Economics 303Y1

The Economic History of Modern Europe to 1914

Topic no. 8 [12]: Impediments to Industrialization on the Continent:
France in the 18th and 19th Centuries

READINGS:

Within each section, the readings are listed in the chronological order of original publication (when that can be ascertained), except for some collections of essays.

A. General Readings on 18th- and 19th-Century Continental Europe: Impediments to Economic Growth and the Beginnings of Industrialization


   (b) ‘Reflections on the Concept of ‘Prerequisites’ of Modern Industrialization’, pp. 31-51. [From L'industria (Milan, 1952), no. 2]


* 9. H.J. Habakkuk and M. M. Postan, eds., *The Cambridge Economic History*, Vol. VI: The Industrial Revolutions and After, Parts I and II: Technological Change and Development in Western Europe (Cambridge, 1965), in particular the following:


(c) Folke Dovring, ‘The Transformation of European Agriculture’, in Part II (chapter 6), pp. 604-72.


Western Europe (Cambridge, 1965).


   (a) Alexander Gerschenkron, ‘Reflections on the Concept of ’Prerequisites' of Modern Industrialization’, pp. 9-29. [Reprinted from L'industria (Milan, 1957).]


   (a) ‘The European Economy in the Late Eighteenth Century’, pp. 25-117.


   g) Claude Fohlen, ‘Entrepreneurship and Management in France in the Nineteenth Century’, pp. 347 - 381.


   (e) T. Kemp, ‘Economic and Social Policy in France’, pp. 691 - 751.

   (f) Volker Hentschel, ‘German Economic and Social Policy, 1815 - 1939’, pp. 752 - 813.


51. Paul Bairoch, ‘Urbanization and the Economy in Preindustrial Societies: The Findings of


issue, on Technology and Productivity in Historical Perspective, ed. Herman de Jong and Stephen Broadberry.]


152. Angela Redish, Bimetallism: An Economic and Historical Analysis (Cambridge and New York: Cambridge University Press, 2000).


175. C. Knick Harley, ‘The Innis Lecture: Growth Theory and Industrial Revolutions in Britain
16


References to Part IV: pp. 910-30.


B. FRANCE: General Studies in Economic History


* 18. Robert Aldrich, ‘Late-Comer or Early-Starter? New Views on French Economic History’, *Journal of European Economic History*, 16 (Spring 1987), 89 - 100.


**C. France: Demography and Population Studies**


(b) Herbert Moller, ‘Population and Society during the Old Regime, c. 16540 - 1770’, pp. 19-41. [Original contribution.]


**Part I: General**


(e) J. Hajnal, ‘European Marriage Patterns in Perspective’, pp. 101-46. [Original contribution.]

**Part III: Europe and the United States**


(1951), 635-62, with statistical appendices from 7 (1952), 319-29.]


20. Jacques Dupâquier, La population française aux XVIIe et XVIIIe siècles (Paris, 1979);


   (c) David Weir, ‘Markets and Mortality in France, 1600 - 1789’, pp. 201-34.


D. France in the 17th and 18th Centuries: to the French Revolution


5. C.E. Labrousse, La crise de l'économie française à la fin de l'ancien régime et au début de la Révolution (Paris, 1944).


* 44. Robert Aldrich, ‘Late-Comer or Early-Starter? New Views on French Economic History’, *Journal of European Economic History*, 16 (Spring 1987), 89 - 100.


50. G. Postel-Vinay, ‘A la recherche de la révolution économique dans les campagnes, 1789 -


52. Eugene White, ‘Was There a Solution to the Ancien Régime's Financial Dilemma?’ *Journal of Economic History*, 49 (September 1989), 545 - 68.


80. George W. Grantham, ‘Food Rations in France in the Eighteenth and Early Nineteenth


94. Lesley Ellis Miller, ‘Manufactures and the Man: A Reassessment of the Place of Jacques-


E. French Agriculture in the 17th and 18th Centuries


* 10. Charles K. Warner, ed., \textit{Agrarian Conditions in Modern European History} (New York, 1964). See the following essays:


82. Cormac Ó Gráda and Jean-Michel Chevet, ‘Famine and Market in Ancien Régime France’,


F. General Studies in the Economic History of 19th-Century France:


   (b) Yves Lequin, ‘Labour in the French Economy Since the Revolution’, pp. 296 - 346 (to p. 318, up to 1914).

   (c) Claude Fohlen, ‘Entrepreneurship and Management in France in the Nineteenth Century’, pp. 347 - 381.


76. Robert Aldrich, ‘Late-Comer or Early-Starter? New Views on French Economic History’, *Journal of European Economic History*, 16 (Spring 1987), 89 - 100.


79. C. Nardinelli, ‘Productivity in XIXth Century France and Britain: A Note on the Comparisons’, *Journal of European Economic History*, 17 (Fall 1988), 427-34.


(e) Tom Kemp, ‘Economic and Social Policy in France’, pp. 691 - 751.


