The Economic History of Modern Europe to 1914

Topic No. 8: [16] The Role of the National State and Financial Institutions in European Economic Development: Germany and/or Russia, 1815 - 1914

You may focus on just Germany, or on just Russia, or you may compare developments involving the role of the state (national government) in both countries.

For readings concerning the economic history and development of modern Europe in general, see section III below (after Russia).

Within each section, readings are listed in chronological order of original publication (except for some collections of readings).

READINGS:

** and * indicate readings of primary importance.

I. GERMANY, 1815 - 1914

A. General:


6. W. O. Henderson, ‘Prince Smith and Free Trade in Germany’, Economic History Review,


   
   
   


36. Hubert Kiesewetter, Industrielle Revolution in Deutschland, 1815 - 1914 (Frankfurt am Main: Suhrkamp, 1989).
   e) Volker Hentschel, ‘German Economic and Social Policy, 1815 - 1939’, pp. 752 - 813.


    
    
    
    
    
    
    
    
    
    
    


74. Hubert Kieswetter, Industrielle Revolution in Deutschland: Regionen als Wachstumsmotoren (Stuttgart: Franz Steiner Verlag, 2004).


80. Werner Abelshauser, The Dynamics of German Industry: Germany’s Path Toward the New Economy and the American Challenge (New York: Bergahn Books, 2005).

81. Jochen Streb, Jörg Baten, and Shuxi Yin, ‘Technological and Geographical Knowledge


B. **The State and Economic Policies in Germany:**


(c) D. E. Schremmer, ’Taxation and Public Finance: Britain, France, and Germany’, pp. 315 - 494.

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


1 (March 2009), 202-37.


C. **German Agriculture: and State Agrarian Policies**


19. Michael Kopsidis and Nikolaus Wolf, ‘Agricultural Productivity Across Prussia During the
D. **German Banking, Trade, and Financial Organization:**


40. Stefano Battilossi and Jaime Reis, eds., State and Financial Systems in Europe and the USA: Historical Perspectives on Regulation and Supervision in the Nineteenth and Twentieth Centuries (Farnham: Ashgate, 2010).


E. **German Industrialization: Entrepreneurship, Productivity, the State, and Cartels**


16. Richard Tilly, ‘The Growth of Large-Scale Enterprise in Germany since the Middle of the Nineteenth Century’, in Herman Daems and Herman Van der Wee, eds., The Rise of Managerial Capitalism (The Hague, 1974).


27. Hubert Kiesewetter, Industrielle Revolution in Deutschland, 1815 - 1914 (Frankfurt am Main: Suhrkamp, 1989).


F. The Industrial Labour Force and Living Standards in Nineteenth-Century Germany

3. Ashok V. Desai, Real Wages in Germany, 1871 - 1913 (1968).
16. Simone A. Wegge, ‘Chain Migration and Information Networks: Evidence from Nineteenth-


II. **RUSSIA, 1815 - 1914**

A. **General**: in chronological order of original publication.


an orthodox Soviet Marxist historian.

** 5. ** Alexander Baykov, ‘The Economic Development of Russia’, *Economic History Review*, 2nd ser. 7 (1954), reprinted in:


(a) Arcadius Kahan, ‘Capital Formation during the Period of Early Industrialization in Russia, 1890 - 1913’, pp. 265 - 307.

(b) Olga Crisp, ‘Labour and Industrialization in Russia’, pp. 308 - 415.


B. The State and Government Economic Policies: General Studies


C. **Russian Agriculture and the State**


27. Irena Kostrowicka, ‘Changes in Agricultural Productivity in the Kingdom of Poland in the XIXth and early XXth Centuries’, *Journal of European Economic History*, 13 (Spring 1984), 75 - 97.


30. Stefano Fenoaltea, ‘Slavery and Supervision in Comparative Perspective’, *Journal of Economic History*, 44 (Sept. 1984), 635-68.


See also the earlier article by Domar:


35. Rodney Bohac, ‘Peasant Inheritance Strategies in Russia’, *Journal of Interdisciplinary History*, 16 (Summer 1985), 23-42.


41. George W. Grantham and Carol Leonard, eds., *Agrarian Organization in the Century of Industrialization*, Supplement no. 5 of *Research in Economic History*, Paul Uselding,

Part II: Families and Farms in Russia and America. Section iv: Agricultural Organization and Agricultural Development in Russia

(a) Carol Leonard, ‘The Distribution of Land and Agricultural Output in Non-Blackearth Russia (Maloga Uezd).’

(b) Rodney Bohac, ‘Agricultural Structure and the Origins of Migration in Central Russia, 1810 - 1850.’

(c) Steven L. Hoch, ‘Bridewealth, Dowry, and Socio-economic Differentiation in Rural Russia.’

(d) V.I. Buganov, ‘Evolution of the Russian Peasant Movement of the Eighteenth and Nineteenth Centuries.’

(e) Evsey Domar, ‘Were Russian Serfs Overcharged for their Land by the 1861 Emancipation? The History of One Historical Table.’

