v3			2.719***		
			(0.947)		
BDEI score v4				2.089***	
				(0.792)	
BDEI score v5					1.444**
					(0.635)
Elevation	−0.004	−0.003	−0.003	−0.001	−0.0001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Distance to river	0.020**	0.021**	0.021**	0.020**	0.019**
	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)
Roman road	−1.742*	−1.593	−1.334	−0.985	−0.705
	(1.051)	(1.018)	(0.971)	(0.916)	(0.883)
Coast	−19.108	−19.082	−17.865	−17.534	−17.239
	(2,213.812)	(2,267.928)	(1,404.991)	(1,426.443)	(1,439.656)
Agricult. suit.	0.020	0.022	0.022	0.020	0.017
	(0.019)	(0.019)	(0.019)	(0.019)	(0.018)
Population (log)	−0.292	−0.257	−0.212	−0.177	−0.153
	(0.391)	(0.387)	(0.381)	(0.376)	(0.371)
Ruggedness	−0.044**	−0.045**	−0.045**	−0.044**	−0.042**
	(0.020)	(0.021)	(0.021)	(0.020)	(0.020)
Urban potential 1300	−0.001*	−0.001*	−0.001	−0.0003	0.0001
	(0.001)	(0.001)	(0.001)	(0.0005)	(0.0004)
Trade city 1300	−4.135	−3.973	−3.721	−3.376	−3.041
	(2.605)	(2.496)	(2.328)	(2.157)	(2.044)
Proto-indust. city 1300	4.123	4.104	3.906	3.506	3.051
	(2.607)	(2.521)	(2.381)	(2.232)	(2.124)
Constant	9.407*	7.960	5.437	2.286	−0.416
	(5.660)	(5.326)	(4.780)	(4.179)	(3.759)
Observations	86	86	86	86	86
Log Likelihood	−32.137	−32.365	−32.947	−34.005	−35.237
Akaike Inf. Crit.	88.274	88.729	89.894	92.010	94.474

Note: Logit *p<0.1; **p<0.05; ***p<0.01

A.22 Early Nineteenth-Century Prussia: Descriptive Summary Statistics

Table A.1 shows descriptive summary statistics for early nineteenth-century Prussia.

Table A29: Descriptive Statistics — Early Nineteenth-Century Prussia

Variable	**n**	**Min**	**q_1**	**$\bar{x}$**	**$\tilde{x}$**	**q_3**	**Max**	**IQR**
BDEI score v1	280	-2.06	-0.83	0.00	-0.11	1.06	1.44	1.88
BDEI score v2	280	-1.75	-0.88	0.00	-0.17	1.08	1.51	1.96
BDEI score v3	280	-1.63	-0.91	0.00	-0.15	1.07	1.53	1.99
BDEI score v4	280	-1.58	-0.96	0.00	-0.09	1.07	1.49	2.03
BDEI score v5	280	-1.56	-1.00	0.00	-0.02	1.05	1.41	2.05
Proportion of large estates 1816	267	0.00	0.00	0.02	0.01	0.02	0.15	0.02
Prop. of agric. servants (of total pop.) 1816/1819	280	0.00	0.07	0.09	0.09	0.11	0.24	0.05
Urban density 1300 (standardized)	280	-2.73	-0.71	0.00	0.27	0.75	1.43	1.46
Distance to the nearest major port (km)	280	0.00	51.55	125.82	94.07	173.94	448.43	122.39
Distance to the nearest medieval trade city (km)	280	0.00	40.14	110.45	68.81	141.28	468.84	101.14
Distance to the ocean (km)	280	0.00	100.47	176.60	165.48	241.31	446.70	140.83
Distance to the nearest large river (km)	280	0.00	6.16	36.46	24.69	59.51	158.22	53.36
Elevation	279	7.00	63.50	156.62	118.00	211.00	626.00	147.50

A.23 Early Nineteenth-Century Prussia: Tobit Models as an Alternative Specification

In our main empirical analysis we use OLS regression to estimate the impact of the *BDEI score* on the *proportion of large estates 1816* and *proportion of agricultural servants (of total population) 1816/1819*. Because these two outcome variables are bounded, we also use Tobit models as an alternative empirical specification.

Table A30 shows the results with respect to the *proportion of large estates 1816* when using Tobit models. Furthermore, Table A31 shows the results with respect to *proportion of agricultural servants (of total population) 1816/1819* when using Tobit models. In both cases, the direction, magnitude, and significance of the coefficients do not change in a way that would alter our previous interpretation.

Table A30: Proportion of Large Estates 1816 (Tobit)

	Dependent variable:									
	Proportion of Large Estates 1816									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.010***					−0.012***				
	(0.001)					(0.002)				
BDEI score v2		−0.011***					−0.013***			
		(0.001)					(0.002)			
BDEI score v3			−0.010***					−0.013***		
			(0.001)					(0.002)		
BDEI score v4				−0.010***					−0.014***	
				(0.001)					(0.002)	
BDEI score v5					−0.010***					−0.015***
					(0.001)					(0.003)
Urb. dens. 1300						−0.00004	−0.0003	−0.0001	0.001	0.002
						(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Dist. maj. port						−0.0001**	−0.0001**	−0.0001**	−0.0001**	−0.0001**
						(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00004)
Dist. trade city						0.00002	0.00001	0.00001	0.00001	0.00001
						(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Dist. ocean						0.00000	−0.00001	−0.00001	−0.00002	−0.00002
						(0.00004)	(0.00004)	(0.00004)	(0.00004)	(0.00004)
Dist. river						0.0001*	0.0001*	0.0001*	0.0001**	0.0001**
						(0.00003)	(0.00003)	(0.00003)	(0.00003)	(0.00003)
Elevation						−0.00001	−0.00001	−0.00001	−0.00001	−0.00001
						(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)
Constant	0.016***	0.016***	0.016***	0.016***	0.016***	0.023***	0.025***	0.026***	0.027***	0.027***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	267	267	267	267	267	266	266	266	266	266
Log Likelihood	643.340	643.729	642.639	640.346	637.240	679.201	682.219	683.363	683.556	682.877

