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From Ancien Régime to Capitalism: The Spread of the French Revolution as a Natural Experiment⁵

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Summary

In this paper we exploit the invasion of Europe, particularly Germany, by French Revolutionary armies as a “natural experiment” to investigate the causal effect of the institutions of the *ancien régime* on economic development. A central hypothesis which can account for comparative development within Europe is that economic growth emerged first in places which earliest escaped *ancien régime* and feudal institutions. However, though there is a correlation between these two events, this does not demonstrate that it was the collapse of the *ancien régime* that caused the rise of capitalism; this is because there may be problems of reverse causation and omitted variable bias. We show how institutional reforms brought by the French in Germany can be exploited to resolve these problems. These reforms were akin to an exogenous change in institutions unrelated to the underlying economic potential of the areas reformed. We can therefore compare the economic performance of the areas reformed to those not reformed before and after the Revolutionary period to examine the impact of the reforms. The evidence we present is consistent with the hypothesis that the institutions of the *ancien régime* did indeed impede capitalism.

*Am Anfang war Napoleon (In the Beginning was Napoleon.)*¹

“Together with Luxemburg, Rhenish Hesse and the Palatinate, Rhenish Prussia shares the advantage of having participated in the French Revolution and in the social, administrative, and legislative consolidation of its results under Napoleon. Ten years earlier than elsewhere in Germany, corporations and patriarchal dominance by the patricians disappeared from the cities, having to face free competition. Rhenish Prussia has the most developed and varied industry in Germany; an industry whose rise can be dated back to the French domination.”²

I. Introduction

One of the most important research agendas of comparative history and social science is a deeper understanding of the causes of the world distribution of income. What can account for the huge differences between the standards of living and life opportunities experienced in countries such as the United States and Western Europe, and those of Sub-Saharan Africa or Latin America? Historians have articulated these questions in terms of the causes of the ‘Rise of the West’, the ‘European Miracle’, or the ‘Great Divergence’.³ These phrases refer to the process by which, starting from a situation 300 or so years ago where differences in prosperity were relatively small, a group of European countries, led by the Netherlands and Britain and subsequently followed by Germany and others, experienced sustained growth in average living standards. During the late 19th century, this prosperity began to disseminate to certain Neo-Europes⁴ such as the United States and Australasia, and in the 20th century it spread to a group of countries in East Asia, but much of the world, Africa, Latin America, Eastern Europe and South Asia, remained mired in poverty.

Scholars have provided many explanations for these patterns and a salient one emphasizes differences in institutions between countries as the main cause of patterns of comparative incomes. For example, the main institutional argument which attempts to explain economic growth within Europe in the early modern period focuses on the abolition or withering away of the institutions of the *ancien régime*.⁵ The countries where institutions were reformed the earliest were the ones that began to grow first. This focus appears in the work of Adam Smith, who saw the economic institutions and policies of a society as being the key factor determining its economic success. Though Smith’s focus was not on comparative history, the account he gives of

the relative prosperity of different societies makes it clear that he thought this was related to the different institutions of these societies and the incentives they created. Smith argued that voluntary exchange in free markets and the resulting division of labor was the key to prosperity. Such a system was obviously very different from the legacy of feudal institutions which were part of the *ancien régime*. Smith believed that the relative prosperity of Western Europe was closely related to the early decline of *ancien régime* institutions and he argued forcefully that feudal institutions were not conducive to prosperity:

But if great improvements are seldom to be expected from great proprietors, they are least of all to be expected when they employ slaves for their workmen [...] This species of slavery still subsists in Russia, Poland, Hungary, Bohemia, Moravia and other parts of Germany. It is only in the western and south-western provinces of Europe that it has gradually been abolished altogether.⁶

When Adam Smith wrote in the late 18th century there were already significant differences in prosperity between the west and the east of Europe. As one moved east, prosperity declined while at the same time the prevalence of feudal institutions increased. Table 1, taken from Jerome Blum, records the dates at which serfdom was abolished in various parts of Europe. Feudalism lingered longest in Eastern Europe, and this was the most economically backward part of the Continent.⁷ Contrast this with the two most dynamic economies of the early modern period, the Netherlands and England. The Netherlands was probably the European society least affected by feudal institutions such as serfdom, where the guilds were weak and where the threat of absolutism was thrown off by the Dutch Revolt of the 1570s.⁸ England was the country where the institutions of the *ancien régime* collapsed earliest. Serfdom had vanished by 1500, guilds lost their power in the 16th and 17th centuries, the Church was expropriated and its land sold off by Henry VIII in the 1530s, the Civil War and Glorious Revolution saw the end of monopolies and royal absolutism, and strong notions of equality before the law developed at least by the early 18th century.⁹

[TABLE 1 ABOUT HERE]

Does this evidence associating the early collapse of *ancien régime* and feudal institutions with the rise of capitalist market economies demonstrate that these institutions indeed retarded or held back economic progress? There are at least two problems in reaching such a conclusion.

First, though the decline of the *ancien régime* and improved economic performance may go together, this could be the result of *reverse causality*. It may be that the progress of capitalism is the cause of the decline of feudalism, not the other way around. For example, an earlier generation of scholars, such as Henri Pirenne, argued precisely that it was the expansion of trade and the development of a more commercial society—what Michael M. Postan called the ‘Rise of the Money Economy’—that explains the dissolution of feudal institutions.¹⁰

Second, there is also the problem of *omitted variable bias* in which both the decline in the *ancien régime* and the take-off of economic growth are the result of other events or social processes. The decision to change economic institutions or not to enforce them is a collective decision in society which itself depends on other factors. For instance, it may be that England’s geographical location or culture created a distinct economic potential for it in the late Medieval period and these in turn determined the evolution of feudal institutions. Perhaps feudalism just became an irrelevance to a modernizing society and withered away without playing an important causal role.

An interesting illustration of omitted variable bias in exactly this context is discussed by Weber in his *Protestant Ethic and the Spirit of Capitalism*. In the early modern period England developed both the most dynamic economy and also one of the freest and least absolutist sets of political institutions in Europe. One could argue, following Douglass North and Barry Weingast,¹¹ that the economic performance was a direct consequence of the political innovations, yet Weber denied this, observing

Montesquieu says (*Esprit des Lois*, Book XX, chap. 7) of the English that they ‘had progressed the farthest of all peoples of the world in three important things: in piety, in commerce, and in freedom’. Is it not possible that their commercial superiority and their adaptation to free political institutions are connected in some way with that record of piety which Montesquieu ascribes to them?¹²

Hence Max Weber directly argued that an omitted factor, here religion, explained both democracy and capitalism in England.

In investigating the relationship between the collapse of the *ancien régime* and the rise of capitalism it is therefore important to recognize both the possibility of reverse causality and omitted variable bias. In the natural sciences the solution to a problem like this would be to conduct an experiment. For instance, we would ideally take a group of countries which were alike—say, all of them having a relatively backward institutional landscape—and abolish *ancien*

régime institutions in a randomly chosen subset of these countries (the ‘treatment’ group) while leaving unchanged the institutions of the rest (the ‘control’ group). Then we could observe what happens to the relative prosperity of these two groups. In reality, of course, we cannot conduct such an experiment. Nevertheless, historians and social scientists can take advantage of ‘natural experiments’ which history sometimes offers.

By a natural experiment we mean a situation in which some historical accident or event leads economic, political and social factors to change in some areas while they remain the same in other comparable places. If indeed the different areas experiencing differential change are comparable, we can think of the group where change has taken place as being the treatment group in an experiment and the other group as corresponding to the control group.

In the context of the decline of the *ancien régime*, the invasion of large parts of Europe by French armies following the French Revolution of 1789 provides a source of variation in institutions that can be used as a natural experiment. The French armies abolished central institutions of the *ancien régime* including many feudal legacies, dues and prerogatives, ending guilds, introducing equality before the law, which included freedom for Jews, and they also redistributed Church land. We can exploit this experience to estimate the effect of some important *ancien régime* institutions on economic growth. To do this we can think of the parts of Europe which were invaded and had their institutions reformed as being ‘treated,’ while those that were not invaded are the control group. Thus, as in an experiment, we can compare the economic performance of these two groups before and after the institutions of the treatment group were reformed and investigate if the reformed group begins to become relatively richer. To the extent that it does, this will provide evidence that institutional reforms contributed to the increase in relative prosperity.

Nevertheless, for inference based on natural experiments to be valid it is important that the areas affected by the treatment (French invasion) were on a growth trajectory similar to other comparable areas before the treatment. Among other things, this requires that the French did not choose to invade places based on their future growth potential.¹³ Thus, for example, if we find that the Rhineland grew relatively faster after 1815 than before 1789, to conclude that this was caused by the French reforms implemented there, it must not be the case that the French annexed the Rhineland because of its latent economic potential.

These considerations motivate our focus in this paper on Germany. Germany contains both invaded and non-invaded areas and is more homogeneous than all of Europe taken

together.¹⁴ By only examining the French invasion of Germany we are considering variation in institutional reforms in an area with a great deal of history, culture and institutions in common. It is much easier to compare Baden with Berg than Poland with Portugal. Nevertheless, the validity of our approach does not rest on different parts of Germany being completely homogeneous, as of course this was not the case. The key issue is what drove patterns of French invasion and reform.¹⁵

To study this natural experiment we need some way of measuring economic development within different parts of Germany in the 18th and 19th centuries before the creation of modern national accounts and the accurate measurement of income. An attractive strategy is to look at urbanization, typically measured as the proportion of the population living in urban areas of 5,000 or more people. In the modern world urbanization is highly correlated with income per-capita and historians, such as Paul Bairoch and Jan de Vries argued that only areas with high agricultural productivity and a developed transportation network could support large urban populations historically.¹⁶ Urbanization is also much used as a proxy in attempts to estimate historical levels of income.¹⁷ We therefore constructed a database of the level of urbanization of a sample of German states for the years between 1750 and 1910.¹⁸

[FIGURE 1 ABOUT HERE]

The basic finding of our paper is captured by Figure 1, which shows the levels of urbanization in the parts of Germany invaded and reformed by the French (the treatment group) and the level of urbanization in the other parts of Germany for which we have data.¹⁹ The figure shows that prior to 1800, urbanization was higher in the parts of Germany that were not invaded. This fact is significant in itself because if urbanization is indeed a good proxy for development, it suggests that the French did not focus their attempts at control on the most prosperous parts of Germany. Figure 1 also shows that urbanization was growing in the 18th century, but clearly began to grow more rapidly everywhere between 1800 and 1850. Most significant, however, is that the increase in the rate of growth of urbanization is most rapid in the treatment group. In particular, territories in the treatment group actually become more urbanized by 1850 than the parts of Germany which were not invaded. Figure 1 suggests that the institutional reforms implemented by the French increased urbanization and therefore economic growth relative to those places which the French did not reform.²⁰ If this situation satisfies the conditions to be a

natural experiment, the findings support the argument that abolishing certain institutions of the *ancien régime* was indeed important in stimulating economic growth. Nevertheless, there are grounds for exercising caution in interpreting Figure 1. Even though there is a clear acceleration in the rate of growth of the invaded part of Germany relative to the rest, there is also a suggestion that it was growing more rapidly between 1750 and 1800 implying that this part of Germany may have been on a different economic trajectory before the revolutionary period.

