

From Ancien Régime to Capitalism: The French Revolution as a Natural Experiment*

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Abstract

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 the institutional reforms (essentially the abolition of the *ancien régime*) 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.

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

1 Introduction and the Argument

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’ (North and Thomas, 1973), the ‘European Miracle’ (Jones, 1981), or the ‘Great Divergence’ (Pomeranz, 2000). These phrases refer to the process by which, starting from a situation 200 or 300 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 living standards. During the late 19th century, this prosperity began to disseminate to certain Neo-Europes (Crosby, 1983) 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, most of them focusing on the collapse of the *ancien régime* and the rise of capitalism. They do however differ on what the causes of this collapse are and whether the disappearance of the institutions of the *ancien régime*, including many aspects of feudal institutions, are a consequence of some deeper process. Weber (1930), for example, argued that the rise of Western Europe was an outcome of the protestant Reformation and a particular set of religious beliefs that stimulated economic activity. To the extent that the fall of the *ancien régime* figures in this account, it was a mere by-product of other forces. Though other scholars have emphasized natural resources or geography,² possibly the most influential approach stems from the work of Smith (1789) 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

¹Nipperdey (1983, p.1).

²For instance, Wrigley (1988) emphasized the importance of the location of deposits of coal for explaining the incidence the industrial revolution.

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 feudal economy of *ancien régime* Europe where villeins were tied to the land, occupational mobility was highly circumscribed, markets regulated, and where economic, political and legal institutions were fused. Smith believed that the relative prosperity of Western Europe was closely related to the early decline of such *ancien régime* institutions and he argued forcefully that the feudal system was 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 western and southwestern Europe, that it has gradually been abolished altogether.” (p. 387)

When Smith wrote in the late 18th century there 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 and serfdom was still a vibrant institution East of the river Elbe. Table 1, from Blum (1978, p. 356), 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. 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 effected by feudal institutions such as serfdom (de Vries and van der Woude 1997, p. 17), where the guilds were weak (de Vries and van der Woude 1997, pp. 162-163) and where the threat of absolutism was thrown off by the Dutch Revolt of the 1570s (Israel, 1995). England was the country where the institutions of the *ancien régime* collapsed earliest. Serfdom had vanished by 1500 (Hilton, 1983), guilds lost their power in the 16th and 17th centuries (Coleman, 1977, pp. 73-75), 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 (Pincus, 2007), and strong notions of equality before the law developed at least by the early 18th century (Thompson, 1975).

Does this evidence associating the early collapse of *ancien régime* and feudal institutions with the rise of capitalist market economies demonstrate that it was these institutions that 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 the progress of capitalism that is the cause of the decline of feudalism, not the other way around. For example, an earlier generation of scholars, such as Pirenne (1937), argued precisely that it was the expansion of trade and the development of a more commercial society, what Postan called the ‘Rise of the Money Economy’ (Postan, 1944), that explains the dissolution of feudal institutions.

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 (there was no explicit proclamation that ended feudalism in England, but rather feudal regulations ceased to be enforced) is a collective decision in society which itself depends on other factors. For instance, it may be that other variables, such as geographical location or culture, created great economic potential for England in the late Medieval period and these factors determined the evolution of feudal institutions. The removal of feudal institutions may have been part of the mechanism through which these factors facilitated sustained prosperity. Alternatively, however, 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 North and Weingast (1989), that the economic performance was a direct consequence of the political innovations, yet Weber denied this, observing (1930, p. 11)

“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?”

Hence Weber directly argued that an omitted factor, here religion, explained both democracy and capitalism in England. Another theory of the development of capitalism in Europe, due to Brenner’s (1976, 1982), provides another example of potential omitted variable bias. In Brenner’s account it is the balance of political power that is the key driving force which leads capitalism to develop or be thwarted. In Britain, where the Lords were relatively weak,

feudalism collapsed, and capitalism emerged. But in his theory it is not clear if the demise of feudal institutions in itself has an important causal role in stimulating capitalism, or is just a side effect of the balance of power.

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 and randomly assign *ancien régime* institutions to some of them (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, we cannot conduct such an experiment. Nevertheless, social scientists can take advantage of ‘natural experiments’ which history sometimes offers.

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. In this paper we argue that we can exploit this natural experiment as a way of estimating the effect of *ancien régime* institutions on economic growth.