Note: Tobit — *p<0.1; **p<0.05; ***p<0.01

Table A31: Proportion of Agricultural Servants (of Total Population) 1816/1819 (Tobit)

	Dependent variable:									
	Proportion of Agricultural Servants (of Total Population) 1816/1819									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
BDEI score v1	−0.012***					−0.018***				
	(0.002)					(0.005)				
BDEI score v2		−0.012***					−0.018***			
		(0.002)					(0.004)			
BDEI score v3			−0.012***					−0.018***		
			(0.002)					(0.004)		
BDEI score v4				−0.012***					−0.019***	
				(0.002)					(0.005)	
BDEI score v5					−0.012***					−0.020***
					(0.002)					(0.005)
Urb. dens. 1300						−0.011**	−0.013**	−0.013**	−0.011**	−0.010*
						(0.006)	(0.005)	(0.005)	(0.006)	(0.006)
Dist. maj. port						0.00002	0.00002	0.00002	0.00002	0.00002
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. trade city						−0.0003***	−0.0003***	−0.0003***	−0.0003***	−0.0003***
						(0.00005)	(0.00005)	(0.00005)	(0.00005)	(0.00005)
Dist. ocean						−0.0002**	−0.0002**	−0.0002***	−0.0002***	−0.0002***
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Dist. river						0.00000	0.00001	0.00001	0.00001	0.00002
						(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Elevation						−0.0001***	−0.0001***	−0.0001***	−0.0001***	−0.0001***
						(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Constant	0.092***	0.092***	0.092***	0.092***	0.092***	0.160***	0.161***	0.161***	0.162***	0.162***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Observations	280	280	280	280	280	279	279	279	279	279
Log Likelihood	528.584	528.386	528.107	527.831	527.461	559.608	560.180	560.395	560.378	560.010

Note: Tobit *p<0.1; **p<0.05; ***p<0.01

A.24 Additional Maps: Geographic Distribution of the BDEI Score

Figure A8 and Figure A9 show the geographic distribution of *BDEI score v1* and *v5* by electoral district, respectively. These maps demonstrate that the score computed by us directly maps onto established knowledge regarding the spread and intensity of the Black Death, which is known to have hit the western and southern parts of Germany first and hardest (in addition to some trade cities in the north). Similarly, because they are much closer to the pandemic's "center of gravity" (in terms of the number and intensity of recorded outbreaks across the continent), the *BDEI score* exhibits its highest values in the western and southern parts of Germany.