Though Figure 1 is telling, it is important to consider that for historical reasons there were additional changes in institutions related to the French Revolution. In particular, in certain parts of Germany the old rulers returned after 1815 and French reforms were reversed (with the minor exceptions of the Bavarian Palatinate and of Rheinhessen, which kept French institutions). Nevertheless, large parts of French-invaded territory were granted to Prussia by the Congress of Vienna in 1815; a fortunate circumstance since Prussia, having reformed itself during the Napoleonic wars, did not reverse the institutional reforms brought by the French. These facts suggest an alternative definition of the treatment group: those parts of Germany which were controlled by the French and then given to Prussia in 1815. In Figure 2 we separate out this subset of Germany and compare its level of urbanization between 1750 and 1910 with that of two other regions of Germany: that part which was never invaded and that part which was invaded by the French but where the old rulers returned in 1815. A cartographic representation of these three distinct parts of Germany (within post-1815 borders) can be found in Figure 3. The evolution of urbanization rates shown in Figure 2 tells a story very similar to Figure 1. We see that in 1800 urbanization was highest in the non-invaded parts and lowest in the parts which were invaded but not given to Prussia. We again see that urbanization begins to grow more rapidly in the treatment group after 1800 than elsewhere in Germany, but once more there is a suggestion that urbanization was already growing more rapidly in the eighteenth century. Interestingly, the figure also suggests that the worst outcomes were in the areas which were reformed but where the reforms were reversed after 1815.

[FIGURE 2 ABOUT HERE]

[FIGURE 3 ABOUT HERE]

This second way of defining the treatment group raises three additional concerns. First, it

needs to be the case that at the Congress of Vienna different parts of Germany were not allocated to Prussia on the basis of their economic potential, but rather were determined as the outcome of a political negotiation which did not reflect the economic factors or the economic potential of places that were eventually given to Prussia. Second, we need that the Prussians did not selectively reverse the French reforms. Finally, we should be able to exclude direct effects stemming solely from the circumstance that some parts were ruled by Prussia instead of other countries (“Prussia effects”). Fortunately for our empirical strategy, as we discuss shortly, all three of these conditions appear to be satisfied.

II. The *Ancien Régime* and Economic Progress

At the time of the French Revolution, much of Europe was dominated by two kinds of oligarchies: the landed nobility in agriculture and the urban-based oligarchy controlling commerce and various occupations. By *ancien régime* institutions we mean those that maintained and benefitted these groups along with unchecked royal power.²¹ In terms of economic institutions there is a close relationship between institutions inherited from the feudal era and those identified as belonging to the *ancien régime*. In the larger part of Europe west of the Elbe the most extreme forms of serfdom and labor services had vanished in the period after the Black Death, but the basic order of society persisted in many parts. Though following the work of Alfred Cobban it has become controversial to talk about French society in 1789 as feudal, recent scholarship seems to have driven home that feudal dues and impositions remained large in France and played an important role in the Revolution.²² Even in urban areas, which were often a refuge from the constraints of the countryside, economic activities and membership of the urban community were controlled by powerful guilds.

The most basic aspect of the *ancien régime* was a fundamentally hierarchical notion of society where some groups or social orders had privileges, social, political and economic, while others did not. These groups were primarily the monarchy, the aristocracy and the church. These groups had different laws and rights from the general populace and this manifested itself in many important ways. For example the aristocracy was typically exempt from paying taxes while the church, which held large amounts of land, levied its own taxes, the tithe, on the agricultural output of peasants. At the bottom of this hierarchy were the peasants and urban poor whose

economic and social choices were often highly circumscribed. The same fate was suffered by religious minorities such as Jews who were heavily discriminated against. The principle of equality before the law was quite alien in most of Europe in 1789. The political representation of groups was based on the same orders, though in the age of absolutism many medieval parliamentary institutions, most famously the estates general in France, had mostly withered away. Prominent aspects of all these institutions were abolished in France in 1789.

The connection between this institutional nexus and economic performance is quite intuitive and consistent with basic economic theory and a great deal of evidence. Only institutions that provide secure property rights and facilitate entry and social mobility will generate economic growth.²³ The system of aristocratic privilege was a major impediment to social mobility and in the rural sector feudal restrictions on mobility and occupational choice placed restrictions on the efficient allocation of resources. The legal system, discriminatory, arbitrary and often somewhat chaotic, was also a major impediment to economic progress. Though there have been revisionist interpretations of the effects of guilds, it is uncontroversial that one of their main functions was to act as a cartel, to limit entry and competition and to improve the incomes of their members.²⁴ Such restrictions almost certainly retarded innovation both indirectly and directly. Joel Mokyr presents many examples of guilds attempting to block new innovations which would have undermined their economic and political position.²⁵

III. The *Ancien Régime* in Germany

The institutions of the *ancien régime* characterized various parts of Germany to a greater or lesser extent. A major source of variation comes from the territorial fragmentation of the Holy Roman Empire, which was made up of around 400 different heterogeneous polities. Nevertheless, some useful generalizations can be made.

Firstly, the notion of feudal orders and privileges was still dominant in Germany, and even though the extent of absolutism varied a lot, the general political structures of the *ancien régime* were in place. A telling example is Hanover where, as Herbert Fisher notes,

The provincial estates of Hanover, despite the connexion of the Electorate with the free people of England, never supported the abolition of noble privilege or the emancipation of the peasantry.²⁶

Secondly, although feudalism in its most rigid form was abolished in Germany west of the Elbe, with Joseph II abolishing serfdom in Austria (though not the rest of the Hapsburg Empire) in 1781, a lot of its remnants remained.²⁷ In addition, to the east of the Elbe, serfdom was still strong. In the west, serfdom had been replaced by various forms of taxes and tributes to landowners in other areas, which could nonetheless be quite onerous. For example, in the Rhineland, the first area in Germany to come under French control, a form of serfdom was still practiced. Timothy Blanning writes: “In some areas [of the Rhineland], where an attenuated version of serfdom still lingered, the peasant was also subject to restrictions on his movement.”²⁸ Friedrich Lenger, for example, describes this in the following way: “[B]esides the original obligations to provide services and dues to the lord the agricultural labor force was also burdened with personal servitude.”²⁹ He continues:

In the small territory of Nassau-Usingen around 1800 there were no less than 230 different payments, dues, and services that the peasants living there had to provide to the lords. Dues included the ‘blood tithe’ to be paid after an animal was slaughtered, a ‘bee tithe’, a ‘wax tithe’ as well as large fees owed to the lord whenever a piece of property changed hands.³⁰

This plethora of taxes and the arbitrary power of local aristocracies to collect them must have created severe disincentives for investment.

As elsewhere in Europe, the legal system of Germany remained unmodernized and embodied many inequities and privileges for aristocracy, military orders and the church. Meanwhile Jews were subject to severe restrictions on choice of occupation, residence and travel and had to pay special taxes.

Finally, urban oligarchies were perhaps even more pernicious to industrialization than the remnants of feudal institutions in the countryside and were still strong in Germany. Almost all major occupations were controlled by guilds, significantly limiting entry into those professions by others, but also indirectly restricting adoption of new technologies. Herbert Kisch specifically argues that guilds impeded the introduction of new technology in the Rhineland, in particular in the major cities of Cologne and Aachen, where the adoption of new textile (spinning and weaving) machines were significantly delayed because of guild restrictions.³¹ In addition, many cities were controlled by a few families for many generations, amassing wealth at the expense of potential new entrants with greater ability or better technologies.³²

IV. The Impact of the French Revolution

Despite the fact that the French Revolution was immediately seen as threatening to Europe's elite, the War of the First Coalition did not break out until 1792. The French quickly seized the Austrian Netherlands (roughly today's Belgium) and the Netherlands. The French also gained effective control over much of modern-day Switzerland. In all three places, French had strong control through the 1790s. Germany was initially hotly contested (with Prussia reclaiming control in 1793), but by 1795 the French had firm control over the Rhineland (the left bank of the Rhine).³³ In 1802 the Rhineland was officially incorporated into France. Following the Peace of Lunéville in 1801 the Austrians abdicated any responsibility for the reorganization of the territories of the Holy Roman Empire to a deputation of imperial delegates who met with French representatives in 1802 and 1803. The result was massive reorganization: 112 independent estates, 66 ecclesiastical territories and 421 free imperial cities vanished and were made into a larger cluster of kingdoms, principalities and duchies. The 1,500 fiefs of the imperial knights also vanished. The most noteworthy new polities were the Grand Duchy of Baden and the Kingdoms of Württemberg and Bavaria. In 1806, Napoleon brought these all together in the *Rheinbund* (Confederation of the Rhine). This move led to further reorganization and a further reduction to less than 40 states, almost all of which joined the *Rheinbund* by 1808.³⁴

During this period Napoleon also took over parts of Northern Germany. In 1803, Napoleon occupied Hanover, as a consequence of the war against Britain. The Grand Duchy of Berg was formed in March 1806, the Kingdom of Westphalia in August 1807 and the Grand Duchy of Frankfurt in February 1810. Formed out of states merged together by Napoleon, they were run by either Napoleon's relatives (Joachim Murat, Napoleon's brother-in-law, ruled over Berg, and Jérôme Bonaparte, Napoleon's youngest brother, over Westphalia) or by close allies (Karl Theodor von Dalberg, formerly archbishop of Mainz, was made Grand-Duke of Frankfurt).

