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**Working Paper**

## Institutional Transplant and Cultural Proximity: Evidence from Nineteenth-Century Prussia

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## Institutional Transplant and Cultural Proximity: Evidence from Nineteenth-Century Prussia

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# Institutional Transplant and Cultural Proximity: Evidence from Nineteenth-Century Prussia

## Abstract

The economic impact of an institutional transplant depends on the underlying cultural environment of the receiving country. This paper provides the first evidence that the positive effect of importing good institutions cancels out when the receiving territories are characterized by cultural traits in conflict with those embedded in the imported institutions. We obtain this result using county-level data from late nineteenth-century Prussia. This environment allows us to exploit both the quasi-natural experiment generated by the radical Napoleonic institutional reforms and the deeply rooted cultural heterogeneity across Prussian counties. First, using religious affiliation as a proxy of cultural commonality, we find no effect of French institutions in Protestant areas. Then, using hand-collected data on pre-Napoleonic reigns we show that kingdoms with stronger ties to French culture exhibit a more effective transplant even when controlling for institutional proximity. Our findings are consistent with the hypothesis that cultural compatibility between the country exporting the institution and the receiving areas is a significant determinant of a successful transplant.

JEL-codes: N130, N430, O470, Z100, Z120.

Keywords: institutions, institutional transplant, culture, economic growth.

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# 1 Introduction

Economists have long argued the importance of good institutions for economic growth. Rule of law, better enforcement of contracts, security of property rights are usually associated with better economic outcomes, such as higher investment in physical and human capital, and technological progress. Some countries lacking good legal institutions have attempted to import them from abroad with the goal of boosting economic growth (e.g. Chinese antitrust law, Japanese national Civil Code). However, the adoption of good foreign institutions not always led to positive economic outcomes (e.g. in British African colonies).

Why does institutional transplant fail? Is culture responsible for it? When institutions are perceived as "foreign" or in conflict with local culture and social norms they may not be assimilated and, thus, not fully enforced. If this is the case, the effectiveness of a transplanted formal institution will crucially hinge on the reception by local communities and elites. This paper focuses on the differential long term economic effect of an institutional transplant. Specifically, we argue that the growth effect of transferring a well functioning institution from its original setting depends on the cultural compatibility with the receiving country.

In order to test our hypothesis we focus on a particular historical natural experiment: the Napoleonic invasion of German territories and the consequent imposition of French institutions. Our novel finding is that the transplant of the Napoleonic Code, a good legal institution, had heterogeneous effects on economic performance across German areas characterized by different cultural traits. In particular, the transplant was more effective in areas with stronger cultural commonality with France. The imposition of the Napoleonic Code increases our measure of economic performance by 12-20 % in areas culturally similar to France while it has virtually no effect in culturally distant ones.

A potential mechanism through which culture affects the adoption of the new formal institutions is local enforcement. In his quest to build a pan-European empire, Napoleon sought to assimilate the conquered territories and forge a class of loyal new *Frenchmen* to support him in the administration of the empire. Historical evidence shows how, in some areas, local elites willingly fit themselves into the Napoleonic society because they shared the same values, thus facilitating the implementation of new institutions (it is the case of Piedmont and Rhineland). In other areas, instead, the amalgamation policy pursued by Napoleon imposed French culture on a reluctant population and the

Napoleonic Code was simply too alien to be enforced by local communities.<sup>1</sup>

In our empirical analysis we construct several measures to capture different dimensions of cultural distance with the French invader. Our first proxy of similarity is the Protestant share of the population. Given that France was predominantly Catholic at that time, this measure serves as an inverse proxy for cultural proximity. Religious affiliation has several advantages: it is available for all 451 Prussian counties, it is well measured and varies substantially across different areas. The Protestant share, however, may not capture all aspects of cultural commonality that maybe relevant for an institutional transplant: hence we also construct alternative proxies based on hand-collected data. These measures are intended to capture cultural linkages and the exposure to French Culture before the French revolution, namely: (i) presence of Huguenots colonies, (ii) ties between each German reign and the Kingdom of France, (iii) the attitudes of each ruler both towards the French enlightened ideals and French customs.

We perform several robustness checks to ensure that our results are not spuriously driven by observable and unobservable characteristics of Prussian counties. First, we map Prussian counties to pre-Napoleonic reigns. This allows us to condition the estimation on a full set of reign fixed effects, thereby controlling for any difference in pre-existing social norms, historical facts and economic characteristics. Second, we explore a wide range of alternative specifications using a large set of controls and different proxies for economic performance and institutions. Third, we show that our finding is not contaminated by past implementation of liberal reforms in some Prussian areas. Finally, we explore a number of competing explanations such as: (i) human capital accumulation, (ii) religious fractionalization within county and (iii) religious diversity with neighboring counties. We find none of these to fully explain our results.

Our paper contributes to an emerging literature on the interplay between cultural traits and institutions. Guiso et al. (2015) argue that social norms are crucial to sustain legal institutions. Acemoglu and Jackson (2014), in a seminal paper, model the interaction between law enforcement and social norms.<sup>2</sup> An interesting prediction of their model is that laws in conflict with prevailing social norms may backfire as they do not spur the private cooperation from citizens necessary for an effective enforcement. We are the first to address a similar question from an empirical perspective. In the context of Napoleonic invasions, their prediction implies that the reception of French institutions can be different depending on the underlying cultural environment of the

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<sup>1</sup>See Parsons (2010).

<sup>2</sup>Bisin and Verdier (2015) also have a theoretical model on the interaction of culture and institutions.

several states receiving the Code, consistently with our results.

We also connect to three strands of research. First we relate to the literature on transplant of legal systems.<sup>3</sup> While these studies mainly focus on the effectiveness of imported legal institutions and attribute differences in adoption to the process of lawmaking and to the demand for law, we test the channel of cultural similarity as a mediating factor in the reception of transplanted institution and analyze the long term economic effect of the interplay between new legal institutions and the local culture. The second important stream of literature we connect to is the one investigating the importance of good institutions for economic growth. Starting with the seminal work of Douglass North, many scholars have emphasized that institutions "matter".<sup>4</sup> In an influential paper, Acemoglu et al. (2011) exploited the variation in institutional reforms during Napoleonic campaigns across 18<sup>th</sup> and 19<sup>th</sup> century to show that these radical reforms had a positive and significant effects on long-term economic performance.<sup>5</sup> In contrast to the existing contributions, our analysis does not focus on the positive effect of adopting a good institution but on the heterogeneous reception and the different economic effect in areas characterized by variegated cultural traits.

Finally, we touch upon the literature analyzing the link between culture and economic performance.<sup>6</sup> In particular, related to our paper are the works by Becker and Woessmann (2009) and Cantoni (2014). They test the Weberian hypothesis<sup>7</sup> using data on early modern Germany – the same historical environment that we exploit – and provide controversial results. Cantoni (2014) analyzes the impact of Protestantism on urbanization, starting from the 17<sup>th</sup> century. He finds no significant effect of Protestant ethic on economic development. Becker and Woessmann (2009) use an argument similar to the one proposed by Botticini and Eckstein (2005, 2012) stressing the importance of human capital to explain economic prosperity. Using cross-county variation in Prussia during the 19<sup>th</sup> century, they find evidence of higher level of human capital in Protestant areas, thus providing an alternative channel to explain the higher prosperity of Protestant regions. We provide the first empirical evidence of the mediating effect of culture in a law transplant, thereby marrying the literatures on culture and that on institutions.

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<sup>3</sup>See, for example, Berkowitz, Pistor and Richards (2003).

<sup>4</sup>See, for example, North (1990) and Acemoglu et al. (2001, 2002). For the relation between institution and the legal origin of countries see Glaeser and Shleifer (2002) and La Porta et al. (2008).

<sup>5</sup>See also Acemoglu et al. (2010) and Buggle (2015).

<sup>6</sup>See Alesina and Giuliano (2010, 2015), Algan and Cahuc (2010), Bisin and Verdier (2000), Doepke and Zilibotti (2008), Fernandez, Fogli and Olivetti (2004), Galor and Moav (2002), Giavazzi et al. (2014), Greif (1993), Guiso, Sapienza and Zingales (2008), Nannicini et al. (2013), Nunn and Wantchekon (2011) and Tabellini (2008, 2010). Fernandez (2011) provides a detailed review on this literature.

<sup>7</sup>See the seminal work by Max Weber (1930) "The Protestant Ethic and the Spirit of Capitalism".