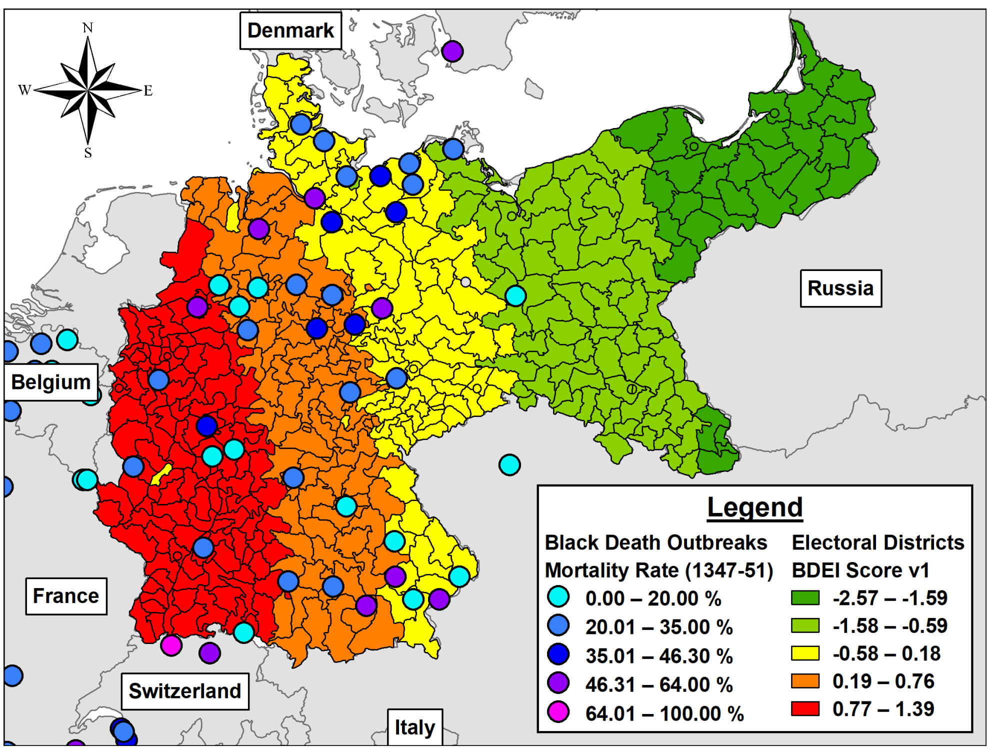

Figure A8: Geographic Distribution of BDEI score v1 by Electoral District

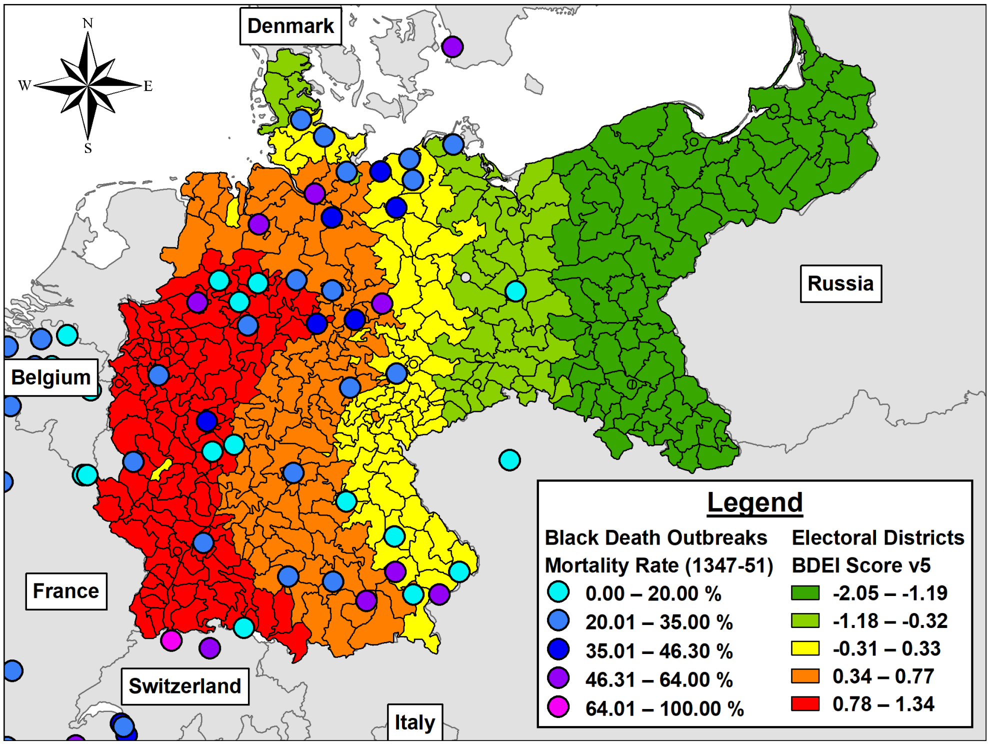

Figure A9: Geographic Distribution of BDEI score v5 by Electoral District

A.25 Further Discussion of the Empirical Design

In this section, we further discuss aspects of the empirical design, namely (1) our choice to focus on the plague outbreak in 1347–1351, (2) the possibility that preexisting differences in socioeconomic conditions may inflate our *Black Death exposure intensity* estimates, and (3) reasons for not including the Free Conservative Party when analyzing political outcomes in the article's main text.

A.25.1 The Difference Between the Initial and Subsequent Plague Outbreaks

For several centuries after the initial outbreak of the Black Death—the event that is at the center of our study—Europeans repeatedly suffered from further plague outbreaks. Why did we limit our study and empirical design to the major outbreak that occurred in 1347–1351?

The reason for this choice is primarily a substantive one. Only the shock of 1347–1351 was of such depth, severity, and geographic extent that it led to the "tectonic" movements in political-economic equilibria that many have historians, economists, and epidemiologists have observed before us.

All subsequent outbreaks were limited in their geographic extent and/or killed a substantially smaller number of people (in many of the affected locations).[32] Not only do less severe outbreaks make it more likely that external market forces restore an old political-economic equilibrium more quickly, but it is also improbable that they would lead to fundamental reconfigurations of social and political relationships as did the first wave of the Black Death. Equally important is the fact that the following outbreaks of the plague were anticipated, whereas the initial shock was not. The experience with the Black Death led to changes in inheritance patterns and other adaptations that cushioned the economic blow of subsequent plague recurrences. For these reasons, our focus is on the 1347–1351 episode.

A.25.2 The Possible Effect of Preexisting Differences in Political Institutions

Some may argue that preexisting differences in landholding inequality and labor coercion could potentially bias the results of our study. One such argument might be that the eastern parts of German-speaking central Europe historically (i.e., pre-1347) already had significantly higher levels of labor coercion and landholding inequality, rendering the impact of the Black Death less substantial than we argue it is.

As a first response to this objection, note that at least part of such variation in initial socioeconomic structures would likely be picked up by one of the covariates that we employ in our analysis: the level of *urban density 1300*. As it turns out, the coefficient on this variable is insignificant in the vast majority of specifications, indicating that regional differences in urban density in the early fourteenth century were small and cannot account for the substantial variation in socieconomic structures observed in nineteenth-century Imperial

[32] Some of the later plague outbreaks in Europe were severe as well, but they were "localized events that failed to achieve the continental reach of the first invasions"; Snowden 2019, p. 38.

Germany.

More importantly, the objection relies on the assumption that prior to the arrival of the Black Death labor coercion and landholding inequality were stronger in the eastern parts of German-speaking central Europe than in the west. This is a dubious historical claim. Not only were the regional differences likely small, existing historiography suggests that the eastern parts of German-speaking Europe probably had more progressive labor regimes than the western parts.

