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# Externally-Imposed Institutions and Regional Growth Differences:

## Evidence from France and Germany

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### Abstract

This paper provides a critical examination about the effect of externally-imposed French Revolution institutions on regional economic development variations in the 19<sup>th</sup> century by focusing on the experience of France where the Revolution originated. Acemoglu et al. (2011) take advantage of the “natural experiment” provided by the imposition of French institutions on a number of German states by the invading Napoleonic armies. The argument that the differences in the long-run economic performance of German states stem from the differences in externally-imposed French and domestic German institutions needs to be investigated further. In order to achieve this purpose, first the variation in historical urbanization rates across the French departments is examined statistically. Then a difference-in-difference estimation is used to identify a treatment effect causing growth differences between border and interior departments. The proposed treatment effect is the faster industrialization due to intensified minerals mining and railway construction in north and northeast France after 1850. It is shown that the border departments experienced higher economic growth primarily after 1850 even though the Revolution institutions and reforms were imposed uniformly across the French departments. Therefore, all the variation in economic development across German polities cannot be attributed to the externally-imposed French institutions and reforms.

**Keywords:** *French Revolution, Externally-Imposed Institutions, Regional Growth Differences, Urbanization, French Departments.*

**JEL Classifications:** *J11, N43, N93, O43, O52, P16*

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## **1. Introduction**

The effect of institutions on economic performance has remained a long-debated and unresolved issue in the literature. The examples of institutional reform failures in Africa, Latin America, the former Soviet Union in the 1980s and 1990s, and the recent cases of Afghanistan and Iraq support the view that radical changes in institutions do not necessarily have a positive effect on economic outcomes (Acemoglu et al., 2011). According to Hayek (1960), institutions cannot be designed, and have to emerge and form under natural and local conditions. A related view states that the externally-imposed institutions and reforms should be in harmony with the set of circumstances in the host countries (Berkowitz et al., 2003a, b, Rodrik, 2007). Nevertheless, there are successful external institutional reform cases such as the post Second World War institutional transformations in Germany and Japan designed by the US.

The related debate about the economic outcomes of the French Revolution has also not reached an agreement. On the one hand, some economic historians identify the French Revolution and following wars as an obstacle slowing down technology adoption and the industrial revolution in continental Europe (Landes, 1969 and Crouzet, 2001). For instance, Buyst and Mokyr (1990) argue that the Napoleonic wars hampered economic development in the Netherlands. On the other hand, the view that the enactment of the civil code, abolition of guilds and serfdom, and agricultural reforms caused by the French Revolution led the way to the industrial revolution and institutional enlightenment in continental Europe suggests that the French Revolution fostered economic development in the parts of Europe affected by the Revolution and subsequent invasion (Olson, 1982 and Acemoglu, 2008).

The French Revolution reforms and institutions can be gathered under three categories: Legal, commerce and agricultural reforms. The enactment of commercial courts and civil code

introduced the notion of everyone's equality before the law. The abolishment of the seignorial regime and guilds contributed to the emergence of a more free labor market. These institutions and reforms helped to build a solid basis for an economic environment friendly to the newly emerging commercial and industrial businesses. In the agricultural area, serfdom was officially banned. Moreover, political control and feudal landholding privileges of the elite and the Church were abolished.

In this paper, I develop a counter-argument to the argument developed in Acemoglu, Cantoni, Johnson, and Robinson (2011) by comparing differences in the long-run economic performance of French regions. Acemoglu et al. (2011) recently attempted to explore the effect of the French Revolution on German institutions and long-run German economic growth. To do this they compare the differences in the economic performance of those German states that were invaded by Napoleonic armies and adopted French institutions with other German states that retained the particularly German legal and economic institutions throughout. Their empirical analysis results indicate that there remained a sustained difference in economic performance long after the invaders retreated, and they argue that these regional economic development differences were caused by the externally imposed French Revolution reforms and institutions.

