



## China's Forgotten Industrial Revolution

**W**e live in a world that has been shaped by a process that began some 250 years ago in northwestern Europe. We often call it the Industrial Revolution because one of its most dramatic features was the appearance of industrial manufacture with the rise of the factory system. However, this was only one element and not the most significant. Moreover, concentrating on industrialization suggests that the change is now complete. The process continues.

It has several important aspects, which are mutually reinforcing. The most obvious is continuous intensive economic growth. Intensive growth is marked by constant innovation and increased efficiency: doing new things and doing more with less. Extensive growth, the historical norm, means more of the same and doing more with more, that is, with no increase in efficiency or productivity. Another important part of the process is continuous technological innovation and improvement. This both reflects and encourages a growth of theoretical knowledge. (See Joel Mokyr's *The Gifts of Athena: Historical Origins of the Knowledge Economy*.) Yet another part is the development of increasingly complex economic institutions and instruments.

All historians recognize the existence and importance of this phenomenon. However, they disagree about many other related matters. In particular there is no real agreement

*Stephen Davies (steve365@btinternet.com) is a senior lecturer in history at Manchester Metropolitan University in England.*

about how this process started and why it happened in Europe rather than some other part of the world. Why not in the Islamic world or in India? Above all, why not in China? The last question is the truly difficult one. As Kenneth Pomeranz points out in *The Great Divergence: China, Europe and the Making of the Modern World Economy*, economically China was on an equal footing with Europe until the mid-eighteenth century or later. In fact, for the greater part of human history China was by far the most innovative and technologically advanced of the great civilizations. The list of important inventions first made in China is almost endless. So why did the revolutionary process not start there?

Actually, it did start in China before it did in Europe. As Eric Jones has pointed out in *Growth Recurring: Economic Change in World History*, China had an "industrial revolution" comparable to that of eighteenth-century Europe—some 800 to 900 years ago. It happened under perhaps the most maligned yet fascinating of China's imperial dynasties, the Song.

The Song reunited China following the division and chaos of the Five Dynasties (907–960). The dynasty was founded by two remarkable brothers, Song Taizu (960–976) and Song Taizong (976–997). They introduced a number of important changes in the economic policy and organization of the Empire. One was a measure that gave peasant farmers true property rights in their land, above all the right to sell it. The result was the emergence of a market in land, which led to the consolidation of smaller

farms and the appearance of commercial agriculture. Even more important was their fiscal policy. Traditionally the Chinese state had depended on taxes levied on the peasantry, most often paid in kind. Song Taizu laid down the principle “Agrarian taxes must not be increased.” Consequently, the Song came to depend increasingly on taxes on trade and so systematically encouraged it.

This had dramatic results. China rapidly became a highly monetized economy. In 750 only 4 percent of all taxes was paid in money, but by 1065, 50 percent was paid that way. In 1024, in the reign of Song Renzong, the widespread use of paper money began. Initially, paper notes had a strict three-year limit and were convertible into cash or specified quantities of commodities. With time, checks, promissory notes, and bills of exchange were all used. By the end of the dynasty, the amount of paper money in circulation was equivalent to 70 million strings of cash, or 70 billion copper coins.

## Dramatic Economic Growth

Agriculture, trades, and manufacture all grew dramatically. It is clear, particularly from the agricultural evidence, that this was intensive, not extensive, in nature. Thus while the population doubled between 960 and 1020, the output of rice more than doubled. In 1078, China produced 125,000 tons of cast iron, more than the rest of the planet put together. This would not be surpassed until the 1790s, in Britain. A whole range of technological breakthroughs and improvements were made. These included movable type printing (1000), the blast furnace (1050), mechanical water clocks (1090), paddlewheel ships (1130), the magnetic compass (1150), water-powered textile machinery (1200), and most dramatically, huge oceangoing junks with watertight bulkheads, a carrying capacity of 200 to 600 tons, and a crew of about 1,000 (1200).

The period also saw rapid urbanization, most notably in cities such as Kaifeng, Liaoyang, and Hangzhou. One aspect of this was the deregulation of markets as part of the policy of encouraging commerce. Previously markets had only been allowed in specified places under tight control. Under the Song, towns and cities had street markets, shops on the major streets and thoroughfares, and specialized shopping areas with products from all over the empire and beyond. Two other aspects of Song policy were related to this phenomenon. One was the encouragement of import and export trade. In 964 total revenues from exports amounted to 500,000 strings of cash; by 1189 they came to 65 million strings. The other aspect was free movement throughout the empire, encouraged by another Chinese invention, the motel.

By the 1260s China had reached a level of technological sophistication and economic development that Europe would not achieve until the late eighteenth or early nineteenth century. All the above-mentioned features of the process that produced modernity can be found in Song China, which was clearly being transformed in the way that our world has been and continues to be. However, it did not continue. Instead Chinese society stabilized. It remained superior or equal to European society until about 1800, but the dynamic process stalled. That it did not continue is truly a tragedy. If it had we would be living in a “Chinese” world rather than a “Western” one. We would also be much richer and more knowledgeable.

Why did it not continue? As Jones says, this is the big and important question for economic historians. As ever, there are many answers. This is, however, not just of interest to historians, for the answers may have a considerable import for ourselves and our own position. One explanation in particular holds a terrible warning for us. What that is I hope to set out in my next column. □