Describing conditions in the east prior to the Black Death, Francis Ludwig Carsten writes:

> The peasants' position was far better than it was in the west, and this included the native population. Class distinctions in the east were less sharp, noblemen moved into the towns and became burghers, while burghers acquired estates and village mayors held fiefs. The whole structure of society, as might be expected of a colonial area, was much freer and looser than it was in western Europe.[33]

This more favorable context for laborers was tied to the relatively recent colonization of the east by German speakers. As explained by Carsten:

> The fact that the German villages [in the east] as a rule were founded 'from wild root' explained, in the opinion of a legal commentator of the early fourteenth century, that the peasants had better rights in Brandenburg than they had in Saxony, that they could freely sell and leave their farms, that they had a 'heritage' which was better than leasehold, as they had improved their holdings with their own work.[34]

In short, the high level of labor coercion and landholding inequality that existed in Prussia in the centuries preceding the German Empire was *not* a feature of these regions in the period prior to the Black Death. Rather, the differential impact of the Black Death led to what was, in effect, a long-run reversal of fortune for laborers: the abandonment of labor coercion in previously highly coercive areas (the west) and the growth of labor coercion

[33] Carsten 1954, p. 88.

[34] Carsten 1954, p. 38.

in previously less coercive areas (the east). The crucial point here for our analysis is that unmeasured differences in pre–Black Death socioeconomic structures likely bias *against* our findings, since these structures were historically more coercive towards labor in the west than in the east.

A.25.3 The Free Conservative Party / German Empire Party

In addition to the Conservative Party, a second party in Imperial Germany represented conservative interests: the Free Conservative Party or German Empire Party. In our main analysis, in which we focus on the Conservative Party only, we did not include the Free Conservative Party's vote shares for two reasons: First, unlike the Conservative Party, the Free Conservative Party was not exclusively a party representing the interests of traditional landed elites. Instead, industrialists, who embraced capitalism and industrial production, were members, too. Second, the party's program was more moderate than that of the Conservative Party. While Free Conservatives also defended existing social hierarchies, they were less extreme in their political goals. In contrast, the Conservative Party of the early 1870s went so far as to demand the construction of an "estate society."[35] For these reasons, vote shares for the Free Conservative Party are not as good an empirical match with the expectations derived from our theory about the Black Death's long-term consequences as are vote shares for the Conservative Party.

Nevertheless, in an extension of our empirical test (subsection A.13), we consider joint vote shares of the Conservative Party and the Free Conservative Party. In this additional analysis, we find that all of our results hold.

[35]Berdahl 1972, pp. 2–3.

A.26 The Black Death and Cultures of Political Engagement in the German-Speaking Lands of Central Europe: Tracing Out the Mechanisms

As shown in several figures in the main text, the Black Death imposed a particularly severe loss of life in the western areas of what would later become the German Empire, while largely sparing the east. In this section of the supplementary material, we elucidate how the geographical variation in the in the toll taken by the Black Death spurred economic, social, and institutional changes within the German-speaking lands that ultimately led to highly distinct cultures of political engagement by the dawn of the German Empire.

Our central contention is that areas which experienced drastic loss of life due to the Black Death reduced or eliminated the strictures of serfdom at a relatively early date, whereas those areas with more minor losses from the Black Death maintained or even increased the coercion of the rural workforce. This generated two distinct paths: (1) a virtuous path where the early acquisition of economic freedom begat institutional and cultural changes that reinforced and protected said freedom; and (2) a vicious path where the absence of economic freedom contributed to a process of institutional and cultural development that eventually blossomed into full-fledged despotism.

A.26.1 The Virtuous Path

Areas where labor coercion declined early experienced much greater social mobility, more equitable ownership of and use rights for land, and relatively vibrant towns. As the scope of liberty expanded, these areas also developed robust forms of local self-government. The experience with local self-government, in turn, bequeathed a participatory ethos and a strong capacity for collective action. This created a proto-democratic and (comparatively) egalitarian equilibrium that proved difficult to dislodge. Indeed, subsequent attempts by elites to reintroduce coercive labor practices in these areas ultimately fell flat. In the long run, the absence of major disparities in de facto power between the nobles and other sectors of society, combined with the presence of participatory institutions at the local level, shaped principality-level institutions (the "Estates") in ways that limited the predations of potentially despotic sovereigns. Liberal political traditions thrived up until the dawning of the Empire.

In establishing the contrast of the west's development with the east, it is important to emphasize that, prior to the Black Death, serfdom was just as widespread in the west and arguably even more onerous. Specifically, to attract peasants to work the lands of the less populated east, lords often had to offer terms of employment that were more favorable than those encountered in the west.[36] Thus, the pre–Black Death living standards of peasants were frequently superior in the east and subsequent fundamental changes in those circumstances cannot be interpreted as an artifact of initial conditions favoring the freedom of peasants in the west.

After the Black Death, the conditions of the peasantry and other laborers gradually improved in the west while declining precipitously in the east. The immediate consequences of the mortality shock imposed by the Black Death in western areas of the German-speaking lands were similar to what they were in other hard hit parts of Europe. The reduction in the labor supply increased the bargaining power of labor, leading to new rights for peasants like hereditary tenure along with a transition from labor service to cash rents. Towns and merchants grew more wealthy and powerful, and urban laborers earned higher wages. The historical dominance of the nobility was curtailed as land values plummeted.[37]

Among the clearest indicators of the erosion of serfdom in the west—and its rise in the east—is the size of "lord's lands" (i.e., the demesne). This term refers to the amount of agricultural land directly held by the lord of the manor and serviced by serfs in fulfillment of

[36] Blum 1957; Carsten 1954; Friedrichs 1996.
[37] Rösener 1996; Wilson 2016.

their customary labor obligations. As shown by Sheilagh Ogilvie, the proportion of total land composed of the lord's lands during the early modern period was orders of magnitude greater in the eastern areas of the German-speaking lands than in the western areas. Whereas less than five percent of land was made up of the lord's lands in western and southern Germany, the lord's lands accounted for more than fifty percent of the land in much of the east.[38] Since both areas had roughly equivalent land tenure arrangements prior to the Black Death, this indicates very different trajectories in the two regions.