G. The French Economy in the 19th Century: Growth or Stagnation?


2. Rondo Cameron, ‘Profit, croissance et stagnation en France au XIXe siècle’, Economie appliquée, 10 (1957), 409-44.

   (a) Barry Supple, ed., The Experience of Economic Growth (1963), pp. 328-39;


H. French Agriculture in the 19th Century (1815-1914)


Part I: *Enclosures, Tenure, and Organization of Capital in Britain and Europe*. Section ii: *European Agriculture during Industrialization: Crises and Adjustments.*

a) John W. Shaffer, ‘Agrarian Change and Landlord-Tenant Relations in the French Nivernais.’

b) George Grantham, ‘Capital and Agrarian Structure in Early Nineteenth-Century France.’

c) Gilles Postel-Vinay, ‘Debt and Agricultural Production: The Languedocian Vineyard, 1870 - 1914.’


54. Pierre Sicsic, ‘City-Farm Wage Gaps in Late Nineteenth-Century France’, *The Journal of*
Economic History, 52 (September 1992), 675-95.


67. Donald M. G. Sutherland, ‘Peasants, Lords, and Leviathan: Winners and Losers from the


**I. French Entrepreneurship: The Landes Thesis**

** 1. David Landes, ‘French Entrepreneurship and Industrial Growth in the Nineteenth Century’, *Journal of Economic History*, 9 (1949), 45-61. Reprinted (with some omissions) in both:


J. The Debate over the Landes Thesis: With other Publications on French Entrepreneurship and Business Organization:


(b) David Landes, ‘Religion and Enterprise: the Case of the French Textile Industry’, pp. 41-86 [partly modifying his earlier views].


An important, seminal article based upon, but in effect reversing for France the theories of
Alexander Gerschenkron, as expounded in the following collection, which you should read first [see section I]


Note: Fohlen's views are a strong attack on those of Landes.


See Roehl (1976) above.


22. Katrina Honeyman and Jordan Goodman, ‘Regional Competition and Specialization in the


French Banking, Finance, and Investment from the French Revolution to 1914:


K. French Industries and Industrialization in the 19th Century


37. Thierry Magnac and Gilles Postel-Vinay, ‘Wage-Competition between Agriculture and
Acknowledgments

L. French Foreign Trade, Colonialism, and Commercial Policies, 1815 - 1914


QUESTIONS:

1. What were the major impediments to economic growth and more particularly to industrialization in 18th and 19th century France?

   a) For the 18th century, up to the French Revolution, were economic growth rates about comparable; or did the British surpass the French -- before or after the commencement of Britain's Industrial Revolution?

   b) What impact did the French Revolution, the subsequent Revolutionary and Napoleonic Wars, and Napoleon's economic policies have upon the French economy and French economic growth rates? Is this the period in which the British economy decisively overtook the French?

   c) Compare French and British economic growth rates in the 19th century.

2. Discuss the various impediments to French economic growth, or to growth in various regions of France, during the 18th and 19th centuries in terms of the following:

   a) the institutional heritage of the past: feudalism and manorialism;
   b) the structure of agriculture, in both southern and northern France;
   c) the location of natural resources in relation to transportation facilities and major ports and markets;
   d) demographic trends and population structures in rural and urban areas;
   e) political institutions of the Ancien Régime, the Revolutionary and Napoleonic Periods; and in the post 1815 period.
   f) government economic policies, before and after 1789: agriculture and land reform; commercial, monetary, and fiscal policies;
   g) educational institutions and structures;
   h) commercial and financial institutions: business organization and business attitudes; the scale of enterprise;
   i) social structures and social attitudes: towards business, commerce and finance, industry, labour, etc.: before and after 1789.

3. To what extent were these problems or impediments merely regional and to what extent were they general and ‘national”? What were the most pronounced regional differences in the economic development of France before the French Revolution? Which were the most developed and prosperous regions; and which were the most economically ‘backward’ and poorest regions? How do you explain the regional differences?

4. Discuss the thesis that the French economy industrialized much more slowly and much less completely than either the British or the German economies in the 19th century (1815 - 1914). Discuss the ‘revisionist’ case for a much more favourable comparison between British and French growth rates in the 19th century.

5. Discuss the impact of the French Revolutionary Land Reforms upon French agriculture and the French economy more generally in the 19th century.
6. Discuss and debate some of the current theses about the nature of French economic growth in the later 18th and 19th centuries:

a) Rondo Cameron's thesis about the relationships between/among the Revolutionary Land Reforms, peasant farming after the Revolution, slow population growth, and economic stagnation (rural and urban). What is the evidence for his thesis, particularly for demographic stagnation and labour scarcity?

b) David Landes' thesis that the family -- in agriculture, trade, banking, and industry, both as a social and economic unit -- acted as an impediment to entrepreneurship, industrialization, and economic growth in the 18th and 19th centuries. How important was industrial scale and industrial organization to economic growth in the 19th century? Was France unique? Discuss in particular Claude Fohlen's revision of the Landes thesis.

c) The O'Brien-Keyder thesis comparing the structures of British and French agriculture (especially northern French agriculture) in the 18th and 19th centuries. Discuss the problems of French agriculture, and their impact on French industrialization.


e) Crouzet's 'revisionist' theses on French economic growth in the 19th century.

f) Craft's 'Review of the Evidence' in discussing these debates and economic issues concerning the 19th century French economy.

