THE CONSEQUENCES OF RADICAL REFORM: THE FRENCH REVOLUTION

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What were the effects of the French invasion of Europe on the institutions of surrounding countries, and how did that affect the economic development of those places?

Two More Related Fundamental Questions

1. Does radical reform of institutions cause a long term change in the economic development of a country?

2. Do good institutions have to evolve organically/domestically, or can they be imported/enforced externally?

The French Revolution can help us analyze both of those questions.

1. The radical reform of the French armies can be viewed as a quasi-natural experiment.
2. Since the reforms were externally imposed, if there is a positive effect then we can say it does not matter if reforms are imported.

Some Historical Context

France and the Revolution

1. Revolution in 1789
2. Estates-General and then National Assembly in 1789
3. The terror, execution of the king
4. Napoleon Takes power in 1799 until 1815
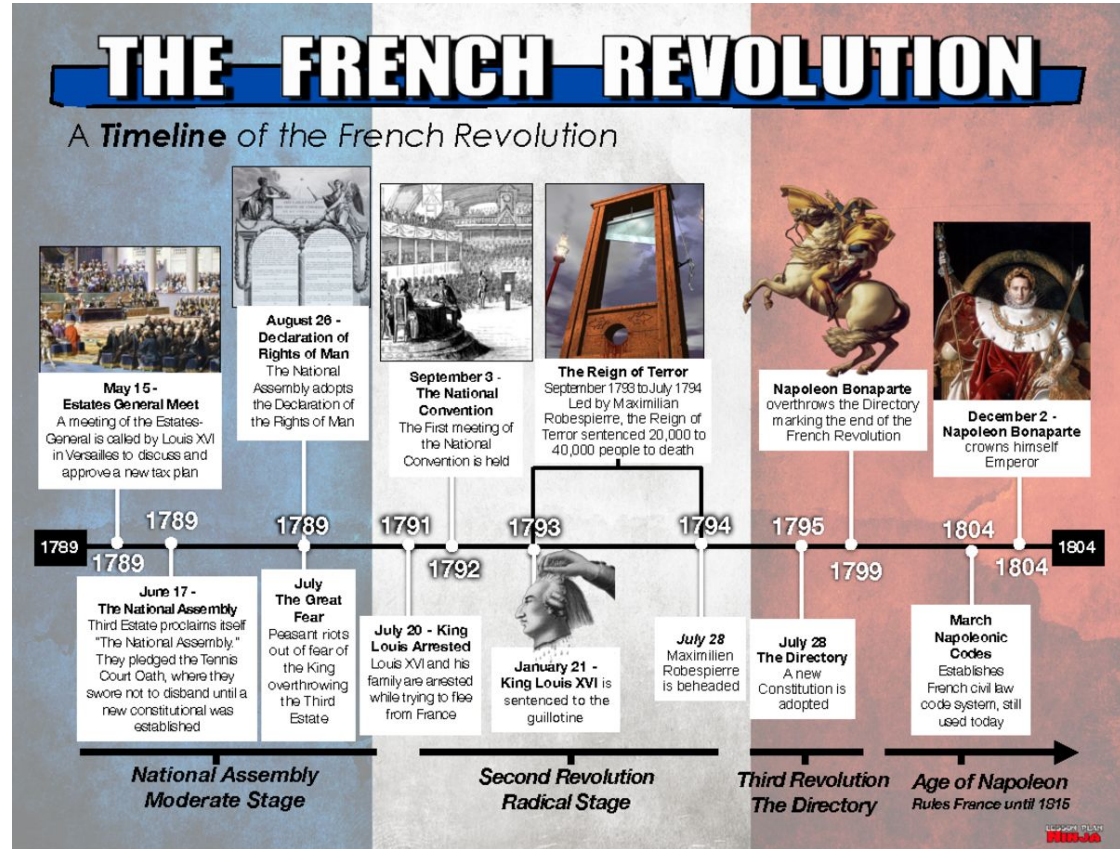
Europe before the Revolution

1. Oligarchies - either of the landed nobility or urban-based commercial elites

2. Feudalism was mostly gone, but serfdom still existed in Eastern Europe, and there were remnants of the old system (peasant taxes to landlords for example)

3. Vast privileges for the Nobility and Clergy (taxes especially) and treated differently in court (no equality under the law)

4. Urban elite. Everything controlled by guilds, with very high barriers to entry and no new technology

What Reforms were Implemented and when?

