Economics 303Y1

The Economic History of Modern Europe to 1914

Topic No. 7 [16]: Entrepreneurship in European Industrialization during the 19th Century: Great Britain, c.1850 - 1914

I. GENERAL READINGS: for the European Continent


   (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.


   (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.


123. Trevor J. O. Dick, ed., *Business Cycles since 1820: New International Perspectives from


149. Max-Stephan Schulze, ‘Patterns of Growth and Stagnation in the Late Nineteenth-Century


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


<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Journal/Volume/Year</th>
</tr>
</thead>
</table>


References to Part IV: pp. 910-30.


199. Scott Wallstein, ‘Returning to Victorian Competition, Ownership, and Regulation: an Empirical Study of European Telecommunication at the Turn of the Twentieth


II. GREAT BRITAIN

A. Textbooks and General Surveys on British Economic History, 1850 - 1914:


7. W. H. B. Court, British Economic History, 1870-1914: Commentary and Documents


   b) John Cantwell, ‘Railways and late Victorian Economic Growth’, pp. 73-95.


46.


Donald Winch and Patrick K. O’Brien, eds., The Political Economy of British Historical


Vol I: Industrialization, 1700 - 1860

a) Joel Mokyr, ‘Accounting for the Industrial Revolution’, pp. 1-27


Vol. II: Economic Maturity, 1860 - 1939


d) Gary B. Magee, ‘Manufacturing and Technological Change, pp. 74-98.


n) Sue Bowden and David Higgins, ‘British Industry in the Inter-War Years’, pp. 373-402.


Vol. III: Structural Changes and Growth, 1939 - 2000


4. G.P. Jones and A.G. Pool, A Hundred Years of Economic Development in Great Britain, 1840-1940 (London, 1940; reprinted 1963), Part II: chapters VIII and IX.


a) Barry Supple, ed., The Experience of Economic Growth: Case Studies in Economic History (New York, 1963), pp. 205 - 16 (with omissions, but also with


* 38. Derek Aldcroft and H.W. Richardson, eds., The British Economy, 1870-1939 (London, 1969). Read the introduction, pp. 3 - 100, especially on ‘The Business Cycle’, pp. 23-60, while ignoring the post-1914 sections; and read especially the following essays:


** 42. David Landes, The Unbound Prometheus: Technological Change and Industrial Development in Western Europe from 1750 (Cambridge, 1969), chapter 5: ‘Short


   (h) S. B. Saul, ‘Some Thoughts on ... the Performance of the Late Victorian Economy’, pp. 393-400.

   (a) Introduction by the editors, pp. 1-73 (skim read).
   (c) A. G. Ford, ‘British Economic Fluctuations, 1870-1914’, pp. 131-60. [Reprinted from The Manchester School of Economic and Social Studies, 37 (1969).]


   (d) Chapter 5, ‘The British Climacteric’, pp. 112- 34.


   (a) Editors' introduction, pp. i - xiii.

N.B. See below for the completely revised edition of 1994, with many new authors.


** 57. François Crouzet, The Victorian Economy, trans. A.S. Forster (London, 1982). In particular:
   (c) Chapter 4: ‘Problems of Growth’, pp. 101-144.


60. William Kennedy, ‘Economic Growth and Structural Change in the United Kingdom’, Journal of Economic History, 42 (March 1982), 105-14. Followed by:

N.B. These three papers all involved advanced theory and econometrics.


York, 1986).


221-43.


n) Sue Bowden and David Higgins, ‘British Industry in the Inter-War Years’, pp. 373-402.

C. ‘The Great Depression’ of 1873 - 1896: Publications specifically concerning this debate


7. J. Saville, ‘Mr. Coppock on the ‘Great Depression’: A Critical Note’, and:


D. **Money, Prices, Banking, and Business Cycles in the British: Depressions and Booms, 1873-1914:**

N.B. The role of capital exports, overseas investments, international trade, and the gold standard all enter into these issues of money, prices, and business cycles in the British economy.


(b) chapter 2, ‘Cycles in the British Economy, 1790-1914’, pp. 31-57.


(a) Introduction by the editors, pp. 1-73 (skim read).


(c) A. G. Ford, ‘British Economic Fluctuations, 1870-1914’, pp. 131-60. [Reprinted
from The Manchester School of Economic and Social Studies, 37 (1969).]