7. Is it legitimate to consider problems of French economic growth in the 19th century as though France had been a fully integrated and homogenous national economic entity? Is it justifiable to make national economic comparisons between and among France, Great Britain, Germany, and Russia -- particularly in terms of 'national growth rates'? Or should we more properly make comparisons in terms of regional economies within all these countries? In the case of France, should we examine the question of industrialization in terms of the different experiences for such regions as North-West France (Lille and the Pas de Calais), Alsace-Lorraine, Normandy, etc.? If we are examining industrialization in terms of iron, coal, and steel, should we make comparisons between the British Midlands, France's Lille region, Alsace-Lorraine, southern Belgium, the Rhineland and Saar regions, and the Donbas region of Russia? [See question 3 above]

8. Under what other circumstances may national economic comparisons be more valid? What were the particularly 'national' features of French economic development between 1789 and 1914?

9. Discuss the role of the state and government economic policies in French industrialization from 1789 to 1914: positive or negative? Discuss in particular government fiscal, monetary, financial, commercial, military, and industrial policies.

10. What role did warfare, national defence, and foreign policy play in French economic development from 1789 to 1914?

11. What were the costs of the defeat in the Franco-Prussian war of 1870-1 -- its impact on French
economic development until 1914?

12. Discuss the role of foreign investments in French economic development: France's role as both an importer and exporter of capital, between 1815 and 1914?

13. What role did foreign trade and overseas colonization play in French economic development during the 19th century?

14. Did any region of France undergo either an agricultural or industrial ‘revolution’ before 1914?
Table 1 (a). FRENCH AND GERMAN AGRICULTURE IN THE 19th CENTURY

Distribution of Farm Lands

A. FRANCE: 1881

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Farms by Area</th>
<th>Percentage of Total Farms</th>
<th>Area in Hectares (2.47 acres)</th>
<th>Percentage of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 5 hectares</td>
<td>1,866,000</td>
<td>53.3%</td>
<td>5,600,000</td>
<td>11.5%</td>
</tr>
<tr>
<td>5 - 20 hectares</td>
<td>1,200,000</td>
<td>34.2%</td>
<td>12,300,000</td>
<td>25.3%</td>
</tr>
<tr>
<td>20 - 40 hectares</td>
<td>296,000</td>
<td>8.5%</td>
<td>8,400,000</td>
<td>17.3%</td>
</tr>
<tr>
<td>Over 40 hectares</td>
<td>142,000</td>
<td>4.1%</td>
<td>22,300,000</td>
<td>45.9%</td>
</tr>
<tr>
<td>(100 acres)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,504,000</td>
<td>100.0%</td>
<td>48,600,000</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Over 20 hectares

<table>
<thead>
<tr>
<th>Number of Farms by Area</th>
<th>Percentage of Total Farms</th>
<th>Area in Hectares</th>
<th>Percentage of Total Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>438,000</td>
<td>12.5%</td>
<td>30,700,000</td>
<td>63.2%</td>
</tr>
</tbody>
</table>
Table 1 (b). FRENCH AND GERMAN AGRICULTURE IN THE 19th CENTURY

Distribution of Farm Lands

B. GERMANY: 1907 (In terms of post 1919-frontiers)

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentages of the Total Arable Area per Category of Farms by Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>East Elbia*</td>
</tr>
<tr>
<td>Under 5 hectares</td>
<td>8.7%</td>
</tr>
<tr>
<td>5 - 20 hectares</td>
<td>21.3%</td>
</tr>
<tr>
<td>20 - 100 hectares</td>
<td>29.5%</td>
</tr>
<tr>
<td>Over 100 hectares (250 acres)</td>
<td>40.5%</td>
</tr>
<tr>
<td>Over 20 hectares</td>
<td>70.0%</td>
</tr>
</tbody>
</table>

Table 2. OUTPUT OF PRINCIPAL GRAIN CROPS OF SELECTED EUROPEAN COUNTRIES, IN MILLIONS OF QUINTALS, IN DECENNIAL AVERAGES, 1871-90 TO 1905-14