(f) L. Goriuskhin, ‘The General and Specific in Siberian Agrarian Development in the Second Half of the Nineteenth and Beginning of the Twentieth Century.’

(g) I.D. Kovalchen'ko, ‘Size and Profitability of Peasant Farms in Central Russia at the End of the Nineteenth Century and Beginning of the Twentieth.’


(i) Carol Leonard, ‘Postscript: Soviet Scholarship and Russian Agriculture.’


a) Michael Bush, ‘Serfdom in Medieval and Modern Europe: A Comparison’,

b) Robert Brenner, ‘The Rises and Declines of Serfdom in Medieval and Early Modern Europe’,

c) Steven Hoch, ‘The Serf Economy and the Social Order in Russia’


* 71. Tracy Dennison and Steven Nafziger, ‘Living Standards in Nineteenth-Century Russia’, *Journal of Interdisciplinary History*, 43:3 (Winter 2013), 397-441.
D. Banking and Finance in Russia: State Financial Policies


E. The Russian State: Foreign Trade, Foreign Investment Policies, and Russian Colonialism


F. The Russian State and Railways


G. **Russian Industrialization and the Development of an Industrial Labour Force:**

1. Rosa Luxemburg, *The Industrial Development of Poland* (1898; trans. from original German edition by Tessa De Carlo, New York, 1977). Remember that much of Poland was then part of the Russian Empire. A Marxist interpretation in the classical (non-Leninist) mold.


(a) Arcadius Kahan, ‘Capital Formation during the Period of Early Industrialization in Russia, 1890-1913’, pp. 265-307.

(b) Olga Crisp, ‘Labour and Industrialization in Russia’, pp. 308-415.


III. GENERAL READINGS: for the European Continent

A. European and International: General Topics


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


(g) Claude Fohlen, ‘Entrepreneurship and Management in France in the Nineteenth


(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.


76. Paul Klep and Eddy Van Cauwenberghe, eds., Entrepreneurship and the Transformation of
the Economy (10th-20th Centuries): Essays in Honour of Herman Van der Wee (Leuven: Leuven University Press, 1994).


119. Maxine Berg and Kristine Bruland, eds., Technological Revolution in Europe: Historical


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


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


   References to Part IV: pp. 910-30.


200. Andrea Giuntini, Peter Hertner, and Gregio Núñez, eds., Urban Growth on Two Continents in the 19th and 20th Centuries: Technology, Networks, Finance and Public Regulation


214. Maurice Obstfeld and Alan M. Taylor, *Global Capital Markets: Integration, Crisis and*


254. Philip L. Cottrell, Evan Lange, and Ulf Olsson, eds., *Centres and Peripheries in Banking: the*


Vol. I: 1700 - 1870

Vol. II: 1870 to the Present

Note: this set of historical studies is organized not by the nation state (as is my course), but by general topics and the chief economic sectors of the European economy (including Great Britain). Germany is thus discussed in most of these chapters. The second volume obviously continues for almost a century after World War I, the terminal date for this course; but Part I of Volume II does cover the very relevant period 1870 to 1914 (pp. 1-129.)

B. The Smaller Countries of Continental Europe

Iberia:

   - Vol I: O Século XVIII
   - Vol. II: O Século XIX
   - Vol. III: O Século XX


9. Leandro Prados de la Escosura, ‘Inequality, Poverty, and the Kuznets Curve in Spain, 1850 -
Italy:


The Austro-Hungarian and Ottoman Empires


The Low Countries


Scandinavia and Finland:


QUESTIONS

1. Compare and contrast the role of the state in the economic development of Germany and Russia in the 19th and early 20th centuries.

2. What were the chief barriers to German and Russian industrialization in the mid 19th century, particularly in the view of their respective state governments: in terms of agriculture, transportation, money and banking, education, foreign trade and investment, industry? How did the German (Prussian, Bavarian, Saxon, etc.) and Russian governments respond to these barriers and how did they seek to overcome them?

3. Apply Gerschenkron's model of ‘economic backwardness’ to both Russia and Germany, to their principal economic and cultural regions, in the 19th century. In terms of Gerschenkron's model what role would the state or their respective governments be called upon to eliminate or overcome such problems of ‘backwardness’? Was such state intervention a necessary consequence of backwardness, given the political and international circumstances of the late 19th century? Which governments were the more successful in applying favourable economic policies?

4. Why was Germany so much more successful than Russia in overcoming the obstacles to economic development and in achieving modern industrialization before World War I? Can the Prussian or German governments take any particular credit for this relative economic success? In each country, did economic development occur because of or despite government economic policies?

5. How successful was the Russian government in establishing an infrastructure and base for industrialization by World War I? Did state economic policies play a major role -- apart from military defeat in World War I -- in ‘causing’ the 1917 Revolutions?

6. In analyzing the economic development of Russia and Germany, from 1850 to 1914, compare and contrast the role of railroads and steam shipping, and the roles played by their governments in providing, financing, or supporting such transportation facilities.