1. Most reforms were undertaken during the invasion of the French Revolutionary armies, but they continued under Napoleon (Code Napoléon)

2. Abolition of serfdom, power of clergy, end of guilds, and equality of law

3. Happened especially in Belgium, the Netherlands, Switzerland, and the Rhineland of Germany

Persistence of Reforms after the Fall of Napoleon

1. Key point throughout the paper is that, since the reforms were *so* radical, they could not simply go back to the old status quo

2. There was some attempt to go to the old system, but much remained. The differences in persistence is also part of the data analysis based on region
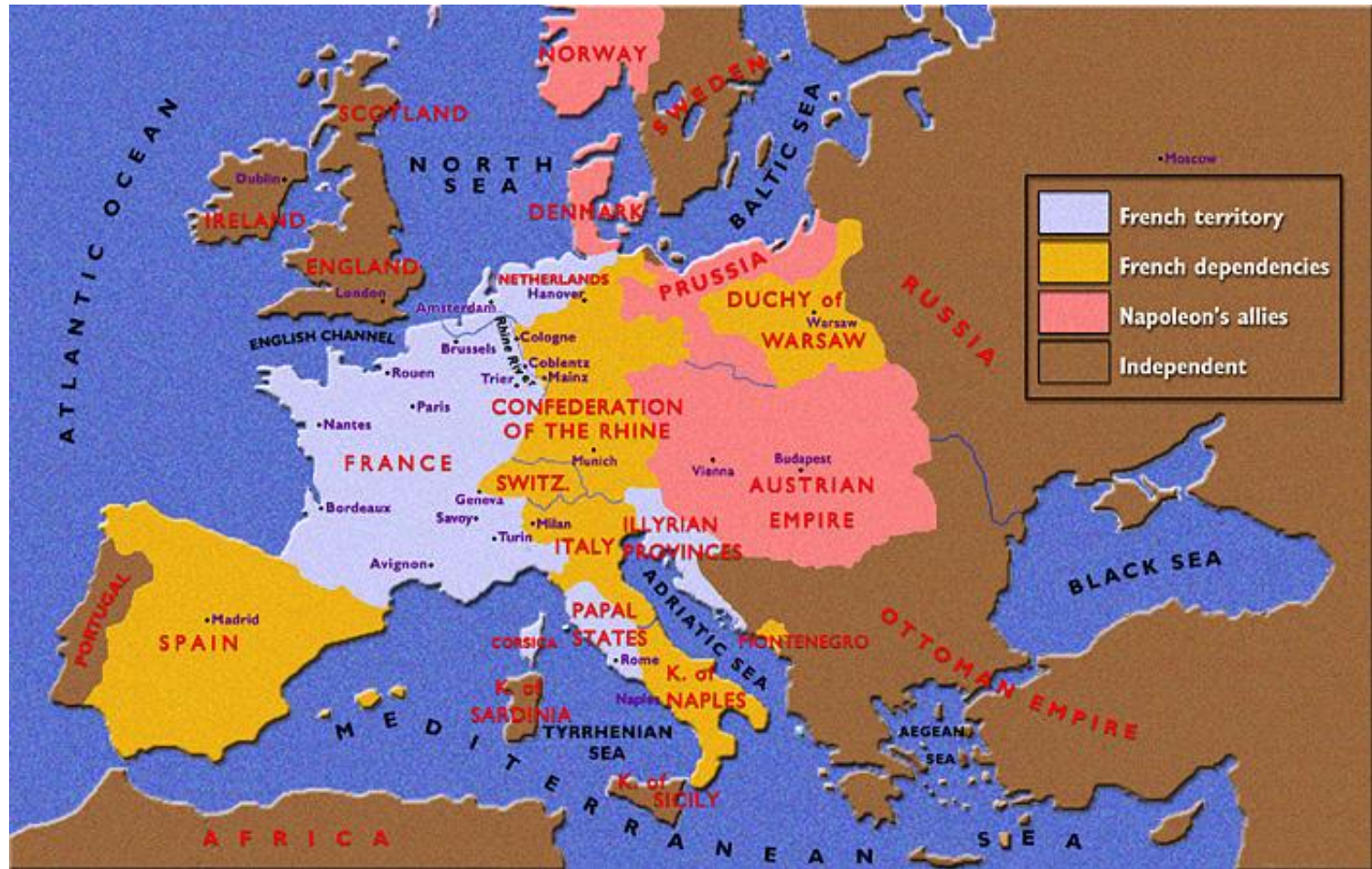
Data Analysis