<table>
<thead>
<tr>
<th>Decade</th>
<th>Great Britain</th>
<th>France</th>
<th>Germany</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1781-90</td>
<td>35.0</td>
<td>85.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800-13</td>
<td>43.0</td>
<td>94.5</td>
<td></td>
<td>268.6</td>
</tr>
<tr>
<td>1815-24</td>
<td>49.5</td>
<td>104.0</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>1825-34</td>
<td>n.a.</td>
<td>116.3</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>1835-44</td>
<td>n.a.</td>
<td>131.4</td>
<td></td>
<td>310.1</td>
</tr>
<tr>
<td>1845-54</td>
<td>64.0</td>
<td>146.6</td>
<td>122.6</td>
<td>363.3</td>
</tr>
<tr>
<td>1855-64</td>
<td>68.0</td>
<td>158.5</td>
<td>153.7</td>
<td>381.2</td>
</tr>
<tr>
<td>1865-74</td>
<td>70.0</td>
<td>160.1</td>
<td>204.8</td>
<td>410.1</td>
</tr>
<tr>
<td>1875-84</td>
<td>n.a.</td>
<td>161.8</td>
<td>248.4</td>
<td>451.0</td>
</tr>
<tr>
<td>1885-94</td>
<td>56.9</td>
<td>160.1</td>
<td>304.6</td>
<td>515.4</td>
</tr>
<tr>
<td>1895-1904</td>
<td>52.5</td>
<td>172.1</td>
<td>391.0</td>
<td>479.3</td>
</tr>
<tr>
<td>1905-14</td>
<td>51.7</td>
<td>171.9</td>
<td>457.9</td>
<td>543.1</td>
</tr>
</tbody>
</table>

1 quintal = 100 kilograms = 0.10 metric ton = 220.46 lb.

Table 3.  

CROP YIELDS IN FRANCE, BRITAIN, AND GERMANY, 1906-10

Kilograms of Output per Hectare of Land: Five-Yer Means

(1 hectare = 2.47 acres)

<table>
<thead>
<tr>
<th>Crop</th>
<th>France</th>
<th>Britain</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>135</td>
<td>221</td>
<td>201</td>
</tr>
<tr>
<td>Rye</td>
<td>106</td>
<td>182</td>
<td>170</td>
</tr>
<tr>
<td>Barley</td>
<td>130</td>
<td>196</td>
<td>196</td>
</tr>
<tr>
<td>Oats</td>
<td>126</td>
<td>189</td>
<td>197</td>
</tr>
<tr>
<td>Potatoes</td>
<td>86</td>
<td>138</td>
<td>136</td>
</tr>
</tbody>
</table>


Table 4.  

WHEAT-TONS PER LABOUR-UNIT IN AGRICULTURE IN SELECTED COUNTRIES: FRANCE, BRITAIN, GERMANY, AND U.S. IN 1880 AND 1930

<table>
<thead>
<tr>
<th>Country</th>
<th>1880</th>
<th>1930</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>7.4</td>
<td>13.2</td>
</tr>
<tr>
<td>Great Britain</td>
<td>16.2</td>
<td>20.1</td>
</tr>
<tr>
<td>Germany</td>
<td>7.9</td>
<td>16.0</td>
</tr>
<tr>
<td>United States</td>
<td>13.0</td>
<td>22.5</td>
</tr>
</tbody>
</table>
Table 5. INDICES OF EUROPEAN AND AMERICAN AGRICULTURAL PRODUCTIVITY FROM 1810 TO 1910

Annual net output per agricultural worker (male) measured in million of calories

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>1810</th>
<th>1840</th>
<th>1860</th>
<th>1880</th>
<th>1900</th>
<th>1910</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain</td>
<td>14.0</td>
<td>17.5</td>
<td>20.0</td>
<td>23.5</td>
<td>22.5</td>
<td>23.5</td>
</tr>
<tr>
<td>France</td>
<td>7.0</td>
<td>11.5</td>
<td>14.5</td>
<td>14.0</td>
<td>15.5</td>
<td>17.0</td>
</tr>
<tr>
<td>Germany</td>
<td>7.5</td>
<td>10.5</td>
<td>14.5</td>
<td>22.0</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>7.0</td>
<td>7.5</td>
<td>7.0</td>
<td>9.0</td>
<td>11.0</td>
<td></td>
</tr>
<tr>
<td>U.S.A.</td>
<td>21.5</td>
<td>22.5</td>
<td>29.0</td>
<td>31.0</td>
<td>42.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 6.
Birth Rates in France, Germany, and Britain in 1900

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>Birth Rates per 1000 in 1900</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRANCE</td>
<td>19.7</td>
</tr>
<tr>
<td>GERMANY</td>
<td>24.8</td>
</tr>
<tr>
<td>GREAT BRITAIN</td>
<td>29.8</td>
</tr>
</tbody>
</table>

Table 7:
Rural and Agricultural Proportions of French Population, from 1870 to 1930

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage in Rural Areas</th>
<th>Percentage in Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870</td>
<td>69%</td>
<td>52%</td>
</tr>
<tr>
<td>1900</td>
<td>59%</td>
<td>43%</td>
</tr>
<tr>
<td>1930</td>
<td>50%</td>
<td>36%</td>
</tr>
</tbody>
</table>
Table 8:
Number of European Cities over 100,000 in 1900

<table>
<thead>
<tr>
<th>Country</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>15</td>
</tr>
<tr>
<td>Germany</td>
<td>48</td>
</tr>
<tr>
<td>Britain</td>
<td>50</td>
</tr>
</tbody>
</table>

Table 9.
Proportions of Total Populations engaged in Agriculture in England and France

