

DATING THE GREAT DIVERGENCE: THE EIGHTEENTH CENTURY AS AN EMERGING CONSENSUS

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File: Goldstone Reply JGH v2

Abstract: By offering a particular interpretation of the new evidence on historical national accounting, Goldstone argues for a return to the Pomeranz (2000) version of the Great Divergence, beginning only after 1800. However, he fails to distinguish between two very different patterns of pre-industrial growth: (1) alternating episodes of growing and shrinking without any long term trend in per capita income (2) episodes of growing interspersed by per capita incomes remaining on a plateau, so that per capita GDP trends upwards over the long run. The latter dynamic pattern occurred in Britain and Holland from the mid-fourteenth century, so that Northwest Europe first edged ahead of the Yangzi delta region of China in the eighteenth century.

When Kenneth Pomeranz (2000) claimed that the Great Divergence began only during the nineteenth century, his fundamentally quantitative claim was backed up with surprisingly little data, as Jack Goldstone (2019) notes. After almost twenty years of debate, incorporating systematic quantitative evidence on both Europe and Asia, a new consensus is emerging, shared by Pomeranz (2011; 2017) himself, that his original claim was somewhat exaggerated, and that the divergence dates from the eighteenth century. Of course, this is still a lot later than suggested by the classic view of the rise of the West, which would see Europe forging ahead of Asia as early as 1500. Pomeranz and the California school can thus be seen as having had a substantial effect on the dating of the divergence. The California School also had a lasting effect on the characterisation of development on both continents, by highlighting the significance of regional variation. Goldstone seeks to challenge this emerging consensus and restore Pomeranz's original claim that the divergence occurred only after 1800.

At the heart of the disagreement lies Goldstone's belief that the episodes of growth in Britain and Holland before 1800 are just further examples of his concept of "efflorescence" (Goldstone, 2002). However, his definition of an efflorescence lacks clarity, covering two very different cases. First, there is the standard Malthusian case, where an episode of growing is followed by an episode of shrinking, so that there is no long term trend in per capita income. Second, however, there is the case where an episode of growing is followed by the economy remaining on a plateau with a permanently higher level of per capita income until the next growing episode starts, so that per capita income trends upwards over the long run. Goldstone (2019: 4) writes as if he believes that the latter case were the norm, arguing that "To be sure, societies often retained the techniques and capital accumulated during the efflorescence, and preserved a new equilibrium, so that an efflorescence usually had a ratchet effect". But if such a ratchet effect had been the norm, then most of world history would have been characterised by trend growth rather than long run stagnation of per capita incomes.

What the new work on historical national accounting demonstrates is that the standard case was long run stagnation, with alternating episodes of growing and shrinking (Broadberry and Wallis, 2017).¹ From the mid-fourteenth century, however, Britain and Holland broke away from this pattern, beginning a dynamic process of reduction in episodes of shrinking

¹ In addition to the cases discussed below, data are now available for France, Belgium, Portugal, Sweden, Germany and Poland for much of the period between 1300 and 1800 (Ridolfi, 2017; Buyst, 2011; Palma and Reis, 2017; Schön and Kranz, 2012; Krantz, 2017; Pfister, 2015; Malinowski and van Zanden, 2017).

rather than an acceleration in the rate of growing (Broadberry et al., 2015a; van Zanden and van Leeuwen, 2012). Although other west European economies shared in the growth of per capita incomes after the mortality crisis of the Black Death, only Britain and Holland retained the gains and avoided shrinking as population growth returned, before building on these gains during the early modern period, culminating in the first transition to sustained modern economic growth in eighteenth century Britain.