Following the War of the Third Coalition, Napoleon placed humiliating terms on the Austrians at the Treaty of Pressburg in December 1805. He took all their lands in Italy, grabbed territory in the Balkans; Tyrol was given to Bavaria and its upper Rhine territories to Baden and Württemberg. Prussia also expanded to compensate for the loss of territory in the Rhineland. After the defeat in Jena and the Treaty of Tilsit, however, Prussia lost all territory west of the

Elbe, which became part of the Kingdom of Westphalia, and its Polish provinces became the Duchy of Warsaw. Prussia had to pay a huge indemnity to the French. Finally, in December 1810 Napoleon also annexed the Hanseatic cities of Hamburg, Lübeck and Bremen, which became part of France.

The first important thing to note here is that where the French invaded was largely determined not by the economic potential or characteristics of different places, but rather by their military or geopolitical significance. For example, Michael Rowe notes that the Kingdom of Westphalia, a satellite state created by Napoleon in Northern Germany, served as a French strategic strongpoint in Germany, and Brendan Simms argues the same.³⁵ In addition, while Napoleon was able to form alliances with the Southern German states of Bavaria, Württemberg and Baden, the northern states of Hanover (dynastically attached to Britain), Hesse-Kassel and Brunswick remained implacably opposed to him. Thus the historical evidence does not support the idea that the parts of Germany which the French invaded were chosen on the basis of their potential for economic growth. This is the most important condition for our interpretation of Figure 1 to be valid.

After Napoleon's defeat and exile to St. Helena the European powers met in Vienna to decide on the postwar settlement. Much of the outcome in Germany was determined by the status quo ante of the *Rheinbund*. Ultimately, a German Confederation of 38 sovereign states emerged after 1815, and states such as Bavaria, Baden and Württemberg, which had expanded enormously, kept their territorial gains. The territory of Prussia was one of the most hotly contested issues.³⁶ In February 1813 Prussia and Russia had signed the Treaty of Kalisch under which Russia would take Poland and Prussia would get Saxony. Though the bargaining position of Saxony at Vienna was much weakened by the fact that it had remained in alliance with Napoleon much longer than the other German states, the bargaining power of Prussia was not strong either.³⁷ After the defeat of Jena, the Prussians had played a relatively minor role in the defeat of the French. Prussia's territorial demands were based on wanting to annex lands next to Prussia, hence the attraction of Saxony.

In the end Prussia was not able to get what it wanted in Vienna. It was given 60% of Saxony, though only 40% of its population. In addition, it received large parts of French-occupied Germany, including much of the Rhineland and of the former Kingdom of Westphalia. James Sheehan argues that the Rhenish and Westphalian lands were taken with some reluctance as compensation for Prussia's thwarted ambitions in Saxony.³⁸ Alan J.P. Taylor notes that the

lands on the left bank of the Rhine

were not a tempting proposition: strategically exposed to French invasion [...] By a strange chance, these lands found themselves in Prussia, an outcome most undesired both by themselves and by Frederick William III [...] Prussia had imposed on her the task of defending the Rhine against the French and shouldered it most unwillingly; it was, as it were, a practical joke played by the Great Powers on the weakest of their numbers.³⁹

For the purpose of our second definition of the treatment group, used in Figure 2, the relevant factor is that there is no evidence that Prussia attempted or succeeded in obtaining parts of Germany that it saw as having greater potential for economic growth.

Finally, the Prussians, having themselves initiated extensive reforms after 1807, made few changes to the institutional regimes created by the French in Western Germany.⁴⁰ Herbert Fisher sums this up as follows:

The agrarian reforms of the Revolution, the Consulate, and the Empire had scarcely had time to take full effect save in the Rhenish provinces [...] Indeed, save for one circumstance, in itself connected with the career of Napoleon, there is no doubt that the French settlement would have been overthrown throughout Germany [...] That circumstance was the agrarian legislation of Stein and Hardenberg in Prussia [...] the reforms of these two statesmen were the first attack upon a system defended by one of the hardest and most stubborn aristocracies in Europe [...] but for the fact that Prussia had taken in hand the reform of her own land-system, there would have been little chance of any part of the French settlement surviving. As it was, Prussia obtained the Duchy of Posen, the Duchy of Berg, and part of the Rhenish provinces in 1815, and the Prussian administrators were strong enough to disregard the appeals of the nobility for the restoration of the feudal system. In these provinces [...] the hand of the clock was not set back.⁴¹

This evidence suggests that the economic characteristics of the territories did not determine which areas Prussia received at Vienna. In addition, Prussia did not selectively reverse the institutional changes brought by the French. Rather, because they had themselves engaged in broad reforms and also because they had to rule these new areas—and reversing French reforms would have implied strengthening the power of local elites—the Prussian rulers left these reforms

unaltered.⁴² Finally, could it be that the findings we discussed in Figures 1 and 2 represent a direct effect of being taken over by Prussia in 1815 on subsequent urbanization? The answer to this is no, because large parts of Prussia are also in the group that was not invaded. Thus it is not Prussia that starts to do differentially well after 1815, but the parts reformed by the French. To sum up, the historical evidence does indeed suggest that the invasion and reform of institutions in Germany by the French can be regarded as a natural experiment with either of the two treatment groups we have examined.

V. Institutional Reforms in Germany

In Germany, there were two waves of institutional reforms: the first under the Revolutionary armies affected only the Rhineland; the second, under Napoleon, influenced much of Northern Germany through the satellite states he created.⁴³ As we noted above, these processes triggered reforms in many other parts of Germany though some places, such as Saxony or Mecklenburg, remained almost uninfluenced. We now try to capture and measure the extent of social and economic reforms undertaken in the early 19th century, distinguishing between those territories that were ruled by France or by Napoleonic satellite states and then were taken over by Prussia, those that fell to minor reactionary rulers as a consequence of the Congress of Vienna, and those states that were not directly influenced by Napoleon, except through the implementation of defensive modernization.

The reform of the administrative and fiscal system, the enactment of written legal codes, the restructuring of agricultural relations, the abolition of guilds, the emancipation of Jews, and the secularization of church lands are often cited among the beneficial reforms introduced either by the French rule in Germany, or by modernizing sovereigns. Since the reorganization of administrative systems is a reform hard to define and quantify, and the secularization of Church lands could, for obvious historical reasons, take place only in Catholic territories, we focus on the other reforms. The results are summarized in Table 2 for 29 territories of the German Confederation. Though we were only able to construct data on urbanization for a subset of eight German states/provinces (see Figures 1 and 2), we were able to measure reforms with much greater territorial detail; in particular, in many cases we had to single out parts of territories, e.g. in Prussia, according to their pre-1815 ruler, as the politics of reform were not always consistent

within a territory and depended on previously implemented reforms.

[TABLE 2 ABOUT HERE]

The introduction of the French civil and commercial codes was one of the most long-lasting legacies of the French presence in Germany, since the *Code Civil* was in force until 1900 in the territories left of the Rhine, and often cited as one of the reasons for the peculiar economic dynamism of the Rhineland.⁴⁴ Also, the introduction of the civil and commercial codes is the reform that was most consistently pursued in all territories ruled either by France directly or in the Napoleonic satellite states. The codes were enacted in the Rhineland starting in 1802, in Westphalia starting in 1808, in the Grand Duchy of Berg starting in 1810, and starting in 1809/1810 for the territories of northern Germany corresponding to present-day Lower Saxony, as well as in the Hanseatic Cities of Bremen, Hamburg, and Lübeck.⁴⁵ At the same time, Baden, under the leadership of its liberal prime minister Johann Niklas Friedrich Brauer, introduced the *Badisches Landrecht*, essentially the *Code Napoléon* with some minor additions; Bavaria, on the other hand, merely revised some parts of its *Codex Maximilianeus Bavaricus Civilis* of 1756, which however remained a subsidiary legal source, second to customary law.⁴⁶

After the demise of Napoleonic rule in Germany, the territories east of the Rhine were quick in reintroducing the previous legal systems and dismantling all remnants of the Napoleonic reforms. Two exceptions stand out, though. The lands that were taken over by Prussia obtained the *Allgemeines Landrecht* (ALR), the ambitious Prussian civil code of 1794, a 19,000 paragraphs-long codification of all legal matters which, while retaining some vestiges of the feudal system such as the *Patrimonialgerichtsbarkeit*⁴⁷, was a progressive work for its times, heavily influenced by the ideals of the Enlightenment. Similarly, the former territories of the Margraviates of Ansbach and Bayreuth, now part of Bavaria, maintained the ALR, a reminder of their former allegiance to the House of Hohenzollern.⁴⁸ The other exception is represented by the Rhineland, where both in its Prussian parts and in *Rhein Hessen* (Hesse-Darmstadt) and in the Bavarian Palatinate the local bourgeoisie successfully defended the presence of the *Code Napoléon*, evidently favorable to their position.⁴⁹

The first column in Table 2 reports which territories had a written legal code by 1820. Also, the figures in this column indicate both the potential presence of a written civil code, and of a system of commercial law, represented either by the French *Code de Commerce*, or by book 8,

chapters 7-15, in the Prussian ALR.⁵⁰ The map in Figure 4 shows graphically how the adoption of a written legal code differed temporally across German territories; most of the regions obtained a system of written civil law only in 1900 with the Germany-wide introduction of the *Bürgerliches Gesetzbuch* (the BGB).