<table>
<thead>
<tr>
<th>Year</th>
<th>England</th>
<th>France</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>76%</td>
<td>73%</td>
</tr>
<tr>
<td>1600</td>
<td>70%</td>
<td>69%</td>
</tr>
<tr>
<td>1700</td>
<td>55%</td>
<td>63%</td>
</tr>
<tr>
<td>1750</td>
<td>46%</td>
<td>61%</td>
</tr>
<tr>
<td>1800</td>
<td>40%</td>
<td>59%</td>
</tr>
</tbody>
</table>

Sources:


Table 10.
BANK RESOURCES AS A PERCENTAGE OF NET NATIONAL INCOME

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>YEAR</th>
<th>PERCENTAGE OF NNI</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRANCE</td>
<td>1870</td>
<td>16%</td>
</tr>
<tr>
<td>ENGLAND</td>
<td>1844</td>
<td>34%</td>
</tr>
<tr>
<td>BELGIUM</td>
<td>1875</td>
<td>42%</td>
</tr>
<tr>
<td>PRUSSIA</td>
<td>1865</td>
<td>31%</td>
</tr>
<tr>
<td>RUSSIA</td>
<td>1910</td>
<td>61%</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>1871</td>
<td>30%</td>
</tr>
</tbody>
</table>
Table 11.
FOREIGN CAPITAL INVESTMENTS OF THE CHIEF LENDERS
expressed in millions of current American dollars

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>1870</th>
<th>1910</th>
<th>1914</th>
<th>% of 1914</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.K.</td>
<td>4,900</td>
<td>12,000</td>
<td>20,000</td>
<td>44.0%</td>
</tr>
<tr>
<td>FRANCE</td>
<td>2,500</td>
<td>5,800</td>
<td>9,050</td>
<td>19.9%</td>
</tr>
<tr>
<td>GERMANY</td>
<td>4,800</td>
<td>5,800</td>
<td></td>
<td>12.8%</td>
</tr>
<tr>
<td>U.S.</td>
<td>100</td>
<td>500</td>
<td>3,500</td>
<td>7.8%</td>
</tr>
<tr>
<td>OTHER</td>
<td>500</td>
<td>1,100</td>
<td>7,100</td>
<td>18.6%</td>
</tr>
</tbody>
</table>

TOTAL 45,450 100.0%

Table 12. PER CAPITA PRODUCT IN SELECTED EUROPEAN COUNTRIES, 1850 - 1910: Measured in Constant 1970 U.S. Dollars

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>1850</th>
<th>1870</th>
<th>1890</th>
<th>1910</th>
<th>Percentage Total Growth 1850-1910</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRITAIN</td>
<td>660</td>
<td>904</td>
<td>1,130</td>
<td>1,302</td>
<td>197%</td>
</tr>
<tr>
<td>FRANCE</td>
<td>432</td>
<td>567</td>
<td>668</td>
<td>883</td>
<td>204%</td>
</tr>
<tr>
<td>GERMANY</td>
<td>418</td>
<td>579</td>
<td>729</td>
<td>958</td>
<td>229%</td>
</tr>
<tr>
<td>BELGIUM</td>
<td>534</td>
<td>738</td>
<td>932</td>
<td>1,110</td>
<td>208%</td>
</tr>
<tr>
<td>NETHERLANDS</td>
<td>481</td>
<td>591</td>
<td>768</td>
<td>952</td>
<td>198%</td>
</tr>
</tbody>
</table>

Table 13: Railway Tracks Open at Decennial Intervals, 1840 - 1914 in kilometres: Britain, Belgium, France, Germany, and Russia*

<table>
<thead>
<tr>
<th>Year</th>
<th>Britain</th>
<th>Belgium</th>
<th>FRANCE</th>
<th>Germany</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1840</td>
<td>2,390</td>
<td>335</td>
<td>498</td>
<td>468</td>
<td>27</td>
</tr>
<tr>
<td>1850</td>
<td>9,791</td>
<td>903</td>
<td>2,914</td>
<td>5,856</td>
<td>500</td>
</tr>
<tr>
<td>1860</td>
<td>14,594</td>
<td>1,730</td>
<td>9,166</td>
<td>11,088</td>
<td>1,625</td>
</tr>
<tr>
<td>1870</td>
<td>21,545</td>
<td>2,897</td>
<td>16,464</td>
<td>18,875</td>
<td>10,731</td>
</tr>
<tr>
<td>1880</td>
<td>25,045</td>
<td>4,112</td>
<td>23,233</td>
<td>33,836</td>
<td>22,864</td>
</tr>
<tr>
<td>1890</td>
<td>27,810</td>
<td>4,525</td>
<td>33,278</td>
<td>42,868</td>
<td>30,594</td>
</tr>
<tr>
<td>1900</td>
<td>30,061</td>
<td>4,591</td>
<td>38,107</td>
<td>51,675</td>
<td>53,231</td>
</tr>
<tr>
<td>1910</td>
<td>32,163</td>
<td>4,678</td>
<td>40,483</td>
<td>61,205</td>
<td>66,579</td>
</tr>
<tr>
<td>1913</td>
<td>32,613</td>
<td>n.a.</td>
<td>40,768</td>
<td>63,375</td>
<td>70,153</td>
</tr>
</tbody>
</table>