Data Considerations

- Cross-national data. France invaded many parts of Europe, but not uniformly, so the areas can be compared. There is heterogeneity to be aware of

- Intra-country data, primarily Germany. The Rhineland was occupied, while the east was less affected

Important point to note

- You might be worried that the area that was occupied was done so for economic reasons, which would bias the data

- This was not the case. Occupation/invasion was because of military strategy and ideology. We can view the economic institutions as exogenous

Some More Data Nuances

-   Changes only show up after 1850s, because short-term invasion has negative consequences, but we are looking at institutional changes long-term

-   Also matters because the difference in reforms led to different propensities to adopt the industrial revolution, which only became widespread past the 1850s in Continental Europe

3 Measures of French Occupation

1. # Years occupied by the French

2. If it was the French Revolutionary armies who occupied them

3. Whether they were under Napoleon

These measures are compared to unoccupied countries

Unoccupied countries that might have been influenced by implement reforms indirectly would bias the data downward - means if there's an effect it's going to be less pronounced

2 Measures of Prosperity

1. Historical urbanization rates in various parts of Europe. Shown to have a high link to GDP-per-capita before and after industrialization

2. GDP-per-capita for states from Maddison (2003). A less-useful source as Italy and Germany are countries, and not the individual states

Germany Specific Measures of Prosperity

1. Used a few specific reforms (French civil code, abolition of serfdom, the abolition of guilds, and the emancipation of Jews) as a proxy for general reform

2. Notice how guilds were especially a French thing

3. Defensive Modernization (Prussia adopting reforms so that the French wouldn't do it themselves/so they could get ahead)

Relationship between Reforms and Invasion

Table 2
Reforms

	Treatment definitions			Outcomes					
	French Rev. Armies	Napoleonic Armies	Years French Control	Civil Code	Agrarian Reform	Abolition of Guilds	Emancipation of the Jews	Reforms Index as of 1850	Reforms Index as of 1900
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(8)
Hanover	0	1	3	1900	1831	1869	1848	4.75	25
Prussia (Eastern part)	0	0	0	1794	1821	1810	1869	31.25	68.75
Prussia, Rhine Province	1	1	19	1805	1811	1800	1869	33.5	71
Prussia, Westphalia	0	1	6	1808	1825	1808	1869	27.25	64.75
Saxony	0	0	0	1863	1832	1862	1849	4.5	35.75
Baden	0	0	0	1810	1785	1862	1862	26.25	60.75
Württemberg	0	0	0	1900	1836	1862	1864	3.5	25.5
Bavaria	0	0	0	1900	1826	1868	1868	6	26.5
Invaded by French revolutionary armies, average:				1805	1811	1800	1869	33.5	71
Not invaded by French revolutionary armies, average:				1854	1822	1849	1861	14.79	43.86
Invaded by Napoleonic armies, average:				1838	1822	1826	1862	21.83	53.58
Not invaded by Napoleonic armies, average:				1853	1820	1853	1862	14.3	43.45
Years of French presence, correlation coefficient:				-0.3978	-0.1740	-0.6610	0.3057	0.5341	0.5054

Notes: Sources for the dates of reform are listed in Appendix B. Averages in the lower panel of this table are unweighted. The reform index in columns (8) and (9) has been computed exemplarily for two dates (1850, 1900) according to the formula reported in the text.