(b) chapter 2, ‘The Juglar Pattern’, pp. 33-68.

(c) chapter 3, ‘The Kondratiev Price Swing’, pp. 69-93.

(d) chapter 5, ‘The British Climacteric’, pp. 112-34.

(e) chapter 6, ‘The Rate of Growth’, pp. 135-57.

chapters 10-11.


real and monetary factors.


47. Charles Kindleberger, Keynesianism vs. Monetarism: And Other Essays in Financial History (London, 1985), especially:


a) Forrest H. Capie, Terence C. Mills, and Geoffrey Wood, ‘Money, Interest Rates and
the Great Depression: Britain from 1870 to 1913’, pp. 249 - 284.


74. Forrest Capie, Charles Goodhart, Stanley Fischer, and Norbert Schnadt, The Future of


* 17. Derek Aldcroft and H.W. Richardson, eds., The British Economy, 1870-1939 (London, 1969). Read the introduction, pp. 3 - 100 (ignoring the post-1914 sections); and the following essays (already cited in Section A):


c) S. B. Saul, ‘Some Thoughts on the Performance of the Late Victorian Economy’, pp. 393-400.


(c) Donald McCloskey, ‘Did Victorian Britain Fail?’, pp. 94-110. [Reprinted from Economic History Review, 2nd ser. 23 (1970).]


c) James Foreman-Peck, ‘Railways and Late Victorian Growth’, pp. 73 - 95.


64. Maurice W. Kirby and Mary B. Rose, Business Enterprise in Modern Britain from the Eighteenth to the Twentieth Century (London and New York: Routledge, 1994).


* 95. Tom Nicholas, ‘Enterprise and Management’, in Roderick Floud and Paul Johnson, eds.,


F. Enterprise and Technology: Comparisons between Great Britain, Germany and the United States in the Later Nineteenth Century.

[i] General Comparisons


International Competition in Coal, Iron and Steel


G. Other Industries and Businesses: Textile, Metallurgical, Coal, Engineering, Armaments, and Transport


15. Lars Sandberg, Lancashire in Decline: A Study of Entrepreneurship, Technology and International Trade (Columbus, 1974).


47. Rod W. Ambler, ed., The History and Practice of Britain’s Railways: A New Research


57. Mary B. Rose, Firms, Networks and Business Values: The British and American Cotton Industries since 1750 (Cambridge and New York: Cambridge University Press, 2000).


68. Lewis Johnson and Hugh Murphy, British Shipbuilding and the State: a Political Economy of Decline (Exeter: Exeter University Press, 2002).


86. John Elliot, The Industrial Development of the Ebbw Valleys, 1780 - 1914 (Cardiff:
University of Wales Press, 2004).


H. Labour Conditions, Real Wages, and the Standard of Living:


   (b) P. Thane, ‘Social History, 1860-1914,’ pp. 198-238.


33. Henk Jan Brinkman, J. W. Drukker, and Brigitte Slot, ‘Height and Income: A New Method for the Estimation of Historical National Income Series,’ *Explorations in Economic History*, 25 (1988), 227 - 64. This article is almost entirely devoted to the 19th-century Netherlands; but it has methodological and historical implications for the British debate.


I. **British Banking and Financial Institutions, 1815 - 1914**


**J. International Payments and the Gold Standard**


    (b) chapter 4, ‘International Trade and European Domination, 1875-1914’, pp. 94-126.

    (c) chapter 5, ‘International Factor Mobility, 1875-1914’, pp. 127-159.

* 21. Michael D. Bordo and Anna J. Schwartz, A Retrospective on the Classical Gold Standard, 1821 - 1931 (London, 1984). The following conference papers each conclude with comments from discussants and members of the audience. Only the papers relevant to this topic are listed below.


pp. 311-60.


   e) T.C. Mills and G.E. Wood, ‘Money and Interest Rates in Britain from 1870 to 1913', pp. 199-220.

   f) P.L. Cottrell, ‘Silver, Gold and the International Monetary Order, 1851-96', pp. 221-43.


K. Foreign Trade and Capital Exports:


   (a) A. J. Brown, ‘Britain and the World Economy.’


   (c) S. B. Saul, ‘The Export Economy.’


(a) Editor's Introduction, pp. 1-14.