7. Compare and contrast the role of financial institutions, domestic and foreign, and of foreign investment in the economic development of Germany and Russia, 1870-1914. What roles did the state (the governments) play in promoting the development of such financial institutions and foreign investment: positive or negative?

8. Compare the organization, functions, and roles of the central banks in the economic development of Imperial Germany and the Russian Empire from ca. 1875 to 1914: the Reichsbank and Gosbank. Discuss the monetary and fiscal policies pursued by the Imperial German and Russian governments to World War I: how did they differ? What were their consequences?

9. What roles did the German (Prussian, Bavarian, Saxon, etc.) and Russian governments play in liberating the serfs and in promoting land reform and agrarian modernization? Why did they abolish serfdom and promote land reform, in the first place? In each country, how did emancipation of the serfs proceed: under what conditions for both the serfs and the landowners? What happened to the serfs after emancipation: in the various German states, in the Russian Empire, and in Poland (both Russian and German zones)?

10. Discuss both the economic and social consequences of the abolition of serfdom in Germany, Poland, and Russia, during the 19th century and up to World War I.
11. For Russia and the Russian Empire, explain the Stolypin Land Reforms? Why were they necessary, and how successful were they, as government policy?

12. How did the Russian government utilize grain exports to finance industrialization?

13. Discuss the significance of Russian monetary policy, especially of the Gold Ruble of 1897 - 1914: were its consequences positive or negative for Russian economic development, especially in terms of foreign investment?

14. How did the Russian government seek to promote foreign investment in Russia: and what role did such foreign investments play in Russian industrialization up to 1917? Positive or negative? Was such foreign investment at all significant in German economic development?

15. Discuss the role of industrial cartels (or other monopolistic organizations) in the economic development of Germany and Russia, from ca. 1875 to 1914. Discuss the following:

   a) What role did their respective governments play in promoting and protecting these cartels. How did their government policies differ in this respect from those of other European and North American governments?

   b) To what extent did the success of German and Russian cartels depend upon protective tariffs? Explain the economic relationships.

   c) Apart from legal protection for cartel agreements and tariff protection, what other conditions were necessary for the successful functioning of a cartel.

   d) Did the German and Russian governments favour cartel arrangements particularly in heavy industry -- and did they thus seek to promote the relative growth of heavy industry (of capital goods over consumer goods); and if so, why?

16. For Prussia and Imperial Germany, discuss the social and economic policies of Bismarck: success or failure?

17. For Russia, discuss the social and economic policies of Count Sergei Witte: success or failure?

18. What role did the various following factors play in determining the nature of state intervention and state economic policies in Germany and Russia during the 19th and early 20th centuries:

   (a) military factors and foreign affairs;

   (b) political and economic factors, in particular, the goals of industrialization and economic growth, to promote national ‘well-being’ and prestige.

   (c) political and social factors: the fear of social unrest, as the cost of ‘backwardness’, when other countries were developing their economies?
Table 1  GERMAN AGRICULTURE IN THE 19th CENTURY

Distribution of Farm Lands

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</td>
<td>40.5%</td>
</tr>
<tr>
<td>(250 acres)</td>
<td></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></td>
<td>n.a.</td>
</tr>
<tr>
<td>1825-34</td>
<td>n.a.</td>
<td>116.3</td>
<td></td>
<td>n.a.</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, Great Britain, Germany, and the 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.
THE POPULATIONS OF SELECTED EUROPEAN COUNTRIES IN MILLIONS, IN DECENNIAL INTERVALS, 1800-1910

<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</td>
<td>40.8</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 7. Decennial Averages of the Output of Pig Iron and of 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>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:

<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>1870-9</td>
<td>0.260*</td>
<td>52</td>
<td></td>
<td></td>
<td>0.080*</td>
<td>33</td>
<td>0.695</td>
<td>30</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 8: 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&lt;sup&gt;a&lt;/sup&gt;</td>
<td>33,836&lt;sup&gt;b&lt;/sup&gt;</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 9. 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>1860 1913 Index Index</td>
<td>1860 1913 Index Index</td>
<td>1860 1913 % %</td>
</tr>
<tr>
<td>With 1913</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frontiers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom*</td>
<td>45 127  64 115 20% 14%</td>
<td>64 115 20%</td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>11 138  15  85  5% 15%</td>
<td>15 85 5%</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>18  57  20  59  8% 6%</td>
<td>20 59 8%</td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>16  77  8  20  7% 8%</td>
<td>8 20 7%</td>
<td></td>
</tr>
<tr>
<td>ALL EUROPE</td>
<td>120 528 17 45 53% 57%</td>
<td>17 45 53%</td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>16 298 21 126 7% 32%</td>
<td>21 126 7%</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>1 9 7 46 -- 1%</td>
<td>7 46</td>
<td></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 10. INDICES OF INDUSTRIAL OUTPUT*: IN THE UNITED KINGDOM, FRANCE, GERMANY, AND THE UNITED STATES IN QUINQUENNIAL MEANS, 1860-4 TO 1910-13
MEAN OF 1870-4 = 100

<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.