The post–Black Death changes in land access and use rights had important consequences for social organization at the local level. Given that peasants in the west now enjoyed hereditary tenure and administrative responsibility over expanding tracts of land, they needed to create institutional structures to manage their new assets. Coordination of agricultural activities was particularly important given the widespread use of the two- or three-field agriculture system, which "necessitated constant agreement and close co-operation among all the peasants, and some form of central control."[39] This naturally led to the development of institutions for communal self-government.

Although initially focused on matters of agricultural production, such institutions expanded their writ to general administration, taxation, and policing. The peasants themselves were empowered to choose the individuals to oversee these tasks, often from among their own ranks. Slowly but surely, in the western areas of the German-speaking lands, "the village became a self-governing community, or Gemeinde."[40]

For the purposes of our argument, it is crucial to emphasize that this trend towards local self-government: (1) emerged with fullest force after the Black Death; (2) developed specifically as a reaction to the changes in labor freedom and property rights wrought by

[38] Ogilvie 2014.
[39] Blum 1960, p. 5.
[40] Friedrichs 1996, p. 249.

it. In this respect, the elaboration of the social historian David Sabean is worth quoting at length:

> From the late fourteenth century, peasant autonomy in this realm [agricultural production] increased, for the nobles and ecclesiastical institutions withdrew from the direct exploitation of the land and parcelled out the manor to tenants. The officials were, of course, still resident; but they became more concerned with rent payments and keeping of the peace, and less with coordination of the agricultural round. In this situation, peasant proprietors began to develop independent rules for collective decision-making with regard to harvest and ploughing, gleaning and pasturing. This extended itself directly into the question of sanctions for violations. *It came, in the course of time, to the demand that the peasant proprietors be allowed to choose officers to keep the peace, administer village affairs, and the like.*[41]

In other words, by forcing peasants to organize themselves to manage agricultural production and resolve conflicts, the transfer of land planted the seeds of a culture of participatory governance. Local-level representation came to have real meaning, as elections—albeit circumscribed ones—became a means of selecting leaders to represent the village. Proto-democracy was born.

As emphasized in recent research, experiences with proto-democracy can positively shape nature of democratic development for centuries.[42] In the case of the German-speaking lands, the experience of communal self-government was relevant for three reasons: (1) it created a long-lasting ethos of popular participation in local affairs; (2) it created a capacity to act collectively in defense of the rights granted to laborers in the wake of the Black Death; (3) it shaped the structure and efficacy of nascent parliamentary institutions.

The duchy of Württenberg, located in the southwest of the German-speaking lands, provides a good illustration of these dynamics. As in other areas of the region, in the period following the Black Death, "serfdom had lost its rigours, and the manorial system had

[41]Sabean 1976, 356, emphasis added.
[42]Giuliano and Nunn 2013; Bentzen, Hariri, and Robinson 2015; Stasavage 2020.

disintegrated."[43] Detached from the daily details of agricultural production, the nobility came to exert a relatively minor influence on economic and political affairs. Indeed, the nobility ceased to collect taxes from the peasantry on behalf of the duke, with the consequence that peasant villages became responsible for levying and conveying taxes themselves.[44] Given the increased responsibilities accorded to the villages, communal institutions at the local level flourished, and norm of relatively broad participation in the tasks of self-governance became firmly established.

Village governance was based on a system of quasi-citizenship held by the Bürger: adult, married, male householders. The Bürger had the right to use common lands, work in administrative positions in the village, and elect village officials. Male children of a Bürger automatically inherited these rights.[45] It was the Bürger who made up the self-governing community, and it was to the Bürger (in addition to the duke) to whom village officials were ultimately accountable.

Elected and appointed positions within peasant villages were both numerous and critical to the functioning of these entities. The highest office was that of the Schultheiß, a village mayor who was popularly elected by the Bürger from among their own ranks. The chief financial officer was the Bürgermeister, responsible for taxation and financial accounts. There was also a village court (*Gericht*) and a village council (*Rat*) whose members were elected by the Bürger. Other important elected positions included the schoolmaster and the pastor, both of whom were typically outsiders with specialized training. In addition to the elected offices, there was a wide range of positions that were appointed by the Schultheiß, Gericht, and Rat. These included administrators and supervisors of various sorts, as well as inspectors and police officials.[46] All told, to be a member of the Bürger meant directly participating in

[43]Carsten 1959, p. 2.
[44]Sabean 1984, pp. 4–5.
[45]Sabean 1984, p. 13.
[46]Sabean 1984, pp. 14–17.

activities relevant for the welfare of the village, both as a voter and quite often as an official.

Case in point is the small Württemberg town of Wildberg (founded in 1281 and a Württemberg territorial possession since 1440). In 1717, in spite of being home to only 1328 inhabitants in 300 households, Wildberg featured ninety-five different public offices, ranging from mayoral positions, to councilmen, to myriad types of inspectors. As noted by Peter Wilson, this meant that "one fifth of male householders thus held at least one public office, ensuring that authority remained fairly well distributed and a significant proportion of the population retained a meaningful stake in communal affairs."[47]

Without the capacity to exert de facto power, the gains made by peasants in the west—in Württemberg and elsewhere—would have potentially been rolled back. However, the vibrancy of communal life greatly facilitated collective action—including large-scale rebellion—when threats to these gains presented themselves.[48] Such threats emerged in the early sixteenth century, when German princes and nobles attempted to reassert their privileges through a combination of tax increases, additional labor obligations, and restrictions on movement. Württemberg's peasants responded with force of arms, first in the relatively small-scale Poor Conrad uprising of 1514 and later in the massive Peasants War of 1525. At the height of the latter war, the rebel armies had as many as 300,000 mobilized combatants, a feat that has been deemed "a clear demonstration of the potency of communal government."[49]

Although the peasant movement was ultimately crushed militarily, castles had been stormed and nobles had been put to death. The uprising sent the message to elites that the costs of re-imposing serfdom in the west would be unacceptably high. As such, in the long run, it was successful in achieving the peasants' overarching aim. The contrast to

[47]Wilson 2016, p. 522.
[48]Brady Jr. 1996.
[49]Wilson 2016, p. 592.

contemporaneous developments in the east could not be more stark. As will be discussed below, during the sixteenth century, the nobles and princes in the east steamrolled the peasantry with increasingly onerous labor obligations that in effect solidified a condition of near bondage until the nineteenth century.