29. Donald McCloskey, ‘Britain's Loss from Foreign Industrialization: A Provisional Estimate’, *Explorations in Economic History*, 8 (1970 - 71); reprinted in Donald


   (c) Michael Edelstein, ‘Foreign Investment and Empire, 1860-1914’, pp. 70-98.

   (a) ‘From Dependence to Autonomy: Judgements on Trade as an Engine of Growth’, pp. 139 - 54. [Original essay, published for the first time in this volume.]


   (b) chapter 4, ‘International Trade and European Domination, 1875-1914’, pp. 94-126.
(c) chapter 5, ‘International Factor Mobility, 1875-1914’, pp. 127-159.


Sidney Pollard, ‘Comment on Peter Temin's Comment’, both in:


64. Charles Harvey and Jon Press, ‘Overseas Investment and the Professional Advance of
British Metal Mining Engineers, 1851 - 1914', Economic History Review, 2nd ser. 42 (Feb. 1989), 64-86.


121. Stephen Yafa, *Big Cotton: How a Humble Fiber Created Fortunes, Wrecked Civilizations,*


QUESTIONS:

1. Did Great Britain lose industrial hegemony after ca. 1870: how and why? In what industrial fields in particular did Britain lose her leadership to Germany and the U.S.? In which did she retain it? In what industrial fields did Britain advance?

2. Did British industry undergo a phase of ‘retardation’ from 1870 to 1914, or from 1895 - 1914? Did British industry and the British economy in general suffer then from serious structural defects? Or were the difficulties experienced by British industry in this period due to foreign factors beyond British control?

3. More specifically, can British industry be criticized for ‘failures’ in technological innovation (or the adaptation of new technologies), productivity, and especially entrepreneurship? Compare in particular the nature and structure of business and industrial organization in Great Britain and Germany in this period.

4. What other problems did certain and various British industries face in this period: domestic and foreign? Why were they not resolved? Was there a general ‘depression’ from 1873 to 1896?

5. Can Britain's 'failures' be attributed to her educational systems, cultural values, and social structure?

6. On the other hand, what is the evidence for industrial innovation and economic growth in this period? How did Britain fare in the so-called New Industries (in both the manufacturing and distribution of consumer goods)?

7. Did Great Britain prosper in the era 1870-1914? In particular how did the British working classes fare in this period? Discuss this question also in terms of the previous question on the ‘consumer goods revolution.’

8. Discuss the influence of foreign trade and overseas capital investments on the changing structure of British industry in the period 1870-1914. What factors determined whether capital would be invested at home or abroad in this period?

9. Why did the agricultural sector experience a severe contraction in this period, 1870-1914? Was that contraction harmful or beneficial for the British economy as a whole?
10. Examine the advances and setbacks, achievements and failures in the following British industries from 1870 to 1914: iron, coal, and steel; cottons and woollens; shipbuilding and marine engineering; chemical (coal-based, petroleum-based, wood-based); electrical; consumer goods; automobiles; etc.

11. On balance, what is your view of the performance of the British economy, relative to that of the German and American economies, in this period?

12. Explain the course of prices from (a) 1873 to 1896, and (b) 1896 to 1914: were the major factors causing first deflation and then inflation monetary or real? Were the real factors essentially technological? What bearing do the price movements have upon the debate concerning the performance of British industry in this era? Explain the behaviour of interest rates in relation to: (a) movements in the price level; (b) the performance of the British economy.
Table 1. CAPITAL INVESTMENTS, DOMESTIC AND FOREIGN, IN THE BRITISH ECONOMY, 1870-4 TO 1910-14

Net Domestic Capital Formation and Net Foreign Investments, in Millions of Pounds Sterling, Current Values, and as Percentages of Net National Product:

Quinquennial Means, 1870 - 1914

<table>
<thead>
<tr>
<th>Period</th>
<th>Net National Product in Millions £</th>
<th>Net Domestic Capital Formation Millions £</th>
<th>N.D.C.F. as % of NNP</th>
<th>Net Foreign Investment in Millions £</th>
<th>N.F.I. as % of NNP</th>
<th>Total Investment as % of NNP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1870-4</td>
<td>1,020.6</td>
<td>26.6</td>
<td>2.6%</td>
<td>78.4</td>
<td>7.7%</td>
<td>10.3%</td>
</tr>
<tr>
<td>1875-9</td>
<td>1,036.8</td>
<td>48.6</td>
<td>4.7%</td>
<td>30.4</td>
<td>2.9%</td>
<td>7.6%</td>
</tr>
<tr>
<td>1880-4</td>
<td>1,080.8</td>
<td>32.4</td>
<td>3.0%</td>
<td>54.6</td>
<td>5.1%</td>
<td>8.0%</td>
</tr>
<tr>
<td>1885-9</td>
<td>1,153.4</td>
<td>14.2</td>
<td>1.2%</td>
<td>80.4</td>
<td>7.0%</td>
<td>8.2%</td>
</tr>
<tr>
<td>1890-4</td>
<td>1,307.4</td>
<td>29.0</td>
<td>2.2%</td>
<td>69.8</td>
<td>5.3%</td>
<td>7.5%</td>
</tr>
<tr>
<td>1895-9</td>
<td>1,503.8</td>
<td>66.8</td>
<td>4.4%</td>
<td>44.4</td>
<td>3.0%</td>
<td>7.4%</td>
</tr>
<tr>
<td>1900-4</td>
<td>1,671.6</td>
<td>109.2</td>
<td>6.5%</td>
<td>34.4</td>
<td>2.1%</td>
<td>8.6%</td>
</tr>
<tr>
<td>1905-9</td>
<td>1,833.0</td>
<td>57.4</td>
<td>3.1%</td>
<td>132.6</td>
<td>7.2%</td>
<td>10.4%</td>
</tr>
<tr>
<td>1910-4</td>
<td>2,107.4</td>
<td>36.0</td>
<td>1.7%</td>
<td>190.0</td>
<td>9.0%</td>
<td>10.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Decade</th>
<th>Germany</th>
<th>U.K.</th>
<th>U.K.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Mitchell</td>
<td>(Kuznets</td>
<td>(Feinstein</td>
</tr>
<tr>
<td>1860-9</td>
<td>11.9%</td>
<td>10.0%</td>
<td>-</td>
</tr>
<tr>
<td>1870-9</td>
<td>12.1%</td>
<td>11.8%</td>
<td>8.9%</td>
</tr>
<tr>
<td>1880-9</td>
<td>11.1%</td>
<td>10.9%</td>
<td>8.1%</td>
</tr>
<tr>
<td>1890-9</td>
<td>13.6%</td>
<td>10.1%</td>
<td>7.5%</td>
</tr>
<tr>
<td>1900-9</td>
<td>14.4%</td>
<td>11.7%</td>
<td>9.5%</td>
</tr>
</tbody>
</table>
Table 3. **UNITED KINGDOM**

**AVERAGE ANNUAL GROWTH RATES (% per annum)**

<table>
<thead>
<tr>
<th>Period</th>
<th>Manufacturing &amp; Mining</th>
<th>Gross Domestic Product (1907 Prices)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1853-1873</td>
<td>2.7%</td>
<td>1.95%</td>
</tr>
<tr>
<td>1873-1883</td>
<td>2.2%</td>
<td>1.90%</td>
</tr>
<tr>
<td>1883-1899</td>
<td>2.1%</td>
<td>1.85%</td>
</tr>
<tr>
<td>1899-1913</td>
<td>2.0%</td>
<td>1.70%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
<th>No. Years</th>
<th>Total Real Industrial Output (at constant prices)</th>
<th>Gross Domestic Product at Constant Factor Prices (from output data)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1855-69</td>
<td>15</td>
<td>2.08%</td>
<td>1.63%</td>
</tr>
<tr>
<td>1870-84</td>
<td>15</td>
<td>2.04%</td>
<td>1.71%</td>
</tr>
<tr>
<td>1885-99</td>
<td>15</td>
<td>2.91%</td>
<td>2.14%</td>
</tr>
<tr>
<td>1900-13</td>
<td>14</td>
<td>1.60%</td>
<td>1.64%</td>
</tr>
<tr>
<td>1855-1913</td>
<td>59</td>
<td>2.29%</td>
<td>1.87%</td>
</tr>
<tr>
<td>1870-1913</td>
<td>44</td>
<td>2.09%</td>
<td>1.82%</td>
</tr>
</tbody>
</table>