[FIGURE 4 ABOUT HERE]

The abolition of guilds is another reform intimately linked to the abolition of the remnants of the *ancien régime*. While Prussia had already pushed for curtailing the powers of guilds through the *Reichszunftsordnung* of 1731,⁵¹ strong winds of change breezed through Germany only after the invasion of the French Revolutionary armies. The development mirrors the case of the introduction of the civil code: guilds are first abolished in the territories on the left bank of the Rhine (1790/91), then in the Napoleonic states of Westphalia (1808/10) and Berg (1809), finally in Northern Germany. Restoration of the status quo ante occurred equally quickly in the reactionary states of Hannover and Hesse-Kassel between 1814 and 1816. Even the Hanseatic cities reversed the reforms they had been subjected to. Only Nassau set a countervailing trend, proclaiming freedom of commerce in 1819.⁵²

The situation in the Prussian territories was varied: while the *Gewerbefreiheit* (freedom of commerce, including the abolition of guilds) was a pillar of the reforms of Stein and Hardenberg, it extended at first only to the core territories of Prussia at its minimal territorial extension after the Peace of Tilsit. Following the Congress of Vienna, the abolition of guilds was further pursued in the Rhineland (both Prussian and non-Prussian) and in the former territories of Berg and Westphalia; however, the old structures were retained in the lands that Prussia obtained from Saxony and Sweden, as well as in a small enclave in the district of Arnsberg.⁵³

No other German state pursued the objective of freedom of commerce after 1815 as thoroughly as Prussia; Baden retained its guild structure, whereas Württemberg reorganized its guilds in larger units, allowing for a small degree of mobility within groups. Bavaria and Saxony moved instead to a concession-based system, where a state bureaucracy would determine the number of people and the prerequisites to become craftsmen.⁵⁴ A temporary backlash occurred during and after the 1848 revolution, when there was pressure for a restoration of guild structures in many states that had so far pursued liberal policies, and full liberalization all over Germany was eventually achieved with the new *Gewerbeordnung* (law regulating commerce) after

unification in 1871. The figures in column 2 of Table 2, hence, reflect the status as it persisted from the 1820s until the foundation of the German empire, disregarding the lapse around 1848. The map in Figure 5 shows the temporal evolution of the abolition of guilds; the laggards that followed only after the unification of Germany are displayed in the darkest shade.

[FIGURE 5 ABOUT HERE]

Agrarian reforms are another dimension along which different approaches are discernible across German states, even when restricting one's view only to the territories west of the Elbe, where the feudal relations were less oppressive than in the eastern territories characterized by serfdom and the *Gutsherrschaft* form of land tenure. Again, we can see that the wave of reforms was lead by the French occupiers first, and by the Prussian 'defensive modernizers' thereafter. The most radical attempt to reform succeeded only west of the Rhine, where serfdom was abolished without compensation and duties were made redeemable for 15 times their annual value in 1798.

Reforms followed suit in Berg (1808) and Westphalia (1809), but confusion soon arose about the exact terms of the redemption of feudal payments, and lawsuits clogged the tribunals, trying to extend the definition of serfdom—which was to be abolished without compensation—to other forms of land tenure. All reforms were ultimately blocked by decree in 1812, and resumed only in Prussian times. In fact, at the same time Prussia was already implementing agrarian reforms in parts of Prussia, starting with the edict of October 9th, 1807, which in 1821 was perfected with laws regulating the exact terms of redemption of feudal duties (25 times their annual value).

A law describing the exact amount needed to exit the feudal relation of the *Grundherrschaft*, bundled in some cases with the establishment of a credit institution providing peasants with the necessary amounts of money, was indeed a crucial precondition for agrarian reforms that did not remain a dead letter. Hence what the figures in column 3 of table 2 report is the presence or absence of such laws, as well as the abolition of serfdom (a mere formality in most territories west of the Elbe). The values reflect the status quo as of the 1820s; in the 1840s, most other territories followed with the implementation of agrarian reforms, so that our variable is supposed to capture early modernization.⁵⁵ A more detailed description of the dates of implementation of agrarian reforms is given by the map in Figure 6.

[FIGURE 6 ABOUT HERE]

The emancipation of Jews is the one reform that was pursued less consistently across Germany. The initial steps taken in the Napoleonic states---the most liberal policy was enacted in Westphalia---were rapidly circumscribed with the *décret infâme* of 1808, which limited the occupational choice of Jews in the Rhineland through concession-based system.⁵⁶ In a similar fashion, Prussia granted wide-ranging freedoms at first through the law of March 1812, but retreated soon afterwards, when it failed to extend the freedoms to the newly acquired territories.⁵⁷ While full emancipation of the Jews, including political rights, had to wait until unification in 1871, some states granted wide-ranging freedoms to their Jewish subjects, in particular with respect to occupational choices. Baden, Brunswick, Anhalt, and the free city of Frankfurt, where the Rothschild dynasty originated, were examples in point. The figures in column 4 of Table 2 capture, as for the case of agrarian reforms, the state of affairs in the 1820s, indicating which states pursued a policy of modernization early on.⁵⁸

On balance Table 2 shows a clear distinction between parts of western Germany that were reformed by the French and then given to Prussia in 1815 and places which were either never invaded by the French, or where the old rulers came back after French domination and reversed the reforms.⁵⁹

VI. The Economic Impact of Institutional Reforms

There is no consensus amongst modern historians about the economic legacy of French and Napoleonic reforms in Europe. The view of Alexander Grab that on a European level, the main significance of the Napoleonic rule lay in marking the transition from the *ancien régime* to the modern era, is a common one.⁶⁰ Yet Grab himself notes that Napoleon was Janus faced---undermining his reforms by his complicity to the rule of the local oligarchs. He writes:

Paradoxically, Napoleon himself sometimes undermined his own reform policies

In a number of states he compromised with conservative elites, allowing them to preserve their privileges as long as they recognized his supreme position.⁶¹

There is also disagreement about the economic consequences of this behavior. Within France

itself, seminal interpretations of the Revolution by Marxist scholars such as Georges Lefebvre and Alfred Soboul saw the Revolution as marking the transition from feudalism and capitalism and thus, at least implicitly, ushering in more rapid economic growth. The rejection of this interpretation by Cobban, George Taylor and François Furet was interpreted by many as a denial that the Revolution had the economic implications that Marxists associated with it.⁶² Yet we believe this interpretation is mistaken. First, the fact that the Revolution was not a bourgeois revolution in the traditional Marxist sense does not imply that the institutional changes induced by the Revolution did not improve economic performance. Second, France was certainly relatively poor in the eighteenth century compared to the Netherlands and Britain, with lower agricultural productivity and real wages. Economic historians attribute at least part of these differences to the institutions of *ancien régime* France, and Jean-Laurent Rosenthal has shown in the specific context of irrigation and drainage that institutional changes brought by the Revolution led to increased productivity.⁶³ Rondo Cameron also claims positive economic effects of the Revolution and the institutional changes it brought.⁶⁴

Seen in Europe-wide context, economic historians have typically emphasized the negative effects of the revolution. David Landes, for instance, views the French Revolution as a political roadblock to technological adoption for Continental countries, and concludes that as a consequence of the Revolution the gap in technique between the Continent and Britain had widened, while most of the fundamental educational, economic, and social obstacles to imitation remained.⁶⁵

The economic consequences of the French reforms in Germany are also contentious, despite the statement from Nipperdey at the start of his seminal book and of this paper. Most scholars have focused on political rather than their economic implications, and those that have focused on the latter have often argued that the reforms had adverse effects. Timothy Blanning has prominently argued that reform was already happening and the effects of Napoleon were negligible or even negative, yet Hamerow argues the opposite.⁶⁶ A literature does identify positive economic effects of reforms, but this is usually restricted to the Rhineland. For example, Herbert Kisch describes this as:

When the many strands of commercial legislation were subsequently consolidated in the Code Napoleon, the Rhineland (on the left bank) was not only given a most up-to-date legal framework, but also a system of government in close harmony with the needs of a buoyantly industrializing society.⁶⁷

He and others argue that the consequence of these changes was the transformation of the Rhineland from an oligarchy-dominated area to one open to new business and new entrants,⁶⁸ yet Timothy Blanning disagrees that French reforms had a positive net effect on the economy of even the Rhineland.⁶⁹

The fact that historians have taken such contrasting positions makes a systematic statistical study of the French reforms on German economic growth an important innovation.⁷⁰ As noted above, for this purpose, we use data on urbanization for German states for the period between 1750 and 1910. Figures 1 and 2 present the main findings. They show that the urbanization rate with either definition of the treatment group accelerates more rapidly than in the control group and even overtakes the areas not invaded by 1850. We showed that institutional reforms were more intense in the treatment group and this evidence supports the claim that these reforms caused more rapid urbanization and likely economic growth.⁷¹

In making these comparisons we do not imply that urbanization rates were determined only by institutional factors. In fact there is considerable variation in urbanization between treatment and control groups. Note, for example, that with the second definition of the treatment group, the control group includes the North Sea and Baltic ports and commercial centers, which one might expect to have large populations already prior to the period of the French Revolution and in many ways were already outside of the institutions of feudalism and the *ancien régime*. Notice also that all three series are trending up over time since this is a period of general economic and urban growth in Europe. The important result for our purposes is the relative rate of growth of these areas and the impact of institutional reforms on this rate of growth.

VII. Conclusions

In this paper we have used the invasion of Germany by French armies following the French Revolution to test whether or not key institutions associated with the *ancien régime* impeded prosperity. In the places invaded by the French, they implemented ambitious programs of institutional reforms abolishing many of the pillars of the *ancien régime* and the legacy of feudal economic institutions. We showed that the places where these reforms were implemented seem to have had better economic performance subsequently, in terms of urbanization, than places which the French did not reform. One should of course be cautious in interpreting these

results. For example, though western Germany was less urbanized than eastern Germany during this period, it could be that by accident (or possibly design—though this does not seem to be supported by historical evidence) the French-invaded areas were for other reasons destined to do better economically.

