Appendix for Online Publication
Temporary Protection and Technology Adoption: Evidence from the Napoleonic Blockade

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Contents

A.1 Additional details on the historical context

A.1.1 The French Revolutionary and Napoleonic Wars (1792-1815)

To what extent were the Napoleonic Wars simply a continuation of the French Revolutionary Wars that had taken place in the preceding decade? This is a key question from the point of view of the identification strategy employed in the paper, as the maintained assumption is that the blockade entailed a fundamental change in the direction of British exports to Europe. The empirical strategy would be invalidated to the extent that this change in the direction of trade was already in place during the period of the French Revolutionary Wars, which is the pre-treatment period for the episode studied in this paper. In this section, I provide evidence that while the French Revolutionary Wars did entail some disruption to trade, the fundamental direction of trade between Britain and France did not change. This implies that departments across France were not subject to a *spatially varying* trade cost shock. In addition, the disruption to trade was also far smaller that what was to come during the Napoleonic Blockade.

Figure A.4 shows *total* exports (including re-exports) between 1787-1819.[1] As can been seen from the figure, in stark contrast to the period of the Napoleonic Wars, there was no major change in the regional composition of British exports during the period of the French Revolutionary Wars. Exports to the north of Europe did not collapse during the period of the French Revolutionary Wars. Moreover, exports to the south of Europe did not increase either.[2]

Figure A.5 examines regional variation in trade patterns at a finer level of spatial disaggregation using port level data collected from the Lloyd's List. Similarly to the more aggregate patterns, there was no change in regional trade patterns during the French Revolutionary Wars. The only exception to this is France itself, where shipping fell markedly during both the French Revolutionary Wars and the Napoleonic Wars. This is only to be expected as the two countries were directly at war with each other.

The important difference between the two periods is that during the French Revolutionary Wars, because regional trade patterns were basically unaffected, the British could keep using nearby neutral ports, both in the south and in the north, to continue trading with destination markets in France. For example, Edwards (1967, p. 54), quotes Thomas Irving, the British

[1] I have not been able to find exports of British manufactures for this period which is why total exports are used.

[2] The year 1802 marks the one year of peace during this time period. Exports to both regions were higher in this year.

Inspector General of Imports and Exports, on the reasons for the increase in cotton textiles exports to Germany in the 1790s; "We are not to attribute this vast export to an increased demand in Germany, as it is a well ascertained fact that no inconsiderable part of these goods were clandestinely introduced into Holland, Flanders and France, and this circuitous trade still continues." This is key, as it implies that while the French Revolutionary Wars plausibly had an effect on protection from British trade across French regions, there was no clear spatial variation in how different French regions were affected. Moreover, given that trade was not disrupted to the same extent, these effects are arguably much smaller than what was to come during the Continental Blockade.

The reason for the difference in outcomes between the two periods lies in the unique nature of the Continental Blockade. Davis and Engerman (2006, p. 27) summarize the difference as follows; "From 1793 until the end of the first part of the war with France, Britain had implemented a rather traditional type of naval blockade, a close blockade of the major French port of Brest as means of observing and limiting the movement of the French fleet. During the second part of the war between the French and the British, from 1803 to 1815, both nations imposed blockades designed to limit trade and to control warships: and both met with some success."

Two unique aspects of the blockade were key to this difference. First, the authors cite the importance of Napoleon's direct or indirect influence over much of Continental Europe during the later period. In this way, it became possible to attempt to enforce the self-blockade along much of the Continental European coastline. Trade restrictions of this type were simply not in place during the French Revolutionary Wars outside of France. It is hard to imagine how imposing the self-blockade only along the borders of the French Empire could have achieved a similarly large disruption to trade. Second, both Britain and France introduced restrictions on the shipping of neutral nations as well, further disrupting overall trade flows (Irwin, 2005; O'Rourke, 2006). This explains why such a large proportion of trade was diverted to land-based routes. For these reasons, the potential to disrupt trade flows between Britain and Europe arose during the Continental Blockade in a way that it had not previously. Differently to the French Revolutionary Wars, "neutral ports" were not available. In addition, the differences in military power between Britain and France in Northern and Southern Europe meant that the actual success of these attempts met different fates, leading to the regional variation exploited in the paper. The reasons for the relative success of the blockade in Northern Europe and the failure in Southern Europe are discussed in detail in Section 2.

A.1.2 Placebo industries: Wool and leather

This section provides additional historical evidence on the two placebo industries used in the short-run analysis, woolen spinning and leather tanning. Woolen spinning is an industry closely related to cotton spinning. Similarly to cotton manufacturing, in woolen manufacturing, spinning is also the stage of production where twist is imparted to the fiber. Prior to mechanization in cotton, the two industries had been fairly similar in the sense that they were both rurally organized cottage industries. In Europe, woolen textiles was typically a much larger industry than cotton textiles, as the latter was a relative newcomer (Riello, 2013). For France, Chabert (1945) estimates that wool was still a much larger industry than cotton at the end of the Napoleonic period, despite the remarkable increase in mechanization in cotton.[3]

Given the the relative importance of the sector, it may seem somewhat surprising that mechanization of woolen spinning (along with other fibers) lagged developments in cotton spinning by decades. The reason for this is that cotton is a very versatile and flexible fiber (Riello, 2013), making it amenable to mechanization. While efforts to adapt new spinning machinery to other fibers such as wool were soon underway, they ran into problems for precisely this reason. A number of adjustments needed to be made to adapt the machines to spinning wool and it took time for innovators to work out what these were. Given its relative similarity to cotton, adaptation was first achieved for woolen spinning, and only later for flax and silk.[4]

To prepare it for mechanized spinning, short wool was carded in the same way as cotton, while the longer wool was combed (Mann, 1954). Rollers for woolen spinning were placed further apart than those used for cotton. Thanks to these adjustments, mechanized woolen spinning fully replaced hand-spinning in Britain in the 1820s and the process was complete in Europe by the 1840s (Jenkins, 2003). Chassagne (1978) highlights that because wool did not mechanize with the same speed as cotton, the industry in France remained rurally organized throughout the Napoleonic period. Given the cottage-industry structure of woolen spinning at the time, we don't expect the industry to benefit from internal or external increasing returns to scale in the same way that mechanized cotton spinning may.

Moreover, prior to the Napoleonic period, domestic producers of woolen textiles also faced

[3]In particualr, Chabert (1945) estimates that the woolen industry was still over 50% larger than the cotton industry in 1812.

[4]Solar (2003) estimates that flax spinning started to become widespread on the Continent from about the 1840s, while English (1954) estimates that mechanized silk spining was only perfected at the end of the 19th century.

far less import competition, as Figure A.12 makes clear. While cotton textiles accounted for between 5-20% of total French imports in the years 1797-1805, woolen textiles' share was never above 1%. Taken together with the rural organization of the industry, the wool industry provides a useful placebo test. If the trade costs shock to Britain is indeed the reason that mechanized cotton spinning increased, we would not expect this shock to have any effect on wool. This is indeed what the results in Table 3 show.

One concern with using woolen spinning as a placebo is that the trade cost shock may have an indirect effect on woolen spinning through its effect on mechanized cotton spinning. If wool and cotton yarn are substitutes, or they co-locate and use the same type of labor, the usefulness of wool as a placebo could be invalidated.[5] For this reason, I also examine another industry, leather tanning, which is less closely related to cotton spinning.

Leather was an industry in which technological progress during the 19th century was almost imperceptible. According to Nuvolari and Tartari (2011), leather was one of the least patent intensive industries in Britain between 1617-1841. The industry remained rurally organized well into the 19th century; data from Chanut et al. (2000) shows that in 1840 the median leather tanning firm had only 4 employees (in cotton spinning the number was 72, while in woolen spinning it was 40). Furthermore, in was also less intensively traded than cotton textiles prior to the Napoleonic blockade, as Figure A.12 shows. It never accounted for more than 0.8% of imports to France in the period 1797-1805. For the same reasons outlined above regarding wool, the trade cost shock with Britain should not have a statistical significant effect on leather tanning, which is what I find.

A.1.3 Importing raw cotton during the blockade

This section provides additional historical evidence on raw cotton trading routes in order to complement the quantitative evidence provided in Section 4.4. Heckscher (1922, p. 276) writes the following about the difficulties of importing Levantine cotton; " (...) it could not be conveyed across the Mediterranean and as a very expensive transport in wheeled vehicles had consequently to be arranged through Bosnia via Genoa and Marseilles." Official government documents confirm the riskiness of sea-based trading routes. One report gives details of a sea-based route into Marseille through Trieste that ran the risk of capture by the British.[6] The alternative was to send the cotton overland from Trieste via Vienna and Strasbourg. Similar land-based routes were used through the Iberian peninsula. Another

[5]In the data, wool handspinning and mechanized cotton spinning do not co-locate.
[6]Archives Nationales, F12/533.

report states that agents for the French government had bought 1500 bales of cotton in Barcelona.[7] These documents describe in detail efforts to bring raw cotton from Portugal (presumably of Brazilian origin) via transit in Spain to France. The main difficulty for the French merchants seemed to be related to acquiring certificates of origin to prove that the products were not British re-exports (as these would violate the terms of the blockade). This source estimates that in 1810 about 40% of Levantine cotton was transported using sea-based routes relative to land-based ones.[8]

A.2 Additional robustness checks

A.2.1 Robustness to specification

This section discusses robustness of the short-run baseline effect to different specifications. Only results not discussed in the paper are treated here. Table A.3 contains the results. Column (1) examines robustness to defining the dependent variable, mechanized spindles, in levels as opposed to normalizing by population. The coefficient is positive and highly significant. The standardized coefficient is similar in magnitude to the baseline effect. Columns (2)-(3) calculate effective distance to Britain from Hull and Liverpool, respectively, as opposed to London. The coefficients are similar in magnitude to the baseline effect and highly statistically significant. Column (4) estimates equation (1) using effective distance in levels as opposed to logs. The (standardized) coefficient of interest is similar in magnitude and highly significant.

Most of the specifications reported in the paper normalize the left hand side variable using population of the department in 1811. Ideally, one would want to use data on population from before the Napoleonic Wars, so as to not confound population responses with the effect of interest. Unfortunately, population data for all departments in the French Empire are not available (as many departments had only recently been annexed to the French Empire). Column (6) explores robustness of the results to using population data from 1801 for the subset of departments for which this information is available.[9] The coefficient of interest remains similar in magnitude and highly statistically significant.

Given that many departments have no mechanized spinning activity, it is important to understand how the large number of zeros influence our estimated effects. Column (7)

[7] Archives Nationales, AF/IV/1061.
[8] Archives Nationales, F12/533.
[9] These are almost all departments that formed *ancien regime* France.

estimates the effect of the trade cost shock using only the sample of departments that had positive spinning capacity in *both* periods. The coefficient is positive, large in magnitude and statistically significant.

Finally, Column (9) estimates the specification taking the natural logarithm of the dependent variable.[10] Column (10) contains the coefficent of interest estimated from a Poisson conditional fixed effects model. The estimated elasticity for these specifications is between 0.47 and 0.58 and is statistically significant.

A.2.2 Robustness of the trade cost shock measure

This section explores robustness of the short-run baseline result to how the trade cost shock is measured. First, Table A.6 includes controls for the time varying effect of transportation infrastructure to capture spatial variation in the quality of overland transportation; the density of the road network and access to navigable rivers. Road density is measured using the highly detailed map produced by Cesar-Francois Cassini de Thury in the 18th century and digitized by Perret et al. (2015).[11] I define road density as the total length of roads traversing a department divided by its area. Access to navigable rivers is calculated by digitizing a map of navigable rivers and canals dating back to our period of interest (Béaur et al., 1997). A department is defined as having access to a navigable river if it has at least one all year round navigable river or canal traversing the department. Both of these measures are interacted with a binary variable that takes the value of one in 1812. It should be noted that these controls are only available for France at its 1789 borders.

Column (1) re-estimates the baseline effect for the restricted subsample including only France at its 1789 borders. Columns (2) - (3) add the time varying controls for road density and navigable rivers, respectively. Both enter with a positive and statistically significant coefficient. The coefficient of interest remains statistically significant, though it is reduced somewhat in size when controlling for the density of the road network. Column (4) shows that the effect of interest is robust to adding both measures simultaneously.

Table A.7 takes a different approach to exploring robustness to how the trade cost shock is defined. In particular, instead of using a simple calibration of how costly transportation is on land-based routes relative to sea-based ones, as in the baseline measure, I make use of a rich measure of travel time introduced in Özak (2016); the Human Mobility Index with Seafaring (HIMSea); “The HIMSea measures the time required to cross any square

[10]The dependent variable is $ln(0.01 + spindlesperthousandinhabitants)$.

[11]Due to financial diffiuclties, publication of these maps was only completed in 1815.

kilometer on land and on some seas accounting for human biological constraints, as well as geographical and technological factors that determined travel times before the widespread use of steam power." (Özak, 2016, p. 18). I use the same restrictions on routes available during the blockade to calculate effective distance in 1812. As such, these robustness checks provide an external source of validation for the number used to calibrate traveling across sea cells relative to land-based ones. Column (1) restates the baseline effect, while columns (2)-(4) estimates effective distance based on HIMSea using London, Hull and Liverpool as source ports, respectively. The estimated effects remain positive and both economically and statistically significant.

Finally, Table A.8 examines robustness to changing the relative cost of crossing sea and land cells. The baseline measure sets one sea kilometer equivalent to 0.15 kilometers on land. Column (1) of Table A.8 restates the baseline measure, while Columns (2)-(5) sets the parameter to 0.05, 0.10, 0.2 and 0.25, respectively. The coefficient of interest remains similar in magnitude and is highly significant. Taking together the evidence presented in this section, the baseline effect is robust to the inclusion of richer controls for the quality of overland transportation and to alternative assumptions about the costliness of sea and land-based transportation.

A.2.3 Robustness to additional controls

This section examines robustness of the short-run baseline result to the addition of other time varying controls which are reported in Table A.9. Similarly to other controls, those reported in Table A.9 are measured at their pre-blockade level and interacted with a binary variable that takes the value of one in 1812 in order to estimate the time-varying effect.

First, it is plausible that mechanization of the cotton industry took place in regions where cotton textiles were historically more important. No similarly high quality data on the cotton textile industry is available prior to my period of interest. However, a reasonable approximation of the relative size of the industry across different departments can be constructed from Daudin (2010).[12] Indeed, departments that were historically important production centers increased their mechanized spinning activity to a larger extent during the Napoleonic Wars. The coefficient of interest however is virtually unchanged in magnitude and remains statistically significant (Column (2)).

It is interesting to examine whether the size of the downstream industry (cotton weaving) had a time varying effect on mechanization. The size of the weaving industry is defined

[12] This measure is described in more detail in Appendix A.3.1.12.

similarly to that of spinning in the sense that I use the stock of capital (number of weaving frames) per thousand inhabitants. The presence of a large downstream industry also has a positive effect on spinning capacity in mechanization (Column (3)). The coefficient of interest remains statistically significant, though it decreases somewhat in magnitude.

Column (4) includes a control for years since incorporation into the French Empire. This captures two potential effects. First, regions annexed to the French Empire gained access to the institutional reforms of the French Empire which may have affected their adoption of frontier technology, such as mechanized cotton spinning (Acemoglu et al., 2011). Second, regions annexed to the French Empire were typically part of smaller internal markets, meaning that annexation to the empire also provided regions with access to a larger internal market. The effect of interest is virtually unchanged, while the coefficient measuring the effect of years since incorporation into the French Empire is statistically indistinguishable from zero.

Column (5) controls for the effect that conscription may have had. The concern is that by driving up the price of labor through a negative labor supply shock, mechanization may have become more attractive. Allen (2009) has argued that cross-country differences in mechanization in the cotton industry were driven by differences in the price of capital to labor. Conscription has no statistically significant effect. This is consistent with the historical literature which has argued that efforts were made to keep conscription proportionate across departments (Forrest, 1989). The coefficient of interest is virtually unchanged.

Column (6) controls for the time-varying effect of (log)-distance to the nearest French Atlantic trading port. Acemoglu and Robinson (2005) show that countries that were Atlantic traders witnessed a divergence in their urbanization rates in the years between 1800-1850. To the extent that urbanization proxies for industrial development, proximity to Atlantic trading ports may confound our effect of interest. The coefficient of interest remains similar in size and highly significant, while the coefficient on distance to the nearest Atlantic port is not statistically significant.[13]

Finally, Column (7) includes all controls simultaneously. The coefficient of interest remains large in magnitude and is statistically significant.[14]

[13]Part of the reason for this may be that the period of the Napoleonic Wars was a period where the Atlantic seaboard of France was shut out of the Atlantic trade as was discussed in Section 4.4. This mechanism would be predicted to have the opposite effect to that identified in Acemoglu and Robinson (2005), at least for this relatively shorter time period under investgation.

[14]Given that there is not a large amount of variation in the institutional change control, it cannot be estimated simultaneously with the time fixed effect in this more demanding specification. As such, it is dropped.

A.2.4 Discussion of Francois Crouzet's "Southern decline" hypothesis

In this section, I discuss in more detail an alternative mechanism that could account for the short-term empirical results. In an influential paper, Crouzet (1964) argued that the period of the French Revolutionary and Napoleonic Wars had a long lasting negative effect on the Atlantic and Mediterranean seaboard as a result of France being shut out of overseas trade during this period. In particular, the author writes; "Because of the permanent injury inflicted on many Continental industries by interruption of overseas trade, the war brought about a lasting deindustrialization or pastoralization of large areas (...). Such was the case of nearly the whole French seaboard, especially the western and southwestern provinces, and also Languedoc, on the Mediterranean, which had an in the eighteenth century an important woolen industry working mostly for the Levant markets (...). These provinces have been ever since, and still are, much less industrialized than northern and eastern France, and to my mind their relative underdevelopment has one of its major causes in the collapse of their traditional industries during the Napoleonic wars." (Crouzet, 1964, p. 573).

If it is indeed the case that the disruption to overseas trade during the period 1792-1815 affected regions in the south and south-west of France differentially, this would be precisely the type of time-varying shock with a geographic component that would confound the mechanism argued for in this paper. In the main text, placebo tests examine the extent to which the trade cost shock had a differential effect on wool spinning and leather tanning. However, one remaining concern with these tests is the question of whether they indeed address Crouzet's "Southern decline" hypothesis directly. In particular, if these industries were not intensively traded in overseas markets, the placebos would only pick up a differential effect if the general equilibrium effects of directly affected industries were sufficiently strong. To assess the importance of these markets for cotton textiles and the placebo industries, Table A.22 reports exports to France's overseas markets (i.e., those markets that France lost access to from the onset of the French Revolutionary Wars); its colonies, the USA and the Ottoman Empire, for the years 1787-1789.[15] It should be noted that this only gives a partial understanding of the importance of these markets as we don't know how reliant domestic production was on export markets relative to internal demand. Of the three industries, cotton textiles were most reliant on overseas export markets relative to total exports with around 75% of all exports destined for these markets, and colonial markets in particular,

[15] All other exports were destined for European markets.

in the years leading up to the French Revolution. However, these destinations were also important for woolen textiles, with around 36% of all exports destined for these markets, with the Ottoman Empire being the more important destination in the case of woolens. Leather goods were less reliant on these destinations; only 10% of exports were accounted for by overseas markets.

In Figure A.15, the spatial distribution of the cotton textile, the woolen spinning and the leather tanning industry are shown for the period around the French Revolution. For both cotton textiles and woolen spinning, it is evident that the industry had a similar presence in both the north and south, suggesting that both regions had access to overseas export markets (though potentially for different destinations). In particular, given their geographic position, the northern regions were likely producing predominantly for the Atlantic destinations, while southern regions were producing for the Mediterranean and markets in the Levant as both Crouzet (1964) and Chassagne (1978) suggest. Indeed, Acemoglu and Robinson (2005) classify Rouen, in the north along the Channel, as a key Atlantic trading port alongside Bordeaux and Nantes, located on the Atlantic seaboard, implying that northern regions were close to a key Atlantic trading port. This would imply that *all* coastal regions of France were affected by the disruption to overseas trade, not only the Atlantic and Mediterranean seaboard. This is key, as it suggests that losing access to overseas trading destinations affected industries across all coastal regions, and not only the Atlantic and Mediterranean seaboard, as Crouzet (1964) claims.