Despite its title, the bulk of Goldstone's paper concentrates on the dating of modern economic growth in the Netherlands and Britain. The normal definition of modern economic growth requires merely positive growth of population and GDP per capita at the same time, in contrast to pre-modern economic growth, where positive growth of per capita income is permitted only by negative growth of population in a world of diminishing returns. Eighteenth century Britain meets the criteria of positive growth of per capita income and population, so that is where modern economic growth began. Goldstone attempts to support his argument that Britain did not achieve modern economic growth during the eighteenth century by claiming that Broadberry et al. (2015a) have exaggerated the growth of British agricultural output during the eighteenth century, and hence also overstated the growth of GDP per capita. Here, Goldstone offers no new evidence but relies on the work of Clark (2018), to which Broadberry et al. (2018a) have already responded elsewhere. Here, therefore, I will focus on the implications of Goldstone's assumption of a 25 percent decline in agricultural output per capita between 1750 and 1800. The effect of this is merely to reduce the growth rate of GDP per capita from 0.39 percent per annum to 0.20 percent, since agriculture accounted for a relatively small share of output by the eighteenth century. Since population was growing rapidly at 0.77 percent per annum at this time, this was still modern economic growth on the normal definition.

1. Patterns of pre-industrial growth and Goldstone's efflorescences

By failing to draw a distinction between long run stagnation and long run trend growth, Goldstone (2019) misses the main point of the Little Divergence debate and its emphasis on the reduction in episodes of negative per capita income growth or shrinking. Broadberry and Wallis (2017) provide a detailed analysis of this process, distinguishing between long run trends over 50-year periods, episodes of at least 3 consecutive years of growing or shrinking and medium-run trends of around a decade or so. Here I show the data for all years rather than a few selected dates and focus on the medium run trends. The first pattern of long run stagnation is illustrated in Figure 1 by the cases of Italy and Spain between 1300 and 1800. In both cases,

medium-run periods of positive trend growth alternated with medium-run periods of negative trend growth or shrinking, leaving little or no progress in the level of per capita incomes over the long run.

For the cases of Britain and the Netherlands in Figure 2, however, although there were periods of strong positive trend growth over the medium-run, periods of negative medium-run trend growth were either non-existent (in the case of Britain) or highly dampened (in the case of the Netherlands). One way to think about Europe's Little Divergence, and also the Great Divergence, is therefore not so much the beginnings of growth, but rather a reduction in periods of shrinking. As this process occurred in northwestern Europe, Britain and Holland overtook Italy and Spain, as shown in Figure 3. Of particular significance in this Little Divergence within Europe was the different effects of the arrival of the Black Death in the mid-fourteenth century, which wiped out around a third of Europe's population within three years, and around half within a century. Both Britain and the Netherlands received a permanent boost to per capita GDP from this mortality shock, remaining on a plateau with substantially higher per capita incomes, even after the return of population growth from the mid-fifteenth century. Although Italy also experienced a rise in GDP per capita in the aftermath of the mortality shock, per capita incomes returned to their pre-Black Death level with the return of population growth, following the conventional Malthusian pattern. Those lucky enough to survive the mortality shock had a transitory increase in their incomes as a result of an increase in land and capital per head, but the return of the population to pre-Black Death levels eliminated the gains. In Spain however, where population density was much lower during the Reconquest period, a further decline of population destroyed commercial networks and further isolated an already scarce population, reducing specialisation and the division of labour. Thus Spain did not share in the general west European increase in per capita incomes after the Black Death (Álvarez-Nogal and Prados de la Escosura, 2013).

Recent reconstructions of historical national accounts for China and Japan mean that it is possible to report in Figure 4 trends in GDP per capita in these two major Asian economies alongside the three European economies of Britain, the Netherlands and Italy.² In China, there were "efflorescences" during the Northern Song and Ming dynasties, but without trend growth over the long run, and this was followed during the Qing dynasty by a strong downward trend

² Data are also available for India between 1600 and 1870 (Broadberry et al., 2015b).

of per capita GDP as population expanded rapidly (Broadberry et al., 2018b). Japan is an interesting case, exhibiting a growth episode between 1450 and 1600, followed by a plateau and then a second growth episode during the eighteenth century (Bassino et al., 2019). Japan, which was the first Asian country to achieve modern economic growth after the Meiji Restoration of 1868, thus appears to have followed a pattern similar to that of the North Sea area economies of Britain and the Netherlands, avoiding major episodes of shrinking. However, Japan started at a lower level and grew more slowly, so that it continued to fall behind the leading European economies until the late nineteenth century.