Importantly, we argued that there was something special about this historical episode—it can be thought of as a natural experiment which gives us the possibility of saying something much more precise about causal factors than is typically the case in historical or social studies. Our paper shows what is involved in applying these ideas in a specific context and shows what concerns must be addressed in order for real social phenomena to count as a natural experiment. History is in fact full of such potential experiments; it is just that historians have not so far thought of them in these terms. We believe that exploiting these in a systematic way will greatly improve our understanding of the important forces which have driven long-run processes of historical, social, political and economic change.

We are not the first to argue that the French reforms had positive economic effects. Yet Engels' view, which we cited at the start of our essay, hardly invokes consensus in the academic literature. Our findings are consistent with his interpretation, though not definitive, and suggest that more structured quantitative investigation of the institutional and economic legacies of the French Revolution is an important area for more research.

Table 1: The comparative abolition of serfdom

The comparative abolition of serfdom <i>Initial decrees of emancipation</i>	
Savoy	19 December 1771
Baden	23 July 1783
Denmark	20 June 1788
France	3 November 1789
Switzerland	4 May 1789
Schleswig-Holstein	19 December 1804
Poland (Grand Duchy of Warsaw)	22 July 1807
Prussia	9 October 1807
Bavaria	31 August 1808
Nassau	1 September 1812
Estonia	23 March 1816
Courland	25 August 1817
Württemberg	18 November 1817
Livonia	26 March 1819
Mecklenburg	18 January 1820
Grand Duchy of Hesse	17 December 1820
Hannover	10 November 1831
Electoral Hesse	5 January 1831
Saxe-Altenburg	29 April 1831
Saxony	17 March 1832
Brunswick	12 October 1832
Schaumburg-Lippe	24 January 1845
Schwarzburg-Sondershausen	28 March 1848
Reuss, older line	25 April 1848
Saxe-Weimar	18 May 1848
Austria	7 September 1848
Saxe-Gotha	20 October 1848
Anhalt-Dessau-Köthen	29 October 1848
Saxe-Coburg-Gotha	25 January 1849
Oldenburg	18 February 1849
Schwarzburg-Rudolstadt	27 April 1849
Anhalt-Bernburg	29 August 1849
Lippe	20 November 1849
Saxe-Meiningen	5 May 1850
Reuss, younger line	14 April 1852
Hungary	2 March 1853
Russia	19 February 1861
Romania (the Danubian Principalities)	14 August 1864

Table 2: Extent of reforms in 19th century Germany

	Written civil code	Agrarian reforms by 1825	Abolition of guilds	Emancipa- tion of Jews
<i>Not invaded</i>				
Anhalt	0	0	0	1
Baden	1	1	0	1
Bavaria	0	0	0	0
Bavaria, formerly Ansbach or Bayreuth	1	0	0	0
Hessen-Darmstadt	0	1	1	0
Holstein	0	0	0	0
Mecklenburg	0	0	0	0
Nassau	0	0	1	0
Prussia	1	1	1	1
Prussia, formerly Nassau	0	1	1	0
Prussia, formerly Saxony	1	1	0	0
Saxony	0	0	0	0
Schleswig	0	0	0	0
Thuringian states	0	0	0	0
Württemberg	0	0	0	0
Average (percent)	29.5	30.2	15.1	20.9
<i>Invaded, not to Prussia</i>				
Bavaria, left of the Rhine (Bav. Palatinate)	1	1	1	0
Bremen	0	n/a	0	0
Brunswick	0	0	0	1
Frankfurt	0	1	0	1
Hamburg	0	n/a	0	0
Hanover	0	0	0	0
Hessen-Darmstadt, left of the Rhine (Rhein Hessen)	1	1	1	0
Hessen-Kassel	0	0	0	1
Lübeck	0	n/a	0	0
Average (percent)	25.6	30.6	25.6	33.3
<i>Invaded, then Prussian</i>				
Prussia, Erfurt	1	1	1	0
Prussia, formerly Berg	1	1	1	0
Prussia, formerly Westphalia	1	1	1	0
Prussia, formerly G.D. of Frankfurt	1	1	1	0
Prussia, left of the Rhine (Rhine Province)	1	1	1	0
Average (percent)	100	100	100	0

Figure 1: Percent of total population living in cities above 5000 inhab.

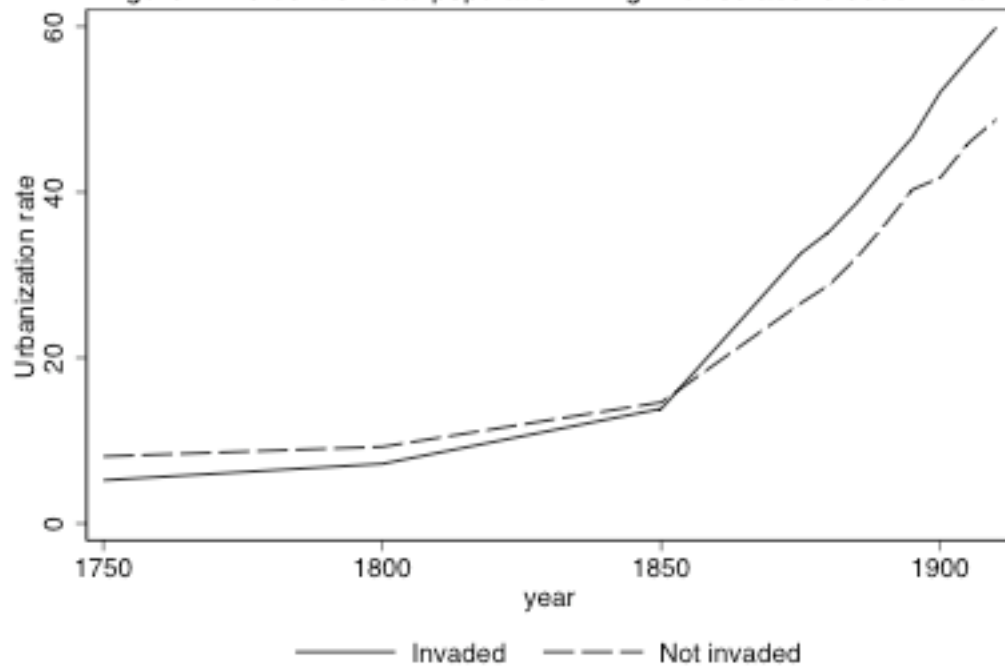


Figure 2: Percent of total population living in cities above 5000 inhab.