The rest of the paper is organized as follows. Section 2 reviews the historical background, discussing the political situation of German territories before French invasion, French military campaigns, and the introduction of the Civil Code. Section 3 describes our data and provides some descriptive statistics. Section 4 presents our main results and discusses their robustness. Section 5 explores some alternative potential explanations for our findings. Section 6 investigates the effects of the other cultural measures, different from religious affiliation, that affect the reception of the Napoleonic code. Finally, Section 7 concludes.

## 2 Historical Overview

### 2.1 The situation of the Holy Roman Empire before 1800

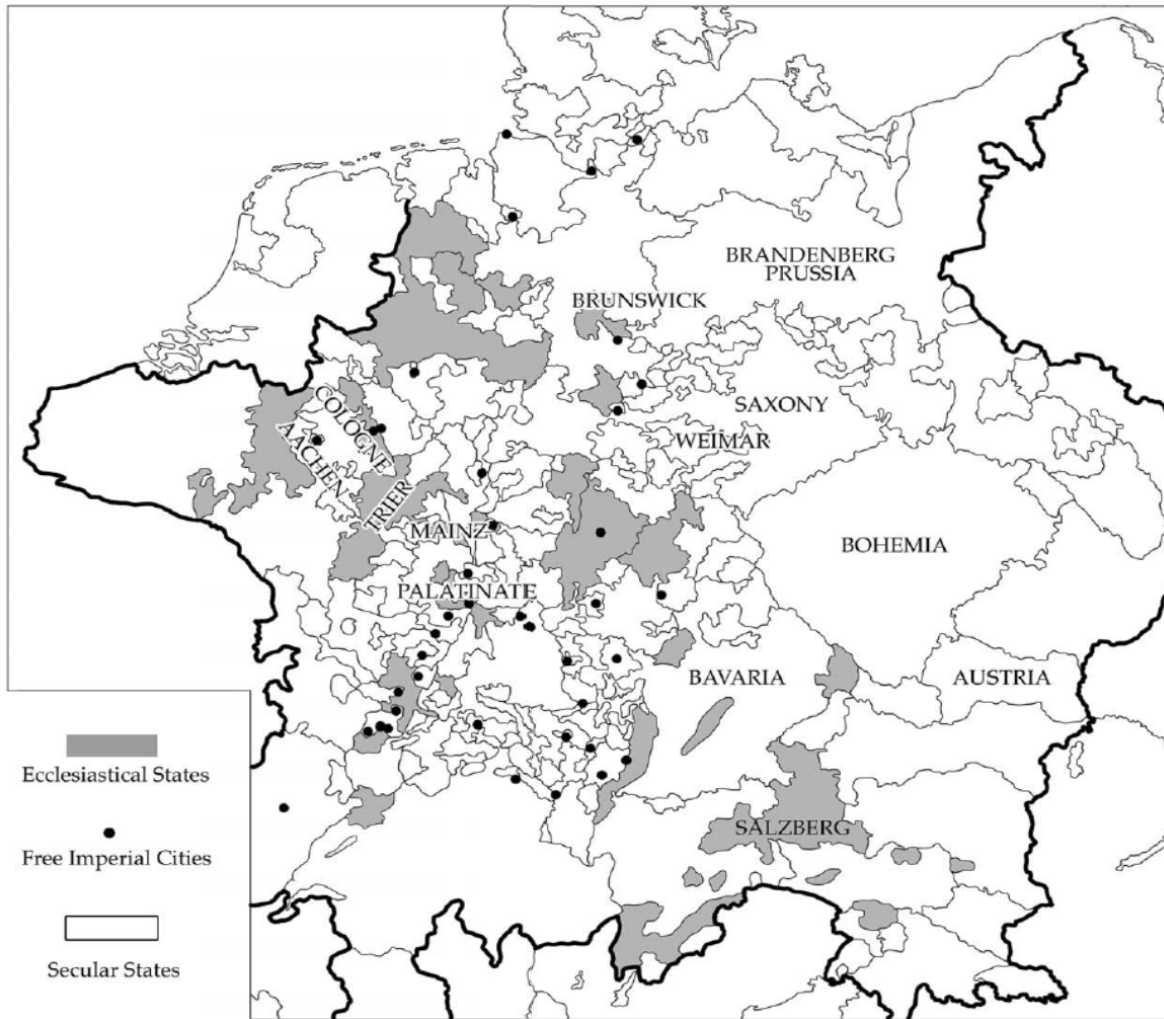
The territories of the Holy Roman Empire had always been characterized by a considerable degree of heterogeneity. Since its foundation in 962 AD the Holy Roman Empire was a multi-ethnic, multi-cultural, and multi-lingual ensemble of several entities – eventually hundreds – governed by kings, dukes, counts and bishops, collectively known as princes. These different layers of political power became gradually more autonomous as the Holy Roman emperors shifted their attention to their local kingdoms.

Pivotal in the progressive disintegration of the Empire was Protestant Reformation. Starting as a protest against the corruption of the Roman Catholic Church, the Reformation quickly spread out throughout central Germany gaining the support of several princes who wanted to stress their political and religious independence. In 1555, after several years of war, the Emperor and the Protestant German princes signed a peace treaty in Augsburg. The principle of *cuius regio eius religio* ("whose realm, his religion") was affirmed making Lutheranism an official religion of the Empire. The ambition of the emperor to centralize power and rule over a unified empire was thus permanently shattered. Religious and political wars continued to afflict the Holy Roman Empire until a stable resolution was reached with the Peace of Westphalia. By 1648 the Empire was just a confederation of German princes who, in their own lands, had the right to legislate, impose taxes, organize an army, mint and engage in foreign policy.

The political fragmentation of the Empire (see Figure 1) gave rise to persistent institutional and cultural heterogeneity. This diversity was also reinforced by the internal migration of religious minorities, most notably Jews and French Protestants, which imported their own values and customs. All these elements contribute to create an

extremely variegated picture where each territory displays its own identity. Religious affiliation, albeit just facet, is the first evident aspect of these cultural differences.

Figure 1: **Holy Roman Empire in 1789**



Source: Eric D. Brose. *German History 1789-1871: From the Holy Roman Empire to the Bismarckian Reich*. Berghahn Books, 1997.

## 2.2 The French Revolution and the Napoleonic Military Campaigns

The emergence of revolutionary France as an aggressive and strong military power at the end of the 18<sup>th</sup> century marked the end of the Holy Roman Empire. The first crushing victories by the French army created a power vacuum in the German territories which Napoleon exploited to create a "cordon sanitaire" between France and its



traditional Eastern enemies, Austria and Russia. By 1795 Napoleon was in control of the left bank of the Rhine which was formally annexed to the French Empire with the treaty of Luneville (1801).<sup>8</sup> When the Habsburg ceded part of their German estates to Napoleon's allies, in 1805, the end of the Holy Roman Empire was essentially determined. The following year, central Germany was unified in the *Confederation of the Rhine*, a formally independent confederation of sixteen states whose protector and unofficial ruler was Napoleon.<sup>9</sup> French expansion continued until Napoleon's downfall after the Russian campaign in 1812. By that time French sphere of influence extended to Poland (with the creation of the Duchy of Warsaw in 1807) and to Northern Germany (with the annexation of the Hanseatic cities of Hamburg, Lubeck, and Bremen in 1810). By the first decade of 19th century Napoleon had taken over the majority of German reigns. Figure 2 shows the counties in territories controlled by Napoleon differentiating between annexed areas and satellite states.

In his expansion of the French Empire, Napoleon was mainly driven by ideological and geo-political concerns, rather than by the economic outlook of the region. Besides the security concern of having influence over a buffer region that separated France from the two main Eastern powers, the Revolutionary rhetoric of *France natural borders* was driving his military campaigns.<sup>10</sup> Therefore, following Acemoglu et al. (2010), we can consider Napoleonic invasions as a quasi-natural shock in our empirical analysis.