In summary, it seems likely that the disruption to seaborne trade during the period of the French Revolutionary and Napoleonic Wars did directly affect industries such as cotton and woolen textiles which lost access to important destination markets. It is possible that the *overall* effect of disruptions to trade during this period was that the southern and south-western provinces ended up much less industrialized than the northern and eastern parts of France as Crouzet (1964) suggests. However, this is likely to have been a combination of two effects; a fairly symmetric negative shock to industries (including cotton and woolen textiles) involved in overseas trade, coupled with a geographically differential effect on mechanized cotton spinning. As the long-run results in Section 5.1 suggest, this latter effect may have resulted in regions more protected from British competition during the blockade having higher industrial GDP per-capita until the Second Industrial Revolution.

A.3 Data Appendix

This section contains two parts. In the first section, I define the variables used in the paper and their sources. In the second, I give an overview of the data that was constructed from primary sources for the purpose of this paper.

A.3.1 Variable definitions and sources

This section describes the sources of the data used in the empirical analysis and their definition. Across all variables defined in per capita terms, I normalize by departmental population in 1811. With few exceptions, it is possible to consistently match departments across time.[16]

A.3.1.1 Shipping between Britain and Continental Europe

Data source (primary): Lloyds List, 1787-1814, digitized by Google, made available by HathiTrust (2015).

Each observation is a journey which took place between a port in Britain and a port in Europe (excluding Ireland and Greenland). See the next section for a description of the construction of this dataset.

To quantify the shortest route prior to the onset of the Napoleonic Wars, I allow trade to pass through any port that was in use between 1787-1814. To calculate the shortest route between London and each department during the Napoleonic Wars, I restrict possible routes to the ones which were in operation during the Napoleonic Wars; Helgoland, Gothenburg, Gibraltar and Malta. To make it to France, these goods could either take the northern overland smuggling route via Strasbourg, or a southern smuggling route via Trieste, Bilbao or Barcelona. Trieste was a documented smuggling center, while free shipping in Spain implied that water-borne routes could be used to get goods close to the French border.[17]

[16] I merge Golo and Liamone from the early Napoleonic period into one department, Corse, as they are later merged and population data in 1811 is only availabe for Corse. Across all specification, the island is classified as one department. I add Tarn et Garonne, a department formed after 1806, to Tarn across all specifications. I merge the departments Meurthe and Moselle into one synthetic department following Combes et al. (2011), as parts of these departments were annexed to Germany in 1871. This synthetic department is used in all regressions that have an outcome variable measured after 1871.

[17] Direct shipping between London and a number of ports in northern Spain also increased fairly significantly suggesting that, at least for some years, routes cheaper than the London-Gibraltar-northern Spain-France route were in operation. This implies that assuming goods came to the south-western border of the French Empire via Malta or Gibraltar (from London) is a conservative estimate.

A.3.1.2 Data on the cotton industry during the Napoleonic period

Data source (primary): Champagny's survey: AN/F12/1562-1564, "Enquêtes industrielles" 1810-1818: AN/F12/1570-1590, AN/F12/1602

The following section contains a detailed description of this data source. Here I only list the variables used in the empirical analysis and their definition.

- **Spinning capacity**

  The baseline measure of spinning capacity is the number of spindles per thousand inhabitants in 1803 and 1812. I also construct an estimate for the number of spindles for 1794 using firm level data. In particular, I take the number of spindles in 1803 for firms founded before and including 1794 as an estimate for spinning capacity in 1794.

- **Capital-labor ratio**

  Table 3 contains results on the effect of the trade cost shock on the capital-labor ratio. This is defined as the number of spindles per unit of labor employed in department i at time t.

- **Type of machine used**

  Table 3 contains results on the effect of the trade cost shock on the proportion of different vintages of machine used. I measure this as as the proportion of spindles used in mule jennys relative to spindles in all other types of machines in department i at time t.[18]

- **Downstream weaving capacity**

  Initial weaving capacity is measured using the number of weaving frames by department (per thousand inhabitants) in 1803.

A.3.1.3 Woollen spinning

Data source (primary): 1792: AN/F12/1344-1348, 1810: AN/F12/1602

The size of the woolen spinning industry in each department is measured as labor employed in woolen spinning per thousand inhabitants. The absence of mechanization makes this

[18] Results are robust to classifying "jeanettes", a third type of machine, as mule jennys, or dropping them from the estimation (see the following section for a discussion on type of machines).

the relevant measure of woolen spinning activity. The following section contains a detailed description of this data source.

A.3.1.4 Tanneries

Data source: Dépors (1933)
Capacity in tanning is measured as the number of firms per thousand inhabitants.

A.3.1.5 Literacy rates

Data source: Furet and Ozouf (1982)
Literacy rates are calculated from departmental statistics which give the percentage of males who were able to sign their marriage certificate between 1786-1790. The variable takes on values between 0 and 1.

A.3.1.6 Conscription rates

Data source: Vallée and Hargenvilliers (1936)
Departmental conscription rates are defined as the number of men conscripted during the year 13 according to the French republican calendar (September 1, 1804 - August 30, 1805) relative to total departmental population in 1811. This is the last year for which detailed departmental statistics are available. Conscription was supposed to be perfectly proportionate to population across departments. In reality however, conscription rates differed somewhat. According to Forrest (1989), conscription rates had significant persistence over time. Departments where fulfilling previous quotas had been easier were pushed harder in the following years. By 1813, this was something that even the *"Directeur general de la Conscription"* admitted, when he informed the prefect in Foix that the ability of an area to produce soldiers and past records of recruitment were being used (Forrest, 1989, p. 41). For this reason, conscription in 1804-05 should be a reasonable proxy for differences in labor supply shocks owing to differential conscription during the Napoleonic Wars.

A.3.1.7 Access to coal

Data source: Fernihough and O'Rourke (2014)
For each city in their dataset, the authors calculate minimum distance (km) from any of Europe's major coalfields. Cities located within a coalfield are coded as having a distance of 1km. The authors then transform this into a proximity measure by taking the inverse of

this measure and multiplying by 10,000. I transform this into a departmental measure for proximity to coal, by using the data point for the prefecture of the department. In a few cases when data for this city is not available, I use the closest city.

A.3.1.8 Access to fast-flowing streams

Data source: EURO-FRIEND (2015)
Data on monthly mean flow rates for 2,412 collection points across the historical boundaries of the French Empire were averaged across time to obtain the mean monthly flow rate for each collection point. The average mean flow rate in each department is the average of all collection points located within the department. In the specifications presented in the paper, I report results which use the natural logarithm of the mean flow rate, but results are similar when levels are used. Median flow rates across collection points for each department also yield similar results.

A.3.1.9 Market potential

Data source: Nunn and Qian (2011)
Reduced form measure of market potential (Harris, 1954) widely used in the literature defined as the natural logarithm of $\sum_j \frac{Pop_c}{dist_{cj}}$, where Pop_c is the population of city c in 1800 and $dist_{cj}$ is the distance between department j and city c. City population in 1800 is from Nunn and Qian (2011). The authors construct data on European city population in 1800 from a variety of sources including Bairoch et al. (1988), Chandler (1987) and Modelski (2003). I calculate distances from the centroid of each department.

Other measures of market potential used in the paper constructed by digitizing a map of Europe during the Napoleonic period from Grab (2003). Cities belonging to Napoleon's sphere of influence are included in the external measure of market potential. A more conservative measure is also created that drops all Spanish cities. As a result of the Spanish insurgency against Napoleonic rule it is hard to imagine that French producers had easy access to Spanish markets.

A.3.1.10 Knowledge access

Data source: Valero and Van Reenen (2016)
Knowledge access measured as the natural logarithm of the sum of the inverse distance to all universities across the French Empire founded up to and including 1803, similarly to the

market potential measure defined above. Data on foundation of universities from (2016). I calculate distances from the centroid of each department.

A.3.1.11 Institutional change

Data source: Wikipedia (2015)
Institutional change is defined as the year of incorporation into the French Empire. Departments belonging to France proper are coded as being incorporated in 1789, the year of the French Revolution.

A.3.1.12 Historic location of the cotton industry

Data source: Daudin (2010)[19]
Historic location of the cotton industry is measured using the Tableaux du Maximum, compiled at the arrondissement (district) level during the French Revolution. The Tableaux give information on trade links between 552 districts in France for fifteen different goods categories. Daudin (2010) collected a representative sample of arrondissements across departments in *ancien regime* France. A binary variable indicates whether a given district reported consuming cotton goods from a given supplier district. Given this information, I construct a measure of how many other districts were supplied by districts in a given department. Normalizing by departmental population gives a comparable measure of the size of the cotton industry for each department. A nice feature of this measure is that it captures cotton manufacturing for trade rather than own-consumption. Note however, that it is not a measure of spinning alone, but rather all aspects of the production process (spinning, weaving, printing).

A.3.1.13 Navigable Rivers

Data source: Béaur et al. (1997)
Access to navigable rivers, which is a binary variable, is calculated by digitizing a map of navigable rivers and canals dating back to our period of interest (Béaur et al., 1997). A department is defined as having access to a navigable river if it has at least one all year round navigable river or canal traversing the department.

[19] The dataset is publicly available at: http://g.d.daudin.free.fr/Page_Web_de_Guillaume_Daudin/Databases.html.

A.3.1.14 Road density

Data source: Perret et al. (2015)
Road density is measured using the highly detailed map produced by Cesar-Francois Cassini de Thury in the 18th century and digitized by Perret et al. (2015).[20] Road density is defined as the total length of roads traversing a department divided by its area.

A.3.1.15 Atlantic trader

Data source: Acemoglu and Robinson (2005)
Distance to Atlantic trader is defined as the natural logarithm of the distance to the nearest Atlantic trading city as defined in Acemoglu and Robinson (2005). For the case of the French Empire, these are Bordeaux, Nantes and Rouen.

A.3.1.16 Travel times: Human Mobility Index with Seafaring

Data source: Özak (2016)
The Human Mobility Index with Seafaring (HIMSea) provides an alternative way of measuring effective distance to London prior to and during the blockade. "The HIMSea measures the time required to cross any square kilometer on land and on some seas accounting for human biological constraints, as well as geographical and technological factors that determined travel times before the widespread use of steam power." (Özak, 2016, p. 18). I use the same restrictions on routes available during the blockade to calculate effective distance in 1812.

A.3.1.17 Clustering on généralités

Assigning departments to the généralités that preceded them was done by assigning the centroids of departments to the généralités to which they belonged previously. The map of généralités was digitized form the David Rumsey Historical Map Collection.[21] Regions outside of France at its 1789 borders were assigned to clusters based on similar historical regions that preceded the departments.

A.3.1.18 Raw cotton prices

Data source (primary): Journal du Commerce
Daily raw cotton prices were sporadically reported for various cities during my period of

[20]Due to financial diffiuclties, publication of these maps was only completed in 1815.
[21]URL: http://www.davidrumsey.com/rumsey/Size4/D0113/4757025.jpg, last retrieved 2017-10-17.

interest in the Journal du Commerce, the French commercial newspaper of the time. Within each category of cotton by supplying region (Levant, US, Colonial, Brazilian), the exact variety of cotton was matched for a southern and northern city within a short interval of time (within a few days to within a month) in order to attain as close a comparison between the north and south of France as possible. Varieties are as follows; Levantine: Smyrne, “Levant”, Souboujac, Kirgache, Macedonie; Brazilian: Pernambuco; US: Georgia and Louisiana; Colonial: Saint Domingue, Cayenne, Martinique, Bourbon, Surat. Northern cities used: Anvers, Lille, Rouen, Paris, Havre or Gand. Southern cities used: Bordeaux, Marseille, Toulouse, Lyon and Bayonne. For Levantine cotton, it was possible to match Marseille to a northern city for each year. These data were supplemented with London prices for Brazilian cotton from Tooke (1848).

A.3.1.19 Departmental population

Data source (primary): Alamanch Impérial 1812
Departmental population is used to normalize measures of production capacity in cotton and woolen spinning and leather tanning. Population data is available for each department for 1811, including departments annexed to the empire during the French Revolutionary and Napoleonic Wars. In 1806, Corsica was formed of two departments, Golo and Liamone, which were later merged and called Corse. As population data is reported for Corse in 1811, I combined the two departments in 1806 and use this in the analysis.

A.3.1.20 Data on the cotton industry in the 1840s

Data source (primary): Chanut et al. (2000) and Statistique de la France: Industrie 1847
The first industrial census in France was conducted between 1839-1847. I use data on all firms classified as cotton spinning firms to impute the number of spindles at the department level for 1840. I use the following variables: value of production, share of women employed, share of children employed, an indicator variable for whether the firm uses water or steam power and the log of primary materials used as a measure of firm size. As data on the number of spindles per firm was not collected by the authors, I used the original documents to supplement this data.

A.3.1.21 Data on the cotton industry in the 1880s

Data source (primary): Annuaire Statistique de la France

In the late 19th century, the French government published a statistical summary for the country, the "Annuaire Statistique de la France". I use data for the number of spindles used in mechanized cotton spinning at the level of the department for 1887 from the edition published in 1890 (data was published with a three year lag).

A.3.1.22 Data on value-added in agriculture, industry and tertiary sector

Data source: Combes et al. (2011)

Data on value added in agriculture, industry and the tertiary sector at the level of the department for 1860, 1896, 1930 and 2000 was published by the authors from various sources. In the analysis, I take the natural logarithm of the respective per capita variables. In the baseline regressions, I take industrial value added per capita using departmental population in 1811 to avoid confounding the effect on value added from endogenous population responses, I show the results are similar when using contemporaneous population to calculate value-added per capita.

A.3.1.23 French exports and imports

Data source (primary): AN/F12/251

Value of exports and imports by category and source-destination country for 1787-1828 (1790-1797 and 1806 missing).[22] All values in francs. I supplement this with data on the value of British cotton exports and exchange rates from Mitchell (1988) and the price index for France from Mitchell (2007). The following section contains a detailed description of this data source.

A.3.1.24 Consumption of raw cotton per capita

Data source: Mitchell (2007, pp. 3-11, 546)

I use data on imports of raw cotton (in metric tons) and normalize by population as of 1840 to approximate the size of the cotton spinning industry (for which raw cotton is an imported input) across Continental European countries for 1830-1850.[23]

[22] Data kindly shared by Guillaume Daudin. Further details on the data can be found at: http://g.d.daudin.free.fr/Page_Web_de_Guillaume_Daudin/Databases.html.

[23] Where population data is not available for 1840, I use the closest year available. For Belgium, this is 1846; for France it is 1841, for the Netherlands it is 1839, for Russia, data is not reported until 1897 and for

A.3.2 Construction of data from primary sources

A.3.2.1 Cotton industry: 1803-1812

Data for the cotton industry are from large scale industrial surveys conducted in 1806 and on a quarterly basis between 1810-1815. The 1806 industrial census contains almost complete firm level data on all mechanized cotton spinning firms in regions which were part of the French Empire as of January 1, 1806.[24] The quarterly reports, by department, from 1810 onwards contain data only at the level of the department, which implies that the unit of observation in the empirical analysis is generally the department. Of the 109 departments which formed the French Empire in 1806, data for both 1803 and 1812 is available for 88 departments. In the following, I discuss construction of the dataset for each period.

Champagny's survey of the cotton industry: 1806

In January, 1806 (about 9 months before the onset of the Continental Blockade), the Minister of the Interior, Champagny, set about conducting an industrial census of the cotton industry. A questionnaire was sent to the prefects of all departments for completion. 8 of the 109 departments failed to complete the survey. Data on the precise location of the firm, the name of the owner, date of foundation, number of employees, (for both 1803 and 1806) number of different types of machines (for both 1803 and 1806), output and quality of yarn spun (count) were provided.

Of the 626 entries from the 102 departments which supplied data, I eliminated 43 entries which are not firms.[25] These entries are either charitable institutions or correctional facilities which produced some cotton yarn for their own use, or they are entries for rural spinners who used a small jenny instead of a wheel. I drop the former type of entries, as these are not organized as for profit institutions. Rural spinners who generally worked in their own homes for a piece rate, are an intermediate step between traditional, rural hand-spinning and modern, mechanized firms employing wage-laborers in a factory. This is not the type of firm

Spain it is 1857.

[24]Chassagne (1976) gives the historical background to the survey. Chassagne also collected and analyzed the data, but as spindle data was not available by department for 1803 and 1806, only a qualitative comparison is made between the location of mechanized spinning activity between 1806 and 1812. Detailed data collected by Chassagne was, to the best of my knowledge, never published, and for this reason, I transcribed all prefectural reports from original sources.

[25]Note that this is not equal to the number of firms in the dataset in 1806, because some entries contain data for firms alive in 1803 which went bankrupt by 1806.

the survey asked for. For this reason, reporting was inconsistent across regions which is why I drop these from the analysis. One important caveat that should be noted is that I do not observe systematic data on what type of power source a firm was using. For this reason, I cannot distinguish mechanized modern establishments with a centralized power-source from smaller workshops.

The only other change I make to the raw data is to create a third category for type of machine. The survey asked for the number of "mull-jennys" (MJ – French name for mule jenny), for spinning weft, and "filature continus" (FC), for spinning warp.[26] Firms and prefects would often report "jeanettes" (JEA) which were much smaller, early type jennys, under the category of MJ. I therefore created a third category of machine to account for these. The average number of spindles for a "JEA" type machine (37), is far smaller than the average number of spindles for an MJ type in the sample (112). As I imputed average spindle by machines type for firms, it is important to make this distinction.

Imputation model for spindles in 1803 and 1806

Despite the fact that only number of machines were asked for in Champagny's survey, some firms or departments reported only number of spindles, some reported both number of machines and number of spindles and some reported only number of machines. Because of the different availability of data on capital across firms, and, because subsequent surveys consistently reported spindles at the departmental level, it is necessary to impute spindles for the firms that are missing spindle data in 1803 and 1806. As the number of machines is known for these firms, once the average number of spindles by machine for each firm is imputed, it is possible to calculate the total number of spindles, both at the firm and at the departmental level.

I imputed the average number of spindles by machine type for each firm, and then aggregated these results to the departmental level. I check robustness of the estimation results to the imputation model by using multiple imputation (MI) to impute the data for firms. Differently to single imputation methods, multiple imputation does not treat imputed observations as known in the analysis. Instead, MI creates multiple imputations for each missing observation, and accounts for sampling variability due to the missing data. This procedure has been shown to be statistically valid from both a Bayesian and a frequentist point of view (Rubin, 2004). I show that both the point estimate and the standard errors change very little when sampling variability is accounted for.

[26] The two types of yarn differ in fineness.

As the most detailed information is available for firms in 1806, I impute the average number of spindles for a given machine for a given firm for this year. I then use average spindles from 1806, together with number of machines reported in 1803, to impute spindles in 1803 for the firms where this is missing. Of the 567 firms alive in 1806, 41 reported only spindles. As the number of their machines is missing, they need to be excluded from the imputation model and their data will simply be included when calculating total spindles by department. One firm reported neither number of machines, nor number of spindles, but only the average number of spindles per machine, so their machine data will be imputed.

The remaining 525 firms all report machine data and some of them also report number of spindles. These are thus the firms that are included in the imputation model. Table A.23 contains the pattern of missing data for firms in 1806 for the three different types of machines used by spinning firms, "jeanettes" (JEA), "filatures continus" (FC), and "mull-jennys" (MJ). Firms usually used only one or two types of machines, which is why the total number of firms who report using a given type of machine is well below 525. As can be seen from the table, average number of spindles per firm (by machine type) is missing for around 50% of the firms.