Figure 4 indicates the range of possible dates for the start of the Great Divergence. First, it would be perfectly possible to reproduce the classic view of the rise of the West from the late medieval period, as Italy was clearly ahead of China already by 1300. However, Broadberry et al. (2018b) reject this position on the grounds that it fails to consider regional variation within China, which was a much larger economy than any European nation. However, we do know from the work of Li and van Zanden (2012) that the Yangzi delta, the richest region of China, was substantially poorer than the richest European nations by the 1820s. Applying the ratio between the Yangzi delta and China as a whole in the 1820s to Chinese GDP per capita for earlier years produces a quantification of the leading Chinese region (labelled Yangzi) for comparison with the European leader in Figure 5. The European leader is constructed from Italy for the period from 1300 to 1540, then the Netherlands to 1800 and finally Britain after 1800. Figure 5 shows that on this basis, taking account of regional variation, the Great Divergence began in the early eighteenth century and was already quite substantial by 1800. It occurred partly as a result of increasing GDP per capita in Europe, but also because of a decline in GDP per capita in China. The inclusion of the other major Asian nations does not change the picture since India was also declining from 1600, and while Japan exhibited a trend increase in GDP per capita, it was starting from a much lower level and also growing more slowly than Britain (Broadberry et al., 2015b; Bassino et al., 2019). To close the gap between the Yangzi delta and the European leader in 1800 would require changes that are too large to be credible. Furthermore, it would go further than Pomeranz (2011; 2017) now considers plausible.

It is worth noting that Goldstone's preferred method of closing the Anglo-Chinese gap until 1800 simply does not work. Goldstone suggests that Broadberry et al. (2015a) have exaggerated the growth of the British economy during the eighteenth century. However, this does not have the effect on the gap between the European and Chinese frontiers that Goldstone

thinks it does, for two reasons. First, the European frontier in Figure 5 is derived from the Netherlands during the eighteenth century rather than from Britain. But second, even if we are concerned about the comparison between China and Britain, lowering the British growth rate during the eighteenth century raises rather than lowers the level of per capita GDP in Britain before 1800. The reason for this is that comparative levels of GDP per capita are established at 1840 and working back from this date with slower growth in Britain would raise the level of British per capita income relative to China in earlier years. This would mean an earlier rather than a later start date for the Great Divergence.

2. The transition to modern economic growth in Britain

Goldstone (2019) misses the transition to modern economic growth in eighteenth century Britain as well as the beginning of the Great Divergence at this time, by failing to see the significance of (1) the plateau between episodes of per capita income growth rather than alternating periods of growing and shrinking and (2) the continued upward trend of per capita income after the return of population growth in the eighteenth century. Figure 6 tells the story of Britain's long run trajectory to modern economic growth, highlighting the significance of the reduction of shrinking episodes and the interaction between population growth and per capita income growth.

Goldstone is correct to point out that per capita income growth before 1700 was confined largely to two episodes, between the 1340s and 1400s following the Black Death, and between the 1650s and 1700s following the Civil War.³ However, there is a substantial difference between the two episodes. Whereas population declined catastrophically at -1.32 percent per annum during the post-Black Death growth phase, the population decline between the 1650s and 1700s was just -0.06 percent and barely shows up as a downward trend. By the seventeenth century, the economy was capable of achieving per capita income growth without the catastrophic population collapse that underpinned the earlier growth phase. Furthermore, already by the 1450s, the return of population growth after the Black Death mortality crises did not lead to a downward trend in per capita incomes, as in the normal Malthusian pattern of alternating phases of growing and shrinking.

³ More formally, Crafts and Mills (2017) show that British growth can be regarded as a segmented trend-stationary process, with breaks for the arrival and departure of the Black Death at 1348 and 1352, and further breaks at 1663, 1707 and 1822.