## 2.3 The Imposition of the French Institutions

Despite the marked institutional heterogeneity of the Holy Roman Empire resulting from the high territorial fragmentation, some useful general features can be identified. At the dawn of 19<sup>th</sup> century the institutions of the "ancien regime" still pervaded the German territories and feudal privileges were the norm. In rural areas, even where serfdom had been abolished, peasants were subject to several restrictions and burdened by a list of duties and services they had to provide to their lords. In the cities, guilds regulated the access to different trades, often limiting the development and the growth

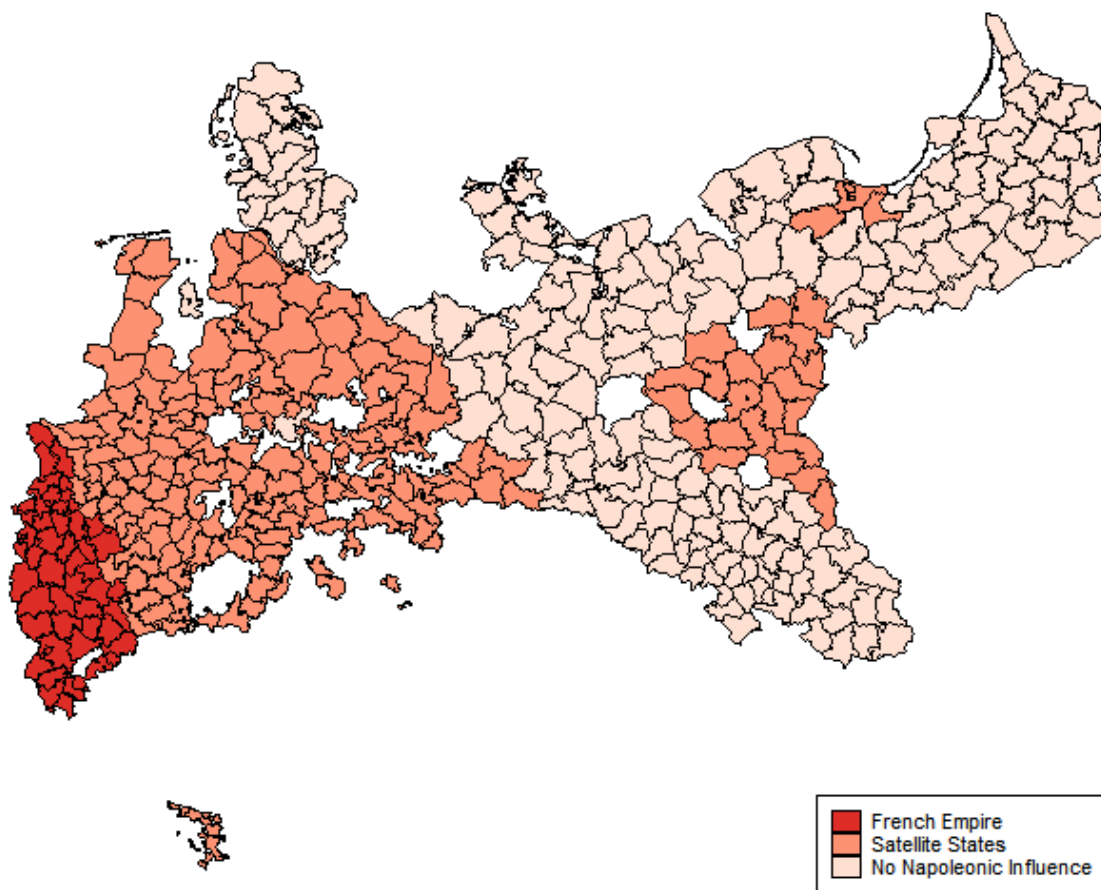
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<sup>8</sup>According to Fisher (1903), this treaty has also been called the "First Revolution of Germany" given that a "territory of 150,000 square miles, peopled by 3,500,000 inhabitants, and amounting to about a seventh part of the population and territory of the whole Empire" was transferred to the French Empire.

<sup>9</sup>The members of the Confederation promised to supply their "protector with a military contingent"(Lefebvre 1969) and, in return for their support, they were given higher statuses or additional territories. For example the free cities of Augsburg and Nuremberg were annexed by Bavaria and Frankfurt to Dalberg, Nassau became a duchy and Dalberg became the prince primate of the Confederation of the Rhine.

<sup>10</sup>Discussion on the Rhine question began well before the outbreak of the hostilities in 1792. The idea of French natural borders became prominent among the jacobin revolutionaries. Georges Jacques Danton on January 21, 1793 during the national convention was arguing in favor of the annexation of Belgium saying that "the limits of France are marked by nature, we will reach the four corners of the horizon, to the edge of the Rhine, to the edge of the ocean, to the edge of the Pyrenees, to the edge of the Alps. The boundaries of our Republic must be there". For more details see Smets (1998).

Figure 2: Counties Under Napoleonic Influence



of the industry they controlled.<sup>11</sup> Equality before the law was still far from being contemplated: aristocrats, clergy, military benefited from particular exemptions, while other groups were discriminated (e.g. Jews).

The arrival of Napoleon was a disruptive force. His rule over central Europe meant the imposition of a series of institutional reforms. The most important was arguably the introduction of the Civil Code. Emblem of the values promoted during the French Revolution, the *Code Napoleon* (1804) introduced equality before the law to all men regardless of their social and economic status. Moreover, it consecrated absolute property rights to which the code dedicated a total of 1776 articles.<sup>12</sup> Finally, the Code provided a modern legal framework that regulated all aspects of social interaction, from family matters to economic contracts. The process of codification continued with

<sup>11</sup>A good example in the Rhenish area is provided by Kisch (1989). The author provides an example of the limitations the guild imposed on the adoption of new technologies.

<sup>12</sup>A huge amount when compared to 515, the number of articles regulating person. See Woolf (1991).

the promulgation of the Code of Civil Procedure (1806), the Commercial Code (1807), the Criminal Code and the Code of Criminal Procedure (1808) and the Penal Code (1810). All these codes were imposed on the satellites states under Napoleon’s control. Interestingly, some states decided to retain the codes even after Napoleon’s fall, and even in those reigns that formally abandon the Code Napoleon, the institutions were permanently affected.<sup>13</sup> Beyond the judicial innovations, French rule also implied a more efficient model of administration and the implementation of fiscal reforms that introduced budgeting and rationalization of public expenditures.

The introduction of judicial and bureaucratic reforms occasionally generated hostility among the indigenous population: the new norms were often perceived as extraneous and incompatible with local culture and customs.<sup>14</sup> Historical evidence shows that in some areas the code met the opposition not only of the aristocracy, deprived of its privileges, but even of the very social classes the revolution meant to emancipate. This suggests that the transition from the *ancien regime* to the modern era evolved at different speeds across territories and, in some states, the transplant of French institutions failed.

### 3 Data and Variables

We build a novel dataset containing cross-sectional information on 447 Prussian counties immediately after the German unification (1871).<sup>15</sup> We combine census data from the Ifo Prussian Economic History Database (iPEHD) with pre-Napoleonic information compiled using historical sources. In particular, we map all the counties into 48 18<sup>th</sup> century reigns: this allows us to build pre-Napoleonic variables at kingdom level based on historical rulers, their relations with France and the implementation of liberal reforms. We complement the resulting dataset with information on the historical religious affiliation by Cantoni (2012) and Spenkuch (2010).

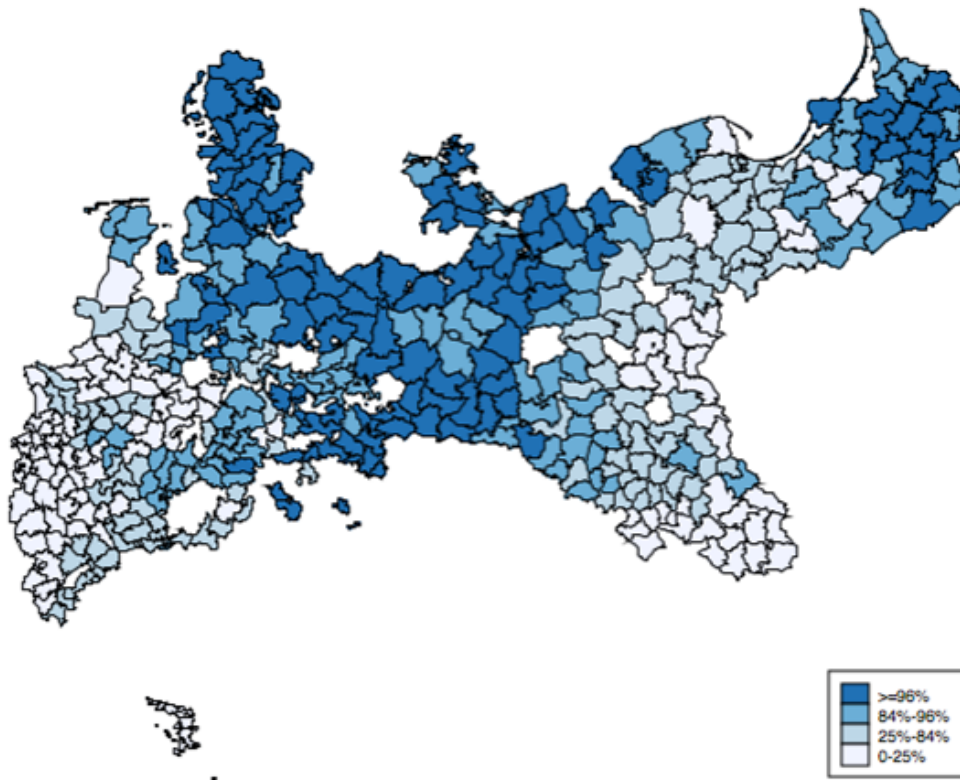
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<sup>13</sup>In the Rhineland territories annexed to Prussia after the Congress of Vienna, a commission was set up to decide whether to extend Prussian law or keep the French one. The Commission ended its work in 1818 and recommended the preservation of the French judicial system. French law remained in force in Rhineland until 1900. But also local population and business community were at the forefront to retain the code. See Rowe (2000) and Diefendorf (1980) for more details. Another notable example is the Duchy of Baden that decided to retain the Napoleonic code even after 1815.

