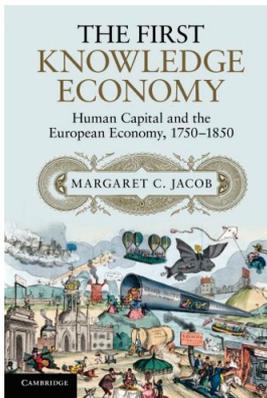


# The First Knowledge Economy: Human Capital and the European Economy, 1750-1850

## By Margaret C. Jacob

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The Industrial Revolution is among the thematic “evergreens” in economic history, and there are good reasons for this. As a consequence of the Industrial Revolution, for the first time in world history a profound change through which humanity managed to escape from the so-called Malthusian trap has been realized. At the beginning of 19<sup>th</sup> century, a period of sustained improvement in the living conditions was launched, and this period coincided with a constantly growing population worldwide. The scientific problems and questions inspired by a change of this magnitude are numerous and difficult. And the appropriate answers suggest a necessity of interdisciplinary approach that combines methods and achievements of various scientific fields. The analytical tools of economic history usually are dominated by the methods and models of economics, which has its advantages, but this approach deprives the explanations of the past processes of their human face.

The book of history professor Margaret C. Jacob *The First Knowledge Economy:*

*Human Capital and the European Economy, 1750-1850* is not just another publication on a trivial topic. It is a contribution from outside economics that clearly shows that historians could make a valuable contribution to the debates about the birth of modern economic growth and that without the insights of historical science the explanations of the Industrial Revolution are incomplete, inaccurate or sometimes completely wrong. There are no (quite often confusing) graphs or charts in the book, but there is clear and well defined thesis – knowledge and its appropriate deployment were inevitable for the Industrial revolution.

The author convincingly opposes to the mono-casual explanation of the Industrial Revolution, which often is clearly visible in the works of some economic historians from the economics side. One of the most popular modern mono-casual explanations is to be found in the work of Allen (2009). According to this author the Industrial Revolution in Britain was a result of the combination of high wages and low price of coal. This combination stimulated the British technical innovations, and entrepreneurs and industrialists established the first mechanized factories. The main flaws in this thesis are that it could not explain why the Industrial Revolution did not begin in France or in the Low Coun-

tries where the wages in the sectors like mining were high too and where the coal in certain regions was easily accessible (p. 65). Also the explanatory power of Allen's thesis is limited because on its basis we could not understand why, despite the incentives of prices, there were investment mistakes made even by some of the cleverest entrepreneurs (p. 77). And last but not least the most serious expenses for the mine owners during the 18<sup>th</sup> century was the price of horses working in mines.

With some level of oversimplification we could point out at three main contributions of the work.

The first one is that the author consistently and convincingly proves that without any knowledge of culture and science the understanding of the causes and consequences of the Industrial Revolution is impossible. All the other factors like capital accumulation, wages, market integration, long-distance trade etc. should not be underestimated too, but culture, modern technical science, knowledge, education etc. in their various forms are indispensable for the understanding of the great enrichment of the last two and so centuries. Jacobs clearly defines the period from app. 1750 to 1850 as a period of the first knowledge economy, where there was a complex and strong causation relation between scientific culture and sustainable economic growth. This book of Margaret C. Jacob, combined with the works of J. Mokyr (2012 and 2016) and D. McCloskey (2006, 2010 and 2016), firmly establishes among the social scientists the thesis that scientific culture and knowledge are not irrelevant in human development and for economic and social progress. The author shows that ade-

quate technical knowledge was essential even in sectors previously thought as not science-intensive like cotton manufacturing. The entrepreneurs in these sectors were not just an illiterate or semi-illiterate artisans. The adequate knowledge of physics and mechanics was necessary in order to invest in appropriate machines (p. 85, 93, 98).

The author also offers a fine-tuning of the old Weberian thesis about the importance of Protestantism for capitalistic development. According to Jacobs the Unitarian ethos, which included enlightened piety and science-based rationalism, was crucial for the beginning of the Industrial Revolution. It is not coincidence that the Unitarians predominated among the Manchester cotton industrialists (p. 100). However, there is no overemphasis on the religious aspects of British society at the end of 18<sup>th</sup> and the beginning of 19<sup>th</sup> century. The lessons from British success were transferable and for that reason in France was founded *Ecole Polytechnique*, and in the other countries on the Continent and in the USA the British scientific culture and its connection with industry were imitated.