Acemoglu et al. (2011) use the evidence of within Germany regional growth differences to test the hypothesis that radical and externally-imposed reforms of the French Revolution caused higher and more rapid economic growth in the German polities where they were imposed. Acemoglu et al. (2011) investigate the relationship between the length of French Revolutionary armies' occupation (treatment variable) and economic prosperity in both a reduced-form analysis and a two-stage least squares framework. They find out that in the invaded German states where French Revolution institutional reforms were enforced, a faster urbanization took place primarily

after 1850. Nonetheless, the authors point out certain caveats about their findings such that they acknowledge that a higher economic growth was observed in German polities where French Revolution institutions were imposed mainly after 1850. They also recognize that their findings are valid for a limited period for which historical data are available.

Since the Revolution reforms and institutions were uniformly enforced across all regions in France, if, as hypothesized, it is found that there were significant regional growth differences in France, it would count as evidence against the hypothesis that all the variation in the regional economic development between invaded and non-invaded German polities were caused by the French institutions.

In order to examine this issue for France, department level historical urbanization rates between years 1800 and 1901 are used as a proxy for regional economic development. First, taking advantage of a statistical test I show that significantly different urbanization rates were observed in the French departments. This finding suggests that the departments went through different economic development experiences after the French Revolution embarked. Second, I use a difference-in-difference estimation to show that there was a treatment effect which was different than the Revolution institutions and reforms causing the regional growth variations in France. The proposed treatment effect is that after 1850 coal, steel and iron ore mining, and railway construction in the northeast and east border departments caused a faster economic growth compared to other regions in France. The treatment effect is found to be statistically significant. Third, I examine the effects of industrialization, education and health services on the departments' urbanization rates. The results of this three-level analysis indicate that all the variation in economic growth between the French-invaded German polities and non-invaded

German polities cannot be attributed to the externally-imposed French Revolution reforms and institutions.

The rest of the paper is organized as follows. Section 2 presents an overview of the economic conditions in France before the Revolution. Section 3 presents the empirical analysis, and section 4 concludes.

## **2. Economic and Social Environment in France before and during the Revolution**

The French Revolution took place under negative economic conditions. The monarchical authority was in bankruptcy. Agricultural production in northern France was damaged by poor weather conditions, causing the price of bread, the main staple food for most of the population, to rise. Since consumers spent the majority of their earnings on food the demand for other goods decreased (Doyle, 2001). Moreover, the manufacturing sector was negatively affected by British competition and by the ensuing lower prices under the commercial treaty of 1786. In addition to this, the unemployment rate was increasing, and an unexpectedly cold winter hampered production done by mills and bulk transport.

Before the French Revolution social life and the economy were controlled by a few dominant groups. The landlords were imposing a light version of serfdom by putting peasants under the burden of heavy taxes and tributes, limiting the mobility of peasants, and hindering the emergence of a free labor market. The urban oligarchy dominant in trade and production sectors strictly controlled important occupations for their own economic benefit by restricting the new entries into professions and the use of new technology (Doyle, 2001). In rural areas, the nobility and Church clergy had the privilege of not paying taxes, and they were not subject to the same laws and courts as peasants, which created an inequitable political and economic atmosphere.

This long term and widespread economic crisis, and social inequality led to a meeting of the Estates-General in 1789 for the first time in 175 years. The Estates-General took the name National Constituent Assembly with the promise of gathering more political power in itself and writing a constitution. It abolished feudalism, the nobility's special privileges and rights, and the Church clergy's authority of taxation. The constitution that was finalized on September 29, 1791 declared France as a constitutional monarchy. The abolition of guilds followed this. In 1804 Napoleon declared himself as emperor, and between 1799 and 1815 he pursued a widespread invasion in continental Europe. Hence, it can be said that the French Revolution was triggered by social injustice and economic crisis, and it caused removal of the institutions of the *ancien regime*, and had profound political and economic consequences within France and in Europe.