<sup>14</sup>For anecdotal evidence on Rhineland and the Duchy of Warsaw, see Rowe (2003) p. 130 and Fisher (1903) p.151.

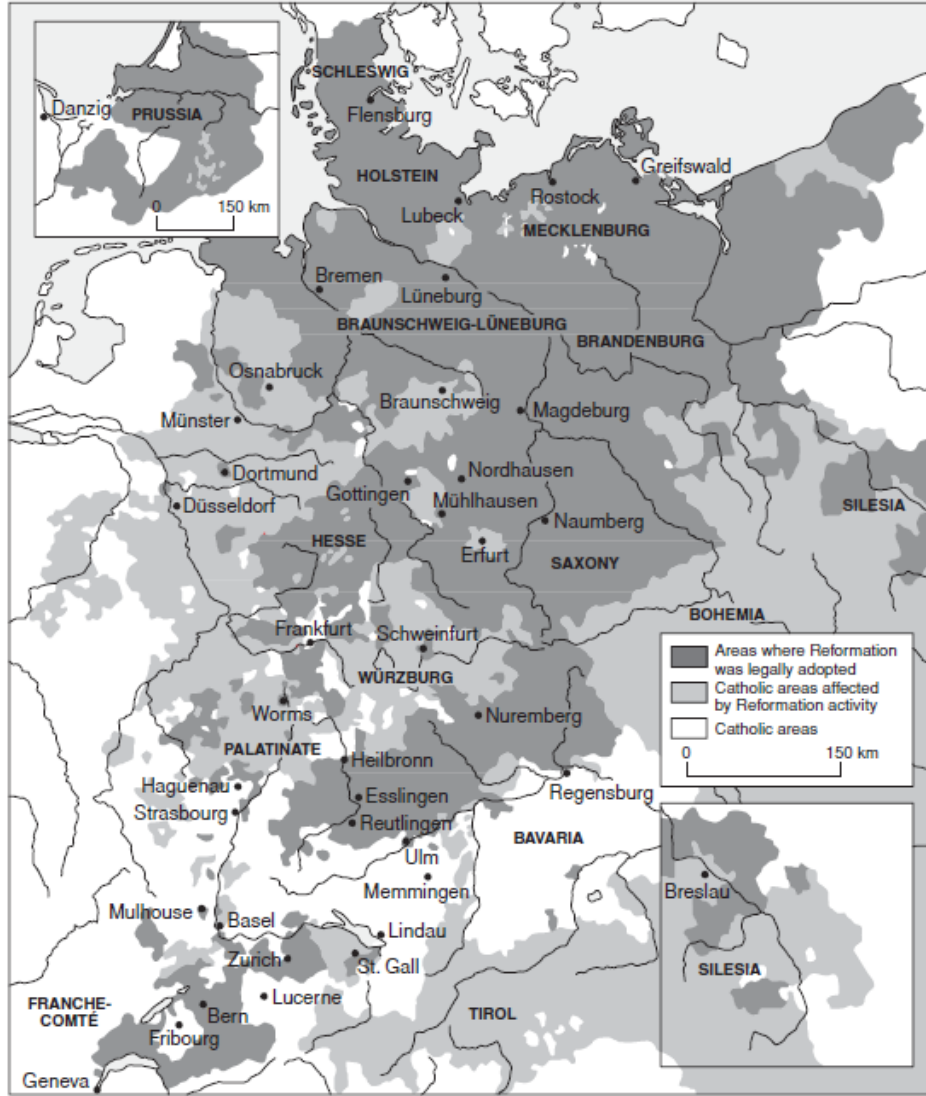
<sup>15</sup>We choose this period because it guarantees the widest geographical coverage (including information on the former members of the Confederation of the Rhine) and also a sufficient time lag for the new institutions to affect economic performance.

Figure 3: Share of Protestant 1871



Following an established strand of literature (Allen, 2001, Galloway, Lee and Hammel 1994, Becker and Woessmann 2009), we use wages to proxy for economic performance. Our main measure of county-level income is the average annual wage of male elementary school teachers from the 1886 Education Census. This is the only direct measure of income available for all counties at that time. Teacher's salary, albeit representative of a simple occupational group, reflects the development of the county as its main determinants were local contributions. One drawback of this proxy is that it may be influenced both by the value the local community attaches to education and by other benefits provided to the teachers (e.g. free housing). In our empirical analysis we address these issues controlling for factors that affect both the demand for teachers (e.g. number of pupils, demographic structure, etc) and supply of teacher (free housing, total number of teachers). Exploiting other waves of the Prussian Census, we assess the robustness of our results using the wage of a daily laborer in 1892 and other two income proxies first proposed by Becker and Woessmann 2009: income tax revenue per capita and the size of the non agricultural sector.

Figure 4: The expansion of Protestantism in Germany to 1570



Source: C. Scott Dixon. *The Reformation in Germany*. Oxford: Blackwell Publishers, 2002.

Cultural traits are notably difficult to measure. We use religious affiliation as our favorite measure of cultural diversity. Besides being easily measurable, religious beliefs are suitable to capture cultural commonality, in particular "[we] expect that two countries with the same religion tend to have similar cultures" (Guiso et al. 2009). Moreover, as already mentioned above, religion has been of paramount importance in shaping the politics of the Holy Roman Empire, determining alliances, wars and lineages. Hence, we expect religious affiliation to synthesize various cultural aspects beyond the mere

spiritual dimension and to play a fundamental role in the transplant of French institutions. In particular, we expect Protestant territories to be less receptive to the new institutions which embedded centuries of French Catholic culture. The persistence of religious affiliation across centuries has been well documented (Cantoni 2012). We then use the share of Protestants in the county from the 1871 Census as an inverse measure of cultural similarity before the Napoleonic invasion. Figure 3 shows the geographical distribution of this measure, Protestants are mainly concentrated in the central part of modern Germany. To test the robustness of the results we construct a dummy variable containing information on the religious affiliation at the beginning of the 17<sup>th</sup> century taken from Cantoni (2012) and Spenkuch (2010).

A possible concern is that religious affiliation does not capture all the relevant cultural aspects that contribute to a successful institutional transplant. We thus construct two alternative measures of cultural similarity with France: *French Ties* and *Pro French*. The former variable is based on the ties between each reign and the Kingdom of France in 17<sup>th</sup> and 18<sup>th</sup> century. First, we expect that early interaction with French courts and customs should facilitate the assimilation of French institutions. We investigate whether, during the 18<sup>th</sup> century, one of the rulers had a direct French relative (mother, father, spouse) and so an explicit link with the French aristocracy. Second, we investigate whether the reigns received Huguenots migrants during the 17<sup>th</sup> century, exploiting county level data by Hornung (2014).<sup>16</sup> Many Huguenots left France after Louis XIV revoked the Edict of Nantes in 1685 and the majority of them migrated to the Protestant neighboring countries. Some sovereigns even competed to attract these skilled French immigrants offering them special privileges: a prominent example is the Electorate of Brandenburg which, with the Edict of Potsdam, granted the Huguenots a tax-free status for ten years and allowed them to hold church services in their native language. Often, these French migrants built their own communities in the towns in which they settled preserving their own traditions and identity. We construct a dummy variable, *French Ties*, that equals one either if the ruler had a direct French relative, or if the reign registered the presence of Huguenots' colonies. We expect the transplant to be more effective if the reign in 17<sup>th</sup> and 18<sup>th</sup> century had ties with France since people were previously exposed to French culture.