Cross–National Urbanization Data

Table 3A
Descriptive Statistics: Europe

	All States	Invaded by French Rev. Armies	Not invaded by French Rev. Armies	Invaded by Napoleonic Armies	Not invaded by Napoleonic Armies
	(1)	(2)	(3)	(4)	(5)
Panel A: Urbanization dataset					
Urbanization in 1700	11.819	18.703	10.042	15.278	9.146
	(11.798)	(9.9)	(11.728)	(9.325)	(12.980)
Urbanization in 1750	12.312	17.475	11.060	14.823	10.347
	(10.958)	(7.624)	(11.363)	(8.085)	(12.595)
Urbanization in 1800	15.256	18.642	14.435	17.799	13.266
	(11.749)	(8.727)	(12.342)	(8.978)	(13.389)
Urbanization in 1850	16.295	20.484	15.279	18.178	14.821
	(11.46)	(7.126)	(12.149)	(7.638)	(13.73)
Urbanization in 1900	41.183	55.936	37.495	51.328	32.882
	(21.241)	(15.458)	(21.058)	(18.235)	(20.207)
Invaded by French Rev. Armies	0.195	1	0	0.444	0
	(0.397)	(0)	(0)	(0.5)	(0)
Invaded by Napoleonic Armies	0.439	1	0.333	1	0
	(0.497)	(0)	(0.473)	(0)	(0)
Years of French Presence	4.634	15.375	2.030	10.556	0
	(6.424)	(4.442)	(3.417)	(5.601)	(0)
Latitude	47.797	47.460	47.879	46.513	48.802
	(6.022)	(3.067)	(6.545)	(4.015)	(7.07)
Protestant	0.268	0.125	0.303	0.139	0.370
	(0.416)	(0.219)	0.444	(0.281)	(0.473)
Observations (panel)	205	40	165	90	115

Intra–Germany Urbanization Data

Table 3B
Descriptive Statistics: Germany

	All States	Invaded by French Rev. Armies	Not invaded by French Rev. Armies	Invaded by Napoleonic Armies	Not invaded by Napoleonic Armies
	(1)	(2)	(3)	(4)	(5)
German urbanization dataset					
Urbanization in 1700	5.639	9.061	4.955	5.521	5.698
	(3.14)	.	(2.968)	(5.007)	(2.839)
Urbanization in 1750	7.414	10.437	6.982	5.791	8.387
	(4.319)	.	(4.475)	(4.152)	(4.568)
Urbanization in 1800	9.810	14.883	9.086	10.099	9.637
	(3.547)	.	(3.126)	(4.278)	(3.572)
Urbanization in 1850	12.514	21.594	11.217	12.700	12.402
	(5.254)	.	(4.062)	(7.717)	(4.299)
Urbanization in 1900	42.382	60.872	39.741	48.409	38.766
	(14.084)	.	(12.896)	(15.380)	(13.612)
Invaded by French Rev. Armies	0.125	1	0	0.33	0
	(0.332)	.	(0)	(0.478)	(0)
Invaded by Napoleonic Armies	0.5	1	0.429	1	0
	(0.503)	.	(0.498)	(0)	(0)
Years of French Presence	3.5	19	1.286	9.333	0
	(6.237)	.	(2.198)	(7.043)	(0)
Observations (panel)	96	12	84	36	60

Notes: Mean values. Standard deviations in parentheses. The number of observations refers to the total observations in the panel, not to a single cross-section. For the summary statistics of urbanization, only a selection of years is shown. Only the Rhine Province is invaded by the French Revolutionary Armies.