* 1 km. = 0.6214 miles.

a. Excluding Alsace-Lorraine: ceded to Germany in 1871

b. Including Alsace-Lorraine: acquired from France in 1871

Sources:
<table>
<thead>
<tr>
<th>Period</th>
<th>United Kingdom</th>
<th>France</th>
<th>France</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Domestic Exports in Millions</td>
<td>Index 1870-4 = 100</td>
<td>Exports in Millions of Francs</td>
<td>Index 1870-4 = 100</td>
</tr>
<tr>
<td>1860-4</td>
<td>138.4</td>
<td>58.9</td>
<td>2,402.6</td>
<td>71.0</td>
</tr>
<tr>
<td>1865-9</td>
<td>181.1</td>
<td>77.1</td>
<td>2,992.0</td>
<td>88.4</td>
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<tr>
<td>1870-4</td>
<td>234.8</td>
<td>100.0</td>
<td>3,385.0</td>
<td>100.0</td>
</tr>
<tr>
<td>1875-9</td>
<td>201.5</td>
<td>85.8</td>
<td>3,459.2</td>
<td>102.2</td>
</tr>
<tr>
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<td>234.3</td>
<td>99.8</td>
<td>3,457.4</td>
<td>102.1</td>
</tr>
<tr>
<td>1885-9</td>
<td>226.2</td>
<td>96.3</td>
<td>3,306.8</td>
<td>97.7</td>
</tr>
<tr>
<td>1890-4</td>
<td>234.4</td>
<td>99.8</td>
<td>3,419.6</td>
<td>101.0</td>
</tr>
<tr>
<td>1895-9</td>
<td>239.7</td>
<td>102.1</td>
<td>3,607.4</td>
<td>106.6</td>
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<tr>
<td>1900-4</td>
<td>289.2</td>
<td>123.2</td>
<td>4,215.4</td>
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<tr>
<td>1905-9</td>
<td>377.3</td>
<td>160.7</td>
<td>5,191.4</td>
<td>153.4</td>
</tr>
<tr>
<td>Year</td>
<td>Value 1</td>
<td>Value 2</td>
<td>Value 3</td>
<td>Value 4</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>1910-3</td>
<td>474.2</td>
<td>202.0</td>
<td>6,476.0</td>
<td>191.3</td>
</tr>
</tbody>
</table>

* estimated

<table>
<thead>
<tr>
<th>Year</th>
<th>Great Britain</th>
<th>Belgium</th>
<th>France</th>
<th>Germany</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>10.7</td>
<td>3.1</td>
<td>27.3</td>
<td>n.a.</td>
<td>35.5</td>
</tr>
<tr>
<td>1810</td>
<td>12.0</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>1820</td>
<td>14.1</td>
<td>n.a.</td>
<td>30.5</td>
<td>25.0</td>
<td>48.6</td>
</tr>
<tr>
<td>1830</td>
<td>16.3</td>
<td>4.1</td>
<td>32.6</td>
<td>28.2</td>
<td>56.1</td>
</tr>
<tr>
<td>1840</td>
<td>18.5</td>
<td>4.1</td>
<td>34.2</td>
<td>31.4</td>
<td>62.4</td>
</tr>
<tr>
<td>1850</td>
<td>20.8</td>
<td>4.3</td>
<td>35.8</td>
<td>34.0</td>
<td>68.5</td>
</tr>
<tr>
<td>1860</td>
<td>23.2</td>
<td>4.5</td>
<td>37.4</td>
<td>36.2</td>
<td>74.1</td>
</tr>
<tr>
<td>1870</td>
<td>26.0</td>
<td>4.8</td>
<td>36.1(^a)</td>
<td>40.8(^b)</td>
<td>84.5</td>
</tr>
<tr>
<td>1880</td>
<td>29.7</td>
<td>5.3</td>
<td>37.7</td>
<td>45.2</td>
<td>97.7</td>
</tr>
<tr>
<td>1890</td>
<td>33.0</td>
<td>6.1</td>
<td>38.3</td>
<td>49.4</td>
<td>117.8</td>
</tr>
<tr>
<td>1900</td>
<td>37.0</td>
<td>6.6</td>
<td>39.0</td>
<td>56.4</td>
<td>132.9</td>
</tr>
<tr>
<td>1910</td>
<td>40.9</td>
<td>7.4</td>
<td>39.6</td>
<td>64.9</td>
<td>160.7</td>
</tr>
</tbody>
</table>

\(^a\) Excluding Alsace-Lorraine.

\(^b\) Including Alsace-Lorraine.