The second variable we construct, *Pro-French*, should capture, using historical sources (Essays, Bibliography, etc.), the inclination of the local ruler toward either the French enlightened ideals or French habits and customs. The *Pro-French ruler* dummy equals 1 if the 18<sup>th</sup> century rulers (i) displayed a positive disposition toward customs and tra-

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<sup>16</sup>We complement these data by Lane Poole (1880).

dition of the French court (e.g. the Landgrave of Hesse-Darmstadt, Ernest Louis, was so fascinated with the grandeur of the Louis XIV court that he dissipated the finance of his reign in the effort of emulating it), or (ii) embraced the French Enlightenment ideals (e.g. the Elector of Palatinate Charles Theodore had an assiduous correspondence with Voltaire), or (iii) had a long standing relation with the French Royal House (e.g. William Henry, Prince of Nassau-Saarbrücken, often traveled to Paris where he even received military honors). We construct a *Pro-French index* based on the fraction of years the *Pro-French ruler* was in power. For example, Charles Theodore held power for 48 years, hence he contributes to the his reign's index by 0.53.3 (i.e. 48 over 90 years). Albeit highly subjective, this variable nicely summarizes the attitudes towards the foreign culture and we expect those rulers with a more favorable stance toward France to better accept and implement the transplanted institutions.

Our results might be induced by institutional rather than cultural proximity. In fact, during the 18<sup>th</sup>-century, some rulers, inspired by the Enlightenment principles, enacted reforms in their states promoting literacy, simplifying justice and the administration.<sup>17</sup> It is possible that these early reforms were implemented in places culturally closer to France, making it easier to enforce the institutions brought by Napoleon. In order to control for this potential confounding factor, we construct a measure of historical institutional proximity. In particular, we collect data on progressive reforms in the educational, judicial or administrative system implemented in each reign between 1700 and 1790. We classify as *Reformists* those rulers who implemented at least one modernizing reform. Given that this index captures similarity between the Napoleonic institutions and the pre-existing ones, we conjecture that *institutional-proximity* positively affects the success of the transplant.

Our main measure of institutional transplant is a binary variable, which takes value 1 if the county is either in the provinces annexed to the French Empire (e.g. Rhineland) or in a satellite state (e.g. Kingdom of Westphalia). This variable reflects the presence of French Institutions since, in our sample, all the territories under direct or indirect control of Napoleon were imposed the Civil Code and, at least partially, the set of modernizing reforms. Employing a dummy variable is the simplest way to account for the introduction of the Napoleonic institutions. Certainly, the exposure to the new institutions was not homogeneous across reigns as it varied according to the fortune of the military campaigns. Therefore, in some specifications, we employ alternative proxies that take into account the different intensity of French presence.<sup>18</sup> Consistently with

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<sup>17</sup>For more details, see Arvind and Stinton (2010).

<sup>18</sup>In one specification we differentiate territories annexed to the French empire, which faithfully imported all French

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Napoleon	0.555	0.498	0	1	447
French Empire	0.121	0.326	0	1	447
Satellite States	0.434	0.496	0	1	447
Years of French Invasion	4.749	6.072	0	19	447
Income of male elem. school teachers (1886)	983.123	201.322	711.961	1954.194	447
Protestant Share	0.644	0.377	0.003	0.999	447
French Ties	0.11	0.313	0	1	447
Pro-French	0.801	0.399	0	1	423
Huguenots	0.075	0.264	0	1	346
Institutional Proximity	0.469	0.361	0	1	447
% of county population in urban areas	0.276	0.22	0	1	447
% females	0.51	0.015	0.44	0.546	447
% age below 10	0.247	0.025	0.153	0.299	447
Total Population (log)	10.804	0.416	9.359	13.625	447
County Area (log)	10.798	1.152	5.313	12.955	447
Universities Holy Roman Empire	0.06	0.238	0	1	447
Hanseatic or Imperial City	0.098	0.298	0	1	447

the existing literature, the expected linear effect of the transplant of good institutions on economic performance is positive on average.

Finally, in our analysis, we use a rich set of controls including historical, geographic and contemporaneous controls. *Historical controls* are meant to capture pre-existing differences across counties. We construct a dummy variable for the presence of Hanseatic or free imperial cities in 16<sup>th</sup>-century, since they benefited from particular economic and diplomatic privileges. We also control for pre-Napoleonic economic development using urban population in 1500 taken from Becker and Woessmann (2009).<sup>19</sup> *Geographic controls* include the distance from the district capital to control for peripheral areas, the latitude (in rad) and a dummy variable for polish-speaking provinces (mainly located in the East and mainly underdeveloped).<sup>20</sup> Using information from the 1871 and 1886 Censuses, we control for demographic and social characteristics of the population and industrial features in the county (e.g. share of people employed in mining), and other aspects that may affect the wage of teachers (*contemporaneous controls*). Table 1 reports summary statistics for our main variables. Table 2 compares the means of our main dependent variable between invaded and not invaded territories across different religious affiliation.

institutions, from satellite kingdoms. In another one, we use years of French presence, which ranges from 5 to 20 years, as a proxy of institutions.

<sup>19</sup>See also De Long and Shleifer (1993).

<sup>20</sup>We do not include longitude in our specifications because it is strongly correlated with institutional variable. Indeed, Napoleonic invasion followed the West-East trajectory starting from the neighboring territories toward Russia, hence



Table 2: Comparison of Means

	Napoleon=0	Napoleon=1	Diff
Catholic	855.64 (15.22)	1016.05 (21.62)	-160.41 (38.76)
Protestant	941.31 (15.54)	972.34 (16.85)	-31.04 (24.01)
Diff	-85.67 (26.57)	43.7 (32.99)	-129.37

*Notes:* Comparison of Average income of male elementary school teachers 1886  
Standard errors in parenthesis.

## 4 Institutional Transplant and Religious Beliefs

### 4.1 Identification strategy

This section presents the empirical model we shall use to test our central hypothesis, namely the dependence of the reception of the Napoleonic Code on the pre-existing cultural traits of the county. We test whether the institutional transfer was more effective in kingdoms culturally more similar to the French Empire, thus inducing a better economic performance.

Our baseline model is as follows:

$$\begin{aligned}
y_i = & \alpha + \beta_1 Culture_i + \beta_2 Napoleon_i + \beta_3 Culture_i \times Napoleon_i \\
& + \mathbf{H}_i \beta_4 + \mathbf{H}_i \times Napoleon_i \beta_5 + \mathbf{G}_i \beta_6 + \mathbf{G}_i \times Napoleon_i \beta_7 + \mathbf{E}_i \beta_8 + \mathbf{X}_i \beta_9 + \varepsilon_i
\end{aligned} \tag{1}$$

where  $y_i$  is the average income of male elementary school teachers in county  $i$ ,  $Culture_i$  is measured by religious affiliation (i.e. Protestant share measured at county level),  $Napoleon_i$  is a binary variable for the adoption of the Napoleonic code.  $H_i$ ,  $G_i$ ,  $E_i$  and  $X_i$  are, respectively, vectors of historical, geographical, educational and economic controls;  $\varepsilon_i$  is a standard error term. We also include the interaction of  $Napoleon_i$  with pre-Napoleonic and geographic variables to control for potential non-linear confounding factors.

The key coefficient  $\beta_3$  is the interaction between the transplanted French institution and the measure of local culture. We expect  $\beta_3$  to be significantly different from zero and, in particular, that cultural similarity and institutions positively interact. Hence

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longitude captures the intensity of the French presence.

our prior is  $\beta_3 < 0$  when Protestant share is used (i.e. Napoleonic institutions had a weaker impact in Protestant areas). Our identification strategy relies on two main assumptions. First, the areas invaded by Napoleon were not chosen because they were more prosperous, i.e. French occupation is exogenous. As extensively argued by Acemoglu et al. (2011), French military invasions were not driven by economic reasons but mainly by geographic and historical ones, as discussed above. Second, religious affiliation is persistent across centuries and thus the share of Protestants in 1871 captures cultural traits that already existed before the arrival of Napoleon. Previous empirical evidence supports this assumption, persistence in religious distribution is observed when comparing religious affiliation data after the Peace of Augsburg (1555) with the more recent one. (see Figure 4).<sup>21</sup>

## 4.2 Results

In this section we test our main specification. The most striking result is the negative and significant coefficient of the interaction term across the different specifications. Column 1 provides evidence that Napoleonic institution had no impact on economic performance in strongly Protestant areas. In particular this is true in most of our counties given that in half of them the Protestant share exceeds 75%. The different specifications also show a significant positive effect of Protestantism and of the French institution on teachers' wage, in line with previous work. Column 1 refers to the most parsimonious specification, which includes only geographic controls, however our estimates prove to be robust to the inclusion of several control variables. In column 2, we control for a set of historical variables to take into account pre-existing differences. In columns 3-4 we add economic and education controls. These variable capture the economic and social outlook of the county after the Congress of Vienna. We find that some of these variables have an effect significantly different from zero but the significance of the interaction term coefficient is barely affected. Column 5 includes the interaction between Napoleonic institutions and historical and geographic controls in order to rule out potential concerns about possible alternative interactions driving the results. Column 6 adds to the baseline specification pre-napoleonic reign fixed effects to control for existing differences across reigns and exploit within reign variation. The estimated coefficient of the interaction term does not change (it slightly decreases) and does not lose statistical significance.