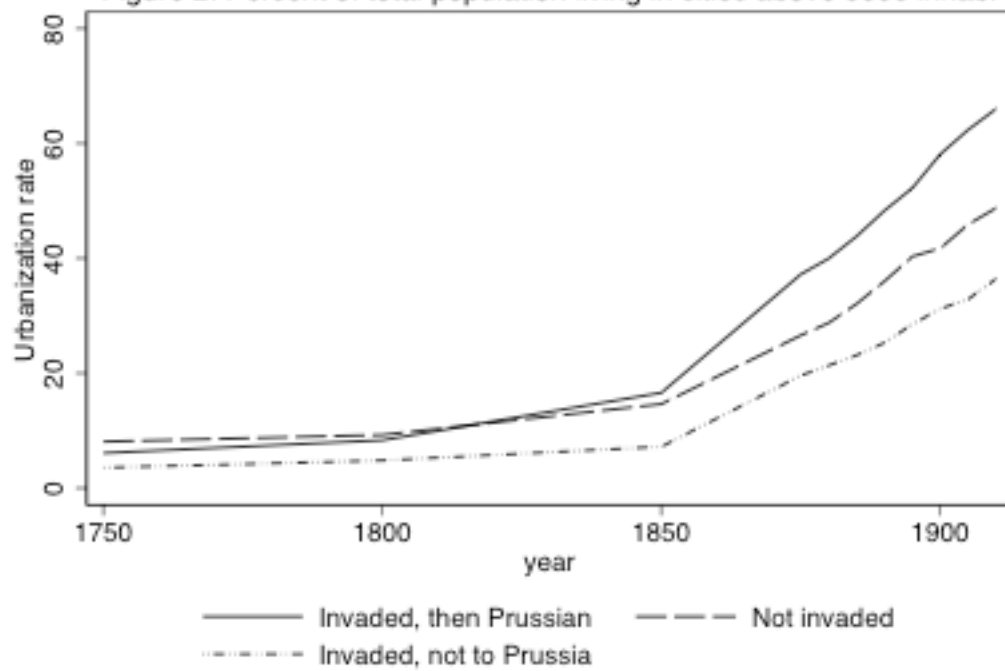


Figure 3: Areas of French rule in Germany

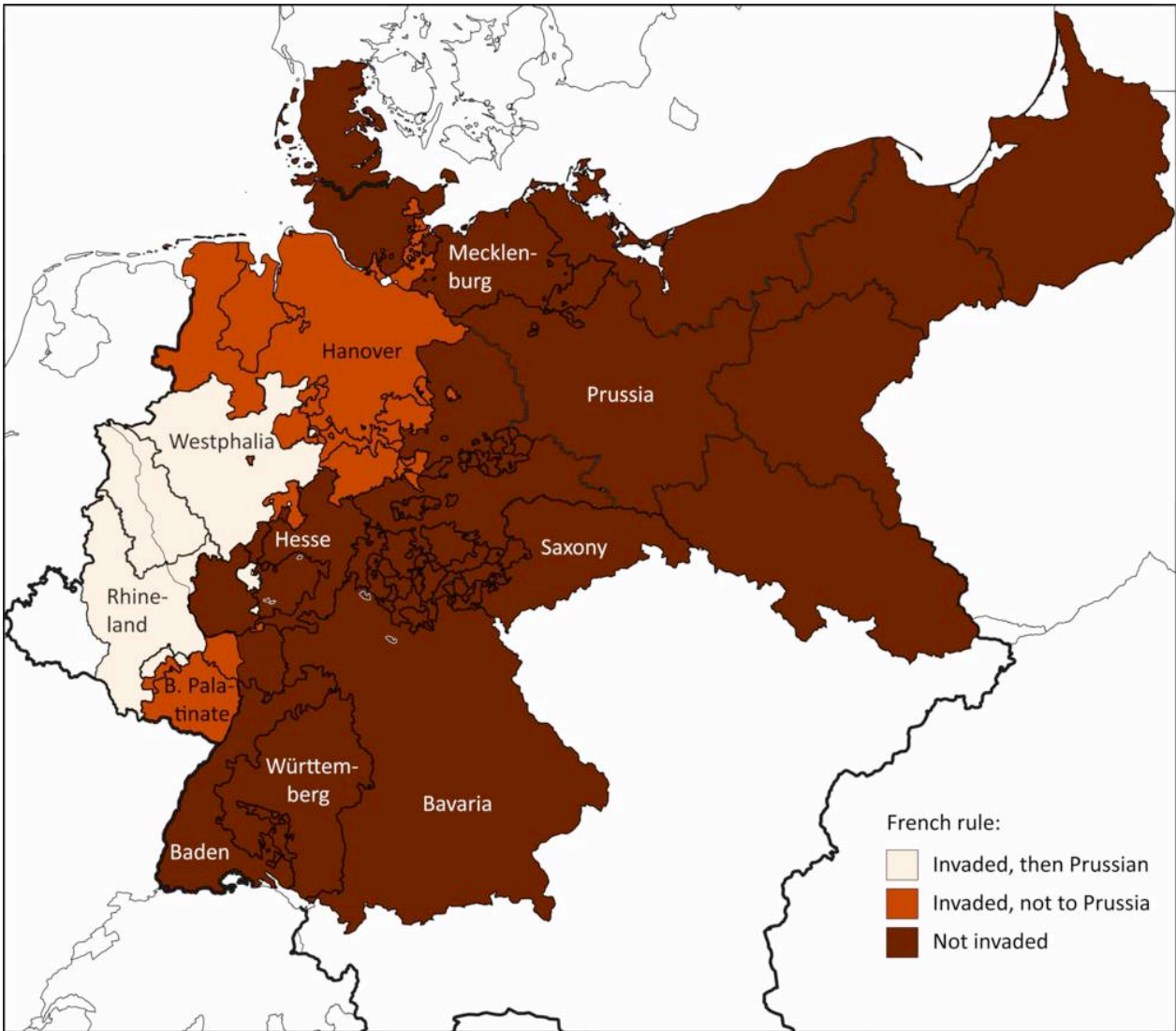


Figure 4: The introduction of written civil codes in Germany

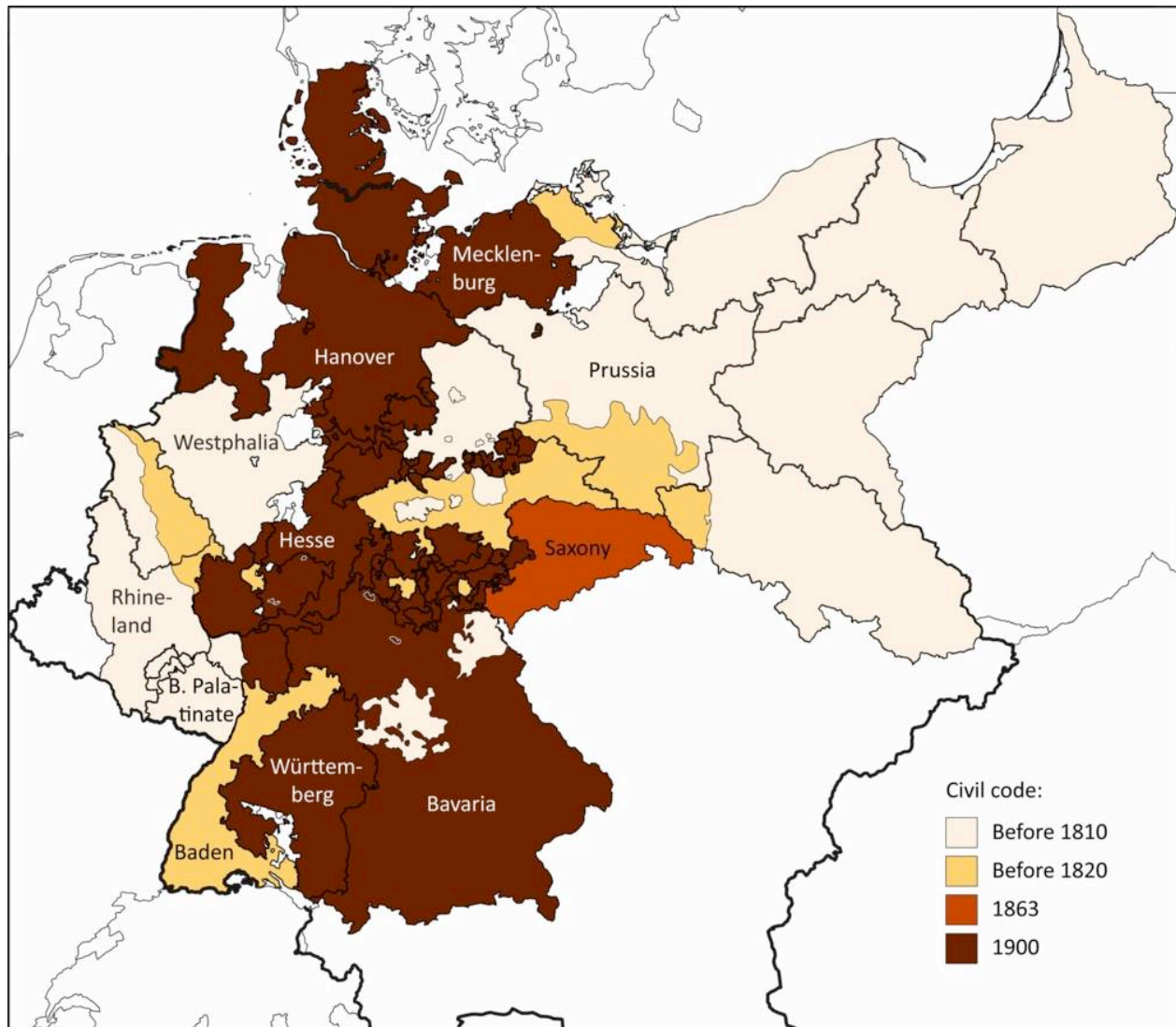


Figure 5: The abolition of guilds in Germany

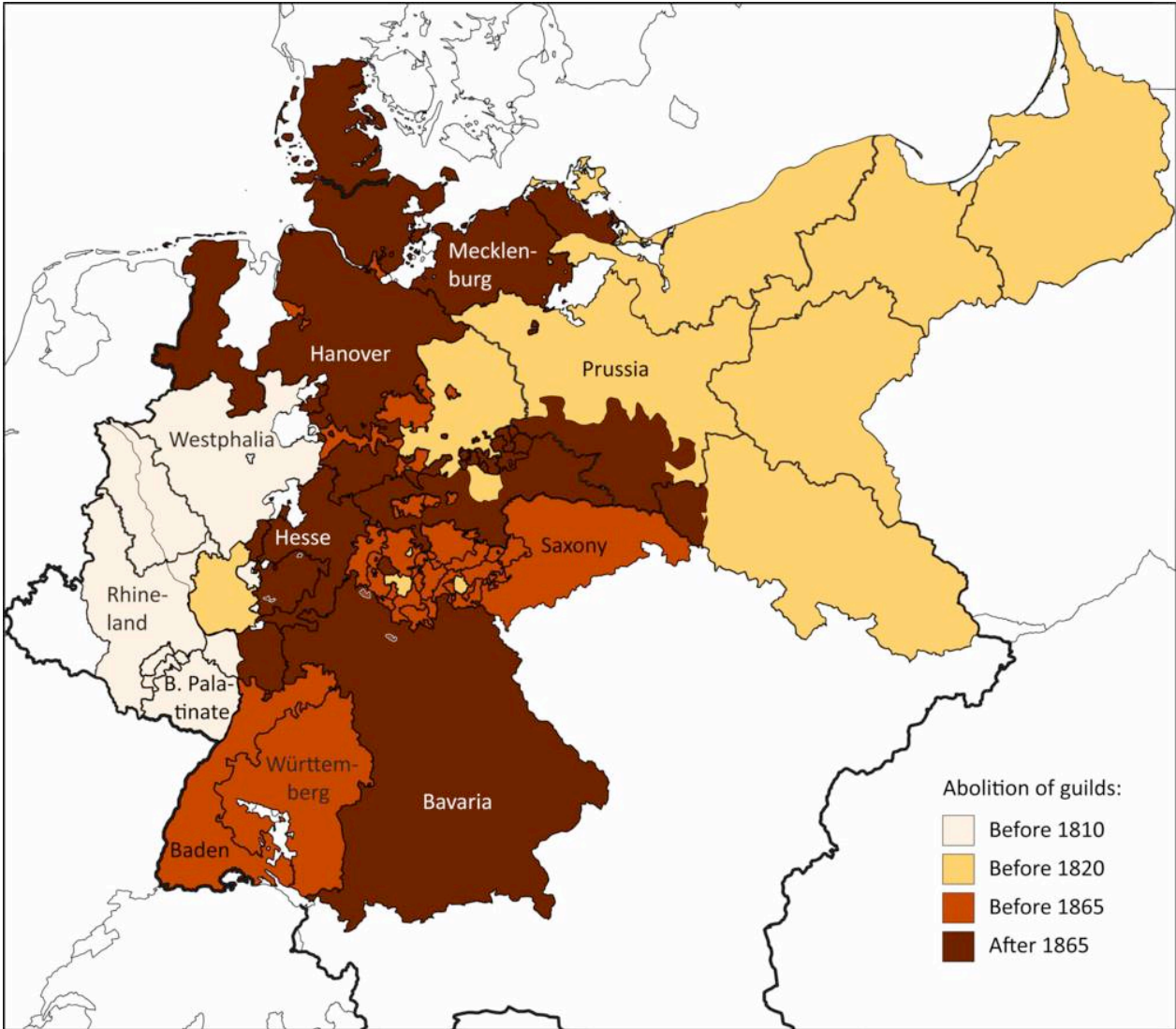
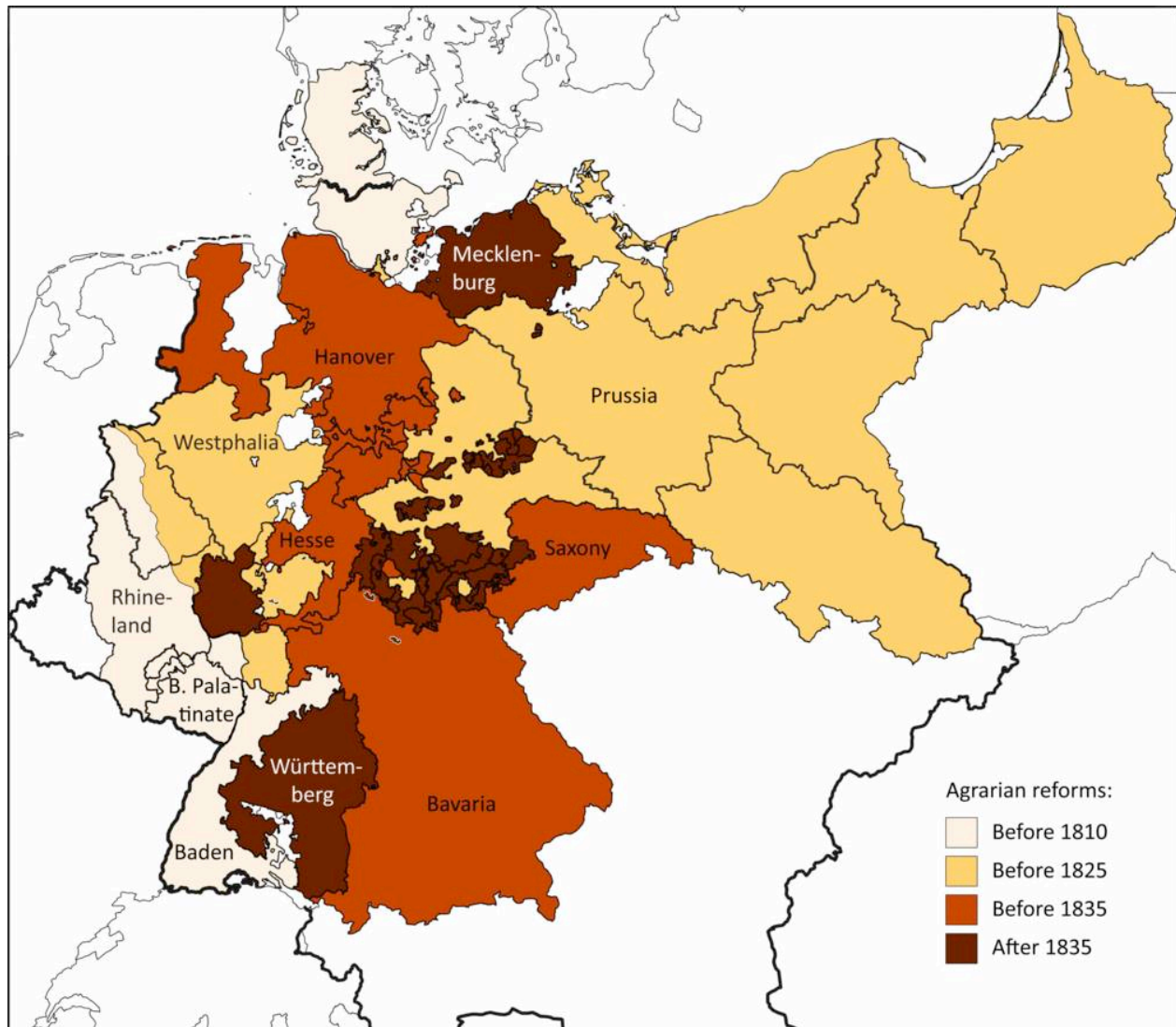