Cross–National Urbanization Regression

Table 4

Country Level Impact of French Revolution: Urbanization

	Fixed Effects OLS	Fixed Effects OLS	Fixed Effects OLS	Weighted Fixed Effects OLS
Dependent variable: Urbanization (Percent living in cities above 5000 inh.)				
	(1)	(2)	(3)	(4)
French Revolution	-0.161	-2.625	-1.026	-0.235
x 1750 year dummy	[0.091]	[1.292]	[2.121]	[0.090]
French Revolution	-0.189	-4.832	-0.969	-0.200
x 1800 year dummy	[0.116]	[1.520]	[2.179]	[0.169]
French Revolution	-0.236	-3.835	-2.145	-0.289
x 1850 year dummy	[0.154]	[2.385]	[2.218]	[0.207]
French Revolution	0.899	9.521	13.081	0.662
x 1900 year dummy	[0.382]	[6.154]	[5.162]	[0.513]
p-value for joint significance "French Revolution" after 1800	0.001	0.037	0.006	0.000
Definition of treatment	Years of French Presence	French Rev. Armies Dummy	Napoleonic Control Dummy	Years of French Presence
Observations	202	202	202	202
Countries	41	41	41	41
R-squared	0.87	0.86	0.88	0.85

Notes: Country level data (pre-unitarian polities for Italy and Germany); all regressions have full set of country and year dummies. Robust standard errors, clustered by country/polity. Base sample is all West and East European countries (except France). Data sources: see Appendix.

Intra–Germany Urbanization Regression

Table 8
Within-Germany Impact of French Revolution: Urbanization in 8 regions

| | Dependent variable: Urbanization (Percent living in cities above 5000 inh.) | | | | | | | | |
| | Fixed Effects OLS | Fixed Effects OLS | Fixed Effects OLS | Fixed Effects OLS, west of Elbe | Fixed Effects OLS | Fixed Effects OLS | Fixed Effects OLS | Weighted Fixed Effects OLS | Arellano-Bond GMM |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
French Revolution	-0.192	-3.115	1.77	-0.167	0.0937	-0.15	-0.187	-0.291	
x 1750 year dummy	[0.14]	[2.21]	[5.65]	[0.17]	[0.23]	[0.084]	[0.12]	[0.15]	
French Revolution	0.008	-0.773	4.826	0.02	0.46	(0.01)	0.01	-0.113	0.195
x 1800 year dummy	[0.15]	[2.37]	[4.69]	[0.18]	[0.34]	[0.15]	[0.14]	[0.18]	[0.18]
French Revolution	0.187	3.807	4.664	0.21	0.71	0.17	0.15	0.072	0.333
x 1850 year dummy	[0.15]	[2.26]	[4.60]	[0.18]	[0.34]	[0.17]	[0.13]	[0.18]	[0.14]
French Revolution	0.712	12.52	9.745	0.774	1.32	0.67	0.672	0.621	
x 1875 year dummy	[0.20]	[3.06]	[4.83]	[0.25]	[0.38]	[0.18]	[0.14]	[0.14]	
French Revolution	0.765	13.17	10.47	0.836	1.39	0.718	0.724	0.665	
x 1880 year dummy	[0.23]	[3.52]	[5.15]	[0.29]	[0.38]	[0.18]	[0.18]	[0.16]	
French Revolution	0.81	13.23	11.33	0.901	1.451	0.757	0.769	0.693	
x 1885 year dummy	[0.26]	[3.90]	[4.99]	[0.31]	[0.40]	[0.16]	[0.23]	[0.19]	
French Revolution	0.85	13.44	11.83	0.95	1.508	0.792	0.808	0.725	
x 1890 year dummy	[0.29]	[4.38]	[5.33]	[0.35]	[0.41]	[0.16]	[0.27]	[0.22]	
French Revolution	0.864	13.13	12.42	0.99	1.538	0.8	0.821	0.717	
x 1895 year dummy	[0.33]	[4.77]	[5.65]	[0.38]	[0.43]	[0.15]	[0.31]	[0.27]	
French Revolution	0.988	14.56	14.01	1.044	1.678	0.919	0.945	0.905	1.098
x 1900 year dummy	[0.37]	[5.41]	[6.45]	[0.46]	[0.44]	[0.24]	[0.38]	[0.25]	[0.59]
French Revolution	1.063	15.22	15.04	1.165	1.769	0.988	1.019	0.925	
x 1905 year dummy	[0.36]	[5.29]	[6.24]	[0.42]	[0.47]	[0.17]	[0.39]	[0.28]	
French Revolution	1.075	14.92	15.72	1.168	1.798	0.994	1.03	0.952	
x 1910 year dummy	[0.37]	[5.39]	[6.23]	[0.43]	[0.50]	[0.19]	[0.42]	[0.29]	
ControlXtime trend					88.96	32.23	2.166		
					[75.2]	[11.1]	[7.21]		
ControlXtime trendXpost-1800					-1.321	-0.892	0.246		
					[2.21]	[0.50]	[0.21]		
Lagged dependent variable									0.201
									[1.42]
p-value for joint significance "French Revolution" after 1800	0.000	0.000	0.036	0.000	0.000	0.000	0.000	0.000	0.059
Definition of treatment	Years of French Presence	French Rev. Armies Dummy	Napoleonic Control Dummy	Years of French Presence	Years of French Presence	Years of French Presence	Years of French Presence	Years of French Presence	Years of French Presence
Control	N	N	N	N	Protestant	Latitude	Initial Urbanization	N	N
Observations	94	94	94	82	94	94	94	94	22
Countries	8	8	8	7	8	8	8	8	8
R-squared	0.96	0.95	0.95	0.95	0.96	0.97	0.96	0.96	