The origins of the French Revolution lie within France, but its ramifications spread throughout Europe. The Revolutionary armies, starting in the 1790s, invaded Belgium, the Netherlands, Switzerland, Italy and western parts of Germany. In all of these cases, they brought abrupt change in economic and legal institutions and the organization of the state. Where the Revolutionary armies started, Napoleon followed. He consolidated and to some extent expanded on the earlier gains, particularly by adding a number of satellite states in Germany and briefly controlling Spain and Poland. The reforms that French armies brought included the abolition of many prerequisites of the *ancien régime* including feudal institutions, dues and prerogatives, ending guilds, introducing equality before the law which included freedom for Jews, and the redistribution of Church land. French rule also led to the reorganization of state institutions, such as fiscal systems.

To estimate whether there is a causal relationship between the collapse of *ancien régime* institutions and the rise of capitalism in Europe on economic growth we use the institutional changes brought by the French Revolution within Germany. This comparison is made complicated by the fact that the map of Germany was re-drawn after 1815 and French reforms

were reversed in many places where the old rulers returned (with the minor exceptions of the Bavarian Palatinate and of Rheinhessen). Nevertheless, we can exploit the fact that large parts of Western Germany were granted to Prussia by the Congress of Vienna in 1815, who having reformed itself, did not reverse the institutional reforms brought by the French in its newly acquired territories. We therefore compare economic development in cities invaded by the French Revolution and Napoleon and then kept by Prussia after 1815 to German cities either not invaded by the French or invaded and whose pre-Revolutionary rulers returned. This strategy will be informative about the causal relationship between the *ancien régime* and the rise of capitalism under three conditions. First, the French must have invaded different parts of Germany not on the basis of their economic potential or economic characteristics, but for other regions (for instance proximity to France or strategy value). Second, at the Congress of Vienna different part 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. Third, the Prussians did not selectively reverse the French reforms.

Fortunately for our empirical strategy all three of these conditions appear to be satisfied. 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. As Napoleon put it in a letter to Emperor Alexander I of Russia after the Treaty of Tilsit in 1807

“The countries situated between the Niemen and the Elbe will form the barrier which will separate the great empires, and deaden the pin-pricks which between nations preceded the cannon shots” (quoted in Fisher, 1903, p. 148).

Rowe (2001, p. 210) notes that the Kingdom of Westphalia, a satellite state created by Napoleon in Northern Germany, “served as a French strategic strongpoint in Germany.” 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. The invasion and policies of the French armies therefore represented a change in institutions which was unrelated to the underlying characteristics of the societies that were reformed.

After the defeat of Napoleon at Waterloo the great powers met in Vienna to re-draw the map of Europe. The political map of Germany was re-drawn with Prussia receiving large areas in the West, including most of the Rhineland and much of Napoleonic Berg and Westphalia.

The Prussians, having themselves initiated extensive reforms after 1807, made few changes to the institutional regimes created by the French in Western Germany.³ Fisher (1903, pp. 380-381) 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.”

The areas Prussia received at Vienna was not determined by their economic characteristics but part of a political log-roll where geopolitical factors again predominated. In addition Prussia did not selectively reverse the institutional changes brought by the French. Rather, because they had themselves reformed their institutions and also because they had to rule these new areas and reversing French reforms would have implied strengthening the power of local elites, they left the reforms unaltered.⁴

In other places, both in Germany and other parts of Europe, where old pre-Napoleonic rulers returned, strenuous attempts were made to revert to the pre-Revolutionary status quo. For instance the French Civil Code was typically abolished and a return made to the previous legal system. A telling example of the extent to which reversion to the status quo was attempted comes from the Papal States in Italy. Before the French took over the Papal States, initially in

³After 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 (see Lee, 1980, on Baden, or Green, 2001, on Württemberg).

⁴The 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.

1798 as part of the Roman Republic and then after 1808 as a department of France, the Pope had ruled that vaccination for smallpox was contrary to religious principles (Lyons, 1994, p. 240). In 1812-13 the French administration vaccinated one third of newborn babies, but when the Pope returned after Waterloo vaccination was again condemned.

Thus the picture that emerges is one where the French attempted to abolish the *ancien régime* in places they invaded, but in some of these the reforms were reversed after 1815. Notably, however, in the parts of Western Germany that were ceded to Prussia at the Congress of Vienna, the reforms were maintained. In addition reforms took place in some places which the French did not invade, mostly as a consequence of the threat of invasion. Nevertheless, we can use the reform imposed by the French Revolution to estimate the impact of the *ancien régime* on economic growth by considering those territories that were invaded by the French and which maintained the reforms subsequently as our treatment group. We can compare the economic performance of this group to those places which were either not invaded by the French or were invaded, but which then reversed the reforms.