Finally, as population growth returned in the eighteenth century after the episode of rapid economic growth following the Civil War, per capita income continued to grow rather than follow the Malthusian pattern of shrinking. Yes, the growth rate of per capita income slowed down after 1700 compared with the period 1650-1700, as Goldstone points out, but compared with other economies at the time this was still a remarkable achievement. It was the first case of modern economic growth as normally understood: sustained positive per capita income growth together with substantial positive population growth. Real GDP per head grew at 0.19 percent per annum between 1700 and the 1750s, rising to 0.44 percent between the 1750s and 1800s, as population growth increased from 0.30 percent to 0.77 percent. Notice the progression here from the maintenance of the higher level of per capita income with the return of population growth from the 1450s to the maintenance of per capita income growth with the return of population growth after 1700.

3. Conclusion

The main disagreement here is one of interpretation. Goldstone does not see any distinction between two patterns of pre-industrial growth, which leads him to miss the significance of both the Little Divergence within Europe and the Great Divergence between Europe and Asia. The most common pattern of pre-industrial growth was long run stagnation, where an episode of positive per capita income growth was followed by an episode of negative per capita income growth or shrinking, so that per capita income showed no permanent gain. However, a second pattern of pre-industrial growth occurred in the North Sea area, with each episode of growth being followed by a plateau with per capita incomes remaining at a higher level, from which the next growth episode started, so that per capita incomes trended upwards over the long run. The latter pattern was a crucial stepping stone to modern economic growth, since it dampened and eventually eliminated the episodes of shrinking that had condemned economies to long run stagnation for millennia, thus paving the way for modern economic growth.

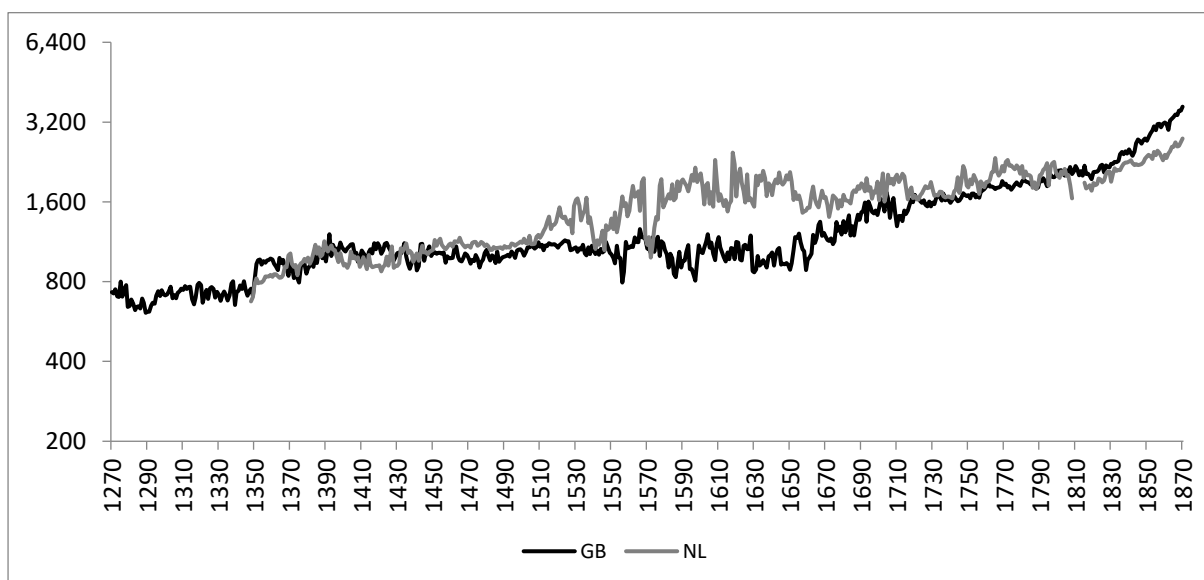
It is striking how Goldstone completely misses the transition to modern economic growth in eighteenth century Britain as well as the beginning of the Great Divergence at this time by attempting to characterise the maintenance of slow but steady per capita income growth in the eighteenth century despite accelerating population growth as merely stagnation. In fact, this was the final stage of a dynamic process that began with the dampening of the typical Malthusian pattern of shrinking during periods of positive population growth. This process began with the growth episode following the Black Death.