Figure 6: The implementation of agrarian reforms in Germany



¹Thomas Nipperdey, *Deutsche Geschichte 1800-1866: Bürgerwelt und starker Staat* (Munich, 1983): 1. English translation: *Germany from Napoleon to Bismarck, 1800-1866* (Dublin, 1996).

²Friedrich Engels quoted by Louis Bergeron, “Remarques sur les conditions du développement industriel en Europe Occidentale à l’époque napoléonienne,” *Francia*, 1 (1973): 537.

³The seminal books on these topics are Douglass C. North, and Robert P. Thomas, *The Rise of the Western World: A New Economic History* (New York, 1973); Eric L. Jones, *The European Miracle: Environments, Economies, and Geopolitics in the History of Europe and Asia* (New York, 1981); Kenneth Pomeranz *The Great Divergence: China, Europe and the Making of the Modern World* (Princeton, N.J., 2000).

⁴To use the phrase coined by Alfred Crosby; see Alfred Crosby, *Ecological Imperialism: The Biological Expansion of Europe 900-1900* (New York, 1986).

⁵Many different sorts of institutions made up the *ancien régime*. Different scholars emphasize different things. Some argue that controlling absolutism was the key. More related to our paper, however, were those institutions overthrown by the French National Assembly on the night of August 4, 1789. As we discuss later, these included aristocratic privileges and guilds.

⁶Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, ed. R.H. Campbell and A.S. Skinner (New York, 1976): 387.

⁷Jerome Blum, *The End of the Old Order in Rural Europe* (Princeton, N.J., 1978): 356.

⁸Jan de Vries and Ad van der Woude, *The First Modern Economy: Success, Failure, and Perseverance of the Dutch Economy, 1500-1815* (New York, 1997): 17, 162-163; Jonathan I. Israel, *The Dutch Republic: Its Rise, Greatness and Fall 1477-1806* (New York, 1995).

⁹On the demise of feudalism see Rodney Hilton, *The Decline of Serfdom in Medieval England*, 2nd Edition (London, 1983); on weak guilds see D.C. Coleman, *The Economy of England, 1450-1750* (Oxford, 1977): 73-75; on contracting absolutism see Steven C.A. Pincus, *England’s Glorious Revolution: A Brief History with Documents* (New York, 2007); and on the rule of law see Edward P. Thompson, *Whigs and hunters: the origin of the Black Act* (London, 1975).

¹⁰Henri Pirenne, *Economic and Social History of Medieval Europe* (New York, 1937); Michael M. Postan, “The Rise of the Money Economy,” *Economic History Review* 14 (1944): 123-134.

¹¹Douglass C. North and Barry R. Weingast, “Constitutions and Commitment: Evolution of Institutions Governing Public Choice in Seventeenth Century England,” *Journal of Economic*

History 49 (1989): 803-832.

¹²Max Weber, *Protestant Ethic and the Spirit of Capitalism* (New York, 1930): 11.

¹³ As long as this is true then we can think of the treatment being ‘as if’ it were randomly assigned.

¹⁴ Nearly all of Germany, including Prussia, was invaded at some point of another by the French. Nevertheless, we are interested only in those places which the French attempted to rule and reform, rather than simply transitorily occupy.

¹⁵In a companion paper, Daron Acemoglu, Davide Cantoni, Simon Johnson and James A. Robinson, “Consequences of Radical Institutional Reform: The French Revolution and Economic Development in 19th Century Europe” (unpublished, 2008), we use statistical tools to examine cross-national evidence on the relationship between institutional reforms brought by the French Revolution and subsequent economic growth and we find results which are very comparable to those we present here.

¹⁶Daron Acemoglu, Simon Johnson and James A. Robinson, “Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution,” *Quarterly Journal of Economics* 118 (2002): 1231-1294; Paul Bairoch, *Cities and Economic Development: From the Dawn of History to the Present* (Chicago, 1988): ch. 1; Jan de Vries, *The Economy of Europe in an Age of Crisis, 1600-1750* (New York, 1976): 164.

¹⁷For example, Angus Maddison, *The World Economy: A Millennial Perspective* (Paris, 2001).

¹⁸The years included in our analysis are: 1750, 1800, 1850, and all years between 1875 and 1910 in five years’ intervals. The states are defined following post-1815 borders and comprise: Prussia, where we distinguish between the Rhine Province (which includes the left bank of the Rhine and Berg), Westphalia, and the rest of Prussia (excluding the provinces of East and West Prussia, which lay outside of the Holy Roman Empire before, the German Confederation after), Hanover, Saxony, Baden, Bavaria and Württemberg. For the construction of these data see <http://www.people.fas.harvard.edu/~cantoni/>

¹⁹Econometrically speaking what we are examining here is a reduced form relationship between a treatment variable, invaded by the French, and a proxy for economic development, urbanization. In Acemoglu et al., *Radical Institutional Reform*, we examine the relationship between this instrument and various indices of reforms, and then examine the relationship between the reforms and measures of economic development.

²⁰ And one should bear in mind here that many places in the control group, such as Baden, Bavaria, and most famously Prussia under Stein and Hardenberg, reformed defensively. This fact actually works against finding that the areas actually invaded experienced differentially rapid urbanization in the nineteenth century.

²¹ William Doyle, *The Ancien Régime*, 2nd ed. (New York, 2001); Emmanuel Le Roy Ladurie, *The Ancien Régime: A History of France, 1610-1774* (Oxford, 1996).

²² Alfred Cobban, *The Social Interpretation of the French Revolution* (New York, 1964); on the importance of feudal dues see Peter Jones, *The Peasantry in the French Revolution* (New York, 1988); Gwynne Lewis, *The Advent of Modern Capitalism in France; the Case of Pierre-François Tubeuf* (New York, 1993); and Alan Forrest, *The Revolution in Provincial Aquitaine, 1789-1799* (Oxford, 1996). On the role of feudal dues in the Revolution see John Markoff, *The Abolition of Feudalism: Peasants, Lords, and Legislators in the French Revolution* (University Park, Penn., 1996)

²³ Daron Acemoglu, Simon Johnson and James A. Robinson, "Institutions As the Fundamental Cause of Long-Run Economic Growth," in Philippe Aghion and Steve Durlauf, eds., *Handbook of Economic Growth* (Amsterdam, 2005). See François Crouzet, *The First Industrialists: The Problem of Origins* (New York, 1985), and Kenneth L. Sokoloff and B. Zorina Khan, "The Democratization of Invention during Early Industrialization: Evidence from the United States," *Journal of Economic History* 20 (1990): 363-378, on the importance of upward social mobility in the industrial revolutions of Britain and the United States.