Why investigate the impact of French reforms just in Germany? Why not consider the whole of Europe? The great advantage of focusing only on Germany is that we are restricting the analysis to a much more homogeneous sample. We have emphasized the problems that omitted variables create for making causal inferences. Looking only at Germany limits the extent of this problem because, since we are examining variation in institutional reforms in an area with a great deal of history, culture and institutions in common, we are better able to control for omitted variables that might bias our results. This would be much more of a problem if we included Spain, Germany, the Netherlands, Poland and Russia all in the same study. Nevertheless, in Acemoglu, Cantoni, Johnson and Robinson (2007) 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.

To study this natural experiment we need some way of measuring economic prosperity within different parts of Germany in the 18th and 19th centuries before the creation of modern national accounts. An attractive strategy is to look at the size of urban populations. In the modern world urbanization, the proportion of the population living in urban areas, is highly correlated with income per-capita (Acemoglu, Johnson and Robinson, 2002) and historians, such as Bairoch (1988, Ch. 1) and de Vries (1976, p. 164) argue that only areas with high

agricultural productivity and a developed transportation network could support large urban populations historically. It is also much used as a proxy in attempts to estimate historical levels of income (for example, Maddison, 2001). We therefore constructed a database of 306 German cities and our main outcome variable is city size.

The basic finding of our paper is captured by Figure 1 which shows the total population in the three groups.⁵ The figure shows clearly that prior to the French revolutionary period total urban population was lower in the areas which constitute our treatment group compared to the rest of Germany. After 1800 however, the urban population of the treatment group begins to grow much more rapidly than the control group and by 1850 even overtakes the urban population of the group of cities which were reformed but where the old rulers returned. Figure 1 suggests that the abolition of *ancien régime* institutions had a first order effect on economic growth and it supports the argument that it was indeed the abolition of the institutions of the *ancien régime* which was a key to unleashing modern economic growth and benefitting from the new innovations and technologies of the industrial revolution.⁶ It is unlikely that these findings represent reverse causality from economic prosperity to institutional change, places which were invaded and where institutions were maintained were not doing better economically prior to the impact of the Revolution and the French reforms were not implemented on the basis of economic potential. Moreover, the effect depicted in Figure 1 cannot represent the effect of some omitted variable, such as religion or the balance of political power because French interventions were independent of any factor such as this which might have determined prosperity.

2 Institutions of the *ancien régime*

2.1 General Characteristics

Before the age 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, with explicit or implicit entry barriers. By *ancien régime* we

⁵Econometrically speaking what we are examining here is a reduced form relationship between a treatment variable, invaded and under Prussian control, and a proxy for economic development, city size. In Acemoglu, Cantoni, Johnson and Robinson (2007) we provide both the first-stage relationship between this instrument and various indices of reforms, and then examine the second stage relationship between the reforms and economic development.

⁶We focus on the period between 1800 and 1850 since between 1850 and 1900 many other large changes occurred, such as German unification, which had large effects on institutions unrelated to those we study.

mean the institutions that maintained and benefitted these groups along with unchecked royal power (Doyle, 2001, Le Roy Ladurie, 1996). 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*.

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 who were often in unfree status. This implied that their economic and social choices were 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 (or even revolutionary) 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.

In most 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 urban areas were often a refuge from the constraints of the countryside, economic activities and membership of the urban community were controlled by powerful guilds.

The connection between this institutional nexus and economic performance is quite intuitive and consistent with basic economic theory. Only institutions that provide secure property rights and facilitate entry will generate economic growth (Acemoglu, Johnson and Robinson, 2005). With respect to political institutions, property rights tended to be relatively insecure under absolutist monarchs and thus the incentive to invest lower. It was the transition from absolutism to constitutional regimes which led to more secure property rights in both the Netherlands in the 16th century and Britain in the 17th. 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, as it was unclear what laws

applied in which situation, also was a major impediment to economic progress. Though there have been revisionist interpretations of effects of guilds (Epstein, 1991, Hickson and Thompson, 1991), the consensus amongst historians is that their main function was to act as a cartel, to limit entry and competition and to improve the incomes of their members (Ogilvie, 2004). Such restrictions almost certainly retarded innovation both indirectly and directly. Mokyr (1990, pp. 256-260) presents many examples of guilds attempting to block new innovations which would have undermined their economic and political position.