Imputation proceeds as follows.[27] By machine type, I calculate average spindles per firm for the firms which report both spindles and number of machines. I then use this information, together with data on all other firm characteristics, to impute average spindles per firm for the given machine type. A further complication arises from the fact that other firm level variables are also incomplete. Table A.24 contains the information on missing data patterns for all other firm level variables. As can be seen, the ratio of missing to complete observations is much smaller for the these variables. However, the fact that all variables contain missing observations in a non-monotone manner implies that imputation is based on a chain iterative model. Each variable is estimated using a univariate imputation model with all variables used as independent variables. Iteration is required to account for the possible dependence of estimated model parameters on imputed values. I use date of foundation, output, maximum quality of yarn spun, minimum quality of yarn spun, number of workers, and number of each type of machine used, to impute the average number of spindles an MJ, FC and JEA type of machine has in a given firm.

Almost all firm level variables are count variables. For this reason, a Poisson model is used for all variables except the three average spindle measures. For these, I use predictive mean matching to account for the fact that average spindles for a machine is bounded by

[27] I use Stata's multiple imputation tool to estimate the model.

technological constraints. In particular, each machine type had a a number of vintages available on the market. For example, MJs usually had 48, 96, 128, 196, 218 and sometime 248 spindles. As the histogram for the average number of MJs per firm shows in Figure A.16, there is a spike at these points.[28] The variable is continuous, because some firms use a combination of different varieties, so averaging at the firm level will smooth out the distribution.

Spindles for firm i in 1806 are then simply calculated as the sum of the number of machines multiplied by average spindles by each type of machine. Calculating spindles for firms in 1803 is also straightforward. There are 375 firms in the database, 16 of which go bankrupt between 1803 and 1806. For almost all the remaining firms, the average spindle data per machine type can be used to calculate number of spindles in 1803, based on how many machines the firm reported for that year. This clearly does not work for firms that went bankrupt by 1806, but also firms which switched into new types of machines between the two points in time. For these firms, I simply use average number of spindles across all firms for the given machine type. This should not effect the results too much, as there are only 20 such changes across all firms and machine types. Finally, three departments (Seine Maritime, Indre et Loire and Orne) do not report 1803 data. For these departments (which do supply data for 1806), I take the 1806 numbers for the firms alive in 1803 as the best available measure of spinning activity.

Table A.25 compares the coefficients and standard errors for the baseline regressions using $m = 5$ and $m = 50$ imputations. As is evident, neither the point estimates, nor the standard errors are sensitive to increasing the number of imputations.

Industrial Surveys

Data on spinning capacity is only observed at the departmental level from 1810 onwards. Prefects were asked to initially send reports on industrial activity for various industries including cotton at 6 month intervals between 1810/1 and 1811/2. From the beginning of 1812, the reports were to be sent to Paris on a quarterly basis. I observe number of spindles, number of workers and output at the departmental level. The reports were intended to inform the government in Paris about fluctuations in industrial activity. For this reason, prefects sometimes reported capacity and sometimes they reported utilization. Therefore, for some departments there are seemingly large fluctuations in the numbers reported from one period to the next. To gain the best possible measure of capacity, I construct the measure

[28] The figure contains data only for the firms where this information is observed.

of spinning capacity in the following way. In general, I take data from the year 1812 as this is the year closest to the end of the blockade where data coverage was still sufficiently large.[29] However, if the number of spindles was larger in earlier reports (1810-11), I use these years. In accompanying qualitative reports sent to Paris, prefects usually indicate whether firms have gone bankrupt or whether they are idle for cyclical reasons. I don't use earlier numbers in instances where it is clear that activity in 1812 is lower because firms have gone bankrupt.

A.3.2.2 Cotton industry: 1840

Chanut et al. (2000) collected and compiled data from a large-scale industrial survey conducted between 1839-47. While the authors published most of the variables, data on the number of mechanized spindles at the level of individual firms was not published.[30] I have supplemented data on mechanized spindles from the original sources. These have been scanned by Bibliothèque Nationale de France (BNF).

583 firms declared cotton spinning as the sector in which they were active. Of these firms, data on the number of spindles was missing for 315 firms. I used multiple imputation techniques, identical to those described in the previous section, to impute spindle data for firms which did not report this. In particular, I used a predictive mean matching model which uses the value of production, the total number of employees, and the number of women, children and men employed to impute missing spindle observations. Robustness to multiple imputation is shown in Table A.26 below. Both the point estimates and the standard errors are similar to the results shown in the baseline regression in Table 4.[31]

A.3.2.3 Woolen spinning

To construct data on capacity in woollen spinning, I use data collected at the 'arrondissement' (district - below the department) level for the industry in the early 1790s, supplemented with data collected at the departmental level in 1810. The longer time horizon should be taken into consideration, when thinking about the results from this falsification test.

[29] As Napoleon's power unravelled, and foreign troops invaded the territory of France, fewer and fewer departments submitted their reports.

[30] I thank Peter Solar for bringing to my attention data on spinning capacity, and sharing his digital scans.

[31] I do not report the first stages as these are not imputation dependent.

A.3.2.4 Shipping routes between Britain and and Continental Europe

Shipping data was extracted using all editions of the Lloyd's List between 1787-1814. The Lloyd's List, one of the world's oldest newspapers, was set up by Lloyd's Coffee House in London as a meeting point for underwriters of marine insurance. The underwriters were reliant on up to date news on shipping conditions, and for a small subscription fee, Lloyd's provided what was generally acknowledged to be the most up to date shipping bulletin of the time.

Lloyd's hired paid correspondents in each port to send information on ships arriving to or departing from a given port to the Post Master General with the word "Lloyds" written in the corner. Each edition featured news on ships sailing from and arriving to various ports. The coverage on arrival and departure of ships to all ports in Britain is believed to be a fairly reliable and representative source of information at the time (Wright and Fayle, 1928).

Early editions of the Lloyd's List have been digitized by Google. To extract data from this source, I OCR-ed the images, and then used a text-matching algorithm which searched for the names of European ports in the Lloyd's List. As port names have changed over time, and even within the time frame that I examine, numerous port names or spelling were in use for the same port, the names of ports were collected by manually searching through editions of Lloyd's Lists.

There are multiple sources of measurement error inherent in this procedure. First, the OCR and text-matching algorithm introduce measurement error both in the form of matching mistakes and omitted names (the ones that could not be matched, or the European ports which I did not identify as such). By comparing samples to the original, I found that incorrectly matched names were minimal, and that the procedure picked up about 70-80% of the ports depending on the quality of the image. Finally, I also had one year (1808) manually entered in order to check that the sample with which I work is representative. There are around 3,000 observations for each year.

One potential problem with this data source is that some authors claim that during the blockade, parts of the Lloyd's List were incorrectly reporting ports of arrival to protect smugglers and full information was only provided to insurers at the "Books and Notice Boards in the Subscribers' Rooms" (Wright and Fayle, 1928). This type of systematic misreporting would have affected direct routes between Britain and France where ships were at risk of violating the laws of the Continental Blockade, but not routes via smuggling centers which either belonged to the British, or were allied to the British. This would undoubtedly lead to measurement error in quantifying trade routes. However, there is reason to believe that the extent of censoring was not quantitatively important.

This is because the findings from the Lloyd's List are consistent with both historical evidence discussed in Section 2 and British trade statistics. The British accurately recorded the destination of exports (Crouzet, 2006). The finding that indirect routes were used to a large extent points to either direct smuggling not being quantitatively important, or to the fact that direct smuggling was so risky (and thus costly) that indirect, and less risky routes were at least as profitable.

Why would indirect routes be less risky? It seems that the blockade was generally better enforced along the coastline of the French Empire than in countries where this was externally imposed, rendering the risk of capture larger for direct routes. Heckscher (1922, p. 188) writes that "outside the limits of France proper it represented a foreign dominion and lacked moral support in all classes of the community." Wright and Fayle (1928, p. 176) write that every French port along the Channel was a "nest of privateers". Indeed, the motivation for annexing countries to the French Empire following 1806 was driven primarily by Napoleon's frustration with lax enforcement of the blockade. For example Grab (2003, pp. 72) writes "Napoleon's main goal in annexing the Netherlands was to assure implementation of the blockade and put an end to smuggling." The author makes the same claim for the Hanseatic cities (p. 94); "In December 1810, Napoleon annexed the Hanseatic cities in order to tighten the Continental Blockade." Similar motivations guided Napoleon in Southern Europe; "When the Pope persisted in his refusal to cooperate with Napoleon in the Continental Blockade, the Emperor ordered General Miollis to occupy Rome (February 1808).", and "Most importantly, the Emperor formed the Illyrian Provinces in order to tighten the Continental Blockade and close the Adriatic ports to British commerce." (pp. 171 and 189).

Of course, this argument also relies on the fact that smuggling along France's overland borders was easier than along its coastline. Ellis writes " (...) smuggling was more active along the inland than the maritime frontiers of the Empire. One reason for this was the nature of the terrain (...). Another was the proximity of foreign entrepots like Frankfrurt, Darmstadt, Mannheim, Heidelberg, Rastatt, Kehl and above all Basel. Within the Empire itself there were many smuggling bases up along the Swiss frontier and down the left-bank of the Rhine." (Ellis, 1981, p. 203).

Table A.20 reports British export data at a higher level of regional disaggregation than what is reported in Figure A.3. These data confirm that exports to France were either zero or very small during the blockade years. In addition, it also shows a consistent picture with the more disaggregated port-level shipping data from the Lloyd's List; Sweden, Germany (including Helgoland), Gibraltar and Malta all show disproportionately high volumes of trade during the blockade years.

A.3.2.5 Export data

I digitized bilateral, product level export-import data for cotton textiles, raw cotton imports by source country, leather and woolen textile imports and exports for the period 1788-1828 from AN/F12/251.[32]

The following should be noted with respect to this source; the data only differentiate between re-exports and exports from the 1820s. Once they are separately entered, I only include exports. Most cotton exports prior to 1803 are likely to have been re-exports. This will underestimate the increase in exports following the Napoleonic Blockade. I exclude all exports to French colonies as French products are likely to benefit from an artificial advantage in these destinations (an exception to this is Table A.22 where exports to the colonies are of interest). In early years, the data do not always distinguish between the type of fiber a particular textile is made from. In these ambiguous cases, I have assigned products to cotton and wool textiles if there are positive exports of these fibers in the same product category once the products are reported by fiber type. This will tend to overestimate exports cotton and woolen textiles in early years.

[32]These data were kindly shared by Guillaume Daudin.

A.4 Additional tables

Table A.1: Pre-treatment comparison of departmental level variables

	Low trade cost shock	High trade cost shock	Difference	N
Spindles	10.96	9.70	-1.26	88
	(5.62)	(2.81)	(6.28)	
			{8.47}	
Coal	5.15	5.48	0.33	88
	(0.11)	(0.23)	(0.26)	
			{0.31}	
Streams	1.56	1.88	0.33	88
	(0.39)	(0.19)	(0.44)	
			{0.44}	
Market potential	9.82	10.06	0.23	88
	(0.02)	(0.05)	(0.05)	
			{0.06}	
Literacy	0.42	0.47	0.05	63
	(0.04)	(0.05)	(0.06)	
			{0.08}	
Knowledge access	-1.41	-1.41	-0.00	88
	(0.03)	(0.05)	(0.06)	
			{0.07}	

All variables measured at the level of the department prior to the Napoleonic Wars. All per capita measures normalized by departmental population measured in 1811. Departments are grouped into low and high trade cost shock groups depending on whether their trade cost shock is above or below median. Variables; Spindles: spindles per thousand inhabitants in 1803; Coal: inverse of log distance to the closest coalfield; Streams: natural logarithm of mean streamflow (m3/s); Market potential: market access to urban population in 1800; Literacy: proportion of men able to sign their wedding certificate in 1786; Knowledge access: market access to universities in 1802. The number of observations differ across rows because of missing observations for literacy. Robust standard errors in parentheses, standard errors clustered at the level of généralités in curly brackets.

Table A.2: Summary statistics

Variable	Obs.	Mean	Std. Dev.	Obs.	Mean	Std. Dev.
A. Dependent Variable - Short run analysis						
Mechanized cotton spinning						
	Levels			Natural logarithm		
Capital-labor ratio	78	43.53	52.79	78	3.30	0.93
Proportion mule-jennys	74	0.71	0.34			
	Levels			Per thousand inhabitants		
Spindles	176	10,170.77	28,995.26	176	22.83	53.79
Woollen spinning						
Labor	138	3,756.90	6,513.76	138	12.51	23.89
Leather tanning						
Number of firms	116	61.28	35.98	116	0.19	0.10
B. Dependent Variable - Long run analysis						
Mechanized cotton spinning						
	Levels			Per thousand inhabitants		
Spindles (1840)	75	42,842.33	142,908.4	75	88.07	272.30
Spindles (1887)	72	59,983.79	252,117.1	72	101.23	346.94
	Levels			Natural logarithm		
Value added per capita						
Industry (1860)	73	171.68	120.90	73	4.93	0.66
Industry (1896)	71	242.38	854.22	71	4.85	0.74
Industry (1930)	73	3,703.58	3,437.82	73	7.93	0.72
Industry (2000)	73	9,274.04	7,622.84	73	8.88	0.71
C. Trade cost shock						
	Levels			Natural logarithm		
Effective distance (1803)	88	379.73	201.87	88	5.76	0.64
Effective distance (1812)	88	1,054.68	160.94	88	6.95	0.16
Trade cost shock	88	674.95	299.35	88	1.18	0.72
D. Baseline control variables						
	Levels			Natural logarithm		
Market potential (1800)	88	21,604.99	7,367.27	88	9.94	0.28
Knowledge access (1802)	88	0.25	0.09	88	-1.41	0.27
Literacy (1786)	63	0.45	0.24	63	-0.98	0.66
Coal	88	758.94	2187.65	88	5.31	1.21
Streams	88	21.97	53.97	88	1.72	2.05

All variables measured at the level of the department. Capital-labor ratio measured as spindles relative to labor employed in mechanized cotton spinning; Proportion mule-jennys measured as spindles used in mule-jenny type machines relative to spindles used in all types of mechanized cotton spinning machines; Spindles measured as spindles employed in mechanized cotton spinning; Labor measured as labor employed in woolen spinning; Number of firms measured as firms active in leather tanning; Spindles 1840 measured as spindles used in mechanized cotton spinning from the 1839-47 firm survey; Spindles 1887 measured as spinning capacity in mechanized cotton spinning in 1887; Value-added per capita in industry in the years 1860, 1896, 1930 and 2000 measured as nominal industrial value-added relative to population in 1811; Effective distance in 1803 and 1812 measured as the shortest land-based kilometer distance to London; Trade cost shock defined as the difference between (log) Effective distance in 1812 and 1803; Market potential defined as access to urban population in 1800; Knowledge access defined as market access to universities in 1802; Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal measured as the inverse of distance to the nearest coalfield; Streams defined as mean streamflow (m3/s).

Table A.3: Robustness of short-run results to specification

	Dependent variable: Spindles									
DepVar measured in	(1) Levels	(2) Per '000	(3) Per '000	(4) Per '000	(5) Per '000	(6) Per '000	(7) Per '000	(8) Per '000	(9) Per '000	(10) Per '000
Effective distance	20,680.96				26.97	43.76	37.40	11.11	0.58	0.47
	0.54				*0.38*	*0.50*	*0.47*	*0.39*		
	(6,894.33)				(13.58)	(13.52)	(13.48)	(2.97)	(0.28)	(0.21)
	{7,002.57}				{13.65}	{14.41}		{3.10}	{0.29}	
Effective distance (Hu)		35.40								
		0.45								
		(10.65)								
		{10.80}								
Effective distance (Li)			39.18							
			0.44							
			(12.83)							
			{13.32}							
Effective distance (levels)				0.07						
				0.49						
				(0.02)						
				{0.02}						
Latitude X 1812					13.50					
					(14.05)					
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Specification	Levels-Log	'000-Log	'000-Log	'000-Log	'000-Log	'000 (1801 pop	Spind. >0	Wins.	Log-log	Poisson
Observations	176	176	176	176	176	140	82	176	176	120
Adjusted R-squared	0.31	0.32	0.29	0.29	0.34	0.36	0.44	0.36	0.15	
Num. clusters (dept)	88	88	88	88	88	70	41	88	88	60
Num. clusters (gen)	40	40	40	40	40	34	24	40	40	

Dependent variable: Column (1) dependent variable is defined in levels, Columns (2)-(8) and (10) dependent variable normalized by departmental population. Column (9) dependent variable is $ln(0.1 + spindlesperthousandinhabitants)$. Departmental population held fixed at its 1811 level across all specifications, except Column (6), which uses population in 1801 (available only for France at its 1789 borders). Column (10) estimates the Poisson conditional fixed effects model. Column (1) estimates the effect on spindles in levels (without normalizing by population). Columns (2) - (3) explore the robustness of effective distance to source port in Britain using Hull and Liverpool, respectively. Column (4) estimates the effect of effective distance to London in levels. Column (5) adds the time varying effect of being above or below median latitude. Latitude takes the value of 1 in the post-treatment period if the department has higher than median latitude. Column (6) explores robustness to using pre-treatment population. Column (7) explores robustness to restricting the sample to only those departments that had non-zero spindles in both periods. Column (8) examines robustness to outliers by winsorizing the dependent variable by replacing the largest 10% of the observations with the dependent variable at the 90th percentile. Columns (9) - (10) estimate the log-linear and Poisson specification. Standardized coefficient in italics. Standard errors clustered at the level of the department in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.4: Binary DD using the median trade cost shock as a cutoff

Depvar Spindles	Pre-war	Post-war	Difference
Large shock	9.70	51.73	42.03
	(2.81)	(12.15)	(12.47)
Small shock	10.96	18.93	7.97
	(5.62)	(7.31)	(9.22)
Difference	-1.26	32.80	34.06
	(6.28)	(14.18)	(10.93)
			{11.04}

Binary difference in difference (DD) specification. Dependent variable: spindles per thousand inhabitants in department i at time t. Departmental population held fixed at its 1811 level. Large and small trade cost shock defined using the median trade cost shock as the cutoff between the two. Robust standard errors clustered at the departmental level for the DD coefficient in parentheses. Standard errors clustered at the level of généralités in curly brackets. All other standard errors are Huber-White robust standard errors.

Table A.5: Extensive and intensive margin of firm adjustment: 1803-06

	Spindles per thousand inhabitants		
	(1)	(2)	(3)
	Total	Ext.	Int.
Effective distance	8.54	7.45	1.09
	0.20	*0.64*	*0.03*
	(2.53)	(2.13)	(0.91)
	{1.81}	{1.84}	{1.10}
Time FE	Yes	Yes	Yes
Department FE	Yes	Yes	Yes
Observations	176	176	176
Adjusted R-squared	0.31	0.30	0.07
Num. clusters (dept)	88	88	88
Num. clusters (gen)	40	40	40

Dependent variable: Spindles per thousand inhabitants in department i at time t (measured in 1803 and 1806). The specifications are estimated at the level of the department. Column (1) estimates the total effect. Extensive margin (Column (2)) includes only spinning capacity for firms who entered the market between 1803-1806. Intensive margin (Column (3)) includes only spinning capacity for firms who were already active in 1803. Effective distance is calculated as the natural logarithm of the shortest route to London for each department i at time t (1803 or 1806). Standardized coefficient in italics. Standard errors clustered at the level of the department in parentheses, standard errors clustered by généralités in curly brackets.