### **3. Data Collection and Empirical Analysis**

#### **3.1. Data Details**

The data on historical output/income per capita are usually not available, so to measure economic development in the past centuries historical city size and urbanization are often used as proxies (Acemoglu, Johnson and Robinson, 2002, and Tabellini, 2010). The motivation behind this assumption is that in the 17<sup>th</sup> and 18<sup>th</sup> centuries in Europe, cities were the trade centers, and most of the economic activities were happening in the center or in the proximity of these urban regions. In addition to this, significant industrialization movements in Europe mostly started in the cities. Hence, historical city size and urbanization rate data can give us information about how developed a region was, and so these variables can be used to represent economic prosperity in a region.

The administrative area of France is divided into 95 departments. Urbanization rate at the department level is used as proxy for economic development. In the literature urbanization rate is commonly defined as the fraction of population living in cities with more than 5000 inhabitants (Chandler, 1987, and Bairoch, Batou and Chevre, 1988). Historical city size and department size data are collected from Chandler (1987) and Lahmeyer (n.d.). Since the historical department population statistics compiled by Lahmeyer (n.d.) start only in 1800, this year also marks the earliest year for the urbanization rates in the sample.

During the 19<sup>th</sup> century the number of departments was changing through treaties and wars with neighbor countries. Nevertheless, in our sample the number of departments is set at 95, so in a specific sample year if the region in question was not defined as a French department, then there are no relevant data for that department in that year, and it would be recorded as a missing observation. It would make the analysis unnecessarily complicated if we changed the number of departments for any sample year according to the border changes due to treaties and wars with neighbor countries.

In both Chandler (1987) and Lahmeyer (n.d.) the available city and department size statistics are clustered in the years 1810 and 1901 (there are still substantial missing data in 1800). An interpolation technique is used to fill in the missing observations on the assumption that the city and department populations followed relatively smooth and predictable trends between 1810 and 1901 (Vollrath, 2007). Hence, the missing observation in year  $a$  which is between the actual observations in years  $t$  and  $t + n$  is calculated as

$$x_a = x_t + (a - t)(x_{t+n} - x_t)/n \quad (1)$$

where years  $t$  and  $t + n$  correspond to 1810 and 1901 respectively. In this way, by using the available city size and department size data, and the simple linear interpolation technique



urbanization rates at the department level are computed for the years 1800, 1810, 1820, 1831, 1851, 1861, 1876, and 1901 based on the population statistics of 697 cities.

The French departments are divided into 24 border and 71 interior departments. Paris and its surrounding area, northeast, and east regions close to Belgium, Netherlands, Luxembourg, Germany, and Switzerland are classified as border departments. This classification of the departments is motivated by the finding and argument in the economic history literature that the industrial revolution in continental Europe initially started as a regional development based on availability of the mining of coal, iron ore, and steel which served as inputs in the fledgling industrial sector, and also based on railway construction (Barnes et al., 1966, Cameron and Neal, 2003, Clapham, 1936, and Pollard, 1981). The regions where these inputs were readily available formed a corridor that ran from parts of Belgium through northeastern France down to the border of France with Switzerland. Much of Germany occupied by Napoleonic armies also happens to be part of this natural resource-rich region in northern and northeastern Europe. This suggests another probable mechanism for the differential growth within France and Germany independent of the institutional framework imposed.

### **3.2. Statistical Inference**

A statistical t-test is performed for the years that the majority of the original data (not interpolated) are available, 1800, 1810 and 1901 to examine whether the interior departments and border departments had different urbanization rates on average, and so experienced different economic growth performances. The null hypothesis here is that there was no difference in the mean urbanization rates between the border departments and interior departments, and the alternative hypothesis is that on average the border departments experienced a higher urbanization compared to the interior departments.