2.2 Germany

The institutions of the *ancien régime* characterized various parts of Germany to a greater or lesser extent. A major source of variation is the Holy Roman Empire, which covered the territory of modern Germany, and 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, even though the extent of absolutism varied a lot. In Prussia and Austria the monarchies had absolutist monarchies, though these were relatively enlightened. In much of the rest of the Holy Roman Empire, however, much more reactionary absolutism held sway. On balance, the general political structures of the *ancien régime* were in place. A telling example is Hanover where, as Fisher (1903, p. 19) 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.”

Secondly, although feudalism in its most rigid form was abolished in Germany west of the Elbe (Blum, 1957), with Joseph II abolishing serfdom in Austria (though not the rest of the Hapsburg Empire) in 1781, a lot of its remnants remained. In addition, to the east of the Elbe, in Prussia 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. Blanning (1983, pp. 20-21) describes this as: “In some areas [of the Rhineland], where an attenuated version of serfdom still lingered, the peasant was also subject to restrictions on his movement”. Lenger (2004, p. 92), for example, describes this as:

“besides the original obligations to provide services and dues to the lord the agricultural labor force was also burdened with personal servitude”. 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.” (Lenger, 2004, p. 96).

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 and 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. Kisch (1989) 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. 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.

3 The French Revolution, Europe and Germany

3.1 Narrative of Wars

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. Contrary to almost everyone’s expectations, after some early defeats, the armies of the new Republic were victorious in an initially defensive war, particularly after the introduction of mass conscription (the *levée en masse*) in August 1793. Initial military success encouraged the Republic’s leadership to expand France’s borders, with an eye towards creating an effective buffer between the new Republic

and the hostile monarchs of Prussia and Austria. 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 west or left bank of the Rhine), and the Prussians were forced to recognize this fact under the Treaty of Basle.⁷ Between 1795 and 1802, the French firmly held the Rhineland, but not any other part of Germany. In 1802 the Rhineland was officially incorporated into France.

In March 1802 the French signed the Treaty of Amiens with the British which, in fact, was just a truce. Britain and France started fighting again in May 1803, mostly because Napoleon reneged on the treaty (among other things, he failed to withdraw his troops from the Netherlands). Napoleon occupied Hanover the same month in retaliation.

Following the Peace of Lunéville 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. Napoleon brought these all together in 1806 in the Rheinbund (Confederation of the Rhine). This move in 1806 led to further reorganization and a further reduction to less than 40 states (Grab, 2003, pp. 89-90). Initially, in 1806 only 16 states joined the Rheinbund, this expanded to 39 in 1808.

During this period Napoleon also took over parts of Northern Germany. The Grand Duchy of Berg was formed in March 1806, the Kingdom of Westphalia in August 1807 and the 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).

The War of the third coalition started in August 1805 when Austria and Russia joined Britain. When Napoleon heard this he marched his army into Germany and defeated the Aus-

⁷Part of the broader 1795 Peace of Basle with Prussia, Spain, and Hessen-Kassel.

trians/Russians at Austerlitz in October. Napoleon placed humiliating terms on the Austrians at the Treaty of Pressburg in December. 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.

Napoleon now put pressure on Prussia, allowing it to acquire more territory in Northern Germany, but also demanding that it close its ports to British goods. Prussia decided it could not tolerate Napoleon's domination of Germany and declared war in the summer of 1806, Napoleon defeated the Prussians at Jena in October. Shortly after this Napoleon entered Berlin and then moved east and fought several indecisive battles with Prussian/Russians armies. In June 1807 he signed a truce with the Russians – the Treaty of Tilsit. At this point 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.

The Kingdom of Westphalia was created by territory taken by Napoleon from various princes he had fought in 1806-1807. The Duchy of Brunswick and the old Electorate of Hesse formed its core, and to this were added those parts of Prussia west of the river Elbe, southern Hanover and other small parcels of land. In December 1810 Napoleon also annexed the Hanseatic cities of Hamburg, Lübeck and Bremen. which later became part of France.