FIGURE 1: Real GDP per capita in Italy and Spain 1270-1870 (1990 international dollars, log scale)



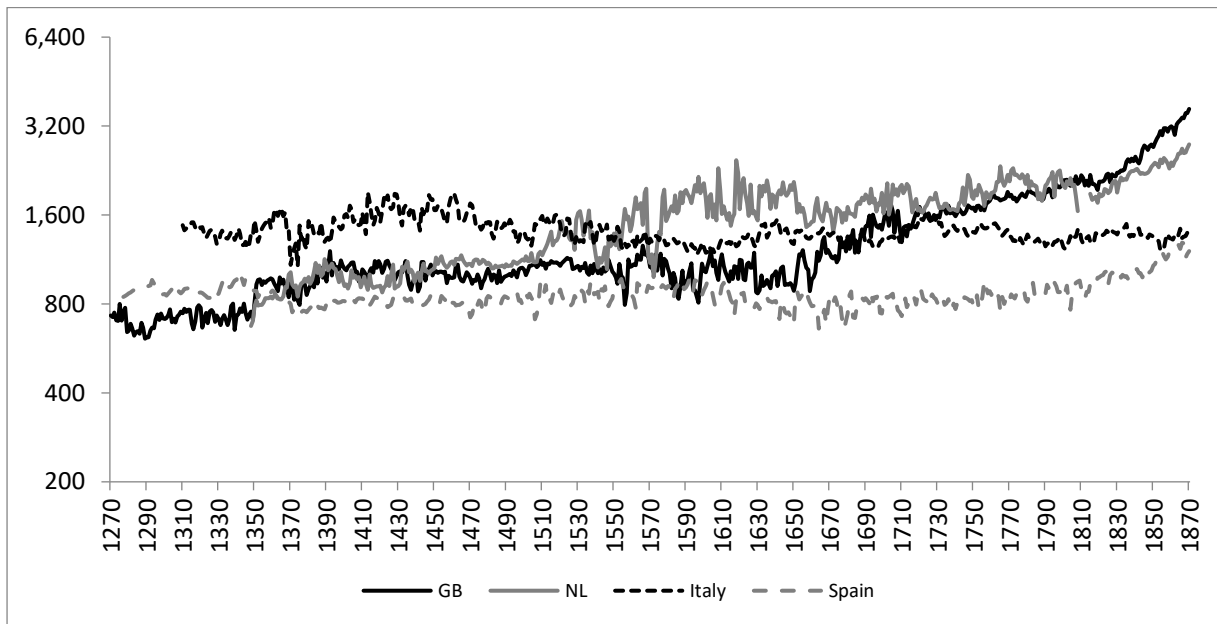
Sources: Malanima (2011); Álvarez-Nogal and Prados de la Escosura (2012).

FIGURE 2: Real GDP per capita in Britain and the Netherlands, 1270-1870 (1990 international dollars, log scale)



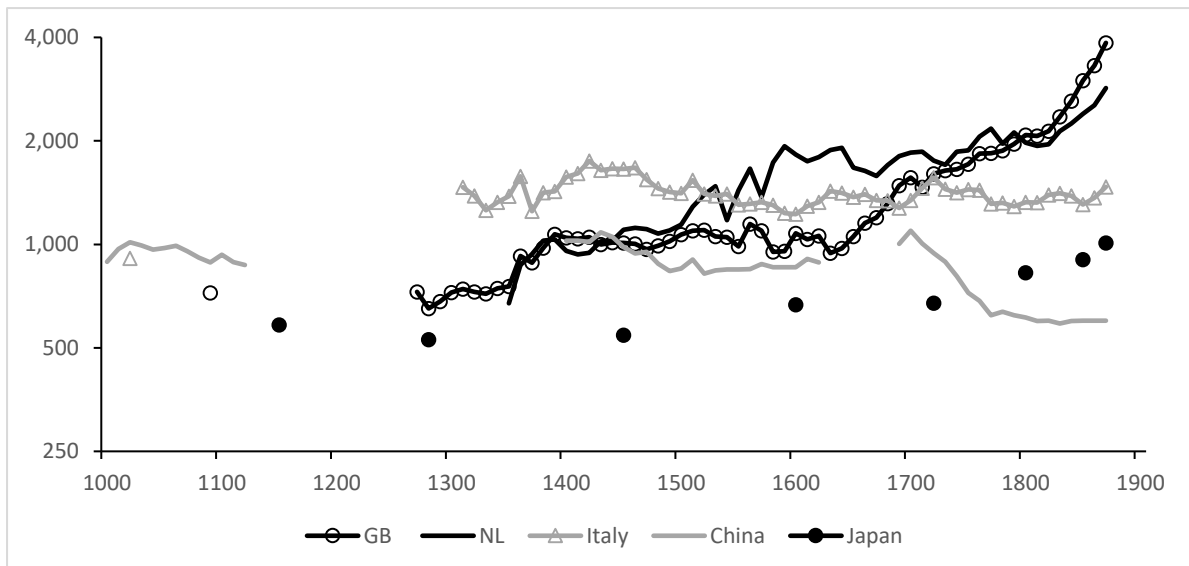
Sources: Broadberry et al. (2015a); van Zanden and van Leeuwen (2012).