The rise of local self-governance was important not only for how it structured institutions and norms at the local level, but also for how it influenced institutional development at the macro-level. In the decades following the Black Death, proto-parliamentary institutions called "Estates" emerged in the duchies and principalities throughout German-speaking Europe. These were no less prevalent in the east than in the west. However, the distribution of power within the Estates and the interests represented within them differed substantially based upon whether or not the Black Death had disrupted traditional social structures. In areas of the west, where the nobility experienced a relative decline, representatives of towns exercised considerable influence.[50] Moreover, the interests of the peasantry were given some consideration and, in several exceptional cases, even enjoyed direct representation via rural communes. By contrast, in the areas of the east, where the nobility remained dominant, agrarian elites wholly dominated the Estates, allowing them to coordinate with princely authorities to maximally exploit the towns and peasantry.

Estates with broader societal representation were ultimately more effective in resisting the despotic tendencies of princes. This was certainly so for the influential Estates of Württemberg—a non-noble led territorial body that in numerous moments in its centuries-long existence (1457–1918) exercised a genuine check on ducal authority and action. Among the lasting institutional achievements of the Estates was the 1514 Treaty of Tübingen, the basis of what became known as Württemberg' ancient constitution. Often the focal point for

[50]Since towns often were centers of manufacturing and trade, the economic basis of their interests was very different from the economic basis of the landed nobility. Thus, town representatives often advocated for different policies than the landed elites did.

negotiations between the duchy's rulers and its towns, the treaty was a consequence of the aforementioned 'Poor Conrad' peasants uprising of 1514. Among the concessions granted in the treaty was that "no part of the duchy was to be sold or pawned without [the Estates'] consent; every subject was to be free to leave at his will; the excessive quit-rents were to be scaled down; every duke was to promise with his letter and seal to preserve these liberties before his subjects rendered homage to him."[51] In this respect the treaty is a good example of how the revolutionary potential of the peasantry—itself a consequence of collective self-governance—led peasants' rights to become enshrined within formal parliamentary structures.

Although Württemberg's dukes occasionally disputed the terms of the treaty, more often than not the Estates were able to enforce compliance. For instance, upon his ascension in 1593 duke Frederick delayed confirming the terms of the treaty (until 1595), apparently contributing to myriad violations of the right of free departure. In the face of Frederick's initial hesitance to recognize this right, the Estates utilized their power of the purse strings to force him to concede the point.[52]

In later centuries, conflict between ducal authorities and the Estates focused on the imposition of taxes in order to finance a standing army. Led by the representatives of the towns, the Estates vigorously opposed such efforts, correctly recognizing the threat that a centralized military apparatus would pose to their prerogatives. Although the Estates' defiance of the dukes on this point was not always successful, it did prevent the emergence of a powerful military machine like that which arose in Brandenburg-Prussia. Consequently, the absolutism that characterized the latter state—built on a foundation of strict social hierarchy and military dominance—was not a feature of Württemberg. Rather, the fierce independence of the Württemberg Estates, like others in the west and south of Germany, "preserved the

[51] Carsten 1959, p. 12.
[52] Carsten 1959, pp. 43–44.

spirit of constitutional government and liberty in the age of absolute monarchy," thereby guaranteeing that the duchy's liberal political traditions could live on into the nineteenth century.[53]

Württemberg is perhaps the best known case of communal self-government contributing to the development of strong proto-parliamentary institutions in the German-speaking lands. However, it is far from unique. The treatment of communalism by Peter Blickle suggests that such a dynamic was present in a fairly wide range of settings west of the Elbe.[54] Two examples are the bishoprics of Chur and Sitten (in present day Switzerland). In those states, powerful rural communities contributed to the creation of charters that institutionalized the independence of the estates vis-à-vis ruling elites. The 1524 constitutional charter establishing the republic of Graubünden (from the bishopric of Chur) was especially noteworthy in that it explicitly prohibited officials of the bishop from serving in any territorial diet or assembly.[55]

A.26.2 The Vicious Path

In tracing out the dynamics of the vicious path, we draw from the experiences of the German-speaking lands east of the Elbe that would eventually compose the main territories of the Hohenzollern dynasty: particularly Brandenburg (the seat of the dynasty) and Prussia, but also Pomerania and Magdeburg. In these areas, labor coercion intensified after the Black Death, reinforcing traditional social hierarchies. Urban areas stagnated or declined, pathways for social mobility were virtually non-existent, and land was increasingly concentrated in the hands of agrarian elites. Local self-government had little or no relevance, since all important economic and legal decisions were made by the lord or his officials. Without experience

[53]Carsten 1959, p. 444.
[54]Blickle 1986.
[55]Blickle 1986, p. 10.

in governing themselves, peasants lacked a capacity for collective action on a large scale. Consequently, they were unable to defend themselves against violations of their customary rights and other abuses.