Tables 2-4 in the Appendix show descriptive statistics of urbanization grouped by the border and interior departments in the three years. We did not find supporting evidence for the alternative hypothesis only for the year 1801. The test results for the years 1810 and 1901 show that we can reject the null hypothesis at the 5% level. In Table 3, in 1810 the mean urbanization rate in border departments was 16%, and it was 10.5% in interior departments. Table 4 shows that in 1901, the mean urbanization rate was 34.1% in border departments, and 20.3% in interior departments, so we can see that the urbanization gap between border departments and interior departments increased in 90 years. Hence there is statistical evidence supporting the argument that border departments had higher urbanization rates compared to interior departments suggesting that French departments went through different economic development periods both in the short run and long run after the French Revolution. This indicates that within France significant regional economic growth differences occurred after the Revolution and enforcement of institutional reforms.

### **3.3. Difference-in-Difference Estimation**

In their paper Acemoglu et al. (2011) argue that some German polities grew faster than others because these polities were subjected to the treatment of French Revolution reforms and institutions through French invasion while others did not. One way to test this argument is to carry out a difference-in-difference regression for the French case, as it is already shown in the previous section that there were differences in regional growth within France. Since the French Revolution institutions and reforms were uniformly imposed in the French departments the regional economic growth differences between the interior and border departments should be caused by a different treatment effect.

In the continental Europe the industrial revolution took a faster pace with increasing coal, iron ore and steel mining, and railway construction primarily after 1850 (Clapham, 1936, and Pollard, 1981). In France natural resource mining, railway construction, and industrialization process were more intense in the northeast and east border regions. Therefore the proposed treatment effect here is that the speedy industrialization in the border departments which was supportively reinforced by natural resources mining and railway construction intensified after 1850. In order to show the impact of this treatment effect on urbanization we use a difference-in-difference econometric model similar to the one used in Card and Krueger (1994). In this model, the period of interest is the years, time period, after 1850, and the treatment group is the border departments. Therefore, the urbanization rates for the eight years mentioned above are divided into two broad groups; before 1850 and after 1850. For each group an average urbanization rate is calculated. The difference-in-difference regression equation we use is as the following;

$$urbanization_{it} = \beta_0 + \beta_1 department_{it} + \beta_2 time_{it} + \beta_3 (department_{it} * time_{it}) + \varepsilon_{it} \quad (2)$$

where the dependent variable is the average urbanization rate. The variable  $department_{it}$  takes the value 1 if it is a border department, and the variable  $time_{it}$  takes the value 1 if the period is after 1850. The interaction term  $(department_{it} * time_{it})$  demonstrates the treatment effect which is the faster, more intense industrialization carried through coal-iron ore-steel mining and railway construction in the border departments after 1850. Hence  $\beta_3$  is the coefficient of interest here. Table 5 depicts the regression results. At the 10% significance level  $\beta_3$  is found to be statistically significant with a positive sign. The regression results suggest that there is evidence in support for the treatment effect of the more speedy and intense industrialization in the border departments after 1850.

The difference-in-difference model examines whether there was a treatment factor affecting primarily the border departments after 1850. The proposed treatment effect is the location of natural resources and railways necessary to transport the natural resources to production points. France did not search and work of most of its coal resources that were gathered mainly at the Luxembourg border in east France, and in northeast France lining into the corridor of Belgium and Germany until after 1850 (Clapham, 1936, and Pollard, 1981). Furthermore, France was also suffering from insufficient railway network for a long time hampering coal and iron ore transportation. Railway construction gained momentum after 1850, and the coal and other natural resources clustered regions were given priority to be the first routes for the new rail network (Cameron, 1970). Therefore, the industrial revolution in France initially started in the east and northeast border regions where coal and iron ore were extracted and transported with the railway after 1850.