FIGURE 3: Real GDP per capita in Britain, the Netherlands, Italy and Spain 1270-1870 (1990 international dollars, log scale)



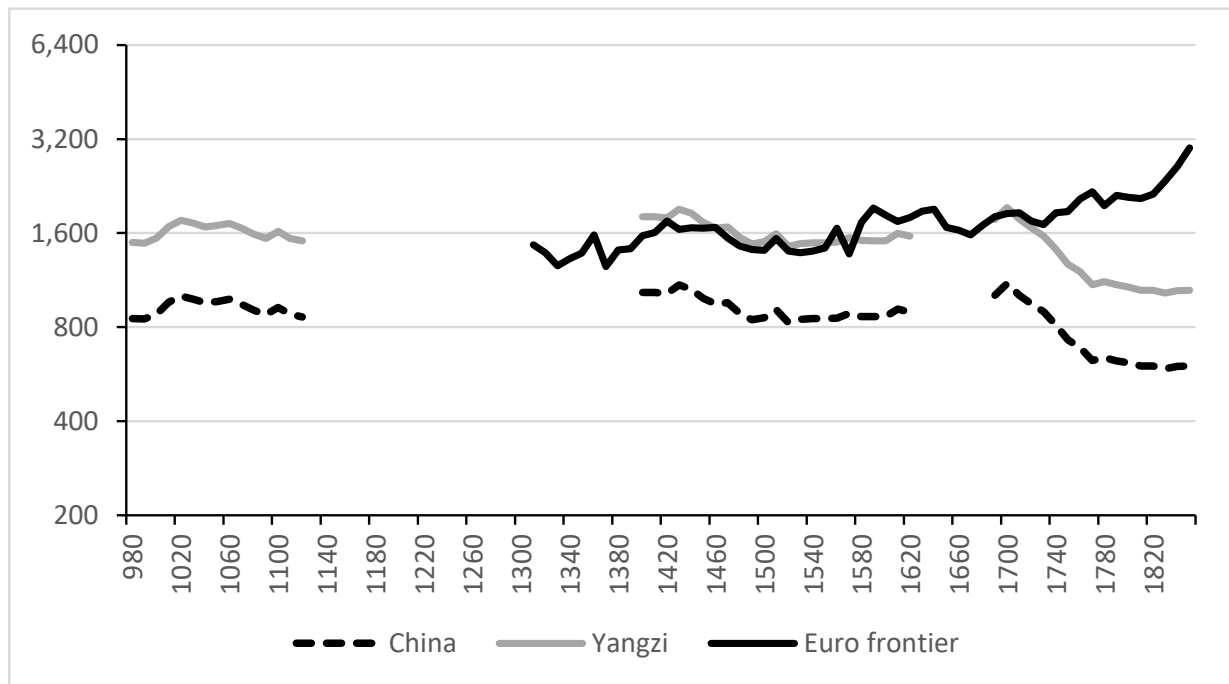
Sources: Figures 1 and 2.