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<sup>21</sup>Spenkuch (2010) provides detailed data and figures of Protestant and Catholic distributions in Germany after the Peace of Augsburg.

Table 3: Institution and Religious Affiliation

Log average wage male elementary teacher 1886	(1)	(2)	(3)	(4)	(5)	(6)
Napoleon	0.0969*** (0.0220)	0.0910*** (0.0218)	0.109*** (0.0276)	0.0881*** (0.0202)	0.220 (0.659)	1.838* (1.066)
Protestant Share	0.168*** (0.0238)	0.186*** (0.0242)	0.206*** (0.0296)	0.201*** (0.0242)	0.270*** (0.0248)	0.164*** (0.0232)
Napoleon $\times$ Protestant Share	-0.0936*** (0.0338)	-0.109*** (0.0335)	-0.182*** (0.0331)	-0.155*** (0.0284)	-0.269*** (0.0335)	-0.107** (0.0447)
Constant	8.526*** (0.322)	8.696*** (0.362)	6.801*** (0.335)	6.105*** (0.409)	6.420*** (0.451)	5.109*** (0.653)
Geographic Controls	yes	yes	yes	yes	yes	yes
Historical Controls	no	yes	yes	yes	yes	yes
Economic Controls	no	no	yes	yes	yes	yes
Education controls	no	no	no	yes	yes	yes
Hist & Geo Interactions	no	no	no	no	yes	yes
Reign FE	no	no	no	no	no	yes
$R^2$	0.377	0.403	0.637	0.648	0.718	0.808
Obs.	447	447	447	447	447	447

*Notes:* *Geographic Controls:* latitude, area of the county (log), distance from the district capital and polish speaking area. *Historical controls:* year of annexation to Prussia, population in 1500 and Hanseatic or Imperial cities. *Economic controls:* total population size (log), percentage of county population in urban areas 1871, percentage of labor force in mining 1882 and number of farms 1882 (log). *Education controls:* percentage of pupils with distance to school over 3 km, total number of pupils 1886 (log), total number of teachers 1886 (log) and number of free apartments for male teachers 1886.

Robust standard errors in parenthesis.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### 4.3 Robustness Checks

This section presents a battery of alternative specifications in order to investigate the robustness of the baseline estimates. The results are reported in Table 4.

**Clustered Standard Errors** Panel a) clusters standard errors at the pre-Napoleon reign (row 1) and 1871 Prussian political district level (row 2) to allow for an arbitrary variance-covariance matrix capturing potential serial correlation in the residual error term. The coefficients of interest are always statistically significant as in the baseline estimates.

**Fixed Effects** In Panel b) we include additional pre-Napoleonic fixed effects. This is crucial to capture pre-existing differences across counties. We include rulers' fixed effects, these are a smaller number with respect to reigns' ones since several kingdoms had the same ruler. Our results are robust to the inclusion of this control.

**Additional Controls** In panel c), we show that our evidence is preserved when adding supplementary controls addressing potential issues. A possible concern could be

that our result is induced by differences in purchasing power across regions or by other drivers that influence the demand for teachers, and hence their wages. Hence, we first include a price measure to capture potential differences in purchasing power across the different counties. This proxy is constructed as the ratio between total expenditures in new school buildings in 1886 over the total number of new school buildings. This measure should capture variation in housing prices, a relevant component of CPI.<sup>22</sup> Albeit not perfect, this is the only available measure of historical unit values at county level. We then add a group of demographic variables in 1871 - including household size, share of population born in the county, share of population of Prussian origin, share of females and share of the population under 16, that might influence the demand of teachers. We also include literacy rate in an additional specification. The results always confirm the baseline estimates. Another important concern is that our results could be biased by the presence of printing presses in the county. Johannes Gutenberg established the first printing press in Mainz around 1450. The diffusion of printing presses is strongly correlated with distance from Mainz.<sup>23</sup> The presence of a printing press has facilitated the diffusion of French books and manuscripts. We collect data from the Universal Short Title Catalogue that is "a collective database of all books published in Europe between the invention of printing and the end of the sixteenth century". We focus our attention on all cities in which a book in French language was printed. We create a dummy variable at county level equal to one if a book in French language was printed in that county. Results are robust when we add a dummy controlling for French books (row 7). Finally we want our results not to be determined by hostility or francophobia generated by previous military invasions. Bonaparte might have been seen as the legitimate heir of Louis XIV, hence the "hereditary enemy". We verify if the reign was occupied by the French Army for a period longer than one year before the Napoleonic invasion. In alternative, previous invasions might also be interpreted as a higher exposure to French culture, hence as a catalyst for the adoption of the new institution. We thus construct a dummy variable that equals one if the reign had been occupied by French troops after the Peace of Westphalia. Our main result is not affected by the introduction of this control (row 8).

**Outliers** In panel d), we show that our evidence is not driven by influential observations. First, we trim (row 9) and winsorize (row 10) the extreme 1% of observations of our dependent variable. We then compute a measure of influence (row 11), specifically

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<sup>22</sup>See Moretti (2013)

<sup>23</sup>See Dittmar (2011) for more information on the diffusion of printing presses and the economic impact in European Cities in sixteenth-century.

Table 4: Robustness checks on the baseline model

	Institutions $\times$ Protestant		Obs.	$R^2$
	Coeff.	Std.Err.		
<b>a)Clustered Std.Err.</b>				
1) At Pre-Napoleonic-Reign	-0.236***	(0.0605)	447	0.667
2) At 1871 District	-0.236***	(0.0686)	447	0.667
<b>b)Fixed Effects</b>				
3) Pre-Napoleonic Ruler FE	-0.160***	(0.0396)	447	0.796
<b>c)Additional Controls</b>				
4) Price (Real estate unit values)	-0.230***	(0.0366)	441	0.666
5) Price and Demo Controls	-0.154***	(0.0382)	441	0.696
6) Price, Literacy and Demo Controls	-0.0725*	(0.0373)	441	0.716
7) French Books	-0.247***	(0.0365)	447	0.670
8) French Occupation	-0.257***	(0.0368)	429	0.665
<b>d)Outliers</b>				
9) Trimming	-0.258***	(0.0319)	439	0.671
10) Winsorising	-0.236***	(0.0341)	447	0.672
11) Df Beta	-0.312***	(0.0286)	426	0.723
<b>e)Alternative Instit. Var.</b>				
12) French Empire	-2.125*	(1.239)	253	0.784
13) Satellite States	-0.222***	(0.0404)	393	0.663
14) Year of French Domination	-0.00773*	(0.00468)	447	0.665
<b>f)Alternative Protestant Var.</b>				
15) Prot. Maj. 1871	-0.175***	(0.0265)	447	0.658
16) Cantoni Prot. Maj. 1600	-0.0498**	(0.0236)	438	0.638
17) IV (Distance Wittemberg)	-0.328***	(0.0485)	446	0.660
<b>g)Alternative Dependent Var.</b>				
18) Wage Urban Male Lab. 1892	-0.256***	(0.0484)	430	0.716
19) Income Tax Revenue p.c.	-0.803***	(0.178)	421	0.329
20) % Pop in Manuf./Services	-0.0973***	(0.0267)	447	0.769

*Notes: Dependent variable:* Log average wage, male elementary school teacher 1886 unless differently specified in the table. Robust standard errors in parenthesis unless differently specified in the table. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

how much an observation has affected the estimate of a regression coefficient.