This finding counts as a counter-argument against the argument in Acemoglu et al. (2011) that it was the French Revolution institutions and reforms that caused higher economic growth in the German polities invaded by French armies compared to other polities which were not invaded. One possible explanation for the differences in regional growth observed both in Germany and France could be the mining of coal and other minerals, and its positive impact on subsequent industrialization in continental Europe (Barnes et al., 1966).

### **3.4. OLS Regression**

An OLS regression is used as an exercise to examine some of the other factors which could affect economic development. The log value of the industrial production in the year 1861 is used as a variable indicating industrialization. The total number of medical students and law students in 1866, weighted by the departments' populations is used as an education variable. The

tertiary education data are not available for the year 1861, and 1866 is the closest year with the available data. As an indication of the level and availability of health services, the total numbers of doctors and health officers in 1847 and 1866, weighted by the departments' populations and interpolated to the year 1861 is also used as an independent variable in the regression<sup>2</sup>. These data are collected from *La Statistique Generale de la France* to examine the effects of industrialization, health services and education on economic development around 1861.

The complete sample is divided into the border departments and interior departments subsamples. The general regression equation can be written as the following:

$$urbanization = \beta_0 + \beta_1 industrial\ production + \beta_2 education + \beta_3 health + \varepsilon_i \quad (3)$$

where the dependent variable is the urbanization rate in 1861 in either border departments or interior departments. The regression results can be seen in Tables 6 and 7 in the Appendix. Due to the limited available data this econometric analysis is done for a single year. For the interior departments, industrial production and the availability of health services show statistically significant positive effects on economic development proxied by urbanization rate. Regarding the border departments it is found that the coefficient of health services appears to be insignificant. Industrial production and tertiary education exert statistically significant and positive effects on economic development.

#### **4. Conclusion**

The French Revolution resulted in a large-scale and long-term institutional transformation in Europe. It permanently changed the social and political setting in France, and then in continental Europe through invasions of French Revolutionary armies and Napoleon.

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<sup>2</sup> To obtain the statistics for 1861, the same interpolation technique which is used to calculate the missing urbanization rates before is also adopted here.

Whether externally-imposed French Revolution reforms and institutions positively affected economic development in Europe is a long-debated topic. In one of the recent studies, Acemoglu et al. (2011) provide empirical evidence that externally-imposed, radical French Revolution institutions caused a faster long-run economic growth in the invaded German polities compared to non-invaded polities in the second half of the 19<sup>th</sup> century. This paper focuses on the case of France, examines regional economic prosperity variations within France during the 19<sup>th</sup> century, and proposes a counter-argument saying that the regional differences in institutions have not been the only or leading reason in causing regional economic growth differences.

Urbanization rates at the department level are used as proxy for economic development for the years 1800, 1810, 1820, 1831, 1851, 1861, 1876, and 1901. The 95 departments are divided into two subgroups as the interior and border departments. By using statistical analysis, we comfortably reject the null hypothesis that average urbanization rates of the interior and border departments were equal in the years 1810 and 1901, indicating that regional economic growth differences were experienced within France. This result suggests that even though French Revolution institutions and reforms were imposed uniformly in France, they might not necessarily cause the departments to experience similar economic growth trends both in the short-run and long-run after the onset of French Revolution.

A difference-in-difference estimation is used to examine the effect of a treatment causing regional growth differences in France. The proposed treatment is that a more rapid industrialization caused by the coal-iron ore-steel mining and railway construction took place in the northeast and east France contributing to higher economic development observed in the border departments after 1850. The coal mining, railway construction, and proto-industrialization also played an important role in those German polities which were invaded by the French

Revolutionary and then Napoleonic armies, and where French Revolution institutional reforms were implemented (Barnes et al, 1966, Pollard, 1981, and Cameron and Neal, 2003). In their analysis Acemoglu et al. (2011) find a faster economic development occurring in the invaded German polities primarily after 1850 as the main result.