Table A.6: Robustness to controlling for transportation infrastructure

	Dependent variable: Spindles per thousand inhabitants			
	(1)	(2)	(3)	(4)
Effective distance	41.33	30.31	37.74	29.68
	0.51	*0.38*	*0.47*	*0.37*
	(12.66)	(13.65)	(11.17)	(12.60)
	{13.50}	{14.79}	{11.92}	{13.54}
Road density X 1812		141.16		114.21
		(49.02)		(51.83)
Nav. river X 1812			31.64	27.02
			(16.60)	(16.89)
Time FE	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes
Observations	138	136	138	136
Adjusted R-squared	0.36	0.40	0.41	0.44
Num. clusters (dept)	69	68	69	68
Num. clusters (gen)	33	32	33	32

Dependent variable: Spindles per thousand inhabitants in department i at time t. Departmental population held constant at its 1811 level. Effective distance is measured as the natural logarithm of the shortest route to London for each department i at time t. Controls: Road density measures the density of the road network in each department (length of total roads traversing the department (in kilometers) as a proportion of the departments area (in kilometers squared)). Navigable river is a binary variable defined as the presence of a river that is navigable all year round in the department. All controls are interacted with a binary variable that takes the value of one in 1812 and is zero otherwise. Standardized coefficients in italics. The number of observations is smaller than those for the baseline specification as the controls are only available for France at its 1789 borders. No road density data available for Corsica. For further details on the data, see Appendix A.3. Standard errors clustered at the level of the department in parentheses, standard errors clustered by généralités in curly brackets.

Table A.7: Robustness to alternative measure of transportation infrastructure

	DepVar: Spindles per thousand inhabitants			
	(1)	(2)	(3)	(4)
Effective distance	33.47			
	0.47			
	(9.80)			
	{10.00}			
Travel time (Lo)		29.45		
		0.40		
		(11.80)		
		{13.12}		
Travel time (Hu)			42.00	
			0.47	
			(14.70)	
			{16.13}	
Travel time (Li)				32.62
				0.33
				(14.74)
				{16.62}
Time FE	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes
Observations	176	176	176	176
Adjusted R-squared	0.34	0.26	0.28	0.23
Num. clusters (dept)	88	88	88	88
Num. clusters (gen)	40	40	40	40

Dependent variable: Spindles per thousand inhabitants in department i at time t. Departmental population held constant at its 1811 level. Effective distance is measured as the natural logarithm of the shortest route to London for each department i at time t in Column (1), in Columns (2)-(4) it is the shortest travel time from London, Hull and Liverpool, respectively using data from Özak (2016). The same route restrictions are in place for the year 1812 as in the baseline measure. Standardized coefficients in italics. For further details on the data, see Appendix A.3. Standard errors clustered at the level of the department in parentheses, standard errors clustered by généralités in curly brackets.

Table A.8: Robustness to different land to sea cost ratios

	DepVar: Spindles per thousand inhabitants				
	(1)	(2)	(3)	(4)	(5)
Effective distance	33.47				
	0.47				
	(9.80)				
	{10.00}				
Effective distance (5)		30.93			
		0.46			
		(9.43)			
		{9.68}			
Effective distance (10)			32.31		
			0.46		
			(9.56)		
			{9.75}		
Effective distance (20)				35.13	
				0.49	
				(10.30)	
				{10.49}	
Effective distance (25)					37.76
					0.51
					(11.04)
					{11.25}
Time FE	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes
Observations	176	176	176	176	176
Adjusted R-squared	0.34	0.34	0.34	0.34	0.34
Num. clusters (dept)	88	88	88	88	88
Num. clusters (gen)	40	40	40	40	40

Dependent variable: Spindles per thousand inhabitants in department i at time t. Departmental population held constant at its 1811 level. Effective distance is measured as the natural logarithm of the shortest route to London for each department i at time t in Column (1). Columns (2)-(5) examine robustness to the calibration of land to sea travel costs used in the baseline measure. The baselines measures uses 1 sea kilometer = 0.15 kilometers on land. The table sets this parameter to 0.05, 0.1, 0.2 and 0.25 in Columns (2)-(5), respectively. Standardized coefficients in italics. For further details on the data, see Appendix A.3. Standard errors clustered at the level of the department in parentheses, standard errors clustered by généralités in curly brackets.

Table A.9: Robustness to additional controls

	Dependent variable: Spindles per thousand inhabitants						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Effective distance	33.47	34.95	23.63	33.15	33.80	33.77	27.19
	0.47	*0.44*	*0.33*	*0.47*	*0.47*	*0.47*	*0.34*
	(9.80)	(10.35)	(6.74)	(9.73)	(9.64)	(9.45)	(8.61)
	{10.00}	{11.27}	{6.12}	{9.79}	{9.51}	{9.64}	{9.33}
Historical cotton X 1812		514.45					353.46
		(158.80)					(183.42)
Dstream weaving X 1812			3.10				2.16
			(0.35)				(0.50)
Institutional change X 1812				0.86			
				(0.76)			
Conscription X 1812					3.64		-0.95
					(11.83)		(10.88)
Dist. Atlantic trader X 1812						0.48	12.52
						(7.91)	(9.11)
Streams X 1812							-2.38
							(3.21)
Coal X 1812							-0.00
							(4.34)
Market potential X 1812							60.51
							(38.44)
Knowledge access X 1812							7.04
							(23.31)
Literacy X 1812							23.79
							(16.68)
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Department FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	176	140	176	176	172	176	126
Adjusted R-squared	0.34	0.53	0.54	0.34	0.33	0.33	0.73
Num. clusters (dept)	88	70	88	88	86	88	63
Num. clusters (gen)	40	33	40	40	39	40	30

Dependent variable: Spindles per thousand inhabitants in department i at time t. Departmental population held fixed at its 1811 level across all variables in per capita terms. Effective distance is calculated as the natural logarithm of shortest route to London for each department i at time t. Controls: Historical cotton measured as the number of French districts a department exports cotton goods to in 1789 per thousand inhabitants; Downstream weaving measured as the number of weaving frames per thousand inhabitants in the department in 1803; Institutional change measured as year of incorporation into the French Empire; Conscription measured as the number of soldiers conscripted in 1804-05 as a proportion of total population; Coal measured as the inverse of log distance to the nearest coalfield; Streams defined as the natural logarithm of mean streamflow (m3/s); Knowledge access defined as access to universities in 1802; Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Market potential defined as access to urban population in 1800. Standardized coefficient in italics. The number of observations differ across columns because of missing observations for the literacy, conscription and historical cotton measure. Standard errors clustered at the level of the department in parentheses, standard errors clustered by généralités in curly brackets.

Table A.10: Persistence in the location of cotton spinning activity, 1840-1887 - First stage and reduced form

	Dependent variable: Spindles per thousand inhabitants															
	First stage								Reduced form							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1812	1812	1812	1812	1812	1812	1812	1812	1840	1840	1840	1840	1887	1887	1887	1887
Trade cost shock	40.49	40.75	32.87	39.97	42.85	43.73	32.48	39.65	100.63	86.36	112.22	107.27	221.73	206.45	202.58	192.16
	(14.88)	(11.40)	(18.24)	(12.42)	(14.89)	(11.21)	(18.25)	(12.45)	(65.85)	(67.08)	(64.90)	(67.20)	(95.97)	(100.11)	(101.83)	(108.95)
	{15.94}	{12.28}	{19.45}	{12.70}	{15.98}	{12.11}	{19.49}		{65.72}	{67.87}	{65.09}	{68.90}	{99.26}	{103.83}	{103.53}	
Spindles 1803		1.43		1.39		1.45		1.37		1.43		1.87		2.22		2.09
		(0.24)		(0.27)		(0.23)		(0.27)		(1.56)		(1.67)		(1.95)		(2.47)
Literacy			27.53	28.76			40.50	37.48			149.75	138.17			208.08	177.35
			(20.75)	(19.49)			(22.95)	(20.84)			(59.77)	(61.49)			(100.12)	(96.74)
Market potential			57.58	20.51			51.02	16.34			64.93	39.30			78.71	62.80
			(42.10)	(31.79)			(38.86)	(30.44)			(95.90)	(114.51)			(207.31)	(238.42)
Knowledge access			36.38	33.29			42.88	37.73			-39.63	-51.24			47.81	23.86
			(26.79)	(22.25)			(25.46)	(22.88)			(66.59)	(66.49)			(129.81)	(130.20)
Coal			12.67	1.07			14.53	2.39			-12.63	-24.54			34.52	24.35
			(13.29)	(7.98)			(13.81)	(8.18)			(21.84)	(30.85)			(60.99)	(74.61)
Streams			-1.41	-1.32			-1.16	-1.12			-8.76	-14.00			-16.48	-22.96
			(2.63)	(2.30)			(2.65)	(2.29)			(7.40)	(6.96)			(16.71)	(16.15)
Observations	75	70	68	63	72	67	66	61	75	70	68	63	72	67	66	61
Adjusted R-squared	0.15	0.54	0.22	0.59	0.17	0.58	0.23	0.60	0.05	0.05	0.22	0.27	0.19	0.19	0.16	0.15
Num. clusters (gen)	34	34	31	30	33	33	30	29	34	34	31	30	33	33	30	29

Dependent variable: Spindles per thousand inhabitants for the respective year denoted at the top of each column. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Controls: Spindles per thousand inhabitants in 1803, Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential is defined as distance to urban population in 1800. All variables measured at their pre-blockade values. The number of observations differ across columns as controls are missing for some departments, while territorial losses to Germany in 1871 account for the difference in observations across the years 1840 and 1887. For further details on the data, see Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.11: Industrial value added per capita outcomes, 1860-2000 - First stage and reduced form

	First stage								Reduced form							
	(1) 1812	(2) 1812	(3) 1812	(4) 1812	(5) 1812	(6) 1812	(7) 1812	(8) 1812	(9) 1860	(10) 1860	(11) 1896	(12) 1896	(13) 1930	(14) 1930	(15) 2000	(16) 2000
Trade cost shock	40.83	41.66	43.42	44.94	40.83	41.66	40.83	41.66	0.32	0.31	0.05	0.04	0.06	0.07	0.16	0.13
	0.40	*0.39*	*0.42*	*0.42*	*0.40*	*0.39*	*0.40*	*0.39*	*0.33*	*0.31*	*0.05*	*0.04*	*0.06*	*0.06*	*0.16*	*0.12*
	(15.34)	(11.74)	(15.36)	(11.51)	(15.34)	(11.74)	(15.34)	(11.74)	(0.11)	(0.10)	(0.12)	(0.12)	(0.13)	(0.13)	(0.11)	(0.11)
	{16.48}	{12.70}	{16.53}	{12.51}	{16.48}	{12.70}	{16.48}	{12.70}	{0.10}	{0.08}	{0.12}	{0.12}	{0.13}	{0.13}	{0.12}	{0.11}
Spindles 1803		1.44		1.46		1.44		1.44		0.01		0.01		0.01		0.01
		(0.23)		(0.23)		(0.23)		(0.23)		(0.00)		(0.00)		(0.00)		(0.00)
Observations	73	68	71	66	73	68	73	68	73	68	71	66	73	68	73	68
Adjusted R-squared	0.14	0.54	0.16	0.58	0.14	0.54	0.14	0.54	0.10	0.25	-0.01	0.10	-0.01	0.19	0.01	0.15
Num. clusters (gen)	33	33	32	32	33	33	33	33	33	33	32	32	33	33	33	33

Dependent variable: Natural logarithm of industrial value added per capita measured at the level of the department. For the first stage regressions, dependent variable is spindles per thousand inhabitants in 1812. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets.

Table A.12: Industrial value added per capita outcomes with additional controls, 1860-2000 - OLS and 2SLS

	Dependent variable: Natural logarithm of industrial value added per capita															
	OLS								2SLS							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1860	1860	1896	1896	1930	1930	2000	2000	1860	1860	1896	1896	1930	1930	2000	2000
Spindles 1812	0.0036	0.0026	0.0028	0.0017	0.0037	0.0021	0.0027	0.0007	0.0084	0.0075	0.0000	0.0003	-0.0019	-0.0004	0.0033	0.0031
	0.3888	*0.2837*	*0.2719*	*0.1638*	*0.4052*	*0.2251*	*0.2829*	*0.0719*	*0.9173*	*0.8170*	*0.0021*	*0.0317*	*-0.2112*	*-0.0426*	*0.3505*	*0.3379*
	(0.0009)	(0.0014)	(0.0007)	(0.0008)	(0.0008)	(0.0011)	(0.0009)	(0.0009)	(0.0039)	(0.0030)	(0.0033)	(0.0025)	(0.0044)	(0.0029)	(0.0031)	(0.0027)
	{0.0013}		{0.0007}		{0.0010}		{0.0009}		{0.0033}		{0.0035}		{0.0047}		{0.0027}	
Spindles 1803		0.0029		0.0031		0.0050		0.0058		-0.0036		0.0049		0.0083		0.0025
		(0.0023)		(0.0025)		(0.0023)		(0.0016)		(0.0044)		(0.0038)		(0.0040)		(0.0034)
Literacy	-0.4968	-0.4727	-0.4785	-0.4699	-0.1762	-0.0893	-0.3758	-0.3088	-0.7764	-0.7484	-0.3206	-0.3941	0.1510	0.0499	-0.4128	-0.4489
	(0.3338)	(0.3503)	(0.3529)	(0.3985)	(0.2975)	(0.3083)	(0.3549)	(0.3631)	(0.4209)	(0.4015)	(0.4225)	(0.4126)	(0.4171)	(0.3410)	(0.3957)	(0.3758)
Market potential	0.7207	0.7486	0.3872	0.4202	0.6119	0.7061	0.5907	0.6338	0.2192	0.3646	0.6705	0.5256	1.1988	0.8999	0.5244	0.4386
	(0.2759)	(0.2976)	(0.2385)	(0.2520)	(0.2660)	(0.2532)	(0.2555)	(0.2373)	(0.3945)	(0.2837)	(0.3453)	(0.2443)	(0.4504)	(0.2574)	(0.3794)	(0.3075)
Knowledge access	0.0005	-0.0105	0.6388	0.6630	0.4546	0.4429	0.6510	0.6705	-0.0625	-0.0228	0.6744	0.6664	0.5283	0.4491	0.6427	0.6642
	(0.2464)	(0.2491)	(0.4000)	(0.4366)	(0.1868)	(0.1733)	(0.2528)	(0.2241)	(0.2545)	(0.2382)	(0.3685)	(0.4080)	(0.2141)	(0.1574)	(0.2466)	(0.2310)
Coal	0.0594	0.0682	0.2086	0.2103	0.1725	0.1490	0.0287	0.0292	-0.0057	0.0563	0.2453	0.2136	0.2487	0.1550	0.0201	0.0231
	(0.0564)	(0.0571)	(0.1264)	(0.1429)	(0.0561)	(0.0675)	(0.0717)	(0.0738)	(0.0973)	(0.0605)	(0.1249)	(0.1330)	(0.1277)	(0.0712)	(0.0827)	(0.0685)
Streams	0.0910	0.0897	0.0430	0.0408	0.0431	0.0403	0.1023	0.1016	0.1035	0.1049	0.0360	0.0366	0.0284	0.0326	0.1039	0.1094
	(0.0376)	(0.0396)	(0.0335)	(0.0338)	(0.0502)	(0.0533)	(0.0438)	(0.0445)	(0.0436)	(0.0453)	(0.0312)	(0.0321)	(0.0491)	(0.0504)	(0.0429)	(0.0441)
Observations	66	61	66	61	66	61	66	61	66	61	66	61	66	61	66	61
Adjusted R-squared	0.3728	0.3714	0.2520	0.2505	0.4530	0.4797	0.3847	0.4332								
KP F-stat									3.169	10.15	3.169	10.15	3.169	10.15	3.169	10.15
Num. clusters (gen)	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29

Dependent variable: Natural logarithm of industrial value added per capita measured at the level of the department. For the first stage regressions, dependent variable is spindles per thousand inhabitants in 1812. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. Controls: Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential defined as distance to urban population in 1800. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Online Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.13: Industrial value added per capita outcomes with additional controls, 1860-2000 - First stage and reduced form

	First stage								Reduced form							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1812	1812	1812	1812	1812	1812	1812	1812	1860	1860	1896	1896	1930	1930	2000	2000
Trade cost shock	32.48	39.65	32.48	39.65	32.48	39.65	32.48	39.65	0.27	0.30	0.00	0.01	-0.06	-0.02	0.11	0.12
	0.31	*0.36*	*0.31*	*0.36*	*0.31*	*0.36*	*0.31*	*0.36*	*0.29*	*0.30*	*0.00*	*0.01*	*-0.07*	*-0.02*	*0.11*	*0.12*
	(18.25)	(12.45)	(18.25)	(12.45)	(18.25)	(12.45)	(18.25)	(12.45)	(0.14)	(0.12)	(0.12)	(0.11)	(0.13)	(0.12)	(0.11)	(0.11)
	{19.49}		{19.49}		{19.49}		{19.49}		{0.13}		{0.12}		{0.14}		{0.11}	
Spindles 1803		1.37		1.37		1.37		1.37		0.01		0.01		0.01		0.01
		(0.27)		(0.27)		(0.27)		(0.27)		(0.00)		(0.00)		(0.00)		(0.00)
Literacy	40.50	37.48	40.50	37.48	40.50	37.48	40.50	37.48	-0.44	-0.47	-0.32	-0.38	0.07	0.04	-0.28	-0.33
	(22.95)	(20.84)	(22.95)	(20.84)	(22.95)	(20.84)	(22.95)	(20.84)	(0.32)	(0.32)	(0.38)	(0.41)	(0.32)	(0.31)	(0.36)	(0.35)
Market potential	51.02	16.34	51.02	16.34	51.02	16.34	51.02	16.34	0.65	0.49	0.67	0.53	1.10	0.89	0.69	0.49
	(38.86)	(30.44)	(38.86)	(30.44)	(38.86)	(30.44)	(38.86)	(30.44)	(0.31)	(0.26)	(0.25)	(0.25)	(0.27)	(0.25)	(0.28)	(0.27)
Knowledge access	42.88	37.73	42.88	37.73	42.88	37.73	42.88	37.73	0.30	0.26	0.68	0.68	0.45	0.43	0.79	0.78
	(25.46)	(22.88)	(25.46)	(22.88)	(25.46)	(22.88)	(25.46)	(22.88)	(0.27)	(0.26)	(0.41)	(0.45)	(0.19)	(0.17)	(0.25)	(0.21)
Coal	14.53	2.39	14.53	2.39	14.53	2.39	14.53	2.39	0.12	0.07	0.25	0.21	0.22	0.15	0.07	0.03
	(13.81)	(8.18)	(13.81)	(8.18)	(13.81)	(8.18)	(13.81)	(8.18)	(0.08)	(0.06)	(0.13)	(0.14)	(0.08)	(0.08)	(0.08)	(0.07)
Streams	-1.16	-1.12	-1.16	-1.12	-1.16	-1.12	-1.16	-1.12	0.09	0.10	0.04	0.04	0.03	0.03	0.10	0.11
	(2.65)	(2.29)	(2.65)	(2.29)	(2.65)	(2.29)	(2.65)	(2.29)	(0.04)	(0.04)	(0.03)	(0.03)	(0.05)	(0.05)	(0.05)	(0.05)
Observations	66	61	66	61	66	61	66	61	66	61	66	61	66	61	66	61
Adjusted R-squared	0.23	0.60	0.23	0.60	0.23	0.60	0.23	0.60	0.30	0.40	0.19	0.24	0.32	0.45	0.33	0.44
Num. clusters (gen)	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29

Dependent variable: Natural logarithm of industrial value added per capita measured at the level of the department. For the first stage regressions, dependent variable is spindles per thousand inhabitants in 1812. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. Controls: Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential defined as distance to urban population in 1800. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.14: Industrial value added per capita outcomes (contemporaneous population), 1860-2000 - OLS and 2SLS