In particular we computed the difference between the regression coefficient of the interaction term (Protestant  $\times$  Napoleonic Code) calculated for the entire dataset and the regression coefficient calculated with the observation deleted, scaled by the standard error calculated with the observation deleted.<sup>24</sup>

**Alternative Institutional Variables** In panel e), we show that the results hold when using different proxies for the French institution. Specifically we reduce our treatment group depending on the exposure to Napoleonic code. We start by using a more conservative definition of institutional variable, namely we define as invaded only those territories formally annexed to the French Empire (row 12). In this subsample

<sup>24</sup>The cut-off value we use for highly influential observation is :  $2/\sqrt{n}$ . Even though, our results are robust to different cut-off values.

the effect of the treatment might be reinforced since, not only the code was imposed, but also the administrative structure and local governors were replaced by the French ones. We then exclude the territories under the direct control of the French Empire and we consider only those territories in the Confederation of the Rhine (i.e. Satellite States) which adopted the code (row 13). Finally, we use years of French domination as a proxy for intensity-to-treatment (row 14). Reassuringly, all measures yield the same message as the preferred Napoleonic-invasion dummy.

**Alternative Protestant Variables** In panel f), we show that the results are robust to using alternative measures of religious affiliation. First (row 15), we use a dummy that equals one if the county has an absolute Protestant majority (share of Protestant >50%). Crucial for our identification is the persistence of the religious affiliation, hence using a binary variable attenuates the potential concern that Protestant share may have changed over time. We then construct a historical measure of the Protestant majority in seventeenth century using data from Cantoni (2012). The advantage of this measure is that it is defined two centuries before the arrival of Napoleon. It has however two limitations: the historical religious affiliation is defined at reign level - not county level - in 1600 (row 16) and it is not available for the entire sample. Finally, in order to address endogeneity concerns, we follow the literature instrumenting Protestant share with the distance from Wittenberg. We identify the exogenous variation in Protestantism using the concentric diffusion of Protestantism in Prussia around Luther's city (row 17). Note that the coefficients maintain the same sign as in the baseline specification, and remain significant at conventional levels.

**Alternative Outcomes Variables** Panel g) shows that the baseline results hold for alternative proxies of economic prosperity. In row (18) we use the only other direct measure of income available, that is wage of daily laborer in 1892.<sup>25</sup> Following Becker and Woessmann (2009) we use income tax revenue per capita (row 19) and the size of the non agricultural sector (row 20). The coefficient of the interaction term remains consistently negative and statistically significant across the different specifications.

#### 4.4 Diff-in-Diff Specification

Our main specification allows us to exploit a rich variation across counties and to investigate several dimensions of institutions and culture. However, a possible concern

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<sup>25</sup>The table displays the results for the male laborers in urban areas. The coefficients are virtually the same when using wage of rural male daily laborer or wage of female daily laborer. Results are available upon request.

is that historical controls and reign fixed effects do not fully account for pre-Napoleonic trends. We then test our hypothesis using a different dataset that allows us to implement a Diff-in-Diff specification.

We exploit the dataset compiled by Acemoglu et al. (2011). The dataset has information on urbanization levels and religious affiliation for a panel of 19 independent German states (or provinces of larger states) for the period 1750-1900. Unfortunately these data have a higher level aggregation (19 states vs more than 400 counties) and are not fit for a deeper investigation of potential channels that may drive our results.

In this case our baseline specification is

$$u_{it} = \delta_t + \mu_i + \alpha_1 Post_t + \alpha_2 Post_t \times Napoleon_i + \alpha_3 Post_t \times Prot_i + \alpha_4 Post_t \times Napoleon_i \times Prot_i + \varepsilon_{it} \quad (2)$$

where  $u_{it}$  is urbanization rate,  $Post$  is a dummy variable that equals one if we consider a time period after the Napoleonic invasion (i.e. second half of nineteenth century),  $Napoleon$  is a dummy that captures French presence in the state and  $Prot$  is the share of Protestants around 1800. Column 1 in Table 5 shows that after the Napoleonic invasion, there is a negative interaction between French institutions and Protestant share, consistent with our previous results. These findings are robust also in columns 2-3, where respectively we implement a weighted regression (weighted by total population in 1750) and an unweighted one but controlling for the level of population in 1750. Columns 4 provides similar results but using a different measure of French institutions, i.e. the number of years of French presence, while column 5 shows consistent results using year dummies. The evidence suggests that this "moderating effect" due to the negative interaction between culture and the civil code is significantly affecting the urbanization rate since 1875, i.e. 60 years after the Congress of Vienna.

## 5 Possible Alternative Explanations

This section investigates alternative channels proposed in the literature that might explain our findings. We investigate three possible alternative channels: human capital accumulation, religious fractionalization and diversity from neighborhood. Human capital accumulation is a significant driver of economic growth but it is also closely related to the diffusion of Protestantism, as already stressed in the existing literature.<sup>26</sup>

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<sup>26</sup>For the effect of human capital on economic growth see, for example, Barro (2002) and Gennaioli et al. (2014).

Table 5: Difference in Difference Estimation

Dep. Var.: Urbanization Rate	(1) Baseline	(2) Weighted	(3) Initial Urbanization	(4) Years of French	(5) Napoleon × Years
Post 1850	9.925*** (2.442)	10.38*** (2.325)	8.734*** (2.861)	11.64*** (2.949)	
Napoleon × Post 1850	21.78*** (7.467)	21.23*** (4.889)	23.29*** (6.842)		
Post 1850 × Nap. × Prot. Share	-28.13*** (8.458)	-29.18*** (6.563)	-30.45*** (8.340)		
Years of French × Post 1850				1.454*** (0.272)	
Post 1850 × French Yrs. × Prot. Share				-2.233*** (0.751)	
Napoleon × 1750					10.49 (12.01)
Napoleon × 1800					20.68 (14.45)
Napoleon × 1850					19.38 (12.50)
Napoleon × 1875					37.67** (16.93)
Napoleon × 1900					50.93** (20.67)
Prot. Share × Nap. × 1750					-12.46 (14.67)
Prot. Share × Nap. × 1800					-24.65 (16.57)
Prot. Share × Nap. × 1850					-24.65 (15.06)
Prot. Share × Nap. × 1875					-47.80** (18.84)
Prot. Share × Nap. × 1900					-62.55** (21.95)
Constant	8.526*** (0.832)	9.012*** (0.712)	8.505*** (0.826)	8.524*** (0.851)	5.531*** (1.611)
Number of id	19	19	19	19	19
$R^2$	0.506	0.530	0.509	0.503	0.878
Obs.	109	109	109	109	109

*Notes:* All regressions have territory and year fixed effects. Robust standard errors clustered by territory. Weighted regressions are weighted by territories total population in 1750. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



A potential concern is that some of the institutions brought by Napoleon had a negative impact on the human capital accumulation of the regions. Narrative evidence suggests that Napoleon’s educational policies were not aimed to boost literacy but targeted higher education in order to breed well-prepared military and administrative elites. Hence, technical schools were promoted (Polytechnic, Conservatory of art and trades, etc.) and lycees introduced. Napoleon, in fact, paid very little attention to primary education - and even less to the education of girls - which was mainly managed at local level and left to religious institutions. These policies could have led to a relevant role of Catholic parishes in the invaded areas weakening Protestant human capital accumulation. We use pre-Napoleonic measures of education, the presence of schools and monasteries - relevant educational centers - in 1517 and the presence of universities before Napoleonic invasion, and their interaction with Napoleonic Code in order to test the validity of this potential channel. In column 1 of Table 6 we show that including these controls does not affect the significance of the interaction term. Hence, human capital cannot alternatively explain our result.

Most of the counties invaded by French troops were mainly Catholic. An alternative explanation of the negative interaction between Protestantism and institutions may be that those counties with a higher share of Protestants were also highly fractionalized. A potential concern is that the interaction term reflects the effects of religious diversity. Several papers have investigated the cost and the benefits of diversity, whether racial, ethnic, religious, or linguistic.<sup>27</sup> Fragmented societies are often more prone to poor policy management and pose more politico-economic challenges than homogenous ones; however, a diverse cultural or ethnic mix also brings variety in abilities and experiences that may be productive and lead to innovation and creativity. A highly fractionalized area can be a better recipient of French institutions if the diversity fosters open-mindedness and ability to adapt to changes. Furthermore if religious heterogeneity is correlated with political instability, French domination might have both a sharper or a weaker effect in those counties that are more heterogeneous. We construct a Herfindal Index using the shares of three biggest religious groups (Protestants, Catholics and Jews) and we use this measure and its interaction with the Napoleonic dummy to test this alternative explanation. Column 2 shows that our results are robust even when we include a measure of religious fragmentation.

