

The industrial revolution

Supply and demand

Why Britain got there first

May 21st 2009 | from the print edition

JUST why the industrial revolution took place in Britain is a puzzle that arouses fierce emotions among social scientists. François Crouzet, a French historian, calls the search for an explanation “somehow akin to the quest for the Holy Grail”. Was it because capitalism was further along in Britain than in, say, France, the Netherlands or indeed China? Because Britain's constitutional monarchy after 1688 minimised the intervention of the state and entrenched property rights? Because the British were better at science, or culturally more attuned to technology? Or did dumb luck drop the first spinning jenny on Lancashire rather than Lyon?

This debate matters, for the industrial revolution is quite probably the most important economic development of the past 500 years. It produced not a once-only step-up in productivity but a century-and-a-half of industrial expansion and continuing innovation that transformed lives everywhere. What is more, it stemmed from the globalisation of the early-modern period (Tudors, and all that) and gave rise to more. With global crisis raging anew, readers could do worse than ponder that long-ago upheaval.

Robert Allen's analysis will delight many economists, for he deals in measurable factors such as wages and prices. An American professor of economic history at Oxford University and long a writer in this field, he suggests that most explanations for Britain's industrial revolution focus too much on supply—of inquiring scientists, landless workers, helpful laws. These conditions were conducive to a great leap forward but not sufficient. Nor were they exclusive to Britain. Property rights were arguably more secure in France; much of the science behind the steam engine took place in Italy and Germany; the Dutch were highly urbanised. The industrial revolution occurred in Britain in the 18th and early 19th centuries for one overwhelming reason, he argues: it was profitable there and then. It met a demand.

By the early 1700s Britain was a country of conspicuously high wages and cheap energy (coal). The great inventions of that century—the steam engine, mechanical spinning, smelting iron with coke—all served to economise on the expensive factor of production and use more of the cheaper one. Other countries were slow to follow suit not because they were stupid, sluggish or repressed, but because they did not have that particular combination of expensive labour and inexpensive energy.

Britain lost its competitive edge when, in making its machines more efficient, it reduced their consumption of energy: steam engines went from using 45 pounds (20.4kg) of coal to produce one horsepower-hour to just two. That made these machines cost-effective for countries with dearer energy. “The genius of British engineering undid Britain's comparative advantage,” Mr Allen writes.

But why did Britain have such high wages and cheap energy in the first place? Pick up most stones in Mr Allen's analysis and trade lurks somewhere underneath. The Black Death raised the price of labour and boosted trade, for English sheep grew longer fleeces as they grazed fields newly left fallow, and local cloth improved. As Britain traded more, extending its reach to the Americas and Asia, London, then other cities, expanded. Agriculture became more productive. Between 1500 and 1800 England shifted people out of farming faster than any other big European country. The coal that Britain was lucky enough to have was mined in growing quantities to fuel city dwellings. By 1800 Britain was producing “the vast preponderance” of the world's coal, and it was cheap.

Thanks to trade, wages stayed high although the population grew. Education improved (though the Dutch still had a higher literacy rate in 1800). So did diet, permitting people to work longer and harder. And trade gave them a reason to, bringing in exotic products that well-paid workers could aspire to. This “industrious revolution” made possible the industrial revolution—but what was the actual spark?

France and Germany were hardly inspiration-free zones, but only in Britain was there enough profit to be had from radically realigning the factors of production to make macro-inventions worth investing in. Less theoretically, the pre-existence of two industries also helped. Steam engines were originally designed to pump water out of the pits and railways to move coal around them. The watchmakers of southern Lancashire proved an unequalled source of high-quality, low-cost gears.

This is a beautifully written book, the language as clear as a brook and with the same tumbling energy. One occasionally yearns for more. Finance gets rather short shrift: Britain had a thriving capital market and presumably this added to its edge in industrialising. Policies limiting rivals' access to British colonies, and industrial exports from those colonies, might also be worth more attention.

But today, when governments from America to Japan are reinventing industrial policy with each off-the-cuff bail-out, this study offers some useful reminders. One is that innovation is most likely to occur where there is market demand for it. Another is that patents can delay innovation as well as stimulate it. A third is that the benefits of trade cannot be overestimated. Not that that needs repeating.

Source: The Economist

Follow up questions:

- 1) According to Robert Allen, why did the Industrial Revolution occur in Britain? Give his reasoning.
- 2) Why did it take longer for the Industrial Revolution to occur in other European countries?
- 3) Explain how, “the genius of British engineering undid Britain’s competitive advantage”.
- 4) List the reasons that made Britain the right place for the Industrial Revolution to begin. (there are 8 of them).