	Dependent variable: Natural logarithm of industrial value added per capita															
	OLS								2SLS							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1860	1860	1896	1896	1930	1930	2000	2000	1860	1860	1896	1896	1930	1930	2000	2000
Spindles 1812	0.0028	0.0023	0.0016	0.0011	0.0021	0.0013	0.0011	0.0007	0.0097	0.0082	0.0016	0.0010	-0.0006	-0.0001	0.0050	0.0041
	0.3413	*0.2867*	*0.1740*	*0.1257*	*0.3992*	*0.2494*	*0.2588*	*0.1665*	*1.1703*	*1.0020*	*0.1744*	*0.1087*	*-0.1088*	*-0.0272*	*1.1318*	*0.9607*
	(0.0009)	(0.0013)	(0.0007)	(0.0008)	(0.0004)	(0.0006)	(0.0003)	(0.0004)	(0.0043)	(0.0029)	(0.0024)	(0.0021)	(0.0021)	(0.0014)	(0.0025)	(0.0016)
	{0.0011}		{0.0006}		{0.0005}		{0.0004}		{0.0041}		{0.0023}		{0.0022}		{0.0027}	
Spindles 1803		0.0014		0.0011		0.0025		0.0013		-0.0064		0.0013		0.0044		-0.0032
		(0.0020)		(0.0022)		(0.0012)		(0.0007)		(0.0042)		(0.0034)		(0.0019)		(0.0020)
Literacy	-0.1742	-0.1913	0.0141	-0.0316	0.3629	0.3990	0.1955	0.2186	-0.5703	-0.5218	0.0138	-0.0228	0.5195	0.4820	-0.0278	0.0278
	(0.3171)	(0.3316)	(0.3317)	(0.3841)	(0.1621)	(0.1658)	(0.1668)	(0.1727)	(0.4108)	(0.3794)	(0.3796)	(0.3859)	(0.2185)	(0.1872)	(0.2329)	(0.2049)
Market potential	0.7105	0.7121	0.2516	0.2410	0.2799	0.3130	0.0435	0.0200	0.0001	0.2518	0.2512	0.2532	0.5607	0.4287	-0.3571	-0.2457
	(0.3023)	(0.3187)	(0.2037)	(0.2304)	(0.1484)	(0.1452)	(0.1167)	(0.1111)	(0.4538)	(0.3054)	(0.2982)	(0.2239)	(0.2094)	(0.1311)	(0.2958)	(0.1864)
Knowledge access	-0.0540	-0.0569	0.5807	0.6199	0.2233	0.2251	0.0293	0.0419	-0.1432	-0.0717	0.5806	0.6203	0.2586	0.2288	-0.0210	0.0334
	(0.2505)	(0.2501)	(0.4186)	(0.4516)	(0.1388)	(0.1356)	(0.1499)	(0.1397)	(0.2804)	(0.2447)	(0.3892)	(0.4208)	(0.1303)	(0.1202)	(0.1746)	(0.1523)
Coal	0.0254	0.0460	0.1624	0.1783	0.1030	0.0914	-0.0149	-0.0134	-0.0668	0.0317	0.1623	0.1787	0.1394	0.0950	-0.0668	-0.0217
	(0.0554)	(0.0541)	(0.1334)	(0.1532)	(0.0266)	(0.0303)	(0.0259)	(0.0271)	(0.1241)	(0.0626)	(0.1184)	(0.1422)	(0.0616)	(0.0334)	(0.0660)	(0.0349)
Streams	0.0830	0.0826	0.0325	0.0299	0.0361	0.0319	0.0829	0.0819	0.1008	0.1009	0.0325	0.0294	0.0291	0.0273	0.0929	0.0924
	(0.0319)	(0.0335)	(0.0279)	(0.0280)	(0.0199)	(0.0207)	(0.0143)	(0.0153)	(0.0421)	(0.0421)	(0.0258)	(0.0266)	(0.0196)	(0.0198)	(0.0156)	(0.0152)
Observations	66	61	66	61	66	61	66	61	66	61	66	61	66	61	66	61
Adjusted R-squared	0.3499	0.3364	0.1384	0.1241	0.5536	0.5620	0.3451	0.3410								
KP F-stat									3.169	10.15	3.169	10.15	3.169	10.15	3.169	10.15
Num. clusters (gen)	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29

Dependent variable: Natural logarithm of industrial value added per capita measured at the level of the department. Contemporaneous population used to calculate per capita values. For the first stage regressions, dependent variable is spindles per thousand inhabitants in 1812. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. Controls: Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential defined as distance to urban population in 1800. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.15: Industrial value added per capita outcomes (contemporaneous population), 1860-2000 - First stage and reduced form

	First stage								Reduced form							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1812	1812	1812	1812	1812	1812	1812	1812	1860	1860	1896	1896	1930	1930	2000	2000
Trade cost shock	32.48	39.65	32.48	39.65	32.48	39.65	32.48	39.65	0.31	0.32	0.05	0.04	-0.02	-0.01	0.16	0.16
	0.31	*0.36*	*0.31*	*0.36*	*0.31*	*0.36*	*0.31*	*0.36*	*0.37*	*0.37*	*0.05*	*0.04*	*-0.03*	*-0.01*	*0.35*	*0.35*
	(18.25)	(12.45)	(18.25)	(12.45)	(18.25)	(12.45)	(18.25)	(12.45)	(0.12)	(0.11)	(0.09)	(0.09)	(0.07)	(0.06)	(0.05)	(0.05)
	{19.49}		{19.49}		{19.49}		{19.49}		{0.11}		{0.10}		{0.07}		{0.05}	
Spindles 1803		1.37		1.37		1.37		1.37		0.00		0.00		0.00		0.00
		(0.27)		(0.27)		(0.27)		(0.27)		(0.00)		(0.00)		(0.00)		(0.00)
Literacy	40.50	37.48	40.50	37.48	40.50	37.48	40.50	37.48	-0.18	-0.22	0.08	0.01	0.50	0.48	0.17	0.18
	(22.95)	(20.84)	(22.95)	(20.84)	(22.95)	(20.84)	(22.95)	(20.84)	(0.29)	(0.30)	(0.36)	(0.39)	(0.17)	(0.17)	(0.16)	(0.16)
Market potential	51.02	16.34	51.02	16.34	51.02	16.34	51.02	16.34	0.49	0.39	0.33	0.27	0.53	0.43	-0.10	-0.18
	(38.86)	(30.44)	(38.86)	(30.44)	(38.86)	(30.44)	(38.86)	(30.44)	(0.29)	(0.26)	(0.23)	(0.23)	(0.14)	(0.13)	(0.12)	(0.12)
Knowledge access	42.88	37.73	42.88	37.73	42.88	37.73	42.88	37.73	0.27	0.24	0.65	0.66	0.23	0.22	0.19	0.19
	(25.46)	(22.88)	(25.46)	(22.88)	(25.46)	(22.88)	(25.46)	(22.88)	(0.25)	(0.25)	(0.42)	(0.46)	(0.14)	(0.14)	(0.14)	(0.13)
Coal	14.53	2.39	14.53	2.39	14.53	2.39	14.53	2.39	0.07	0.05	0.19	0.18	0.13	0.09	0.01	-0.01
	(13.81)	(8.18)	(13.81)	(8.18)	(13.81)	(8.18)	(13.81)	(8.18)	(0.06)	(0.06)	(0.13)	(0.15)	(0.04)	(0.03)	(0.03)	(0.03)
Streams	-1.16	-1.12	-1.16	-1.12	-1.16	-1.12	-1.16	-1.12	0.09	0.09	0.03	0.03	0.03	0.03	0.09	0.09
	(2.65)	(2.29)	(2.65)	(2.29)	(2.65)	(2.29)	(2.65)	(2.29)	(0.04)	(0.04)	(0.03)	(0.03)	(0.02)	(0.02)	(0.01)	(0.01)
Observations	66	61	66	61	66	61	66	61	66	61	66	61	66	61	66	61
Adjusted R-squared	0.23	0.60	0.23	0.60	0.23	0.60	0.23	0.60	0.35	0.39	0.12	0.12	0.42	0.53	0.38	0.42
Num. clusters (gen)	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29

Dependent variable: Natural logarithm of industrial value added per capita measured at the level of the department. Contemporaneous population used to calculate per capita values. For the first stage regressions, dependent variable is spindles per thousand inhabitants in 1812. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. Controls: Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential defined as distance to urban population in 1800. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Online Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.16: Agricultural value added per capita outcomes, 1860-2000 - OLS and 2SLS

	Dependent variable: Natural logarithm of agricultural value added per capita															
	OLS								2SLS							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1860	1860	1896	1896	1930	1930	2000	2000	1860	1860	1896	1896	1930	1930	2000	2000
Spindles 1812	-0.0003	0.0002	-0.0005	-0.0001	-0.0006	-0.0003	-0.0003	0.0004	0.0027	0.0019	0.0013	0.0013	-0.0008	-0.0005	-0.0005	-0.0001
	-0.0909	*0.0446*	*-0.1688*	*-0.0191*	*-0.1322*	*-0.0785*	*-0.0462*	*0.0574*	*0.7426*	*0.5387*	*0.4175*	*0.4236*	*-0.1686*	*-0.1119*	*-0.0643*	-0.0162
	(0.0004)	(0.0005)	(0.0003)	(0.0004)	(0.0003)	(0.0004)	(0.0010)	(0.0015)	(0.0024)	(0.0015)	(0.0017)	(0.0013)	(0.0017)	(0.0015)	(0.0030)	(0.0026)
	{0.0004}		{0.0003}		{0.0003}		{0.0008}		{0.0025}		{0.0018}		{0.0016}		{0.0029}	
Spindles 1803		-0.0015		-0.0014		-0.0007		-0.0024		-0.0038		-0.0032		-0.0005		-0.0017
		(0.0010)		(0.0007)		(0.0008)		(0.0026)		(0.0020)		(0.0017)		(0.0021)		(0.0035)
Literacy	-0.1572	-0.1683	-0.4032	-0.3955	-0.6902	-0.6937	-0.4504	-0.4643	-0.3319	-0.2670	-0.5114	-0.4716	-0.6808	-0.6854	-0.4426	-0.4336
	(0.1423)	(0.1467)	(0.1088)	(0.1104)	(0.1688)	(0.1813)	(0.2808)	(0.2987)	(0.1890)	(0.1598)	(0.1323)	(0.1140)	(0.1964)	(0.1881)	(0.3161)	(0.3005)
Market potential	0.3913	0.3440	0.3054	0.2972	0.3756	0.3888	0.5265	0.5138	0.0780	0.2065	0.1112	0.1911	0.3925	0.4003	0.5403	0.5565
	(0.1384)	(0.1231)	(0.1166)	(0.1121)	(0.1522)	(0.1582)	(0.3407)	(0.3591)	(0.2459)	(0.1411)	(0.1736)	(0.1116)	(0.2026)	(0.1621)	(0.4296)	(0.3578)
Knowledge access	0.0800	0.0815	0.0061	-0.0193	0.0144	-0.0053	-0.3248	-0.3489	0.0406	0.0771	-0.0183	-0.0227	0.0166	-0.0049	-0.3230	-0.3475
	(0.1482)	(0.1377)	(0.1207)	(0.1073)	(0.1461)	(0.1462)	(0.2617)	(0.2578)	(0.1518)	(0.1187)	(0.1189)	(0.0918)	(0.1453)	(0.1384)	(0.2471)	(0.2407)
Coal	-0.0188	-0.0087	-0.0160	-0.0121	-0.0154	-0.0144	-0.0031	0.0102	-0.0595	-0.0130	-0.0412	-0.0154	-0.0132	-0.0141	-0.0013	0.0115
	(0.0363)	(0.0370)	(0.0329)	(0.0336)	(0.0326)	(0.0343)	(0.0613)	(0.0672)	(0.0701)	(0.0388)	(0.0497)	(0.0333)	(0.0393)	(0.0325)	(0.0696)	(0.0630)
Streams	-0.0384	-0.0353	-0.0250	-0.0199	-0.0484	-0.0469	-0.0077	0.0021	-0.0305	-0.0299	-0.0202	-0.0157	-0.0488	-0.0473	-0.0080	0.0004
	(0.0199)	(0.0228)	(0.0156)	(0.0183)	(0.0278)	(0.0309)	(0.0385)	(0.0436)	(0.0236)	(0.0254)	(0.0173)	(0.0200)	(0.0282)	(0.0308)	(0.0377)	(0.0417)
Observations	66	61	66	61	66	61	66	61	66	61	66	61	66	61	66	61
Adjusted R-squared	0.1100	0.0845	0.1392	0.1249	0.2238	0.1997	-0.0223	-0.0342								
KP F-stat									3.169	10.15	3.169	10.15	3.169	10.15	3.169	10.15
Num. clusters (gen)	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29

Dependent variable: Natural logarithm of agricultural value added per capita measured at the level of the department. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. Controls: Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential defined as distance to urban population in 1800. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Online Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.17: Agricultural value added per capita outcomes, 1860-2000 - First stage and reduced form

	First stage								Reduced form							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1812	1812	1812	1812	1812	1812	1812	1812	1860	1860	1896	1896	1930	1930	2000	2000
Trade cost shock	32.48	39.65	32.48	39.65	32.48	39.65	32.48	39.65	0.09	0.08	0.04	0.05	-0.02	-0.02	-0.02	-0.00
	0.31	*0.36*	*0.31*	*0.36*	*0.31*	*0.36*	*0.31*	*0.36*	*0.23*	*0.20*	*0.13*	*0.15*	*-0.05*	*-0.04*	*-0.02*	*-0.01*
	(18.25)	(12.45)	(18.25)	(12.45)	(18.25)	(12.45)	(18.25)	(12.45)	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)	(0.07)	(0.10)	(0.11)
	{19.49}		{19.49}		{19.49}		{19.49}		{0.05}		{0.05}		{0.06}		{0.10}	
Spindles 1803		1.37		1.37		1.37		1.37		-0.00		-0.00		-0.00		-0.00
		(0.27)		(0.27)		(0.27)		(0.27)		(0.00)		(0.00)		(0.00)		(0.00)
Literacy	40.50	37.48	40.50	37.48	40.50	37.48	40.50	37.48	-0.22	-0.20	-0.46	-0.42	-0.71	-0.70	-0.46	-0.44
	(22.95)	(20.84)	(22.95)	(20.84)	(22.95)	(20.84)	(22.95)	(20.84)	(0.15)	(0.15)	(0.11)	(0.11)	(0.17)	(0.18)	(0.28)	(0.29)
Market potential	51.02	16.34	51.02	16.34	51.02	16.34	51.02	16.34	0.22	0.24	0.18	0.21	0.35	0.39	0.52	0.55
	(38.86)	(30.44)	(38.86)	(30.44)	(38.86)	(30.44)	(38.86)	(30.44)	(0.14)	(0.14)	(0.11)	(0.11)	(0.15)	(0.16)	(0.36)	(0.36)
Knowledge access	42.88	37.73	42.88	37.73	42.88	37.73	42.88	37.73	0.16	0.15	0.04	0.03	-0.02	-0.02	-0.34	-0.35
	(25.46)	(22.88)	(25.46)	(22.88)	(25.46)	(22.88)	(25.46)	(22.88)	(0.15)	(0.15)	(0.12)	(0.11)	(0.14)	(0.14)	(0.29)	(0.28)
Coal	14.53	2.39	14.53	2.39	14.53	2.39	14.53	2.39	-0.02	-0.01	-0.02	-0.01	-0.02	-0.02	-0.01	0.01
	(13.81)	(8.18)	(13.81)	(8.18)	(13.81)	(8.18)	(13.81)	(8.18)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.06)	(0.07)
Streams	-1.16	-1.12	-1.16	-1.12	-1.16	-1.12	-1.16	-1.12	-0.03	-0.03	-0.02	-0.02	-0.05	-0.05	-0.01	0.00
	(2.65)	(2.29)	(2.65)	(2.29)	(2.65)	(2.29)	(2.65)	(2.29)	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.04)	(0.04)
Observations	66	61	66	61	66	61	66	61	66	61	66	61	66	61	66	61
Adjusted R-squared	0.23	0.60	0.23	0.60	0.23	0.60	0.23	0.60	0.14	0.11	0.13	0.14	0.21	0.20	-0.02	-0.04
Num. clusters (gen)	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29

Dependent variable: Natural logarithm of agricultural value added per capita measured at the level of the department. For the first stage regressions, dependent variable is spindles per thousand inhabitants in 1812. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. Controls: Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential defined as distance to urban population in 1800. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Online Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.18: Tertiary value added per capita outcomes, 1860-2000 - OLS and 2SLS

	Dependent variable: Natural logarithm of tertiary value added per capita															
	OLS								2SLS							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1860	1860	1896	1896	1930	1930	2000	2000	1860	1860	1896	1896	1930	1930	2000	2000
Spindles 1812	0.0027	0.0013	0.0027	0.0010	0.0029	0.0013	0.0019	-0.0004	-0.0004	0.0003	-0.0016	-0.0003	-0.0041	-0.0021	-0.0035	-0.0020
	0.3959	*0.1894*	*0.3507*	*0.1381*	*0.3406*	*0.1536*	*0.2023*	*-0.0477*	*-0.0615*	*0.0486*	*-0.2097*	*-0.0381*	*-0.4800*	*-0.2491*	*-0.3654*	*-0.2175*
	(0.0007)	(0.0007)	(0.0008)	(0.0008)	(0.0008)	(0.0009)	(0.0011)	(0.0010)	(0.0032)	(0.0023)	(0.0037)	(0.0025)	(0.0051)	(0.0030)	(0.0045)	(0.0030)
	{0.0008}		{0.0009}		{0.0009}		{0.0011}		{0.0030}		{0.0035}		{0.0054}		{0.0048}	
Spindles 1803		0.0044		0.0050		0.0049		0.0069		0.0056		0.0068		0.0095		0.0090
		(0.0014)		(0.0015)		(0.0017)		(0.0021)		(0.0030)		(0.0031)		(0.0038)		(0.0041)
Literacy	-0.1921	-0.0888	-0.3793	-0.2642	-0.4468	-0.3205	-0.7245	-0.6337	-0.0127	-0.0352	-0.1325	-0.1887	-0.0368	-0.1254	-0.4128	-0.5434
	(0.2118)	(0.2180)	(0.2399)	(0.2454)	(0.2811)	(0.2890)	(0.3643)	(0.3776)	(0.2736)	(0.2263)	(0.3052)	(0.2473)	(0.3947)	(0.2998)	(0.4510)	(0.3755)
Market potential	0.4127	0.4626	0.6759	0.7561	0.5685	0.6552	0.6283	0.7345	0.7344	0.5373	1.1187	0.8613	1.3038	0.9269	1.1873	0.8603
	(0.3076)	(0.3055)	(0.3190)	(0.3090)	(0.3258)	(0.3106)	(0.3271)	(0.2954)	(0.3982)	(0.3305)	(0.4167)	(0.3213)	(0.5122)	(0.2993)	(0.4978)	(0.3096)
Knowledge access	0.1767	0.1573	0.1459	0.1163	0.3734	0.3419	0.6746	0.6786	0.2171	0.1597	0.2015	0.1197	0.4658	0.3506	0.7448	0.6826
	(0.2441)	(0.2420)	(0.2398)	(0.2341)	(0.2466)	(0.2372)	(0.2873)	(0.2505)	(0.2263)	(0.2198)	(0.2319)	(0.2112)	(0.2736)	(0.2074)	(0.2824)	(0.2227)
Coal	0.0273	0.0109	0.0379	0.0192	0.0333	0.0136	0.0199	0.0061	0.0690	0.0132	0.0954	0.0224	0.1287	0.0221	0.0924	0.0100
	(0.0450)	(0.0419)	(0.0486)	(0.0446)	(0.0538)	(0.0570)	(0.0735)	(0.0695)	(0.0954)	(0.0426)	(0.1136)	(0.0466)	(0.1531)	(0.0664)	(0.1506)	(0.0699)
Streams	0.0365	0.0366	0.0282	0.0301	0.0446	0.0505	0.0275	0.0267	0.0284	0.0336	0.0171	0.0259	0.0263	0.0397	0.0135	0.0217
	(0.0456)	(0.0484)	(0.0513)	(0.0546)	(0.0614)	(0.0658)	(0.0617)	(0.0639)	(0.0424)	(0.0447)	(0.0475)	(0.0502)	(0.0578)	(0.0602)	(0.0584)	(0.0599)
Observations	66	61	66	61	66	61	66	61	66	61	66	61	66	61	66	61
Adjusted R-squared	0.2906	0.3284	0.2989	0.3457	0.2744	0.3163	0.2031	0.2644								
KP F-stat									3.169	10.15	3.169	10.15	3.169	10.15	3.169	10.15
Num. clusters (gen)	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29