Another concern may be that counties that display internal religious homogeneity might be very diverse from their neighboring counties and thus economically and politically disadvantaged. Since Protestant counties in the western part of the sample are

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<sup>27</sup>For example Alesina and La Ferrara (2005)

Table 6: Alternative Channels

Log average wage male elementary school teacher 1886	(1) Education	(2) Rel. Frag.	(3) Rel. Distance	(4) Horserace
Napoleon	-0.420 (0.833)	-0.524 (0.853)	-0.290 (0.860)	-0.311 (0.848)
Protestant Share	0.279*** (0.0252)	0.239*** (0.0243)	0.250*** (0.0274)	0.227*** (0.0266)
Napoleon $\times$ Protestant Share	-0.245*** (0.0362)	-0.209*** (0.0352)	-0.214*** (0.0381)	-0.187*** (0.0378)
Universities Holy Roman Empire	-0.0439 (0.0425)			-0.0401 (0.0444)
Napoleon $\times$ Universities HRE	0.0735 (0.0599)			0.0778 (0.0604)
Monasteries or Schools in HRE	0.116 (0.0722)			0.0866 (0.0702)
Napoleon $\times$ Monasteries or Schools in HRE	-0.0396 (0.0809)			-0.0109 (0.0790)
Religious Fragmentation		0.203*** (0.0418)		0.169*** (0.0438)
Napoleon $\times$ Religious Fragmentation		-0.350*** (0.0820)		-0.316*** (0.0859)
Rel. Dist. from Neighbours			-0.163*** (0.0463)	-0.110** (0.0463)
Napoleon $\times$ Rel. Dist. from Neighbours			0.223*** (0.0801)	0.117 (0.0816)
Constant	9.279*** (0.402)	9.171*** (0.395)	9.055*** (0.424)	9.129*** (0.419)
Geographic Controls	yes	yes	yes	yes
Historical Controls	yes	yes	yes	yes
Economic Controls	yes	yes	yes	yes
Education controls	yes	yes	yes	yes
Hist & Geo Interactions	yes	yes	yes	yes
$R^2$	0.523	0.532	0.521	0.546
Obs.	447	447	431	431

*Notes:* *Geographic Controls:* latitude, area of the county (log), distance from the district capital and polish speaking area. *Historical controls:* year of annexation to Prussia, population in 1500 and Hanseatic or Imperial cities. *Economic controls:* total population size (log), percentage of county population in urban areas 1871, percentage of labor force in mining 1882 and number of farms 1882 (log). *Education controls:* percentage of pupils with distance to school over 3 km, total number of pupils 1886 (log), total number of teachers 1886 (log) and number of free apartments for male teachers 1886.

Robust standard errors in parenthesis. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

a minority among a Catholic majority, this issue could drive our main results. We create a measure of religious distance with neighboring counties as the difference between Protestant share of the county and the average Protestant share of the neighbouring counties. Column 3 confirms that the negative interaction term is not determined by religious distance from the Catholic neighborhood. Finally, column 4 includes all the alternative explanations, we implement a horserace, and findings support our hypothesis that cultural incompatibility drives the negative coefficient between Protestant share and institutions. Our results are robust across the different alternative explanations and these confirm the fact that culture plays a relevant role in law transplants.

## 6 Discussion: The relevance of Cultural Commonality

Summing up: our results are robust to possible measurement issues, we devote this section to investigate whether Protestant areas are characterized by other cultural features and different institutional qualities that can explain the negative interaction in our findings. In particular, we want to stress that the weaker impact of French institution on Prussian economy is mainly driven by the clash with local culture. We construct alternative measures of cultural commonality (see Section 3) and use then in our specifications in the place of the share of Protestants. First we introduce our proxies of alternative cultural dimensions since French institutions might be better received in those areas with historical higher exposure to French culture, through protracted huguenots' presence or family connections. Then we control whether territories characterized by more liberal rulers who enacted progressive reforms in the eighteenth century, might have been more willing to accept Napoleonic institutions. Hence, we want to disentangle the effect of institutional proximity from the one of cultural commonality on the growth effect of the institutional transplant. To this purpose, as we discussed above, we construct a measure of institutional reforms based on judicial, administrative and educational progressive reforms implemented in the eighteenth century (see Section 3). Table 7 presents our results. In columns 1-4 we show that other dimensions of culture have a positive and significant effect on the transplant. We obtain similar results when we use French Ties or the Pro-French dummy. Columns 5-6 show that the pre-existing liberal institutions amplify the effect of Napoleonic Code but they do not delete the effect of cultural similarity. This suggests that the cultural environment is important for the effectiveness of French institutions and that Catholic territories might have had a more favorable attitude towards French culture. When running our different cultural and institutional measures against each other (columns 7-8) we find that the effect is explained by both dimensions. This appears to support the hypothesis that a reign that was historically more exposed to liberal and enlightened ideas was more prone to accept and implement Napoleonic institutions, but also that culture commonality played a relevant role. Earlier connections and links with the exporter have a positive impact on the reception and the effectiveness of the transferred institutions. Finally, the interaction term between Napoleonic Code and Protestant share has a lower magnitude, supporting the fact that religious beliefs are not the only cultural dimension important for economic transplant.

Table 7: The Effect of Cultural Commonality

Log average wage male elementary school teacher 1886	French Ties		Pro-French		Institutional Proximity		Horse race	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Napoleon	0.0777** (0.0378)	-2.463*** (0.880)	-0.246*** (0.0576)	-3.052*** (0.515)	-0.198*** (0.0617)	-2.254*** (0.567)	-2.590*** (0.564)	-2.752*** (0.460)
Protestant Share	0.206*** (0.0448)	0.243*** (0.0458)	0.147*** (0.0445)	0.191*** (0.0415)	0.147*** (0.0479)	0.178*** (0.0479)	0.190*** (0.0454)	0.191*** (0.0400)
Napoleon $\times$ Protestant Share	-0.148** (0.0616)	-0.248*** (0.0657)	-0.0634 (0.0463)	-0.184*** (0.0459)	-0.0758 (0.0464)	-0.160*** (0.0522)	-0.169*** (0.0521)	-0.187*** (0.0437)
French Ties	-0.0164 (0.0354)	-0.0188 (0.0266)					-0.00675 (0.0197)	
Napoleon $\times$ French Ties	0.0719* (0.0390)	0.0685* (0.0386)					0.0712* (0.0379)	
Pro-French			-0.495*** (0.0632)	-0.529*** (0.0645)				-1.971*** (0.127)
Napoleon $\times$ Pro-French			0.666*** (0.0738)	0.755*** (0.0631)				2.193*** (0.134)
Institutional Proximity					-0.312*** (0.0584)	-0.338*** (0.0673)	-0.327*** (0.0643)	0.880*** (0.0753)
Napoleon $\times$ Inst. Proximity					0.354*** (0.0614)	0.386*** (0.0669)	0.391*** (0.0619)	-0.877*** (0.0803)
Constant	6.093*** (0.648)	7.207*** (0.631)	7.214*** (0.463)	8.141*** (0.390)	7.246*** (0.470)	8.105*** (0.423)	8.108*** (0.390)	7.853*** (0.393)
Historical Controls	yes	yes	yes	yes	yes	yes	yes	yes
Geographic Controls	yes	yes	yes	yes	yes	yes	yes	yes
Economic Controls	yes	yes	yes	yes	yes	yes	yes	yes
Education controls	yes	yes	yes	yes	yes	yes	yes	yes
Hist & Geo Interactions	no	yes	no	yes	no	yes	yes	yes
$R^2$	0.650	0.677	0.710	0.756	0.706	0.733	0.739	0.764
Obs.	430	430	426	426	447	447	430	426

Notes: Standard errors, clustered at the pre-Napoleon-reign level, in parenthesis.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## 7 Concluding Remarks

This paper is the first attempt to investigate the heterogeneous effect of a law transplant on economic performance exploiting cultural diversity across territories.

Nineteenth-century Prussia provides a very suitable context to test this hypothesis as it allows us to exploit a quasi-natural experiment, the Napoleonic military campaign, in an environment characterized by a rich variety of cultural traits. All our evidence points to the importance of culture as a mediating factor in the reception of foreign institutions. Specifically, we find no effect of historically French institutions on economic performance due to the absence of cultural similarity. Indeed, the positive effect of radical institutional reforms brought by the French empire in territories either sharing religious beliefs or having experienced previous contact with France is almost double compared to *culturally distant* areas. Our results survive even when controlling for a measure of institutional proximity between pre-existing institutions and the new imported ones.

Although we analyze a very specific historical environment and extrapolation to other contexts might be hazardous, our findings call for extreme care when deciding to export seemingly good institutions, for the transplant may fail when it conflicts with local culture and pre-existing institutions.

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