3.2 The Congress of Vienna

After Napoleon's defeat and exile to St. Helena the great 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, itself a reflection of much state formation during the Napoleonic period. Germany emerged with German Confederation of 38 separate states 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 (Kraehe, 1963). 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 (Sheehan, 1989, p. 397), the bargaining power of Prussia was also not strong. 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 received large parts of French Germany, including much of the Rhineland and the former Kingdom of Westphalia. Sheehan (1989, p. 402) argues that the Rhenish and Westphalian lands were “taken with some reluctance as compensation for Prussia’s thwarted ambitions in Saxony.” Taylor (1961, pp. 42-43) 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.”

For this paper the important thing 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.

4 Institutional Changes Induced by the French 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.⁸ 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 system, the enactment of written legal codes,

⁸While the English language literature on reforms in Germany is very limited, Connolly (1965), Woolf (1991) and Grab (2003) provide some useful details.

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.

The introduction of the French civil and commercial codes is generally remembered as 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 of the peculiar economic dynamism of the Rhineland (Schnabel 1965, vol. 6, p. 51). 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 (Schubert, 1977a,b). 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 (Schröder, 1907, p. 901).

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*⁹, 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 (Schröder, 1907, p. 937). The other exception is represented by the Rhineland, where both in its Prussian parts and in *Rhein Hessen*

⁹The jurisdiction of feudal lords over their serfs.

(Hesse-Darmstadt) and in the Bavarian Palatinate the local bourgeoisie successfully defended the presence of the *Code Napoléon*, evidently favorable to their position (Schubert, 1977a, pp. 97-98).

The first column in Table 2 reports which territories had a written legal code; while numerous such attempts were started, it should be noted that no other codification was enacted before the Germany-wide introduction of the *Bürgerliches Gesetzbuch* (the BGB) in 1900, so that these data reflect the state of affairs in Germany over the whole of the 19th century. 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 (Coing, 1973, vol. 3 pt. 3, for a summary).

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 (Georges, 1993, p. 345), 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. (Mascher, 1866, Schmoller, 1870, Wernet, 1963)

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.¹⁰

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 Sax-

¹⁰Mascher, 1866, p. 497, for a detailed description.

ony moved instead to a concession-based system, where a state bureaucracy would determine the number of people and the prerequisites to become craftsmen (Mascher, 1866). 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.

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 less 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. (Lütge, 1957, 1963, Dipper, 1980)

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 (Meyer, 1996, p. 28). 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 (Toury, 1977, p. 281). 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 from, 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 (von Rönne and Simon, 1843, Toury, 1977, Meyer, 1996).

On balance Table 2 shows the clear distinction between parts of western Germany that were reformed by the French and then given to Prussia in 1815 and either places which were never invaded by the French, or those that were but where the old rulers came back and reversed the reforms. This motivates our definition of the treatment and control groups for our empirical study. Figure 2 shows the three different areas of Germany with the names of key cities.

5 Consequences of the French Invasion of Germany

Overall, there is no consensus amongst modern historians about the legacy of French and Napoleonic reforms in Europe. The view of Grab (2003, p. 20) 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. Yet there is disagreement about this point, with some, for example Blanning (1989), arguing that reform was already happening and the effects of Napoleon were negligible or even negative. 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” (Grab, 2003, p. 23). There is also disagreement about the implications of reforms in specific areas and the few researchers who have focused on the economic implications of these reforms have also disagreed. On the

one hand Landes (1969, p. 142) views the French Revolution as “...a political roadblock...” to technological adoption for Continental countries, and conclude 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” (Landes, 1969, p. 147). On the other Cameron (1961) claims positive economic effects of the Revolution and the institutional changes it brought.

The consequences of the French reforms in Germany are also contentious, despite the statement from Nipperdey at the start of his seminal book and 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 averse effects. A literature does identify positive economic effects of reforms, but this is usually restricted to the Rhineland. For example, Kisch (1989, p. 212) 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.” He and others argue that the consequence of all of these changes was the transformation of the Rhineland from an oligarchy-dominated area to one open to new business and new entrants (Diefendorf 1980, p. 115), yet Blanning (1983) disagrees that French reforms had a positive net effect on the economy of even the Rhineland.