The proto-parliamentary institutions that emerged in this setting were completely elite-dominated. This ultimately made them highly susceptible to manipulation by despotically-minded princes. In the absence of institutions that empowered a broad societal coalition to check their accumulation of their powers, the Hohenzollern monarchs came to dominate civil society. They did this by coopting the once-dominant nobility, offering them positions of prestige within a growing military-bureaucratic apparatus in exchange for accepting the Crown's total control over taxation and affairs of state. With the nobility tamed, the towns sapped of their vitality, and the peasantry downtrodden and disorganized, the monarchs constructed a powerful autocratic state with the military at its center. Although this new state concentrated political power in the hands of the monarchs, it in no way perturbed the existing social hierarchies in the countryside. To the contrary, it further reinforced them: The progeny of the lords became commanding officers and those of the peasantry became rank-and-file soldiers. The culture of deference of the east Elbian societies—forged over centuries of serfdom—was thus institutionalized within the Hohenzollern state-building project.

As suggested by our theory, the lands east of the Elbe differed greatly from those of the west in their responses to the economic dislocation produced by the Black Death. Whereas in the latter the management of land was devolved to the peasantry, in the former the exact opposite occurred. During the fifteenth and sixteenth centuries, the east Elbian landlords—commonly referred to as Junkers—rapidly expanded and consolidated their lordly estates. The Junkers were what Max Weber called "operating landlords:" hands-on managers of commercial agricultural enterprises dedicated to the production of grain for export.[56]

[56]Weber 1946, p. 380.

Agricultural production took place on large properties serviced by an actively coerced labor force; in these respects, they were of a piece with the latifundia of ancient Rome and colonial Latin America.

Part and parcel of the expansion of the lord's lands was the loss of customary rights enjoyed by the peasants and the imposition of new labor obligations. This process has been dubbed the 'second serfdom' because it supposedly returned the peasantry of the eastern lands to a servile status akin to what had existed prior to the onset of German colonization in the twelfth century.[57] The specific details of the new labor restrictions varied by time and place, but all represented grave impediments to freedom.[58]

In Brandenburg, peasants could only leave their estates with the written authorization of their lords. During harvest season, they could be forced to perform unlimited amounts of service on the lord's lands. The freedom of peasants' children was also sharply curtailed. Peasant children could be forced to serve the lord for three years, upon pain of imprisonment should they refuse. Similar restrictions were in force in Prussia, which required peasant children to serve the lord for an indefinite period of time and forced the daughters of peasants to pay the lord a fee should they leave the estate to marry. Most onerous of all were the ordinances of Pomerania, which subjected peasants to potentially unlimited labor services, eliminated all hereditary rights to land, and imposed severe restrictions on movement. In practice, two to three days per week of uncompensated labor working the lord's lands was typical in the east during this period, though even more extensive labor service was not uncommon.[59] As we shall see below, large-scale resistance to these measures was infeasible given institutional impediments to peasant collective action.

Underlying the system of serfdom was the imposition of terror by the local enforcers of

[57] Blum 1957.
[58] The following description of labor obligations draws from Carsten 1954, pp. 147–164.
[59] Cerman 2012, pp. 70–87.

the lord. Peasants who refused to work the lord's lands or dragged their feet in doing so could receive corporal punishment, imprisonment, or worse. For instance, in Brandenburg in the late sixteenth century, the cost of recalcitrance in one village was that "the lord's men brutally invaded the village, shooting firearms at its members." In another, the lord's men "took eight serfs prisoner, tied them to horses, and dragged them across country." In yet another, "they confiscated and slaughtered serfs' cattle; if they found the male householder absent they ravaged the farm and took the women prisoner."[60]

The centralization of Junker control over agricultural production and the reliance on repression had predictable consequences for the nature of local political institutions. Self-government, at least in the vibrant form which emerged in the west, was a non-starter. This was the case in spite of the fact that, due to the dynamics of German colonization, some of the core features of village organization in the east were similar to those of the west prior to the Black Death.[61] As the second serfdom took root, legal institutions at the local level were structured to legitimize repression and to prevent peasants from seeking redress for the abuses of their lords. The lords controlled the manorial courts, which readily provided a legal imprimatur for the whippings and other sanctions meted out to disobedient serfs.[62] There was no easy escape from this local tyranny. In Brandenburg, for instance, to prevent peasants from directing complaints about their lords to the margrave's court in Berlin, the margrave decreed that wantonly complaining peasants were "to be put into the dungeon."[63] In the countryside, economic and political power belonged solely to the lord:

> Local dominance was complete, for in the course of time, the Junker had become not only an exacting landlord, hereditary serf master, vigorous entrepreneur, assiduous estate manager, and nonprofessional trader, but also the local church patron, police chief, prosecutor, and judge[.] [...] [G]overnment of, by, and for the

[60]Ogilvie 2014, p. 38.
[61]Blum 1971.
[62]Clark 2006, p. 161.
[63]Carsten 1954, p. 157.

landed aristocracy was the preponderant pattern of rulership in the east German principalities.[64]

Without a sustained experience of meaningful self-governance, the capacity for cooperation and collective action among the peasants of the eastern lands was substantially weaker than it was in the west. This was particularly evident during the early sixteenth century, when the quiescence of the peasants of the east contrasted sharply with the steady hum of peasant revolt in the southwest. In spite of a steady decline in their freedoms, the peasants of the east did not, for the most part, transform grievances into action. And in the rare cases in which they did, their actions were largely ineffectual. The most noteworthy attempt of eastern peasants to collectively to defend their rights was the East Prussian peasant rising of 1525, an extremely minor affair relative to that which took place in the southwest. All told, the East Prussian uprising had about 5000 peasants in arms at its height, less than 2 percent the size of the contemporaneous insurgency in the southwest.[65] It was put down quickly, without appreciable loss of life or property. The costs of maintaining serfdom through repression were low, and the nobles knew it.