²⁴ Sheilagh Ogilvie, "Guilds, efficiency, and social capital: evidence from German proto-industry," *Economic History Review* 57 (2004): 286-333. For a revisionist perspective, see: Steven Epstein, *Wage labor & guilds in medieval Europe* (Chapel Hill, N.C., 1991); Charles R. Hickson and Earl A. Thompson, "A New Theory of Guilds and European Economic Development," *Explorations in Economic History* 28 (1991): 127-168.

²⁵ Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (New York, 1990), 256-260.

²⁶ Herbert A. L. Fisher, *Studies in Napoleonic statesmanship: Germany* (Oxford, 1903): 19.

²⁷ Jerome Blum, "The Rise of Serfdom in Eastern Europe," *American Historical Review* 62 (1957): 807-836.

²⁸ Timothy C.W. Blanning, *The French Revolution in Germany: Occupation and Resistance in the*

Rhineland, 1792-1802 (New York, 1983): 20-21.

²⁹Friedrich Lenger, "Economy and Society," in Jonathan Sperber, ed., *The Shorter Oxford History of Germany: Germany 1800-1870* (New York, 2004): 92; See also the discussion in Theodore S. Hamerow, *Restoration, Revolution, Reaction: Economics and Politics in Germany, 1815-1871* (Princeton, N.J., 1958): ch. 3.

³⁰*Ibid.*, 96.

³¹Herbert Kisch, *From Domestic Manufacture to Industrial Revolution: The case of the Rhineland Textile Districts* (New York, 1989)

³²The aggregate evidence for Germany during this period suggests that agricultural productivity lagged far behind that of the Netherlands or Britain, on which see, Robert C. Allen, "Economic Structure and Agricultural Productivity in Europe," *European Review of Economic History* 4 (2000): 1-25; and evidence on height and life expectancy suggests that Germany was substantially poorer than these countries, see Richard H. Steckel, "Health and Nutrition in the Pre-Industrial Era: Insights from a Millennium of Average Heights in Northern Europe," in Robert C. Allen, Tommy Bengtsson and Martin Dribe, eds., *Living Standards in the Past* (Oxford, 2005).

³³Part of the broader 1795 Peace of Basle with Prussia, Spain, and Hessen-Kassel.

³⁴Alexander Grab, *Napoleon and the Transformation of Europe* (New York, 2003): 89-90.

³⁵Michael Rowe, "Napoleon and State Formation in Central Europe," in Philip Dwyer, ed., *Napoleon and Europe* (London, 2001): 210, Brendan Simms, "Political and Diplomatic Movements, 1800-1830: Napoleon, national uprising, restoration," in Jonathan Sperber, ed., *The Shorter Oxford History of Germany: Germany 1800-1870* (New York, 2004): 31.

³⁶Enno E. Kraehe, *Metternich's German policy* (Princeton, N.J., 1963).

³⁷James J. Sheehan, *German History 1770-1866* (Oxford, 1989): 397.

³⁸*Ibid.*, 402.

³⁹Alan J.P. Taylor, *The course of German history: a survey of the development of German history since 1815* (London, 1961): 42-43.

⁴⁰After the defeat at Jena in 1806, Prussia—under the leadership first of Baron von und zum Stein, and then of the Prince of Hardenberg—introduced a series of social and military reforms. Important ones ended many feudal institutions in the countryside and also abolished guilds and introduced commercial freedom. Other states outside of direct French control, such as Baden and

Württemberg in Southern Germany, also reformed defensively.

⁴¹Fisher, *Napoleonic statesmanship*: 380-381.

⁴²The exception to this is that the Napoleonic Civil Code was kept in place in the Rhenish provinces, but replaced with the Prussian legal code in the rest of French Germany ceded to Prussia.

⁴³While the English language literature on reforms in Germany is very limited, the following works provide some useful details: Owen O’Connolly, *Napoleon’s Satellite Kingdoms* (New York, 1965); J. Stuart Woolf, *Napoleon’s Integration of Europe* (New York, 1991); and Grab, *Napoleon*.

⁴⁴Franz Schnabel, *Deutsche Geschichte im neunzehnten Jahrhundert* (Freiburg im Breisgau, 1965), vol. 6: 51.

⁴⁵Werner Schubert, *Französisches Recht in Deutschland zu Beginn des 19. Jahrhunderts* (Köln, 1977); “Das französische Recht in Deutschland zu Beginn der Restaurationszeit (1814-1820),” *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte, Germanistische Abteilung* 107 (1977): 129-184.

⁴⁶Richard Schröder, *Lehrbuch der deutschen Rechtsgeschichte*, 5th ed. (Leipzig, 1907): 901.

⁴⁷The jurisdiction of feudal lords over their serfs.

⁴⁸Schröder, *Rechtsgeschichte*, 937.

⁴⁹Schubert, *Französisches Recht zu Beginn des 19. Jahrhunderts*, 97-98.

⁵⁰See Helmut Coing, *Handbuch der Quellen und Literatur der neueren europäischen Privatrechtsgeschichte*, vol. 3 (Munich, 1973), pt. 3, for a summary.

⁵¹Dirk Georges, *1810/11-1993: Handwerk und Interessenpolitik* (Frankfurt am Main, 1993): 345.

⁵²For a comprehensive description of the movement towards *Gewerbefreiheit*, cf. H.A. Mascher, *Das deutsche Gewerbewesen von der frühesten Zeit bis auf die Gegenwart* (Potsdam, 1866); Gustav Schmoller, *Zur Geschichte der deutschen Kleingewerbe* (Halle, 1870); Karl Friedrich Wernet, *Handwerksgeschichtliche Perspektiven*, Vol. 10 of *Forschungsberichte aus dem Handwerk* (Münster, 1963).

⁵³See Mascher, *Gewerbewesen*, 497, for a detailed description.

⁵⁴*Ibid.*

⁵⁵Friedrich Lütge, *Die mitteldeutsche Grundherrschaft und ihre Auflösung*, 2nd ed. (Stuttgart, 1957); *Geschichte der deutschen Agrarverfassung vom frühen Mittelalter bis zum 19.*

Jahrhundert (Stuttgart, 1963); Christoph Dipper, *Die Bauernbefreiung in Deutschland* (Stuttgart, 1980).

⁵⁶Michael A. Meyer (ed.), *Deutsch-jüdische Geschichte in der Neuzeit*, vol. 2 (Munich, 1996), 28.

⁵⁷Jacob Toury, *Soziale und politische Geschichte der Juden in Deutschland 1847-1871: Zwischen Revolution, Reaktion und Emanzipation* (Düsseldorf, 1977), 281.

⁵⁸Ludwig von Rönne and Heinrich Simon, *Die früheren und gegenwärtigen Verhältnisse der Juden in den saemmtlichen Landestheilen des Preußischen Staates* (Breslau, 1843); Toury, *Geschichte der Juden*; Meyer, *Deutsch-jüdische Geschichte*.

⁵⁹The average values displayed at the end of each panel (Invaded, then Prussian / Invaded, not to Prussia / Not invaded) are weighted averages of the reforms indicators, where the numbers of cities listed in Paul Bairoch, Jean Batou and Pierre Chèvre, *La population des villes européennes* (Geneva, 1988), present in each territorial unit act as weights.

⁶⁰Grab, *Napoleon*, 20.

⁶¹Grab, *Napoleon*, 23.

⁶²Georges Lefebvre, *The Coming of the French Revolution* (New York, 1847); Albert Soboul, *Understanding the French Revolution* (London, 1988); Cobban, *The Social Interpretation*; George V. Taylor, "Noncapitalist Wealth and the Origins of the French Revolution," *American Historical Review*, 72 (1967): 469-496; François Furet, *Interpreting the French Revolution*, (New York, 1981).

⁶³Comparative evidence on agricultural productivity is presented in Allen, *Economic Structure*; and on real wages in Robert C. Allen, "The Great Divergence in European Wages and Prices from the Middle Ages to the First World War," *Explorations in Economic History* 38 (2001): 411-447. Jean-Laurent Rosenthal, *The Fruits of Revolution: Property, Litigation and French Agriculture, 1700-1860* (New York, 1992); Philip Hoffman, "France: Early Modern Period," in Joel Mokyr, ed., *The Oxford Encyclopedia of Economic History* (New York, 2003), argues that the current consensus amongst economic historians is that the institutions of *ancien régime* France were indeed to some extent responsible for its relative under-development.

⁶⁴Rondo E. Cameron, *France and the economic development of Europe, 1800-1914; conquests of peace and seeds of war* (Princeton, N.J., 1961).

⁶⁵David S. Landes, *The Unbound Prometheus* (New York, 1969): 142-147.

⁶⁶Timothy C.W. Blanning, "The French Revolution and Modernization in Germany," *Central*

European History 22 (1989): 109-129; Hamerow, *Restoration, Revolution, Reaction*, 22, 44-45.

⁶⁷Kisch, *Domestic Manufacture*, 212.

⁶⁸Jeffrey Diefendorf, *Businessmen and Politics in the Rhineland, 1789-1834* (Princeton, N.J. 1980): 115.

⁶⁹Blanning, *French Revolution in Germany*.

⁷⁰The analysis we present here is a simple exposition of the basic finding of in Acemoglu et al., *Radical Institutional Reform*, where a full statistical analysis is presented of the impact of French reforms on urbanization in Germany.

⁷¹Though Figures 1 and 2 suggest that urbanization may have been growing more rapidly in either treatment group before 1800, which suggests that these areas had started to do differentially well even before the French invasion, in Acemoglu et al., *Radical Institutional Reform*, we show that this difference is not statistically significant and in neither cross-national nor within-Germany data is there evidence of differential economic progress prior to the French Revolutionary period.