Notes: Urbanization data for 8 pre-unitary German territories; all regressions have full set of country and year dummies. Robust standard errors, clustered by territory.

Other German Development Indices

Table 10
Within-Germany Impact of French Revolution: Railways

Dependent variable:	log(km of railways)	
	baseline	west of Elbe
	(1)	(2)
Cross-sections, impact of the French Revolution		
in 1859	-0.015	-0.001
	[0.014]	[0.038]
in 1864	-0.001	0.01
	[0.014]	[0.039]
in 1869	0.004	0.026
	[0.017]	[0.040]
in 1874	0.000	0.012
	[0.016]	[0.030]
in 1880	0.037	0.057
	[0.015]	[0.018]
in 1885	0.036	0.056
	[0.014]	[0.016]
in 1890	0.034	0.056
	[0.013]	[0.016]
in 1895	0.030	0.051
	[0.013]	[0.015]
in 1900	0.088	0.134
	[0.029]	[0.034]
in 1905	0.090	0.136
	[0.029]	[0.035]
in 1910	0.089	0.135
	[0.029]	[0.035]

Notes: Each cell corresponds to one cross-sectional regression. Impact of the French Revolution is measured in Years of French Control. Robust standard errors, clustered by state. Data are for Prussia only until 1874, for provinces and states only after 1895. Number of observations (baseline/west of Elbe): 23/11 (until 1864), 29/14 (until 1874), 73/53 (until 1895), 38/27 (after 1895).

Table 11
Within-Germany Impact of French Revolution: Occupational shares

	Dependent variable: Share of population employed					
	baseline	west of Elbe	baseline	west of Elbe	baseline	west of Elbe
	(1)	(2)	(3)	(4)	(5)	(6)
	Agriculture		Industry and Manufacturing		Commerce	
Cross-sections, impact of the French Revolution						
in 1849	-0.388	-0.411	0.331	0.061	0.077	0.076
	[0.332]	[0.460]	[0.391]	[0.342]	[0.004]	[0.016]
in 1882	-0.525	-0.486	0.487	0.386	0.045	0.052
	[0.210]	[0.244]	[0.263]	[0.240]	[0.023]	[0.025]
in 1895	-0.620	-0.601	0.539	0.449	0.055	0.063
	[0.186]	[0.242]	[0.237]	[0.231]	[0.027]	[0.031]
in 1907	-0.672	-0.585	0.474	0.321	0.059	0.070
	[0.233]	[0.264]	[0.255]	[0.251]	[0.027]	[0.032]

Notes: Each cell corresponds to one cross-sectional regression. Impact of the French Revolution is measured in Years of French Control. District level data. Robust standard errors, clustered at the state level. Number of observations (baseline/west of Elbe): 39/23 (1849), 62/44 (other years).