Table 5. 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>1913 Index</td>
<td>1860 %</td>
</tr>
<tr>
<td>Frontiers</td>
<td></td>
<td>1913 Index</td>
<td>1913 %</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></td>
<td></td>
<td>45</td>
<td>53%</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>
<td></td>
<td></td>
<td></td>
</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>
<tr>
<td>1880-84</td>
<td>123.4</td>
<td>126.6</td>
<td>160.6</td>
<td>170.4</td>
</tr>
<tr>
<td>1885-89</td>
<td>129.5</td>
<td>130.3</td>
<td>194.9</td>
<td>214.9</td>
</tr>
<tr>
<td>1890-94</td>
<td>144.2</td>
<td>151.5</td>
<td>240.6</td>
<td>266.4</td>
</tr>
<tr>
<td>1895-99</td>
<td>167.4</td>
<td>167.8</td>
<td>306.4</td>
<td>314.2</td>
</tr>
<tr>
<td>1900-04</td>
<td>181.1</td>
<td>176.1</td>
<td>354.3</td>
<td>445.7</td>
</tr>
<tr>
<td>1905-09</td>
<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>
</tbody>
</table>

* Excluding construction, but including building materials.

Table 7. REAL GROSS DOMESTIC PRODUCT PER WORKER IN THE UNITED KINGDOM, 1856 - 1913

Average Annual Percentage Rates of Growth

<table>
<thead>
<tr>
<th>Period</th>
<th>Income</th>
<th>Expenditure</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1856 - 73</td>
<td>1.32</td>
<td>1.38</td>
<td>1.12</td>
</tr>
<tr>
<td>1873 - 82</td>
<td>0.90</td>
<td>1.03</td>
<td>1.20</td>
</tr>
<tr>
<td>1882 - 99</td>
<td>1.49</td>
<td>1.27</td>
<td>0.85</td>
</tr>
<tr>
<td>1899 -1913</td>
<td>0.09</td>
<td>0.33</td>
<td>0.72</td>
</tr>
</tbody>
</table>

Table 8. 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>
<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>23,233a</td>
<td>33,836b</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 10. 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 11. 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>Kingdom</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRON:</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>
</tbody>
</table>

STEEL:

<p>| | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<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>
<td></td>
<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 12.
INTERNATIONAL COMPARISONS IN STEEL PRODUCTION, 1906-13
Prices and Costs of Steel Production in Germany, U.S. & Britain

A. Steel Prices, in Shillings per Metric Ton (1906-13 mean)

<table>
<thead>
<tr>
<th>Steel Product</th>
<th>German Domestic</th>
<th>German Export</th>
<th>American Domestic</th>
<th>British Domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Rails</td>
<td>n.a.</td>
<td>110</td>
<td>115</td>
<td>121</td>
</tr>
<tr>
<td>Steel Bars</td>
<td>106</td>
<td>106</td>
<td>127</td>
<td>139</td>
</tr>
<tr>
<td>Heavy Plates</td>
<td>124</td>
<td>119</td>
<td>132</td>
<td>139</td>
</tr>
<tr>
<td>Structural Steel</td>
<td>114</td>
<td>107</td>
<td>133</td>
<td>130</td>
</tr>
</tbody>
</table>

B. German & American Steel Prices, as Percentages of British Prices

<table>
<thead>
<tr>
<th>Steel Product</th>
<th>German Domestic</th>
<th>German Export</th>
<th>American Domestic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Rails</td>
<td>n.a.</td>
<td>90.9%</td>
<td>95.0%</td>
</tr>
<tr>
<td>Steel Bars</td>
<td>76.3%</td>
<td>76.3%</td>
<td>91.4%</td>
</tr>
<tr>
<td>Heavy Plates</td>
<td>89.2%</td>
<td>85.6%</td>
<td>95.0%</td>
</tr>
<tr>
<td>Structural Steel</td>
<td>87.7%</td>
<td>82.3%</td>
<td>102.3%</td>
</tr>
</tbody>
</table>

C. German & American Production Costs as Percentages of the British Cost

<table>
<thead>
<tr>
<th>Input</th>
<th>German (1906-13)</th>
<th>American (1910-13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron Ore</td>
<td>69.0%</td>
<td>97.0%</td>
</tr>
<tr>
<td>Fuel</td>
<td>88.0%</td>
<td>65.0%</td>
</tr>
<tr>
<td>Scrap Metal</td>
<td>95.0%</td>
<td>99.0%</td>
</tr>
<tr>
<td>Labour</td>
<td>72.0%</td>
<td>170.0%</td>
</tr>
<tr>
<td>Average Unit Costs</td>
<td>72.0%</td>
<td>90.0%</td>
</tr>
<tr>
<td>Factor Productivity</td>
<td>115.0%</td>
<td>115.0%</td>
</tr>
</tbody>
</table>
D. McCloskey on British-American Productivity Difference