The fact that historians have taken contrasting positions makes a systematic statistical study of the French reforms an important innovation. To further investigate the potential effects of the institutional reforms documented in the previous section, we next turn to an analysis of the impact of French occupation (and institutional reform) on German cities.¹¹ As noted above, for this purpose, we use data on the population of individual cities compiled by Bairoch, Batou and Chèvre (1988) for the years 1700, 1750, 1800 and 1850. Our base sample is all German cities. However, we investigate the robustness of our results by examining only German cities to the west of the river Elbe. The motivation for this is that in an experiment, natural or otherwise, it is important for the treatment and control groups to be homogeneous. Since such economic institutions as serfdom was more pervasive east of the Elbe (even considering that Prussia began to reform such institutions after 1807) one might be concerned that

¹¹The analysis we present here is a simple exposition of the basic finding of in Acemoglu, Cantoni, Johnson and Robinson (2007) where a full statistical analysis is presented on the impact of French reforms on city size in Germany.

a control group containing cities both to the east and west of the Elbe would be too heterogeneous. Moreover, to the extent that places further to the east were more backward, one would be concerned that including such cities would bias the results in favor of the hypothesis that French institutional reforms had a significant effect.

Figure 1 shows the total urban population of the three areas, the treatment group and the other two groups which comprise the control group, for the whole of Germany. It shows that prior to 1800 the urban population of the treatment group was not higher, thus making one doubt the claims of Blanning (1983), for instance, that places like the Rhineland were already the most reformed and prosperous parts of Germany. The figure also shows no evidence that urbanization was proceeding more rapidly in the treatment group before 1800, which would have indicated that these areas had started to do differentially well even before the French invasion (which would have made one doubt the role of French reforms). Between 1800 and 1850 however the urban population of the treatment grows much more rapidly than elsewhere in western Germany and overtakes that of the areas which were invaded, but where reforms were reversed after 1815. This is clear evidence in favor of the hypothesis that the abolition of the institutions of the *ancien régime* hindered economic development.

Of course other factors determine the level of urban population and prosperity, and this is why the level of urban population differs. Note, for example, that 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 thing for our purposes is the relative rate of growth of these areas and the impact of institutional reforms on this rate of growth.

For reasons discussed above, Figure 3 looks at the same thing as Figure 1, but this time restricting the sample to Germany west of the Elbe. As one can see the pattern is identical to that for the whole of Germany.

6 Conclusions

In this paper we have used the invasion of Germany by French Revolutionary and Napoleonic armies as a natural experiment to test whether or not the institutions of the *ancien régime* impeded prosperity. In the places where the French invaded, they implemented ambitious

programs of institutional reforms abolishing many of the pillars of the *ancien régime* and legacy of feudal economic institutions. We showed that the places where these reforms were maintained, subsequently had considerably better economic performance than places which the French did not reform. The worst possible scenario was for the French to reform to be followed by the return of previous elites who reversed them. This experience is a natural experiment for two reasons. First, what places the French took over was determined by their geo-political and strategic importance, not because of their economic characteristics. Thus it was not, for example, places with superior economic potential that reformed. Second, whether or not the reforms were maintained depended on whether or not the reformed territory was incorporated into Prussia in 1815. Whether or not this was so was an outcome of the negotiations in Vienna after Waterloo. The evidence is clear that which territories went to Prussia in 1815 was not determined by their economic potential.

We are not the first to argue that the French reforms had positive economic effects. Friedrich Engels noted

“Together with Luxemburg, Rhenish Hesse and 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.” (quoted by Bergeron 1973, p. 537)

Yet Engels’ view hardly invokes consensus in the academic literature. Our main contribution in this paper is to show that the nature of the French reforms in Germany allow a particularly clean investigation of the causal effects of the institutions of the *ancien régime*. Our findings are consistent with his interpretation though not definitive and suggest that more investigation of the relationship between the French Revolution and economic and institutional change is required.