The second merit of Jacob's work is the comparative approach within the core countries of the Industrial revolution in North Western Europe. The comparison between UK, France, and the Low countries is revealing. It is evidence of the old truism that all the good social science is comparative. The explanation of the French industrial retardation in comparison to Britain is enriched by the comparison of their scientific culture and education. One of the reasons for the relative French retardation becomes visible with the comparison between the educational

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systems of the two countries. In Britain the educational system, especially of the Non-Anglican Protestants, was largely informal. It was not centralized and subordinated to the military interests of the state as was the case in France. In fact the French engineers were not illiterate or worse than the British, but the British were working in their self-interest and in the interest of society, while the French were working directly for the state. After the French revolution of 1789 the revolutionaries and Napoleon made attempts to modernize the educational system by introducing physics and other sources of useful for the economic growth knowledge, but during the Restoration 1815-1830 and even after that religion and humanities in their reactionary again were introduced in the French educational system.

On a comparative ground we could better understand why Belgium, but not the Netherlands, was the first country to industrialize on the continent. In Belgium the modern science and education was introduced by the French at the end of 18<sup>th</sup> century and after that there were no huge ups and downs in its development. In the Dutch republic the education remained decentralized and focused on religion and humanities. For some reason the local elite show little interest in physics, and in other forms of useful knowledge (pp. 204-206).

The third merit of the Jacob's work is to some extent more professional or technical. It consists in her heavy reliance of the primary archival materials for the preparation of the book. The work with unpublished archival materials is often underestimated, but typical feature of a good historian's work. And in this sense the book of Margaret Jacob is a

work of a very good historian. To a large extent the structure and content of the work is determined by the available primary sources. The parts for Britain are focused on personal life, scientific training, and other activities of the main players of the industrialization – James Watt, Matthew Boulton, John Kennedy, James M'Connel. The parts on France and the Low Countries are different – they are focused mainly on the functions of institutions, schools, educational policy etc. The author reveals peculiarities of the *époque*, of the places where began the Industrial Revolution, of personal details about education, political and religious beliefs of some of the most important entrepreneurs and inventors. Among the most intriguing details are: the positive role of J. Watt's second wife Annie as a partner in science and in business (p. 31), the problems and details of establishing cost-efficient factories, which took years of trial and error experience (p. 127), the participation of the Leeds's flax manufacturers in the scientific culture of the late 18<sup>th</sup> and the early 19<sup>th</sup> century (p. 116). All these things reveal the human, or, more precisely, the real face of the Industrial Revolution.

The book of Margaret C. Jacobs is focused on North Western Europe, but perhaps the main thesis of the author would benefit from the focus on the economic history of the less developed regions of the world, including the Balkans and Bulgaria. Just as a small remark we could mention the modernization efforts of Bulgaria. At least up to the mid-20<sup>th</sup> century the industrialization of Bulgaria was not very successful and then during the period of socialism the forced Soviet-type industrialization coincided with

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the growing interest of the communist government in natural sciences and technical knowledge. The ruling party made deliberate attempts to encourage the dissemination of technical knowledge and to inculcate a scientific culture on the Bulgarian society. Despite these efforts the socialist industrialization failed at the end of 1980s. So from this perspective the question is where and what exactly is the appropriate place of the scientific knowledge and culture as the explanatory tool for other countries and socio-economic systems? Hopefully in the future prof. Jacobs or some other researcher would try to find the answer.

*Reviewed by Pencho D. Penchev*

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This includes the Electro-Industrial genre, comprised of bands such as Skinny Puppy and Front Line Assembly, the EBM genre (Nitzer Ebb, early Ministry, Front 242, etc.) and the Industrial Metal/Industrial rock genres (later Ministry, Pigface, etc.) just to name a few (the commercially lauded and probably most known post-industrial band, Nine Inch Nails, dabbled in a.Â Industrial-influenced artists pass on a legacy of being aggressive, loud and creative, as