Dependent variable: Natural logarithm of tertiary value added per capita measured at the level of the department. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. Controls: Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential defined as distance to urban population in 1800. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Online Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.19: Tertiary value added per capita outcomes, 1860-2000 - First stage and reduced form

	First stage								Reduced form							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
DepVar measured in	1812	1812	1812	1812	1812	1812	1812	1812	1860	1860	1896	1896	1930	1930	2000	2000
Trade cost shock	32.48	39.65	32.48	39.65	32.48	39.65	32.48	39.65	-0.01	0.01	-0.05	-0.01	-0.13	-0.08	-0.11	-0.08
	0.31	*0.36*	*0.31*	*0.36*	*0.31*	*0.36*	*0.31*	*0.36*	*-0.02*	*0.02*	*-0.07*	*-0.01*	*-0.15*	*-0.09*	*-0.11*	*-0.08*
	(18.25)	(12.45)	(18.25)	(12.45)	(18.25)	(12.45)	(18.25)	(12.45)	(0.11)	(0.10)	(0.11)	(0.11)	(0.13)	(0.12)	(0.12)	(0.13)
	{19.49}		{19.49}		{19.49}		{19.49}		{0.10}		{0.10}		{0.13}		{0.13}	
Spindles 1803		1.37		1.37		1.37		1.37		0.01		0.01		0.01		0.01
		(0.27)		(0.27)		(0.27)		(0.27)		(0.00)		(0.00)		(0.00)		(0.00)
Literacy	40.50	37.48	40.50	37.48	40.50	37.48	40.50	37.48	-0.03	-0.02	-0.20	-0.20	-0.20	-0.21	-0.55	-0.62
	(22.95)	(20.84)	(22.95)	(20.84)	(22.95)	(20.84)	(22.95)	(20.84)	(0.22)	(0.21)	(0.24)	(0.24)	(0.29)	(0.28)	(0.38)	(0.37)
Market potential	51.02	16.34	51.02	16.34	51.02	16.34	51.02	16.34	0.71	0.54	1.04	0.86	1.09	0.89	1.01	0.83
	(38.86)	(30.44)	(38.86)	(30.44)	(38.86)	(30.44)	(38.86)	(30.44)	(0.30)	(0.33)	(0.30)	(0.32)	(0.28)	(0.29)	(0.32)	(0.32)
Knowledge access	42.88	37.73	42.88	37.73	42.88	37.73	42.88	37.73	0.20	0.17	0.13	0.11	0.29	0.27	0.60	0.61
	(25.46)	(22.88)	(25.46)	(22.88)	(25.46)	(22.88)	(25.46)	(22.88)	(0.26)	(0.26)	(0.25)	(0.24)	(0.25)	(0.23)	(0.29)	(0.26)
Coal	14.53	2.39	14.53	2.39	14.53	2.39	14.53	2.39	0.06	0.01	0.07	0.02	0.07	0.02	0.04	0.01
	(13.81)	(8.18)	(13.81)	(8.18)	(13.81)	(8.18)	(13.81)	(8.18)	(0.07)	(0.04)	(0.07)	(0.05)	(0.07)	(0.07)	(0.09)	(0.07)
Streams	-1.16	-1.12	-1.16	-1.12	-1.16	-1.12	-1.16	-1.12	0.03	0.03	0.02	0.03	0.03	0.04	0.02	0.02
	(2.65)	(2.29)	(2.65)	(2.29)	(2.65)	(2.29)	(2.65)	(2.29)	(0.04)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)
Observations	66	61	66	61	66	61	66	61	66	61	66	61	66	61	66	61
Adjusted R-squared	0.23	0.60	0.23	0.60	0.23	0.60	0.23	0.60	0.16	0.31	0.20	0.34	0.19	0.31	0.18	0.27
Num. clusters (gen)	30	29	30	29	30	29	30	29	30	29	30	29	30	29	30	29

Dependent variable: Natural logarithm of tertiary value added per capita measured at the level of the department. For the first stage regressions, dependent variable is spindles per thousand inhabitants in 1812. Departmental population held fixed at its 1811 level across all variables measured in per capita terms. Regressor of interest: Spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Standardized coefficient in italics. Controls: Literacy measured as the proportion of men able to sign their wedding certificate in 1786; Coal is the inverse of log distance to the closest coalfield; Streams is defined as the natural logarithm of mean streamflow (m3/s); Knowledge access is defined as market access to universities in 1802; Market potential defined as distance to urban population in 1800. The number of observations differ across columns because of territorial losses to Germany between 1871 - 1919. For further details on the data, see Online Appendix A.3. Robust standard errors in parentheses, standard errors clustered by généralités in curly brackets. The latter is not reported in cases where the number of généralités is less than 30.

Table A.20: Exports of British merchandise and other produce (official values, thousands of pounds). Source: Crouzet (1987, p. 885).

	1802	1803	1804	1805	1806	1807	1808	1809	1810	1811	1812
Russia	834	930	951	1,102	1,238	1,237	179	524	544	405	686
Sweden	33	29	39	42	66	133	853	1,306	2,554	365	786
Denmark and Norway	195	949	2,152	2,536	856	1,996	2	70	103	311	382
Prussia	434	925	1,646	2,492	165	64	48	354	1,711	44	25
Germany (incl. Helgoland)	3,933	2,469	621	708	2,527	67	463	1,684	1,221	20	21
Holland & Belgium	810	322	286	154	105	138	127	700	78	9	18
France	606	311	13	–	–	–	–	–	69	11	46
Northern & Western Europe	*6,905*	*5,934*	*5,709*	*7,034*	*4,956*	*3,636*	*1,673*	*4.638*	*6,280*	*1,167*	*1,964*
Portugal	1,062	407	692	1,060	1,121	583	283	573	917	3,544	3,024
Madeira & Azores	99	100	88	211	214	244	564	517	412	308	265
Spain	997	532	741	26	14	15	537	1,742	933	809	729
Canaries & Balearic Isls.	68	61	33	4	25	11	99	123	157	116	92
Gibraltar	463	417	506	143	427	652	1,036	2,980	?	?	2,420
Italy, Sicily & Sardinia	1,467	496	285	377	244	445	225	302	152	236	339
Malta	9	123	101	118	231	631	2,232	1,517	?	?	3,106
Ottoman Empire	102	85	56	124	93	10	8	43	46	72	311
Europe Mediterranean	*4,267*	*2,221*	*2,502*	*2,064*	*2,359*	*2,590*	*4,983*	*7,797*	*5,741*	*8,493*	*10,287*
Europe Total	**11,173**	**8,154**	**8,211**	**9,098**	**7,315**	**6,226**	**6,655**	**12,444**	**12,022**	**9,651**	**12,250**

Table A.21: French Customs Duties on Raw Cotton, francs per 100kg

Year	From French colonies	Other
1802	2	3
1803	2	3
1804	1	1
1805		60
1806	60	
1810	200/800[a]	200/800[a]

Notes: [a] Duties are as follows; from Brazil, Cayenne, Surinam, Demerara and Georgia long staple 800 francs; from the Levant by sea, 400 francs; from the Levant by Cologne, Coblenz, Mainz, Strasbourg, 200 francs; from other countries except Naples, 600 francs; from Naples, old duty, 60 francs. Source: Heckscher (1922, p. 409)

Table A.22: French exports, average 1787-1789

Product	Total Exports	Share Overseas
Cotton textiles	23,744	75%
Woolen textiles	23,694	36%
Leather goods	3,143	10%

Notes: Total Exports (in thousands of francs) refer to the average value of exports across the years 1787-1789. Share Overseas refer to the share of exports to French colonies, the US and the Ottoman Empire. See Appendix A.6 for details on data sources and data construction.

Table A.23: Missing data pattern for average spindles by machine at the firm level

	JEA	FC	MJ
Spindles and Machine	20	80	102
Machine only	70	136	190
Total	90	216	292

Table A.24: Missing data pattern for firm level variables

	Observed	Missing	Total
Foundation	560	7	567
Workers	546	21	567
Max quality	401	166	567
Output	522	45	567

Table A.25: Robustness to multiple imputation - Short run

	Dependent variable: Spindles per thousand inhabitants	
	(1)	(2)
	$m = 5$ imputations	$m = 50$ imputations
Effective distance	33.38	33.58
	(9.83)	(9.84)
	{10.00}	{9.96}
Time FE	Yes	Yes
Department FE	Yes	Yes
Observations	176	176
Num. clusters (dept)	88	88
Num. clusters (gen)	40	40

Notes: Dependent variable: spindles per thousand inhabitants in department i at time t. Departmental population held constant at its 1811 level. Effective distance is measured as the natural logarithm of the shortest route to London for each department i at time t. Column (1) estimates the baseline specification for $m = 5$ imputations, Col (2) estimates the baseline specification for $m = 50$ imputations. Standard errors clustered at the level of the department in parentheses, standard errors clustered by généralités in curly brackets.

Table A.26: Robustness to multiple imputation - Persistence 1840

	$m = 5$ imputations			$m = 50$ imputations		
	OLS	2SLS	RF	OLS	2SLS	RF
DepVar: Spindles 1840	(1)	(2)	(3)	(4)	(5)	(6)
Spindles 1812	2.17	2.33		2.19	2.37	
	(0.75)	(1.16)		(0.77)	(1.16)	
	{0.78}	{1.14}		{0.79}	{1.14}	
Trade cost shock			94.26			95.89
			(64.82)			(65.31)
			{64.67}			{65.15}
Observations	75	75	75	75	75	75

Notes: Dependent variable: spindles per thousand inhabitants in department i at time t. Departmental population held constant at its 1811 level. Endogenous variable: spindles per thousand inhabitants in 1812. The instrument is the trade cost shock. Columns (1) and (4) estimate the OLS, (2) and (4) the 2SLS and (3) and (6) the reduced form specification for $m = 5$ and $m = 50$ imputations, respectively. Standard errors clustered at the level of the department in parentheses, standard errors clustered by généralités in curly brackets.

A.5 Additional figures

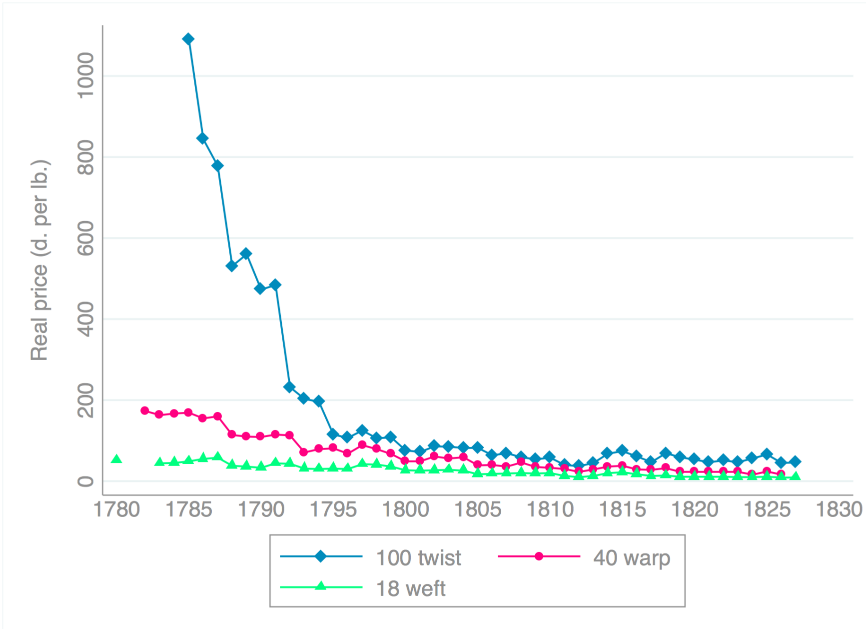


Figure A.1: Real price of yarn in Britain (shillings per pound); numbers refer to the count of cotton yarn. Source: Harley (1988, p. 74).

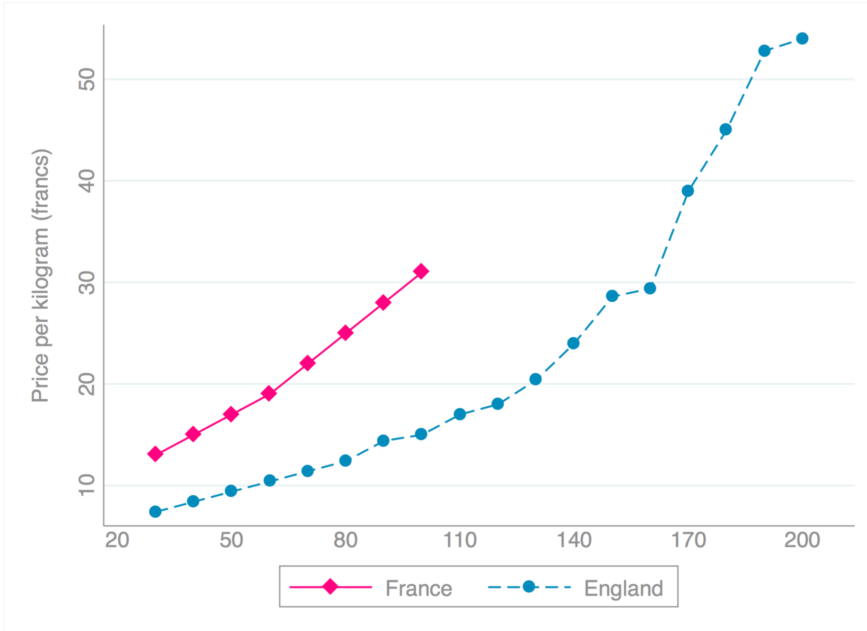


Figure A.2: Price of different count cotton yarn in France and England, 1806-07. Source: Archives Nationales, F12/533.

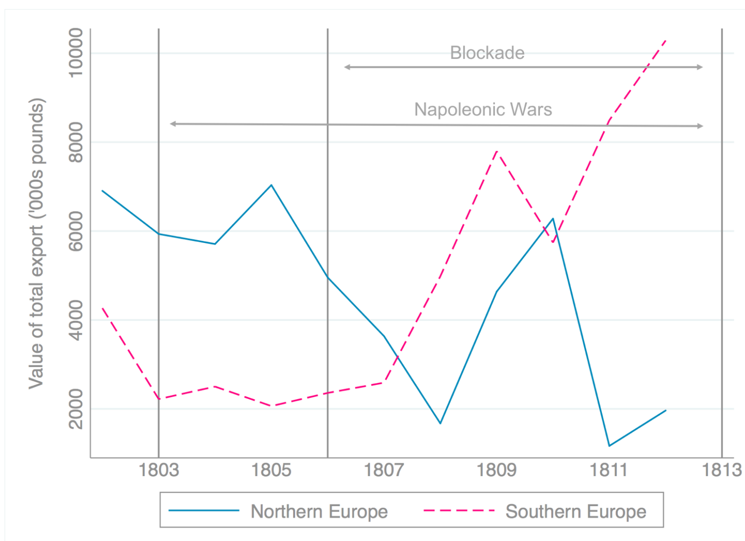


Figure A.3: Exports of British merchandise and other produce (official values). Source: Crouzet (1987, p. 885).

Notes: In 1809-10 exports to the Northern Europe bounce back to pre-blockade levels. This is because of the opening up of the route through Helgoland, as described in detail in Section 2.1.

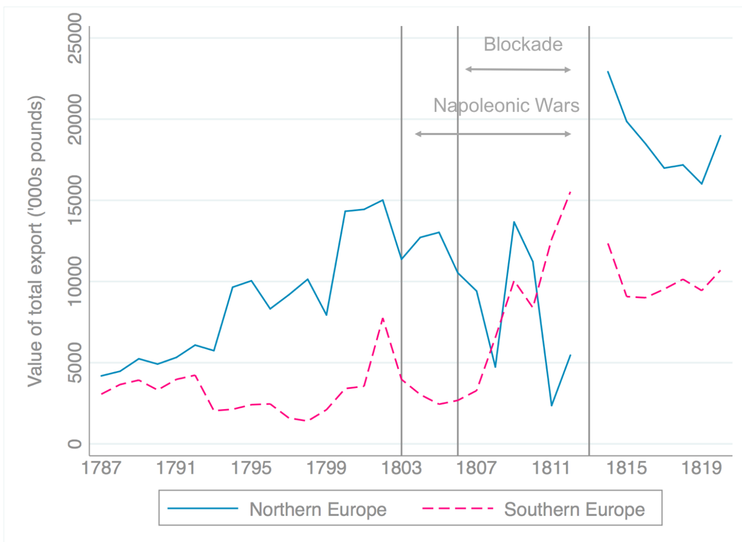
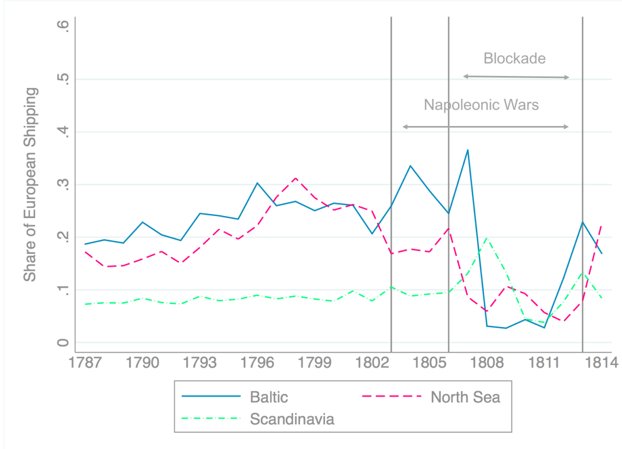
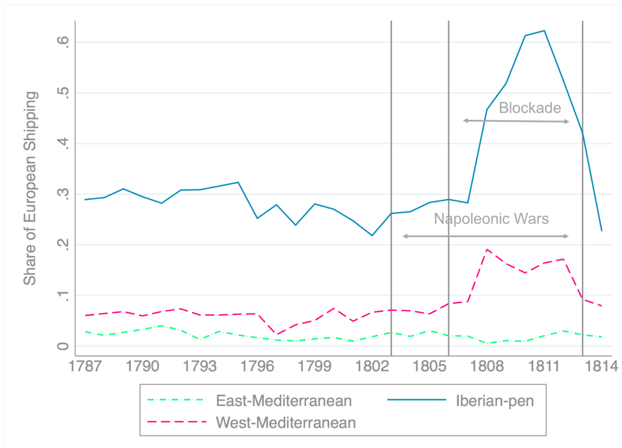


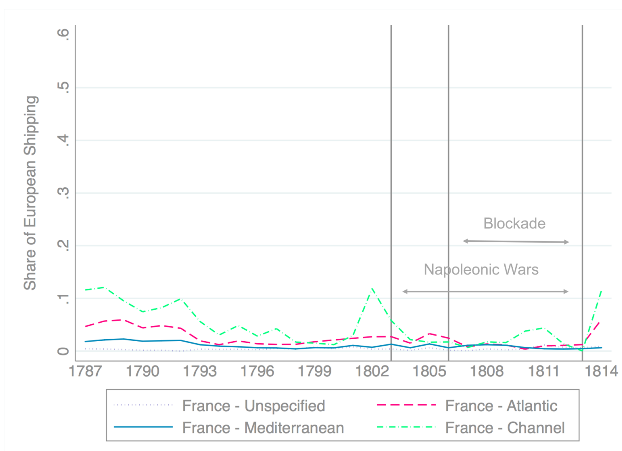
Figure A.4: Total British exports including re-exports (official values). Source: Crouzet (1987, p. 883).



(a) British shipping with Northern Europe



(b) British shipping with Southern Europe



(c) British shipping with France

Figure A.5: British shipping with European regions as share of total, 1787-1814. Source: Lloyd's List.

Notes: "France unspecified" refers to entries in the Lloyd's List where a specific port was not given.