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	No. of cities	Written civil code	Agrarian reforms by 1820s	Abolition of guilds	Emancipation of Jews
Not invaded					
Anhalt	4	0	0	0	1
Baden	10	1	1	0	1
Bavaria	29	0	0	0	0
Bavaria, formerly Ansbach or Bayreuth	4	1	0	0	0
Hessen-Darmstadt	4	0	1	1	0
Holstein	6	0	0	0	0
Mecklenburg	8	0	0	0	0
Nassau	1	0	0	1	0
Prussia	15	1	1	1	1
Prussia, form. Nassau	1	0	1	1	0
Prussia, form. Saxony	12	1	1	0	0
Saxony	22	0	0	0	0
Schleswig	4	0	0	0	0
Thuringian states	7	0	0	0	0
Württemberg	12	0	0	0	0
<i>average (percent)</i>		29.5	30.2	15.1	20.9
Invaded and reversed					
Bavaria, left of the Rhine	6	1	1	1	0
Bremen	1	0	1	0	0
Brunswick	4	0	0	0	1
Frankfurt	1	0	1	0	1
Hamburg	1	0	1	0	0
Hanover	13	0	0	0	0
Hessen-Darmstadt, left of the Rhine	4	1	1	1	0
Hessen-Kassel	8	0	0	0	1
Lübeck	1	0	1	0	0
<i>average (percent)</i>		25.6	35.9	25.6	33.3
Invaded and maintained					
Prussia, form. Berg	32	1	1	1	0
Prussia, form. Erfurt	1	1	1	1	0
Prussia, formerly Westphalia	14	1	1	1	0
Prussia, left of the Rhine	17	1	1	1	0
Prussia, form. Wetzlar	1	1	1	1	0
<i>average (percent)</i>		100	100	100	0