The supremacy of the landed nobility left its mark on institutional development in the principalities. In contrast to the experience of the west, the Estates of the east were almost exclusively dominated by the nobility. Within these proto-parliamentary bodies, the representation of the towns was extremely weak and the peasants had no voice whatsoever. Consequently, the Estates were utilized by the Hohenzollern monarchs—the rulers of what would later become known as the Kingdom of Prussia—to collude with the nobility in order to extract maximal resources from the towns and the peasantry.

Such collusion was particularly evident in the unequal burdens of taxation. Whereas the landed nobility was for centuries exempted from taxation, the towns were burdened with

[64]Rosenberg 1958, pp. 30–31.
[65]Zins 1959, p. 183.

an excise tax on a wide array of goods and services. This placed the towns at a major competitive disadvantage vis-à-vis the countryside, further encouraging their decline.[66] In terms of policymaking for the countryside, the nobles used their leverage within the Estates to push for an extension of their traditional privileges, thus facilitating the appropriation of peasant lands and the eviction of unruly peasants. The upshot was that the interests championed by the Estates were contrary to those of the vast majority of individuals who populated the societies within which they operated.

The narrow social bases of the eastern Estates ultimately made them susceptible to attack by the Hohenzollern monarchs. However, the Estates of the east were not initially weak; indeed, for a time they were able to jealously guard their control over the monarchs' ability to tax, appoint officials, and establish alliances. Yet the balance of power between sovereign and lord changed in the wake of the bloody military conflicts of the seventeenth century. Animated by the desire to unite their varied territorial possessions into a single state with true military prowess, the Hohenzollerns committed themselves to centralizing control over fiscal and military matters, thereby stripping the Estates—and the nobles who controlled them—of real political power. With no broader societal support for the Estates beyond the war weary nobility, it was relatively easy for the Hohenzollern monarchs to use the threat of arms to first defang the Estates then eventually do away with them altogether.

With the Estates cowed, the Hohenzollern dynasty concentrated its efforts on building a powerful standing army. Under Frederick William I, the dynasty instituted the so-called cantonal regime of conscription, a decentralized military reserve system that provided Brandenburg-Prussia with the fourth largest army in Europe (despite being thirteenth largest in population).[67] To pay for this endeavor, the military took over authority for taxation from the Estates, and it eventually became responsible for general administration of the economy.

[66] Carsten 1954; Clark 2006.
[67] Clark 2006.

New military-led agencies such as the General Commissariat (which managed revenue from royal lands) and the General Finance Directory (which handled taxation) became the most important administrative units in the Hohenzollern lands. Populated by officials responsible solely to the sovereign, these new agencies constituted the embryo of a burgeoning military-bureaucratic apparatus, one that would permit the Hohenzollern monarchs to rule with few societal constraints on their exercise of power. Autocratic rule in the newly dubbed Kingdom of Prussia (which encompassed all the Hohenzollern territories) was thus firmly established.

The rise of autocracy in the eastern lands was based on a Faustian bargain. The bargain had two components. First, the nobles would give up their veto power over affairs of state in exchange for the right to rule their estates at their whim and for special privileges conferred to their agricultural enterprises.[68] Second, they themselves would come to populate the lion's share of key offices in the newly created military bureaucracy. This allowed them to enjoy a privileged status relative to the society at large but required strict subordination to the monarch. The Junkers thus became a 'service aristocracy' inextricably intertwined with the Hohenzollern state. This was so much the case that, reflecting on the disintegration of German democracy, the economic historian Alexander Gerschenkron concluded that the norms of the Junkers constituted nothing less than the "spirit of Prussianism" itself.[69]

What was the content of the norms associated with the Junkers? There were two components. The first was an unconditional deference to one's superiors. This was facilitated by the overlapping hierarchies of blood and office. The hereditary hierarchy that persisted in the countryside was transported root-and-branch into the functional hierarchy of the military and later (to a lesser extent) into the civil bureaucracy. In the view of Hohenzollern monarchs like Frederick II it was only appropriate that the fierce taskmasters of the rural

[68]The interpretation of the rise of autocracy in Prussia as cementing a bargain between the nobles and the Hohenzollern rulers is a common one. See, *inter alia*, Rosenberg 1958, Carsten 1954, Büsch 1997, and Clark 2006.

[69]Gerschenkron 1966, p. 24.

estates be the officers of the army, since common soldiers ought "fear their officers more than any danger to which they might be exposed."[70] The second component was a glorification of militarism. The training of Prussian cadets extolled the virtues of a brutal, Spartan ideal-type of military discipline, a tradition of military instruction that continued on into the Third Reich.[71] Since service in the military was so broad, with large swathes of the population in rural areas drawn into conscription, and since the military's role in society was so multifaceted, the values of the military ultimately became those of much of Prussian society.[72]

All told, centuries of serfdom in the eastern lands bequeathed a weak civil society, one that was militaristic but divided and obedient. Such conditions tend to favor the development of despotism.[73] The experience of the western lands suggests that it did not have to be this way. Had the mortality shock introduced by the Black Death been more profound, the eastern nobles very well may have been forced to make concessions to the peasantry comparable to those which occurred in the west. In this alternative scenario, a self-sustaining path towards greater freedom may have emerged, and the historical differences between west and east would have been much less stark.

[70] quoted in Rosenberg 1958, p. 60.
[71] Roche 2013.
[72] Büsch 1997; Willems 1986.
[73] Acemoglu and Robinson 2019; Stasavage 2020.

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