**Sources:**


Table 16. OUTPUT OF COAL IN MILLIONS OF METRIC TONS:

FOR SELECTED EUROPEAN COUNTRIES, DECENNIAL MEANS: 1820/9 - 1910/3

<table>
<thead>
<tr>
<th>Decade</th>
<th>Great Britain</th>
<th>Belgium</th>
<th>France</th>
<th>Germany</th>
<th>Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>1820-9</td>
<td>20.00</td>
<td>n.a.</td>
<td>1.30</td>
<td>1.40</td>
<td>n.a.</td>
</tr>
<tr>
<td>1830-9</td>
<td>25.45</td>
<td>2.75</td>
<td>2.45</td>
<td>2.45</td>
<td>n.a.</td>
</tr>
<tr>
<td>1840-9</td>
<td>40.40</td>
<td>4.60</td>
<td>3.95</td>
<td>5.25</td>
<td>n.a.</td>
</tr>
<tr>
<td>1850-9</td>
<td>59.00</td>
<td>7.70</td>
<td>6.45</td>
<td>11.95</td>
<td>n.a.</td>
</tr>
<tr>
<td>1860-9</td>
<td>95.50</td>
<td>11.35</td>
<td>11.35</td>
<td>25.90</td>
<td>0.45</td>
</tr>
<tr>
<td>1870-9</td>
<td>129.45</td>
<td>14.70</td>
<td>16.20</td>
<td>45.65(a)</td>
<td>1.60</td>
</tr>
<tr>
<td>1880-9</td>
<td>163.40</td>
<td>17.95</td>
<td>20.85</td>
<td>71.90(b)</td>
<td>4.35</td>
</tr>
<tr>
<td>1890-9</td>
<td>194.15</td>
<td>20.70</td>
<td>28.45</td>
<td>107.05(c)</td>
<td>9.05</td>
</tr>
<tr>
<td>1900-9</td>
<td>245.30</td>
<td>24.05</td>
<td>34.70</td>
<td>179.25(d)</td>
<td>20.50</td>
</tr>
<tr>
<td>1910-3</td>
<td>275.40</td>
<td>24.80</td>
<td>39.90</td>
<td>247.50(e)</td>
<td>30.20</td>
</tr>
</tbody>
</table>

Germany: proportion of total coal output accounted for by lignite:

a. in 1871 22.4%

b. in 1880 20.5%

c. in 1890 21.4%

d. in 1900 27.0%

e. in 1910 31.3%

1 metric tonne = 1000 kilograms = 2,204.6 lb.

Table 17. DECENNIAL AVERAGES OF THE OUTPUT OF PIG IRON AND STEEL IN FRANCE, GERMANY, RUSSIA, AND THE UNITED KINGDOM, IN MILLIONS OF METRIC TONS, 1830-9 TO 1910-3 (IRON) AND 1870-9 TO 1910-3 (STEEL)

Average of 1880-9 = 100. 1 metric ton = 1000 kg. = 2,204.6 lb.

<table>
<thead>
<tr>
<th>Decade</th>
<th>France</th>
<th>Index</th>
<th>Germany</th>
<th>Index</th>
<th>Russia</th>
<th>Index</th>
<th>United Kingdom</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IRON</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1830-9</td>
<td>0.286</td>
<td>16</td>
<td>0.129</td>
<td>4</td>
<td>0.172</td>
<td>31</td>
<td>0.921</td>
<td>11</td>
</tr>
<tr>
<td>1840-9</td>
<td>0.442</td>
<td>25</td>
<td>0.172</td>
<td>5</td>
<td>0.192</td>
<td>35</td>
<td>1.625</td>
<td>20</td>
</tr>
<tr>
<td>1850-9</td>
<td>0.731</td>
<td>25</td>
<td>0.334</td>
<td>5</td>
<td>0.243</td>
<td>44</td>
<td>3.150</td>
<td>39</td>
</tr>
<tr>
<td>1860-9</td>
<td>1.164</td>
<td>66</td>
<td>0.813</td>
<td>25</td>
<td>0.304</td>
<td>56</td>
<td>4.602</td>
<td>57</td>
</tr>
<tr>
<td>1870-9</td>
<td>1.337</td>
<td>75</td>
<td>1.678</td>
<td>52</td>
<td>0.400</td>
<td>73</td>
<td>6.648</td>
<td>81</td>
</tr>
<tr>
<td>1880-9</td>
<td>1.772</td>
<td>100</td>
<td>3.217</td>
<td>100</td>
<td>0.547</td>
<td>100</td>
<td>8.040</td>
<td>100</td>
</tr>
<tr>
<td>1890-9</td>
<td>2.192</td>
<td>124</td>
<td>5.155</td>
<td>160</td>
<td>1.539</td>
<td>281</td>
<td>8.090</td>
<td>101</td>
</tr>
<tr>
<td><strong>STEEL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1870-9</td>
<td>0.260*</td>
<td>52</td>
<td>0.080*</td>
<td>33</td>
<td>0.695</td>
<td>30</td>
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<td></td>
</tr>
<tr>
<td>1880-9</td>
<td>0.500</td>
<td>100</td>
<td>1.320</td>
<td>100</td>
<td>0.240</td>
<td>100</td>
<td>2.340</td>
<td>100</td>
</tr>
<tr>
<td>1890-9</td>
<td>1.015</td>
<td>203</td>
<td>3.985</td>
<td>302</td>
<td>0.930</td>
<td>388</td>
<td>3.760</td>
<td>161</td>
</tr>
<tr>
<td>1900-9</td>
<td>2.175</td>
<td>435</td>
<td>9.505</td>
<td>720</td>
<td>2.490</td>
<td>1038</td>
<td>5.565</td>
<td>238</td>
</tr>
</tbody>
</table>