Figure 1: The Comparative Abolition of Serfdom

Initial Decrees of Emancipation

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

Figure 1: All of Germany

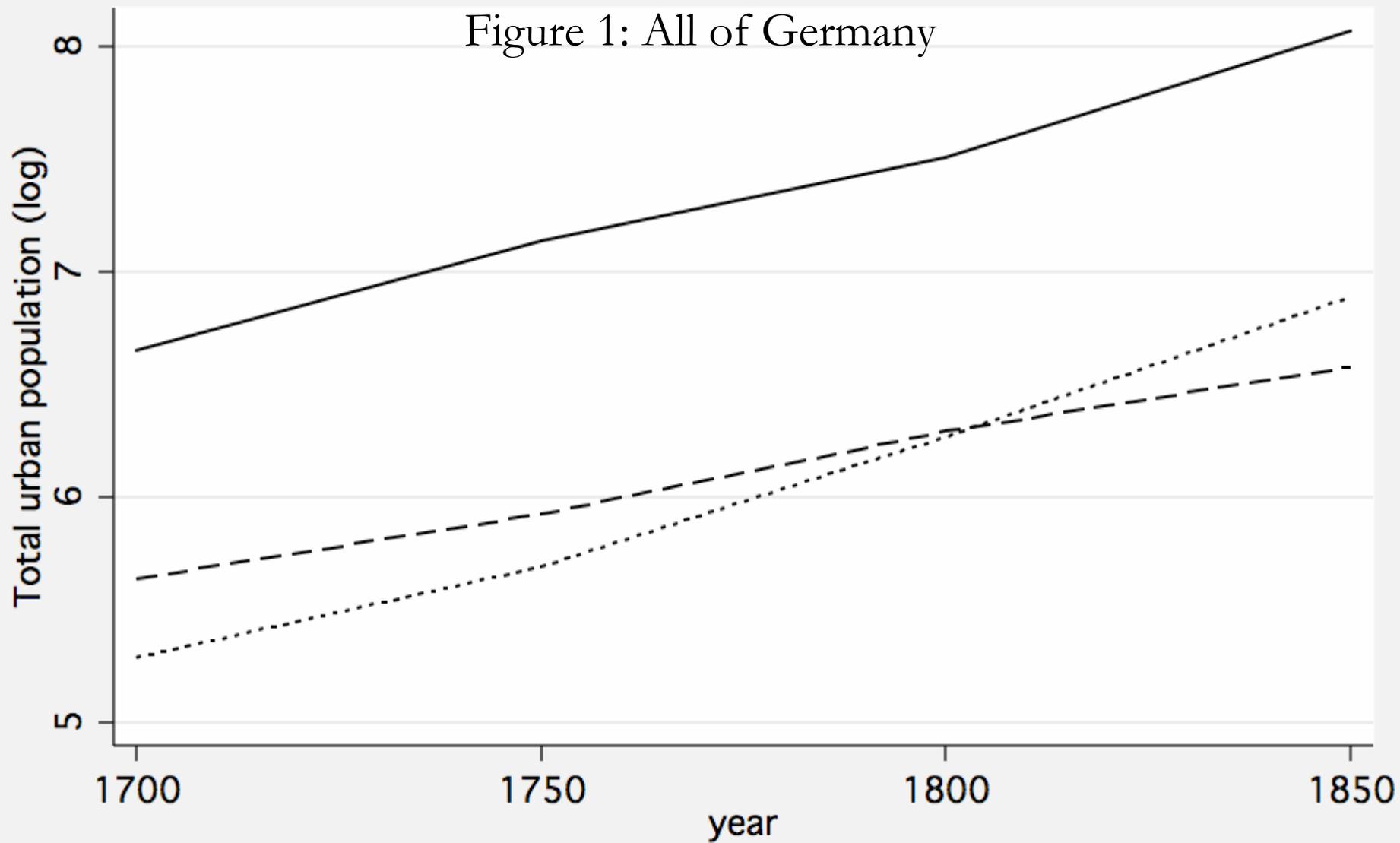
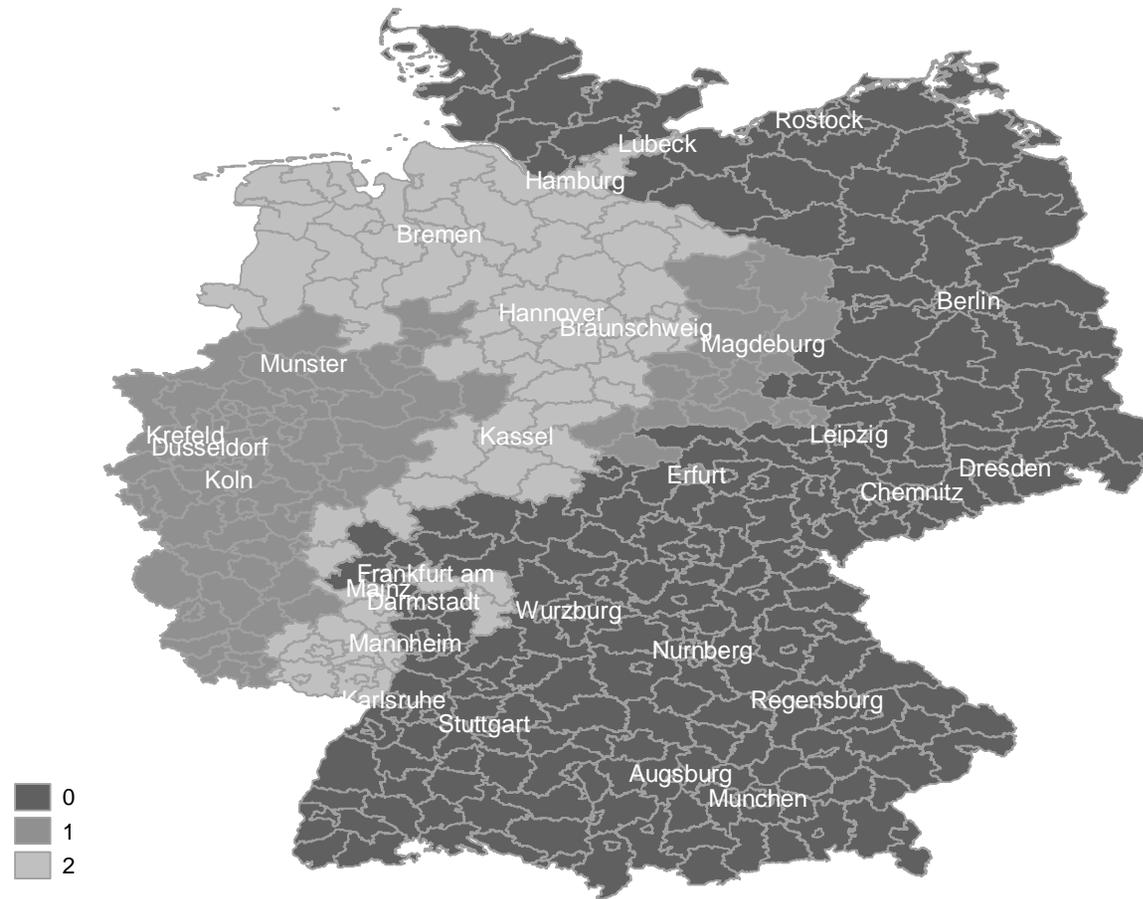


Figure 2

The Incidence of the French Revolution in Germany
(0=not invaded, 1=invaded, then Prussia, 2=invaded, not to Prussia)



NOTE: Names for a selection of cities above 20'000 inhabitants in 1850

Figure 3: Germany West of the Elbe