Comparison between German States

Figure 1: Reforms index, Germany
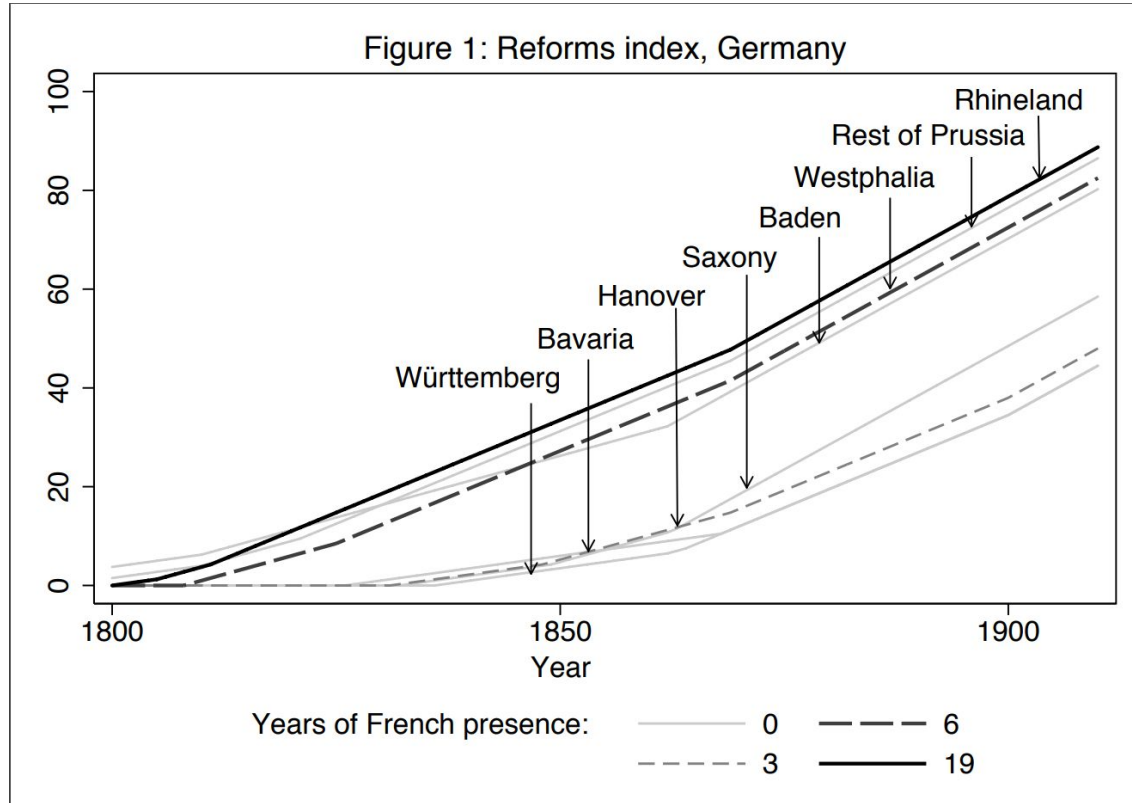
Conclusion

"The evidence suggests that areas that underwent the institutional reforms of the French Revolution experienced more rapid urbanization, especially after 1850"

"It is noteworthy that our findings do suggest that radical institutional reforms can have long-run beneficial consequences"

1. Institutions are important for economic development
2. Ancien Régime institutions were bad
3. The new Revolutionary institutions did not have detrimental effects long-term
4. There is no difference between imported versus domestically evolved institutions

Broader Significance?

- Institutional change is very broadly important for economic development, and should be a focus around the world
- We can, in fact, implement reforms from abroad and implement them
    - A win for the Washington Consensus?