Steel Product (1907-09) | British Advantage | American Advantage
--- | --- | ---
Heavy Plates | 1.57% |  
Rails | 8.13% |  
Bars, Rods | 7.22% |  
Structural Steel | 5.94% |  
Blank Plates, Sheets | 1.85% |  

E. WORLD STEEL PRODUCTION, 1865 - 1910

in Thousands of Metric Tons (2,204.6 lb.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Britain</th>
<th>Germany</th>
<th>U. S.</th>
<th>WORLD TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1865</td>
<td>225</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1870</td>
<td>286</td>
<td>169</td>
<td>68</td>
<td>703</td>
</tr>
<tr>
<td>1880</td>
<td>1,320</td>
<td>660</td>
<td>1,267</td>
<td>4,273</td>
</tr>
<tr>
<td>1890</td>
<td>3,637</td>
<td>2,161</td>
<td>4,346</td>
<td>12,096</td>
</tr>
<tr>
<td>1900</td>
<td>5,130</td>
<td>6,645</td>
<td>10,382</td>
<td>28,727</td>
</tr>
<tr>
<td>1910</td>
<td>6,374</td>
<td>13,698</td>
<td>26,512</td>
<td>58,656</td>
</tr>
</tbody>
</table>
Table 13. FOREIGN TRADE

CURRENT VALUES AND INDICES OF THE DOMESTIC EXPORTS OF THE UNITED KINGDOM, FRANCE, AND GERMANY: QUINQUENNIAL MEANS, 1860-4 TO 1910-13

<table>
<thead>
<tr>
<th>Period</th>
<th>U. K.</th>
<th>U.K.</th>
<th>France</th>
<th>France</th>
<th>Germany</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>
<td>Exports in Millions of Marks</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>
<td>2,328.4*</td>
<td>100.0</td>
</tr>
<tr>
<td>1865-9</td>
<td>181.1</td>
<td>77.1</td>
<td>2,992.0</td>
<td>88.4</td>
<td>2,696.1*</td>
<td>115.8</td>
</tr>
<tr>
<td>1870-4</td>
<td>234.8</td>
<td>100.0</td>
<td>3,385.0</td>
<td>100.0</td>
<td>3,125.0</td>
<td>134.2</td>
</tr>
<tr>
<td>1875-9</td>
<td>201.5</td>
<td>85.8</td>
<td>3,459.2</td>
<td>102.2</td>
<td>3,067.4</td>
<td>131.7</td>
</tr>
<tr>
<td>1880-4</td>
<td>234.3</td>
<td>99.8</td>
<td>3,457.4</td>
<td>102.1</td>
<td>3,125.0</td>
<td>133.2</td>
</tr>
<tr>
<td>1885-9</td>
<td>226.2</td>
<td>96.3</td>
<td>3,306.8</td>
<td>97.7</td>
<td>3,067.4</td>
<td>131.7</td>
</tr>
<tr>
<td>1890-4</td>
<td>234.4</td>
<td>99.8</td>
<td>3,419.6</td>
<td>101.0</td>
<td>3,102.0</td>
<td>133.2</td>
</tr>
<tr>
<td>1895-9</td>
<td>239.7</td>
<td>102.1</td>
<td>3,607.4</td>
<td>106.6</td>
<td>3,688.4</td>
<td>158.4</td>
</tr>
<tr>
<td>1900-4</td>
<td>289.2</td>
<td>123.2</td>
<td>4,215.4</td>
<td>124.5</td>
<td>4,791.6</td>
<td>205.8</td>
</tr>
<tr>
<td>1905-9</td>
<td>377.3</td>
<td>160.7</td>
<td>5,191.4</td>
<td>153.4</td>
<td>6,386.0</td>
<td>274.3</td>
</tr>
<tr>
<td>1910-3</td>
<td>474.2</td>
<td>202.0</td>
<td>6,476.0</td>
<td>191.3</td>
<td>8,658.8</td>
<td>371.9</td>
</tr>
</tbody>
</table>

* estimated
Table 14.