Moreover, we exercise an OLS regression to examine the impacts of industrialization, tertiary education, and availability of health services on economic development proxied by urbanization in the year 1861. It is found that these factors have positive effects on economic development. In this paper, by using the evidence of regional economic growth differences in France where the Revolution reforms and institutions originated, and by investigating the causes of differences in development in the host country of the Revolution we develop an argument that externally imposed institutions may not be the primary reason causing all the variation in regional economic prosperity. Furthermore, the treatment effect of coal-iron ore-steel mining and railway construction that happened after 1850, and improvements in industrialization, education and health services are found to have positive effects on urbanization within France in the medium run after the onset of the Revolution. The limited availability of reliable regional historical data has brought about empirical analysis challenges in this paper<sup>3</sup>. Future research about the industrial revolution in continental Europe appears promising if more detailed, micro-level historical data related to coal mining, railway construction, and infant industrialization are made available.

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<sup>3</sup> Detailed historical European statistics at the country level can be found in Mitchell (1981).

## Appendix

**Table 1: French Departments**

Department	Dept.no	Capital	Region
Ain	1	Bourg-en-Bresse	border
Aisne	2	Laon	border
Allier	3	Moulins	interior
Alpes-de-Haute-Provence	4	Digne	interior
Alpes (Hautes-)	5	Gap	interior
Alpes-Maritimes	6	Nice	interior
Ardèche	7	Privas	interior
Ardennes	8	Charleville-Mézières	border
Ariège	9	Foix	interior
Aube	10	Troyes	interior
Aude	11	Carcassonne	interior
Aveyron	12	Rodez	interior
Bouches-du-Rhône	13	Marseille	interior
Calvados	14	Caen	interior
Cantal	15	Aurillac	interior
Charente	16	Angoulême	interior
Charente-Maritime	17	La Rochelle	interior
Cher	18	Bourges	interior
Corrèze	19	Tulle	interior
Corse	20	Ajaccio	interior
Côte-d'Or	21	Dijon	interior
Côtes-d'Armor	22	Saint-Brieuc	interior
Creuse	23	Guéret	interior
Dordogne	24	Périgueux	interior
Doubs	25	Besançon	border
Drôme	26	Valence	interior
Eure	27	Évreux	interior
Eure-et-Loir	28	Chartres	interior
Finistère	29	Quimper	interior
Gard	30	Nîmes	interior
Garonne (Haute-)	31	Toulouse	interior
Gers	32	Auch	interior
Gironde	33	Bordeaux	interior
Hérault	34	Montpellier	interior
Ille-et-Vilaine	35	Rennes	interior
Indre	36	Châteauroux	interior
Indre-et-Loire	37	Tours	interior
Isère	38	Grenoble	interior



Jura	39	Lons-le-Saunier	border
Landes	40	Mont-de-Marsan	interior
Loir-et-Cher	41	Blois	interior
Loire	42	Saint-Étienne	interior
Loire (Haute-)	43	Le Puy	interior
Loire-Atlantique	44	Nantes	interior
Loiret	45	Orléans	interior
Lot	46	Cahors	interior
Lot-et-Garonne	47	Agen	interior
Lozère	48	Mende	interior
Maine-et-Loire	49	Angers	interior
Manche	50	Saint-Lô	interior
Marne	51	Châlons-sur-Marne	border
Marne (Haute-)	52	Chaumont	interior
Mayenne	53	Laval	interior
Meurthe-et-Moselle	54	Nancy	border
Meuse	55	Bar-le-Duc	border
Morbihan	56	Vannes	interior
Moselle	57	Metz	border
Nièvre	58	Nevers	interior
Nord	59	Lille	border
Oise	60	Beauvais	border
Orne	61	Alençon	interior
Pas-de-Calais	62	Arras	border
Puy-de-Dôme	63	Clermont-Ferrand	interior
Pyrénées-Atlantiques	64	Pau	interior
Pyrénées (Hautes-)	65	Tarbes	interior
Pyrénées-Orientales	66	Perpignan	interior
Rhin (Bas-)	67	Strasbourg	border
Rhin (Haut-)	68	Colmar	border
Rhône	69	Lyon	interior
Saône (Haute-)	70	Vesoul	interior
Saône-et-Loire	71	Mâcon	interior
Sarthe	72	Le Mans	interior
Savoie	73	Chambéry	interior
Savoie (Haute-)	74	Annecy	border
Paris	75	Paris	border
Seine-Maritime	76	Rouen	interior
Seine-et-Marne	77	Melun	border
Yvelines	78	Versailles	interior
Sèvres (Deux-)	79	Niort	interior
Somme	80	Amiens	border
Tarn	81	Albi	interior