FIGURE 4: GDP per capita in Europe and Asia, 1000-1870 (1990 international dollars)



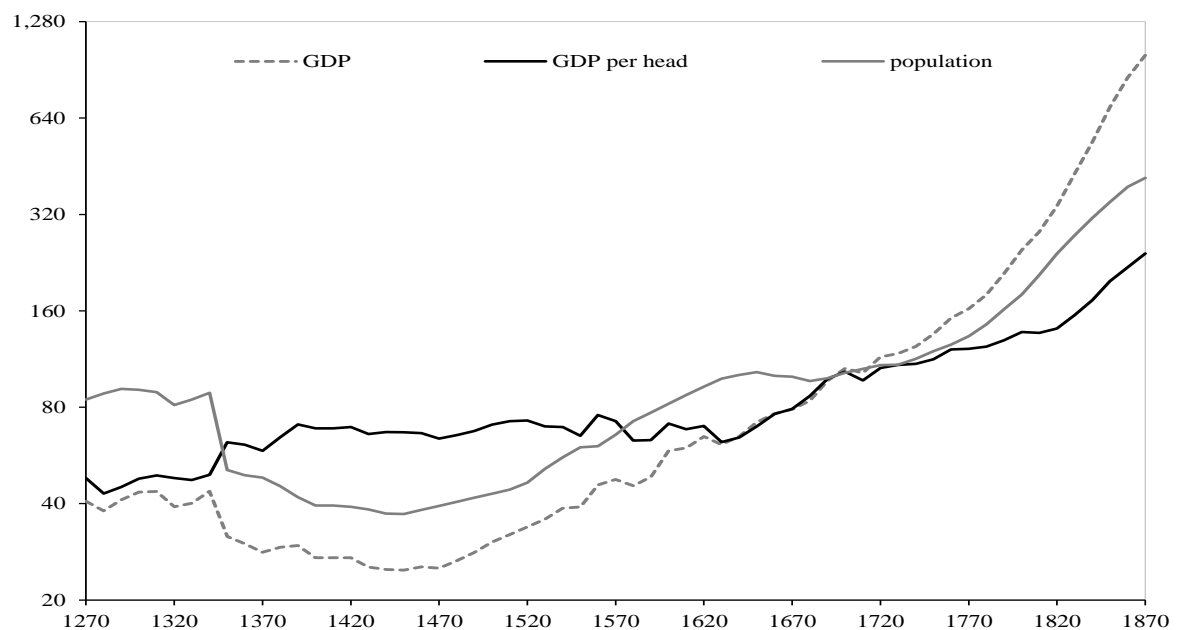
Sources: Broadberry et al. (2015a), van Zanden and van Leeuwen (2012); Malanima (2011); Broadberry et al. (2018b); Bassino et al. (2019);

FIGURE 5: Real GDP per capita in China and the European frontier, 980-1850 (1990 international dollars, log scale)



Source: Broadberry et al. (2018b).

FIGURE 6: Real GDP, population, and real GDP per head, England 1270-1700 and Great Britain 1700-1870 (averages per decade, log scale, 1700 = 100)



Source Broadberry et al. (2015a: 204)