BRITISH FOREIGN TRADE COMPONENTS, 1801/10 - 1901/10


<table>
<thead>
<tr>
<th>Decade</th>
<th>Export Index</th>
<th>Exports - in £</th>
<th>Imports = in £</th>
<th>Balance + on Commodity Account in £</th>
<th>Serv- + losses &amp; Interest in £</th>
<th>Divid- = ends &amp; Interest in £</th>
<th>Balance on the Current Account in £</th>
<th>Accumulated Balance of Overseas Investments* in £ sterling</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801-10</td>
<td>100.0</td>
<td>41.05</td>
<td>50.95</td>
<td>-9.90</td>
<td></td>
<td></td>
<td></td>
<td>104.50</td>
</tr>
<tr>
<td>1811-20</td>
<td>101.3</td>
<td>41.60</td>
<td>49.80</td>
<td>-8.20</td>
<td></td>
<td></td>
<td></td>
<td>149.50</td>
</tr>
<tr>
<td>1821-30</td>
<td>89.2</td>
<td>36.60</td>
<td>47.05</td>
<td>-10.45</td>
<td>12.40</td>
<td>4.40</td>
<td>6.35</td>
<td>314.50</td>
</tr>
<tr>
<td>1831-40</td>
<td>110.0</td>
<td>45.15</td>
<td>63.70</td>
<td>-18.55</td>
<td>16.35</td>
<td>6.70</td>
<td>4.50</td>
<td>591.00</td>
</tr>
<tr>
<td>1841-50</td>
<td>140.0</td>
<td>57.45</td>
<td>79.35</td>
<td>-21.90</td>
<td>18.70</td>
<td>8.50</td>
<td>5.30</td>
<td>197.00</td>
</tr>
<tr>
<td>1851-60</td>
<td>259.6</td>
<td>106.55</td>
<td>137.20</td>
<td>-30.65</td>
<td>33.60</td>
<td>14.10</td>
<td>17.05</td>
<td>1127.00</td>
</tr>
<tr>
<td>1861-70</td>
<td>404.6</td>
<td>166.10</td>
<td>223.60</td>
<td>-57.50</td>
<td>62.50</td>
<td>26.30</td>
<td>31.30</td>
<td>1716.00</td>
</tr>
<tr>
<td>1871-80</td>
<td>537.0</td>
<td>220.45</td>
<td>313.85</td>
<td>-93.40</td>
<td>89.90</td>
<td>53.15</td>
<td>49.65</td>
<td>1127.00</td>
</tr>
<tr>
<td>1881-90</td>
<td>570.8</td>
<td>234.30</td>
<td>331.95</td>
<td>-97.65</td>
<td>97.80</td>
<td>74.50</td>
<td>74.65</td>
<td>1716.00</td>
</tr>
<tr>
<td>1891-00</td>
<td>584.0</td>
<td>239.75</td>
<td>385.20</td>
<td>-145.45</td>
<td>94.55</td>
<td>97.10</td>
<td>46.20</td>
<td>2296.00</td>
</tr>
<tr>
<td>1901-10</td>
<td>845.9</td>
<td>347.25</td>
<td>505.55</td>
<td>-158.30</td>
<td>123.55</td>
<td>132.15</td>
<td>97.40</td>
<td>3006.50</td>
</tr>
</tbody>
</table>
**Explanation of the Table:**

Subtract imports from exports to obtain the balance on the commodity account, which was always negative (i.e. the British imported a greater value of goods than they exported). To that negative balance on the commodity account, add the ‘invisibles’ consisting of ‘services’ (i.e. shipping, banking, insurance revenues, etc.) and those dividends and interest payments received on foreign (overseas) investments, in order to obtain the final balance on Current Account, which was always positive. Gold movements and other items on Capital Account are not shown here.

**The Equation:**  \( \text{Exports} - \text{Imports} = \text{Balance on the Commodity Account} + \text{Services} + \text{Dividends \\& Interest} = \text{Balance on the Current Account}. \)

* The accumulated net balance of overseas investments (foreign credits) includes the retained or re-invested interest and dividends on accumulated foreign investments. Gold movements and other items on the capital account are not given.

**Source:** Calculated from Peter Mathias, *First Industrial Nation* (London, 1969), Table VII, p. 305.
Table 15. 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>5,800</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%