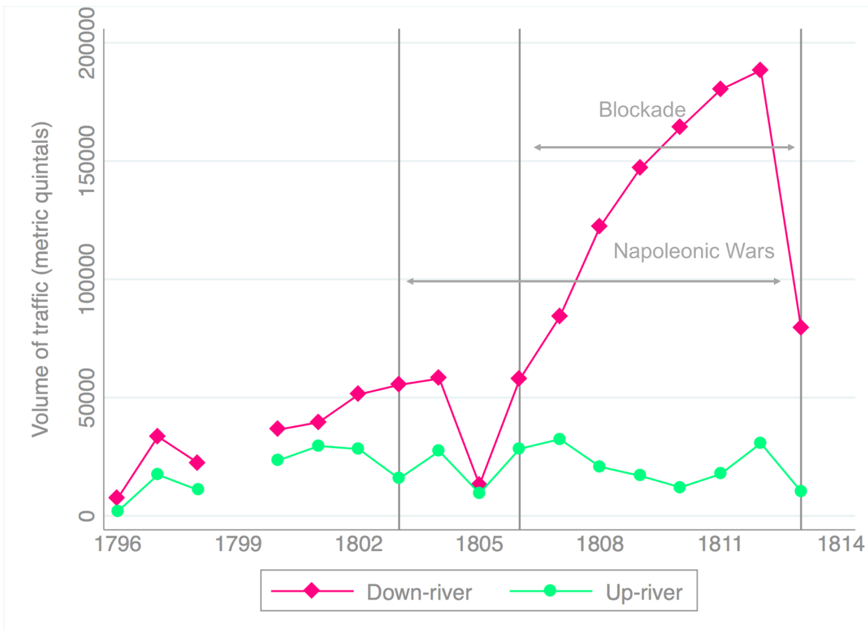
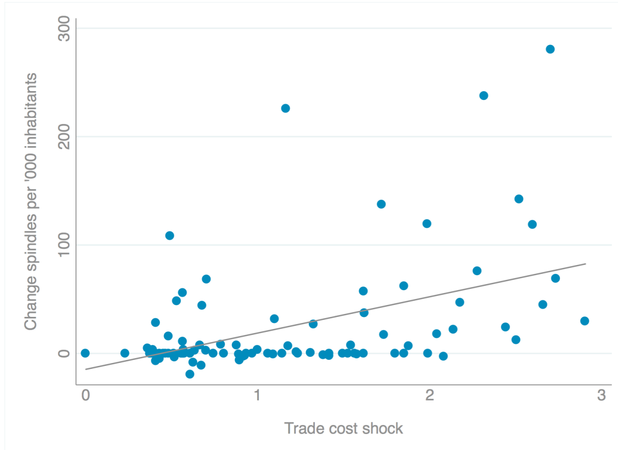


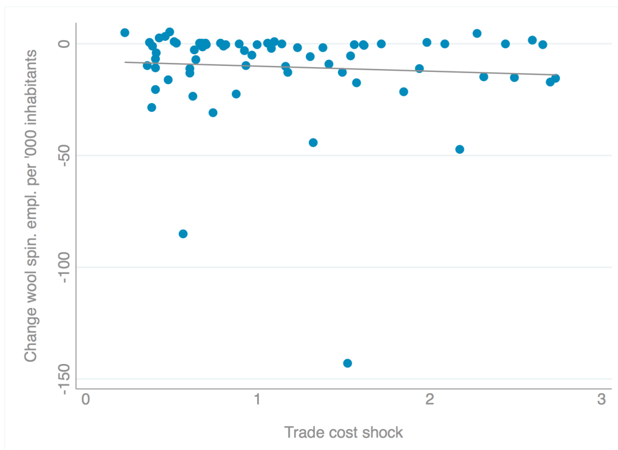
Figure A.6: Volume of traffic up-river and down-river from Strasbourg. Source: Ellis (1981, p. 276).

Notes: Includes road and river traffic. The year 1805 is a partial year as this is when France switched back to the Gregorian calendar from the French Revolutionary calendar. 1805 contains data for only 3 months.

(a) Mechanized cotton spinning (spindles)

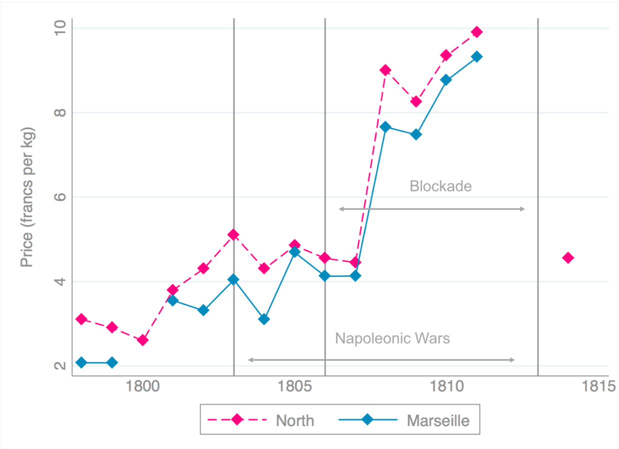


(b) Woolen spinning (labor employed)

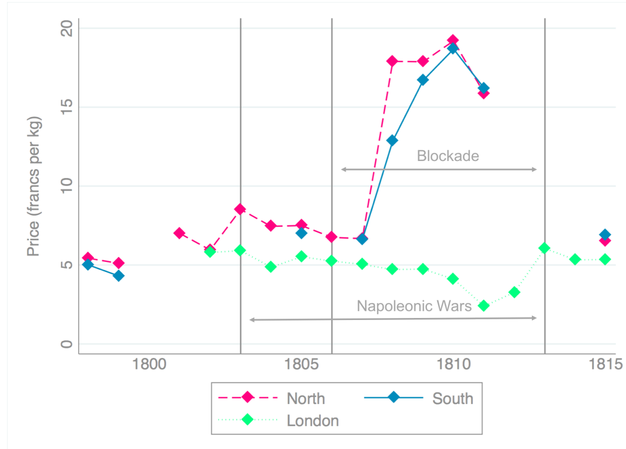


(c) Leather tanning (number of firms)

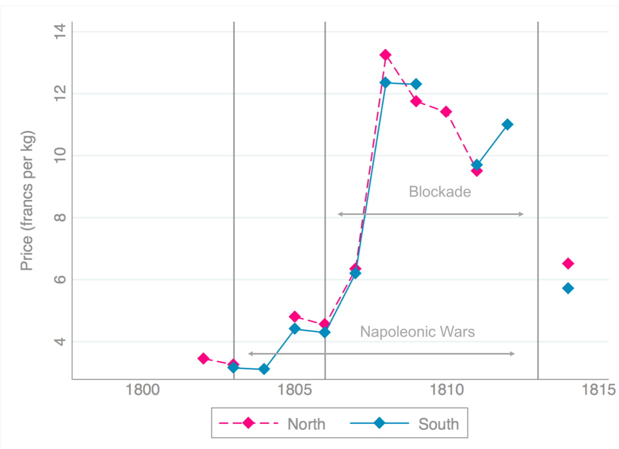
Figure A.7: Change in production capacity per '000 inhabitants vs. trade cost shock



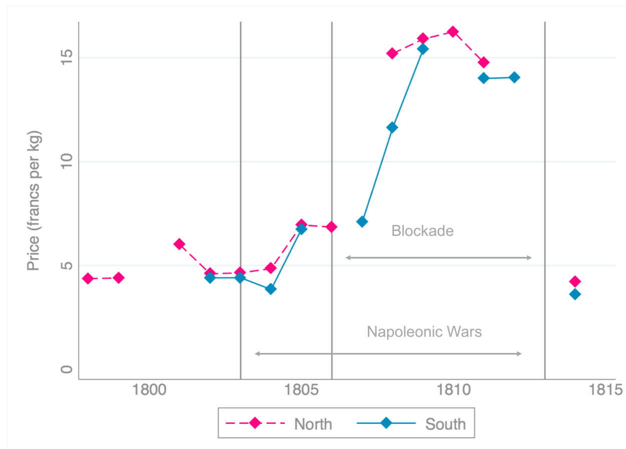
(a) Levantine cotton



(b) Brazilian cotton



(c) US cotton



(d) Colonial cotton

Figure A.8: Price of raw cotton in northern and southern regions of the French Empire. Source: Journal du Commerce.

Notes: With the exception of Brazilian cotton, different varieties are included in the same time series as the same variety could not consistently be observed throughout the time period of interest. With very few exceptions, it has been possible to match the *same* variety of cotton for a given year in both the north and the south making the data points comparable. Varieties are as follows; Levantine: Smyrne, “Levant”, Souboujac, Kirgache, Macedonie; Brazilian: Pernambuco; US: Georgia and Louisiana; Colonial: Saint Domingue, Cayenne, Martinique, Bourbon, Surat. Northern cities used: Anvers, Lille, Rouen, Paris, Havre or Gand. Southern cities used: Bordeaux, Marseille, Toulouse, Lyon and Bayonne. For Levantine cotton, it was possible to match Marseille to a northern city for each year. These data were supplemented with London prices for Brazilian cotton from Tooke (1848).

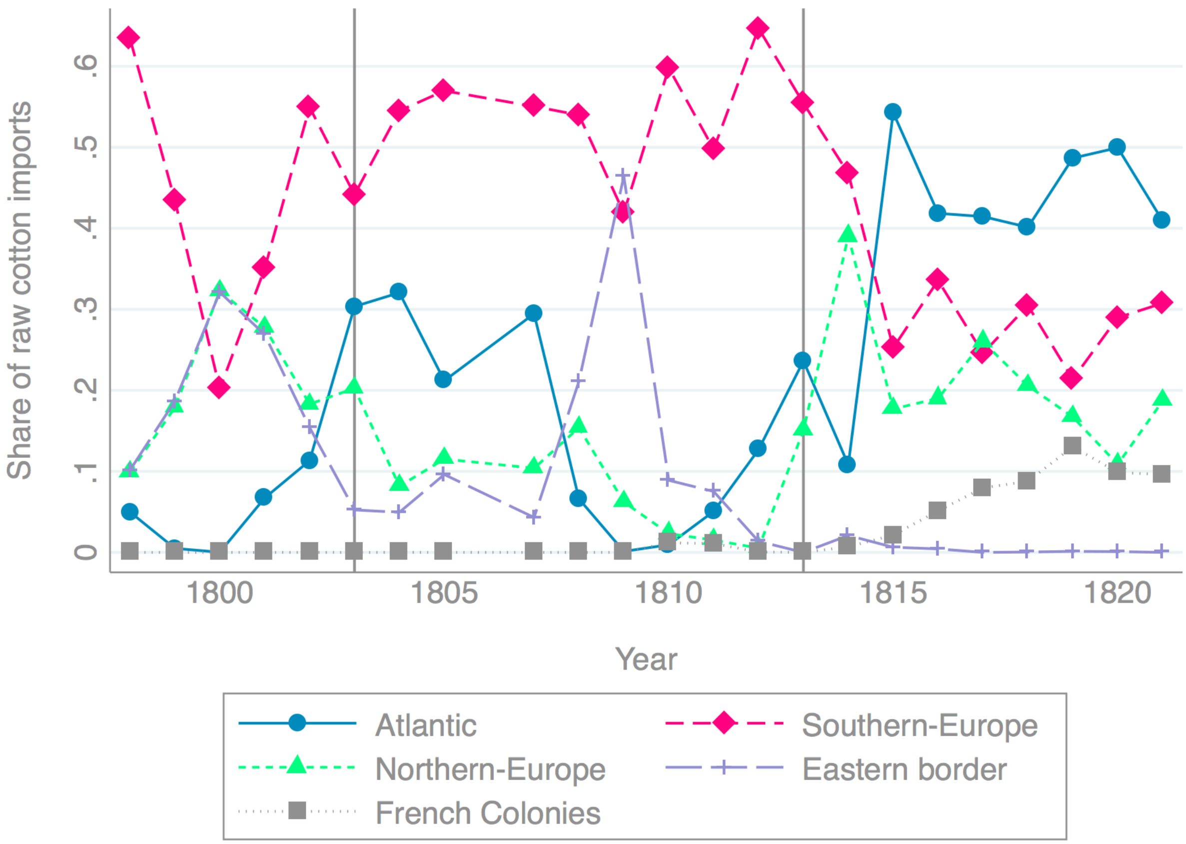


Figure A.9: Source regions for raw cotton imports to France, 1798-1821. Source: Archives Nationales, F12/251.

Regions are classified as follows. Atlantic: US; Northern Europe: Britain, Denmark, Hanseatic cities, Netherlands, Prussia, Russia, Sweden; French Colonies: not separately identified in the trade statistics; Eastern Border: German states, Swiss Republic; Southern Europe: Austrian Empire, Italy, Ottoman Empire, Portugal, Spain. Figures do not add up to 100% as imports captured as prize goods and those from unknown source countries are excluded.

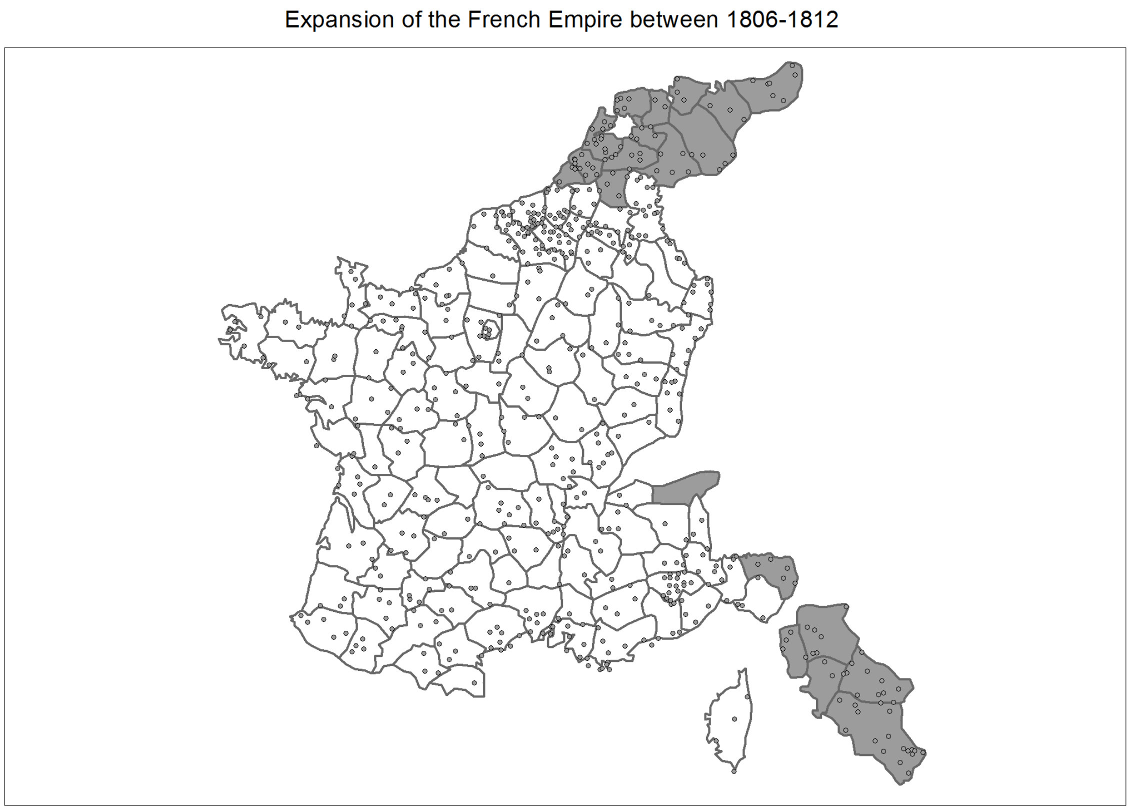


Figure A.10: Departments annexed to the French Empire between 1806-1812

Notes: Gray shading indicates departments annexed to the French Empire between 1806-1812. Gray circles denote the location of cities from Nunn and Qian (2011).

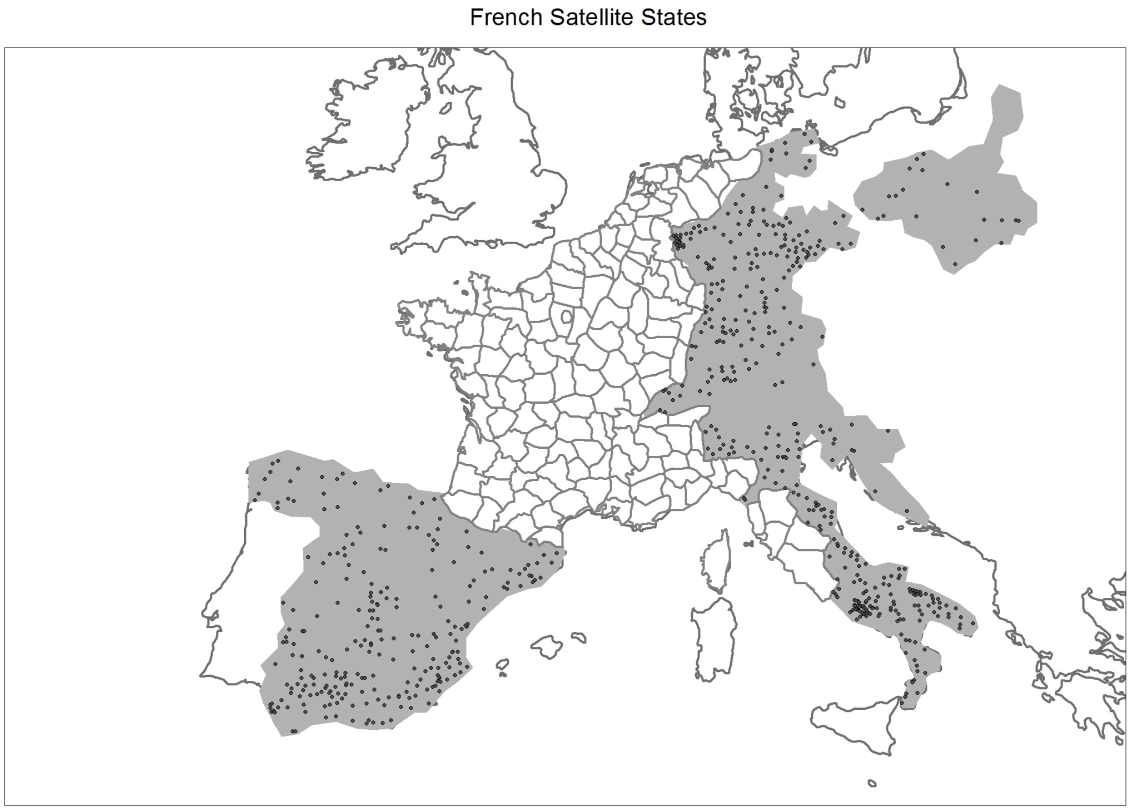


Figure A.11: French satellites as classified by Grab (2003).

Notes: Gray shading indicates regions under French influence. Gray circles denote the location of cities from Nunn and Qian (2011).