REFERENCES

- Álvarez-Nogal, C. and Prados de la Escosura, L. (2013), “The Rise and Fall of Spain (1270-1850)”, *Economic History Review*, 66, 1-37.
- Bassino, J.P., Broadberry, S., Fukao, K., Gupta, B. and Takashima, M. (2019), “Japan and the Great Divergence, 730-1870”, *Explorations in Economic History*, 72, 1-22.
- Broadberry, S., Campbell, B., Klein, A., Overton, M. and van Leeuwen, B. (2015a), *British Economic Growth, 1270-1870*, Cambridge: Cambridge University Press.
- Broadberry, S., Campbell, B., Klein, A., Overton, M. and van Leeuwen, B. (2018a), “Clark’s Malthus Delusion: A Response to ‘Farming in England: Growth or Stagnation?’”, *Economic History Review*, 71, 639-664,
- Broadberry, S., Custodis, J. and Gupta, B. (2015b), “India and the Great Divergence: An Anglo-Indian Comparison of GDP per capita, 1600-1871”, *Explorations in Economic History*, 55, 58-75.
- Broadberry, S. Guan, H. and Li, D. (2018b), “China, Europe and the Great Divergence: A Study in Historical National Accounting”, *Journal of Economic History*, 78: 955-1000.
- Broadberry, S. and Wallis, J. (2017), “Growing, Shrinking and Long Run Economic Performance: Historical Perspectives on Economic Development”, National Bureau of Economic Research Working Paper No. 23343, <http://www.nber.org/papers/w23343>.
- Buyst, E. (2011), “Towards Estimates of Long Term Growth in the Southern Low Countries, ca.1500–1846”, Paper for the “Quantifying Long Run Economic Development” conference at the University of Warwick in Venice, March 22–24, <http://www2.warwick.ac.uk/fac/soc/economics/events/seminars-workshops-conferences/conferences/venice3/programme/buyst.pdf>.
- Clark, G. (2018), “Growth or stagnation? Farming in England, 1200-1800”, *Economic History Review*, 71, 55-81.
- Crafts, N. and Mills, T.C. (2017), “Six centuries of British economic growth: a time-series perspective”, *European Review of Economic History*, 21, 141-158.
- Goldstone, J. (2002), “Efflorescences and Economic Growth in World History: Rethinking the “Rise of the West” and the Industrial Revolution”, *Journal of World History*, 13, 323-389.
- Goldstone, J. (2019), “Dating the Great Divergence”, *Journal of Global History* (forthcoming).
- Krantz, O. (2017), “Swedish GDP 1300-1560: A Tentative Estimate”, Lund Papers in Economic History; No. 152, Department of Economic History, Lund University, http://portal.research.lu.se/portal/files/21081639/LUP_152.pdf.
- Li, B. and van Zanden, J.L. (2012), “Before the Great Divergence? Comparing the Yangzi Delta and the Netherlands at the Beginning of the Nineteenth Century”, *Journal of Economic History*, 72, 956-989.
- Malanima, P. (2011), “The Long Decline of a Leading Economy: GDP in Central and Northern Italy, 1300-1913”, *European Review of Economic History*, 15, 169-219.
- Malinowski, M. and van Zanden, J.L. (2017), “Income and its Distribution in Preindustrial Poland”, *Cliometrica*, 11, 375-404.
- Palma, N. and Reis, J. (2019), “From Convergence to Divergence: Portuguese Economic Growth, 1527-1850”, *Journal of Economic History*, 79, 477-506.
- Pfister, U. (2011), “Economic Growth in Germany, 1500–1850”, paper for the “Quantifying Long Run Economic Development” conference at the University of Warwick in Venice, March, 22–24, https://warwick.ac.uk/fac/soc/economics/seminars/seminars/conferences/venice3/programme/pfister_growth_venice_2011.pdf.
- Pomeranz, K. (2000), *The Great Divergence: China, Europe, and the Making of the Modern World Economy*, Princeton: Princeton University Press.

- Pomeranz, K. (2011), “Ten years after: responses and reconsiderations”, *Historically Speaking*, 12(4), 20-25. Project Muse,
https://muse.jhu.edu/login?auth=0&type=summary&url=/journals/historically_speaking/v012/12.4.coclanis.html.
- Pomeranz, K. (2017), “The Data We Have vs. the Data We Need: A Comment on the State of the “Divergence” Debate (Part I)”, The NEP-HIS Blog,
<https://nephist.wordpress.com/2017/06/06/the-data-we-have-vs-the-data-we-need-a-comment-on-the-state-of-the-divergence-debate-part-i/#comments>.
- Ridolfi, L. (2016), “The French economy in the longue durée. A study on real wages, working days and economic performance from Louis IX to the Revolution (1250-1789), PhD thesis, IMT School for Advanced Studies, Lucca.
- Schön, L. and Krantz, O. (2012), “The Swedish Economy in the Early Modern Period: Constructing Historical National Accounts”, *European Review of Economic History*, 16, 529-549.
- van Zanden, J.L. and van Leeuwen, B. (2012), “Persistent but not Consistent: The Growth of National Income in Holland, 1347-1807”, *Explorations in Economic History*, 49, 119-130.