Tarn-et-Garonne	82	Montauban	interior
Var	83	Toulon	interior
Vaucluse	84	Avignon	interior
Vendée	85	La Roche-sur-Yon	interior
Vienne	86	Poitiers	interior
Vienne (Haute-)	87	Limoges	interior
Vosges	88	Épinal	border
Yonne	89	Auxerre	interior
Belfort (Territoire de)	90	Belfort	border
Essonne	91	Évry	interior
Hauts-de-Seine	92	Nanterre	border
Seine-Saint-Denis	93	Bobigny	border
Val-de-Marne	94	Créteil	border
Val-d'Oise	95	Pontoise	border

**Table 2: Urbanization in 1800**

Department	Obs.	Mean	Standard Error	Standard Deviation	95% Conf.	Interval
Border	10	0.169	0.084	0.265	-0.021	0.36
Interior	28	0.117	0.02	0.105	0.076	0.158
Combined	38	0.131	0.026	0.16	0.078	0.183
Difference			0.059		-0.068	0.172

Note: Descriptive statistics for urbanization in 1800 at the department level.

$$t = 0.8766; \Pr(T > t) = 0.1933, \text{ at } p < 0.05 \quad (4)$$

**Table 3: Urbanization in 1810**

Department	Obs.	Mean	Standard Error	Standard Deviation	95% Conf.	Interval
Border	17	0.16	0.054	0.223	0.045	0.275
Interior	67	0.105	0.0104	0.085	0.084	0.126
Combined	84	0.116	0.0138	0.126	0.089	0.144
Difference			0.034		-0.0125	0.122

Note: Descriptive statistics for urbanization in 1810 at the department level.

$$t = 1.62; \Pr(T > t) = 0.0545, \text{ at } p < 0.05 \quad (5)$$

**Table 4: Urbanization in 1901**

Department	Obs.	Mean	Standard Error	Standard Deviation	95% Conf.	Interval
Border	24	0.341	0.054	0.265	0.229	0.453
Interior	71	0.203	0.0167	0.141	0.17	0.237
Combined	95	0.238	0.0193	0.189	0.2	0.276
Difference		0.137	0.042		0.053	0.222

Note: Descriptive statistics for urbanization in 1901 at the department level.

$$t = 3.2388; \Pr(T > t) = 0.0008, \text{ at } p < 0.05 \quad (6)$$

**Table 5: Difference-in-Differences Estimation**

	(1) urbanization
department	0.0600 (0.0452)
time	0.0583** (0.0289)
department*time	0.114* (0.0606)
constant	0.106** (0.0206)
Observations	182
$R^2$	0.156

Note: Urbanization is the dependent variable. Standard errors are in parentheses. \* Significant at 10%; \*\* significant at 5%.

**Table 6: OLS Regression – Interior Departments**

	(1) urbanization 1861
log industrial production	0.0694** (0.0126)
education	-2.358 (7.539)
health	203.9** (60.66)
constant	-0.845** (0.169)
Observations	69
$R^2$	0.377

Note: Urbanization in 1861 is the dependent variable.  
Standard errors are in parentheses. \* Significant at 10%;  
\*\* significant at 5%.