*1875-9 only.
Table 18. AGGREGATE AND PER CAPITA INDICES OF INDUSTRIAL PRODUCTION (UNITED KINGDOM IN 1900 = 100), AND PERCENTAGE SHARES OF WORLD INDUSTRIAL PRODUCTION, FOR VARIOUS COUNTRIES: IN 1860 AND 1913

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Industrial Output</th>
<th>Per Capita Industrial Output</th>
<th>Percentage Shares of World Industrial Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With 1913 Index</td>
<td>With 1913 Index</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1860 Index</td>
<td>1913 Index</td>
<td>1860 Index</td>
</tr>
<tr>
<td>United Kingdom*</td>
<td>45</td>
<td>127</td>
<td>64</td>
</tr>
<tr>
<td>Germany</td>
<td>11</td>
<td>138</td>
<td>15</td>
</tr>
<tr>
<td>France</td>
<td>18</td>
<td>57</td>
<td>20</td>
</tr>
<tr>
<td>Russia</td>
<td>16</td>
<td>77</td>
<td>8</td>
</tr>
<tr>
<td>ALL EUROPE</td>
<td>120</td>
<td>528</td>
<td>17</td>
</tr>
<tr>
<td>United States</td>
<td>16</td>
<td>298</td>
<td>21</td>
</tr>
<tr>
<td>Canada</td>
<td>1</td>
<td>9</td>
<td>7</td>
</tr>
</tbody>
</table>


* The United Kingdom of Great Britain and Ireland: the values for its aggregate and per capita industrial outputs for 1900 are taken as the base 100 for all the indices in columns 1 to 4. Note that columns 5 and 6 are percentages of total world industrial output.
<table>
<thead>
<tr>
<th>Period</th>
<th>United Kingdom</th>
<th>France</th>
<th>Germany</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>1860-64</td>
<td>72.6</td>
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</tr>
<tr>
<td>1865-69</td>
<td>82.8</td>
<td>95.8</td>
<td>72.6</td>
<td>75.5</td>
</tr>
<tr>
<td>1870-74</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>1875-79</td>
<td>105.5</td>
<td>109.5</td>
<td>120.8</td>
<td>111.4</td>
</tr>
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<td>123.4</td>
<td>126.6</td>
<td>160.6</td>
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<td>1885-89</td>
<td>129.5</td>
<td>130.3</td>
<td>194.9</td>
<td>214.9</td>
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<tr>
<td>1890-94</td>
<td>144.2</td>
<td>151.5</td>
<td>240.6</td>
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<tr>
<td>1895-99</td>
<td>167.4</td>
<td>167.8</td>
<td>306.4</td>
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</tr>
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<td>1900-04</td>
<td>181.1</td>
<td>176.1</td>
<td>354.3</td>
<td>445.7</td>
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<tr>
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<td>201.1</td>
<td>206.2</td>
<td>437.4</td>
<td>570.0</td>
</tr>
<tr>
<td>1910-13</td>
<td>219.5</td>
<td>250.2</td>
<td>539.5</td>
<td>674.9</td>
</tr>
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</table>

* Excluding construction, but including building materials.

Table 20. Demographic and National Income Data for France and Britain, 1800 - 1910

<table>
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<tr>
<th>Category</th>
<th>1830</th>
<th>1840</th>
<th>1850</th>
<th>1870</th>
<th>1890</th>
<th>1910</th>
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</thead>
<tbody>
<tr>
<td>Income Level in 1970 $US</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>$343</td>
<td>$432</td>
<td>$567</td>
<td>$668</td>
<td>$883</td>
<td>$1,300</td>
</tr>
<tr>
<td>Britain</td>
<td>$567</td>
<td>$904</td>
<td>$1,130</td>
<td>$1,300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth Rate*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>29.9</td>
<td>26.8</td>
<td>25.9</td>
<td>21.8</td>
<td>19.6</td>
<td>25.1</td>
</tr>
<tr>
<td>Britain</td>
<td>35.9</td>
<td>35.2</td>
<td>30.2</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Death Rate*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>25.0</td>
<td>21.4</td>
<td>28.4</td>
<td>22.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Britain</td>
<td>22.2</td>
<td>22.9</td>
<td>19.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labour Force in Agriculture+</td>
<td>n.a.</td>
<td>51.8</td>
<td>49.3</td>
<td>45.9</td>
<td>41.0</td>
<td>15.1</td>
</tr>
<tr>
<td>France</td>
<td>25.0</td>
<td>20.0</td>
<td>16.3</td>
<td></td>
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<td></td>
</tr>
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* Birth and Death Rates: crude rates measured per thousand
+ Agriculture includes extractive industries as well
n.a. = data are not available