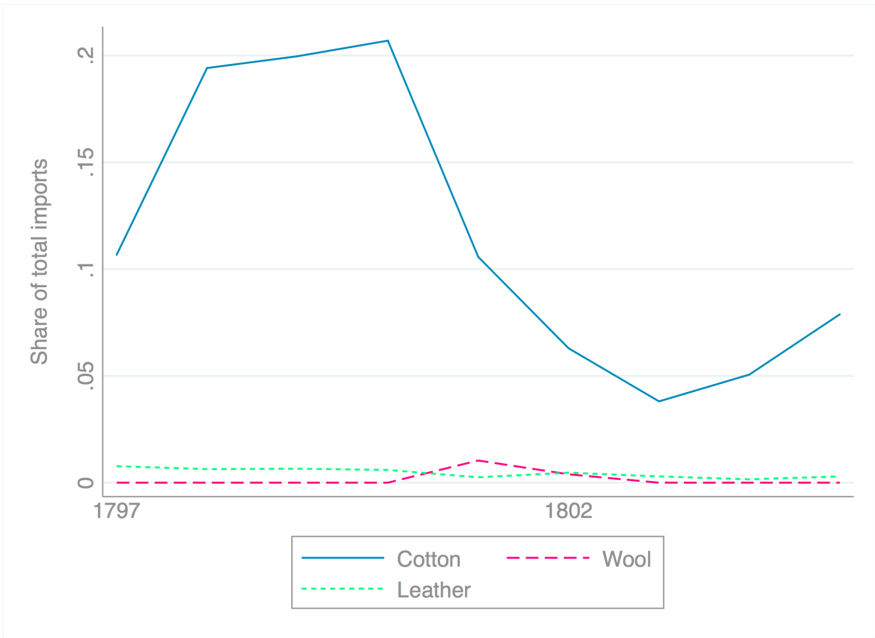
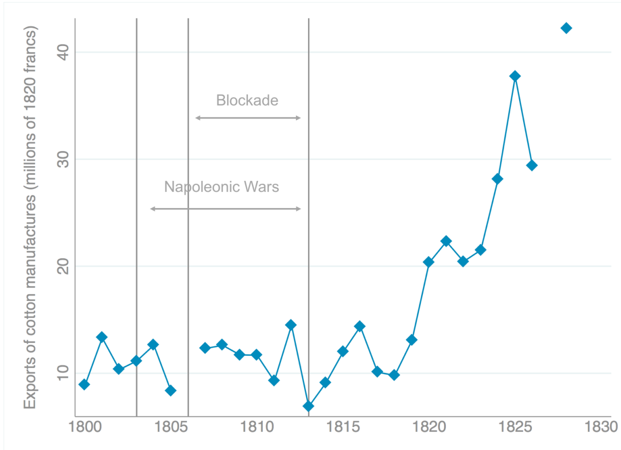
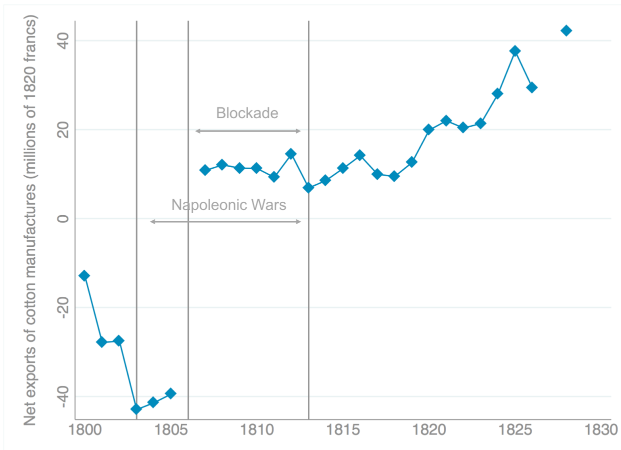


Figure A.12: Share of imports for cotton textiles, woolen textiles and leather prior to the Napoleonic Blocakde (1797-1805).

(a) French exports of cotton manufactures (in millions of 1820 francs). Source: Archives Nationales, F12/251.



(b) French net exports of cotton manufactures (in millions of 1820 francs)



(c) French exports of cotton manufactures as a share of British exports of the same

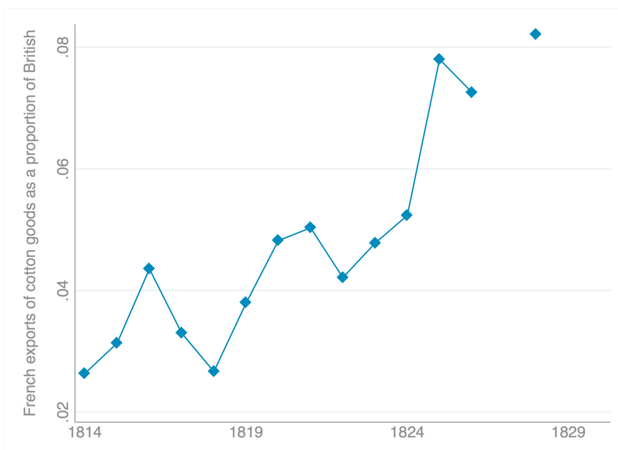


Figure A.13: Exporting outcomes in cotton manufacturing France. Source: Archives Nationales, F12/251.

Notes: Exports to French colonies excluded from French exports. Re-exports are differentiated from exports only in the 1820s. These are excluded once they are separaretly reported. See Appendix A.3.2.5 for further details on data construction.

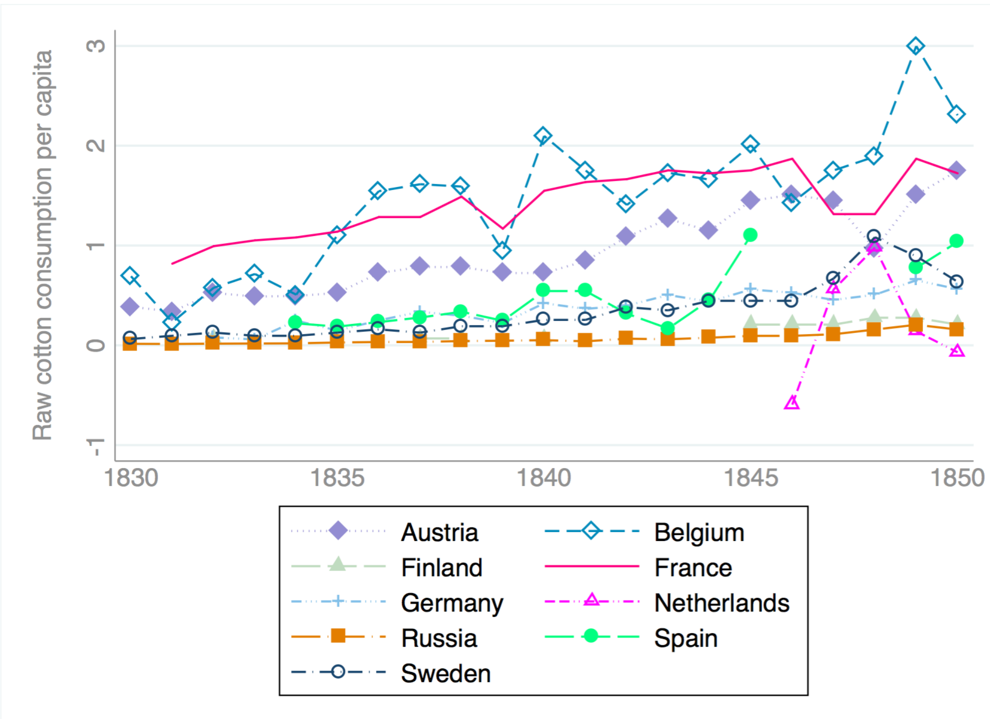
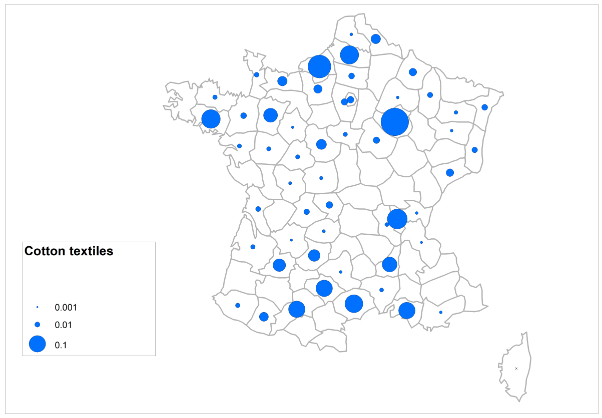
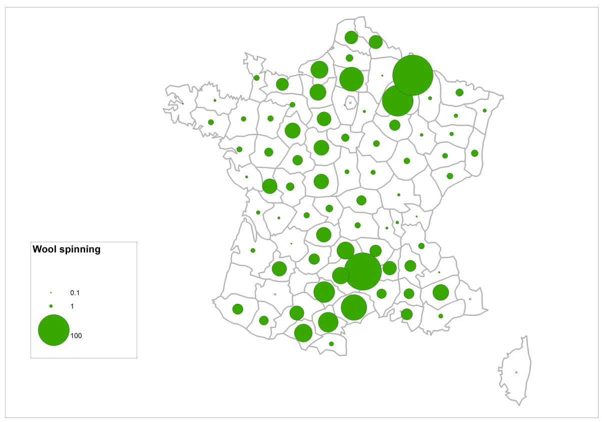


Figure A.14: Imports of raw cotton (metric tons per capita): 1830-1850. Source: Mitchell (2007).

(a) Cotton textiles



(b) Woolen spinning



(c) Leather tanning

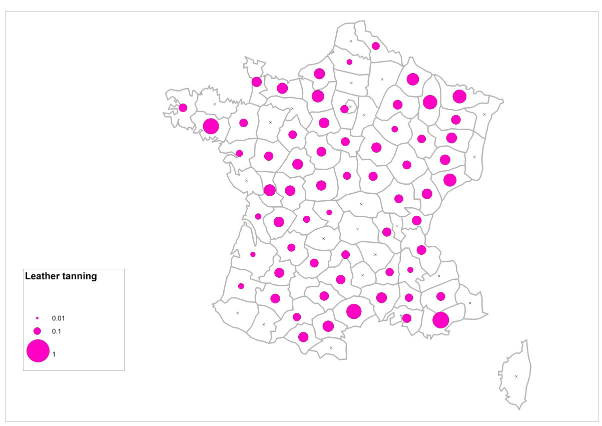


Figure A.15: Spatial distribution of industrial activity in France, 1789

Notes: For cotton textiles, the measure of the scale of the industry in the department (per thousand inhabitants) is based on Daudin (2010) from the Tableaux du Maximum. The measure is defined as the number of arrondissements that reported being supplied by a given arrondssement. For woolen spinning, the measure of the scale of the industry is defined as labor emplyed in woolen spinning per thousand inhabitants. For leather tanning, capacity is measured as the number of firms per thousand inhabitants. For a detailed description of all sources, see Appendix A.3.1. Scaling in (a)-(c) not comparable. The symbol “X” used to denote departments for which data are missing.

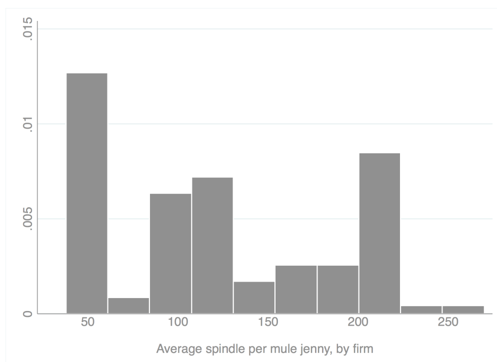


Figure A.16: Average spindles per firm for mule-jennys

A.6 Description of primary sources

A.6.1 Archives Nationales (France)

AN/IV/1318 Petition from cotton spinners to Napoleon requesting ban on imports of British yarn

AN/IV/1060-61 Ministerial reports on commerce and industry

AN/F7/3040 Daily price for merchandise (including raw cotton) at the Paris exchange (an 6 - an 10)

AN/F7/8777-8778 Reports on smuggling into the French Empire along its terrestrial border.

AN/F12/251 French product level imports and exports.

AN/F12/1554-5 Reports on industry. Includes monthly reports from the cotton market in Rouen.

AN/F12/533 Various documents on cotton industry from Napoleonic period. Contains some prices for spun yarn in Eure department. "Bulletin de coton" giving qualitative overview of the state of the cotton industry for a given month (many missing). Firm level data for mechanized spinners in Seine department for 1808.

AN/F12/631 Daily price for merchandise (including raw cotton) at the Paris exchange (1806-1813). Qualitative departmental reports on state of industry.

AN/F12/1245B Annual reports from Beaucaire fair (an 6 - 1814).

AN/F12/1342 Tolozan's report on the state of the cotton industry in 1789.

AN/F12/1344-1348 Industrial survey of woollen industry (1792).

AN/F12/1467-1472 Industrial survey of leather tanning (1792).

AN/F12/1554 Price data for spun yarn and raw cotton in Eure department.

AN/F12/1561 Statistics on cotton industry (predominantly for the period after 1810)

AN/F12/1562-1564 Champagny's survey of the cotton industry (1806)

AN/F12/1570-1589 Detailed departmental statistics and reports for textile industry, 1810-1823.

AN/F12/1590-1600 Industrial survey for leather tanning, 1811

AN/F12/1602 Aggregate tables for textile industry from industrial surveys (cotton, wool, linen, silk and hemp).

F12/1859 French consular reports from across Europe. Cotton yarn prices in Bosnia and Malta.

A.6.2 Bibliothèque National de France (France)

Journal du Commerce: Commercial newspaper which sporadically reports prices from exchanges across France. Contains raw cotton prices from across the French Empire for 1798-1815.

Statistique de la France: Industrie (1847): Four volume edition of data from the 1839-47 firm survey published by the Ministry of Agriculture and Commerce. Contains spindle data for mechanized cotton spinning firms not published in Chanut et al. (2000).

Alamanch Impérial (1812): Contains population data by department

A.6.3 Institut National de la Statistique et des Etudes Economiques (France)

Annuaire Statistique de la France (1890): Statistical yearbook published by the Ministry for Commerce, Industrie and Colonies. Contains data on spinning capacity at the level of the department for 1887.

References

Acemoglu, D., D. Cantoni, S. Johnson, and J. A. Robinson (2011). The consequences of radical reform: The French Revolution. *The American Economic Review 101*(7), 3286–3307.

Acemoglu, Daron, S. J. and J. Robinson (2005). The rise of Europe: Atlantic trade, institutional change, and economic growth. *The American Economic Review 95*(3), 546–579.

Allen, R. C. (2009). *The British Industrial Revolution in Global Perspective.* Cambridge University Press.

Bairoch, P., J. Batou, and P. Chevre (1988). *Population des Villes Européennes de 800 à 1850: Banque de Données et Analyse Sommaire des Résultats.* Librairie Droz.

Béaur, G., P. Minard, and A. Laclau (1997). *Atlas de la Révolution Française: Economie.* Editions de l'École des Hautes Études en Sciences Sociales.

Chabert, A. (1945). *Essai sur les Mouvements des Prix en France de 1798 à 1820.* Librairie de Médicis.

Chandler, T. (1987). *Four Thousand Years of Urban Growth: An Historical Census.* The Edwin Meller Press.

Chanut, J.-M., J. Heffer, J. Mairesse, G. Postel-Vinay, F. Boccara, P. Sicsic, A. Straus, and P. Verley (2000). *L'Industrie Française au Milieu du 19 e Siècle (Les Enquêtes de la Statistique Générale en France).* Recherches d'histoire et de sciences sociales.

Chassagne, S. (1976). L'enquête, dite de Champagny, sur la situation de l'industrie cotonnière française au début de l'Empire (1805-1806). *Revue d'histoire économique et sociale*, 336–370.

Chassagne, S. (1978). L'industrie lainière en France à l'époque révolutionnaire et impériale (1790-1810). *Voies nouvelles pour l'histoire de la Révolution française*, 143–167.

Combes, P.-P., M. Lafourcade, J.-F. Thisse, and J.-C. Toutain (2011). The rise and fall of spatial inequalities in France: A long-run perspective. *Explorations in Economic History 48*(2), 243–271.

Crouzet, F. (1964). Wars, blockade, and economic change in Europe, 1792–1815. *The Journal of Economic History 24*(4), 567–588.

Crouzet, F. (1987). *L'économie britannique et le Blocus Continental: 1806-1813.* Presses Universitaires de France.

Crouzet, F. (2006). The Continental System after eighty years. In R. Findlay (Ed.), *Eli Heckscher, international trade, and economic history.* MIT Press.

Daudin, G. (2010). Domestic trade and market size in late-eighteenth-century France. *The Journal of Economic History 70*(3), 716–743.

Davis, L. E. and S. L. Engerman (2006). *Naval Blockades in Peace and War: An Economic History Since 1750.* Cambridge University Press.

Dépors, H. (1933). Recherches sur l'état de l'industrie des cuirs en France pendant le xviii e siècle et le début du xix e siècle. In E. Lebroux (Ed.), *Mémoires et documents, publiés par la Commission de recherche et de publication des documents relatifs à la vie économique de la révolution*, Volume 3. Imprimerie Nationale.

Edwards, M. M. (1967). *The Growth of the British Cotton Trade, 1780-1815.* Manchester

University Press.
Ellis, G. J. (1981). *Napoleon's Continental Blockade: The case of Alsace*. Oxford University Press.
English, W. (1954). The textile industry: Silk production and manufacture, 1750-1900. In C. J. Singer (Ed.), *A History of Technology IV: The Industrial Revolution c. 1750 to c. 1850*, pp. 308–327. Clarendon Press.
EURO-FRIEND (2015). European water archive, river discharge data.
Fernihough, A. and K. O'Rourke (2014). Coal and the European Industrial Revolution. *National Bureau of Economic Research* (No. w19802).
Forrest, A. (1989). *Conscripts and Deserters: The Army and French Society During the Revolution and Empire*. Oxford University Press.
Furet, F. and J. Ozouf (1982). *Reading and Writing: Literacy in France from Calvin to Jules Ferry*. Cambridge University Press.
Grab, A. (2003). *Napoleon and the Transformation of Europe*. Palgrave Macmillan.
Harley, C. K. (1988). Cotton textile prices and the Industrial Revolution. *The Economic History Review 51*(1), 49–83.
Harris, C. D. (1954). The market as a factor in the localization of industry in the United States. *Annals of the Association of American Geographers 44*(4), 315–48.
HathiTrust (2015). Lloyd's list.
Heckscher, E. F. (1922). *The Continental System: An Economic Interpretation*. Clarendon Press.
Irwin, D. A. (2005). The welfare cost of autarky: Evidence from the Jeffersonian trade embargo, 1807–09. *Review of International Economics 13*(4), 631–645.
Jenkins, D. T. (2003). The Western wool textile industry in the nineteenth century. In D. T. Jenkins (Ed.), *The Cambridge history of Western textiles*, Volume 2, pp. 761–789. Cambridge University Press.
Mann, J. d. L. (1954). The textile industry: Machinery for cotton, flax, wool, 1760-1850. In C. J. Singer (Ed.), *A History of Technology IV: The Industrial Revolution c. 1750 to c. 1850*, pp. 277–307. Clarendon Press.
Mitchell, B. R. (1988). *British Historical Statistics*. Cambridge University Press.
Mitchell, B. R. (2007). *International Historical Statistics. Europe, 1750-2005*. Palgrave Macmillan.
Modelski, G. (2003). *World Cities*. Faros.
Nunn, N. and N. Qian (2011). The potato's contribution to population and urbanization: Evidence from a historical experiment. *Quarterly Journal of Economics 126*(2), 593–650.
Nuvolari, A. and V. Tartari (2011). Bennet Woodcroft and the value of English patents, 1617–1841. *Explorations in Economic History 48*(1), 97–115.
O'Rourke, K. H. (2006). The worldwide economic impact of the French Revolutionary and Napoleonic Wars, 1793–1815. *Journal of Global History 1*(1), 123–149.
Özak, Ö. (2016). Distance to the technological frontier and economic development.
Perret, J., M. Gribaudi, and M. Barthelemy (2015). Roads and cities of 18th century France. *Scientific data 2*.

Riello, G. (2013). *Cotton: The Fabric that Made the Modern World*. Cambridge University Press.

Rubin, D. B. (2004). *Multiple imputation for nonresponse in surveys*. John Wiley Sons.

Solar, P. M. (2003). The linen industry in the nineteenth century. In D. T. Jenkins (Ed.), *The Cambridge history of Western textiles*, Volume 2. Cambridge University Press.

Tooke, T. (1848). *A History of Prices, and of the State of the Circulation, from 1793 to 1837: Preceded by a Brief Sketch of the State of Corn Trade in the Last Two Centuries*. Longman, Orme, Brown, Green, and Longmans.

Valero, A. and J. Van Reenen (2016). The economic impact of universities: Evidence from across the globe. *National Bureau of Economic Research* (No. w22501).

Vallée, G. and A.-A. Hargenvilliers (1936). *Compte général de la conscription de A.-A. Hargenvilliers publié d'après le manuscrit original avec une introduction et des notes*. Librairie de Recueil Sirey.

Wikipedia (2015). 130 departments of the First French Empire.

Wright, C. and C. E. Fayle (1928). *A History of Lloyd's from the Founding of Lloyd's Coffee House to the Present Day*. Macmillan and Company.