**Table 7: OLS Regression – Border Departments**

	(1) urbanization 1861
log industrial production	0.0544** (0.0203)
education	604.9* (306.5)
health	-153.9 (228.8)
constant	-0.661** (0.271)
Observations	18
$R^2$	0.544

Note: Urbanization in 1861 is the dependent variable.  
Standard errors are in parentheses. \* Significant at 10%;  
\*\* significant at 5%.

## References

- Acemoglu, D. (2008). Oligarchic vs. Democratic Societies. *Journal of the European Economic Association*, 6: 1-44.
- Acemoglu, D., Johnson S., and Robinson J. A. (2002). Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution. *Quarterly Journal of Economics*, 118: 1231-1294.
- Acemoglu, D., Cantoni D., Johnson S., and Robinson J. A. (2011). The Consequences of Radical Reform: The French Revolution. *American Economic Review*, 101 (7): 1-30.
- Bairoch, P., Batou J., and Ch`evre P. (1988). *La Population des villes Europeenes, 800–1850: Banque de Donn´ees et Analyse Sommaire des R´esultats*. Geneva; Droz.
- Barnes, T. G., Blum J., and Cameron R. (1966). *The European World since 1815: Triumph and Transition*. Little, Brown and Company.
- Berkowitz, D., Pistor K., and Richard J.-F. (2003a). The Transplant Effect. *American Journal of Comparative Law*, 51: 163-204.
- Berkowitz, D., Pistor K., and Richard J.-F. (2003b). Economic Development, Legality and the Transplant Effect. *European Economic Review*, 47: 165-195.
- Buyst, E. and Mokyr J. (1990). Dutch Manufacturing and Trade during the French Period (1775-1814) in a Long Term Perspective in Erik Aerts and Francois Crouzet eds. *Economic Effects of the French Revolutionary Wars*. Leuven; Leuven University Press.
- Cameron, R. (1970). *Essays in French Economic History*. American Economic Association.
- Cameron, R. and Neal L. (2003). *A Concise Economic History of the World From Paleolithic Times to the Present*. Fourth Edition, New York, Oxford University Press.
- Card, D. and Krueger A. (1994). Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania. *American Economic Review*. Vol. 84, No. 5 (December), 772-93.
- Chandler, T. (1987). *Four Thousand Years of Urban Growth: A Historical Census*. St. David's University Press, Lewiston/Queenston.
- Clapham, J. H. (1936). *The Economic Development of France and Germany 1815-1914*. Cambridge University Press.
- Crouzet, Francois (2001). *A History of the European Economy, 1000–2000*. Charlottesville. University of Virginia Press.

Doyle, W. (2001). *The French Revolution: A Very Short Introduction*. Oxford; Oxford University Press.

Hayek, F. (1960). *The Constitution of Liberty*. Chicago; University Of Chicago Press.

La Statistique Generale de la France. Historical demographic and industrialization statistics. <http://acrh.revues.org/2890> (accessed June 28, 2014).

Lahmeyer, Jan. n.d. Population statistics: historical demography of all countries, their divisions and towns. <http://www.populstat.info/> (accessed May 5, 2014).

Landes, D. S. (1969). *The Unbound Prometheus*. Cambridge University Press.

Mitchell, B. R. (1981). *European Historical Statistics, 1750-1975, Facts on File*. New York.

Olson, M. (1982). *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*. New Haven; Yale University Press.

Pollard, S. (1981). *Peaceful Conquest: The Industrialization of Europe 1760-1970*. Oxford University Press.

Rodrik, D. (2007). *One Economics, Many Recipes: Globalization, Institutions, and Economic Growth*. Princeton; Princeton University Press.

Tabellini, G. (2010). Culture and Institutions: Economic Development in the Regions of Europe. *Journal of the European Economic Association*, 8: 677-716.

Vollrath, D. (2007). Land distribution and international agricultural productivity. *American Journal of Agricultural Economics* 89: 202–216.