

Can the debate on the Great Divergence be located within the Kuznetsian paradigm for an empirical form of global economic history?

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1 An overview of the debate

Peer Vries has written the most comprehensive and critically penetrative engagement with a virtual library of recent literature from history, economics and other social sciences on the origins of modern economic growth.¹ To do that he has mobilized a wide range of credentials including an impressive range of linguistic skills, a grasp of several academic disciplines and a perucid style to publish an up-to-the-minute text that can be placed in a tradition of books by John Hicks, Fernand Braudel, Walt Rostow, Simon Kuznets, Eric Jones, Doug North, Immanuel Wallerstein, Andre Gunder Frank, Nathan Rosenberg, Richard Lipsey, Ian Morris, Daron Acemoglu, Robert Allen and others, who have attempted to synthesize our claims to knowledge about 'mankind's escape from poverty'.²

It would be agreeable and appropriate to continue to transform this review into a laudatio and to select for commendation themes in the book that deal, for example, so acutely with connexions between states, institutions and economic growth that have long been mis-specified, underestimated and derogated by an anachronistic liberal tradition in eco-

1 P. Vries, *Escaping Poverty: The Origins of Modern Economic Growth* (Vienna and Göttingen 2013).

2 C. White, *Understanding Economic Development. A Global Transition from Poverty to Prosperity* (Cheltenham 2009).

nomics.³ That would, however, be nothing less than a dereliction of intellectual duty and a failure to engage seriously with one of our tribe's most widely read, cogent and of eloquent polemicists.⁴

We propose instead to raise the serious doubts that many historians retain about the validity and viability of three separable, but mutually reinforcing sets of data cited in those sections of the book that seek to 'systematically compare Great Britain and China'. That comparison and the protracted debate that it continues to stimulate, has inspired Peer Vries, these reviewers and a virtual brigade of economists and economic historians from western universities to engage with an analytical narrative elaborated in a seminal book by Ken Pomeranz, *The Great Divergence. Europe, China and the Making of the Modern World Economy* published fifteen years ago.⁵

The core theses for the Great Divergence Debate have been elaborated and discussed so often that, for present purposes, they can be summarized as two bullet points. The first point is that divergence in standards of living afforded by the economy to populations contained within the political boundaries of the Ming-Qing empire of China did not fall behind the levels of well-being afforded to the populations of the national economies of western Europe until late in the eighteenth century. Furthermore, and given this was the case, there could be no reasons to accept views elaborated by a long line of 'Eurocentric' political philosophers (Bossuet, Weber, Montesquieu, Hume, Hegel, Tocqueville, Herder, Comte), and classical economists (Smith, Malthus, Mill, Marx and Weber). They pointed to political, legal, institutional and cultural frameworks sustaining and conditioning the evolution of production in the Chinese Empire that had for centuries before the first industrial revolution placed and maintained the development of the imperial economy upon a path-dependent trajectory that led inevitably to a condition of relative backwardness compared to the economies of Western Europe.⁶

3 B. Yun-Casallila and P. O'Brien, (eds.), *The Rise of Fiscal States; a Global History 1500-1914* (Cambridge 2012).

4 P. Vries, 'The California School and Beyond: How to Study the Great Divergence', *History Compass*, 8, 2010, 730-751; Vries, *Escaping Poverty*.

5 K. Pomeranz, *The Great Divergence: China, Europe and the Making of the Modern World Economy* (Princeton 2000).

6 J. M. Bryant, 'The West and the Rest Revisited: Debating Capitalist Origins, European Colonialism, and the Advent of Modernity', *Canadian Journal of Sociology*, 31, 4, 2006, 403-444; P. E. Tetlock, R. N. Lebow and G. Parker (eds) *Unmaking the West. What if Scenarios that Rewrite World History* (Ann Arbor 2006).

The almost instantaneous reaction to these theses from Eurocentred economists and economic historians (with credentials in neo-classical economics and with expertise and reputations derived from scholarship locatable within the Kuznetsian paradigm for empirical economics) was to launch three programmes of scholarly research.⁷ These programmes were and continue to be designed to subject the novel and ostensibly implausible theses communicated by Pomeranz and supported by the California School and other cosmopolitan radicals to the heavy artillery of statistical-cum-econometric ‘tests’.⁸ Predictably that bombardment has concentrated on two indices or indicators for the representation of relative economic success or retardation among and across the national economies of Europe and the imperial economies of Asia, namely GDP per capita and real wage levels.⁹ Both indicators have, moreover, dominated theories and vocabularies deployed by economists to specify model and measure convergence among an OECD group of developed economies in the 1980s.¹⁰ But recognizing that the pre-modern Chinese economy was dominated by household units of production engaged with agricultural, combined with domestic industrial production, a third and potentially more promising (but also more research intensive) programme has attempted to investigate sources of evidence that could conceivably be used to construct estimates for the net annual incomes and per capita consumption levels afforded to more representative samples of the Chinese population who experienced levels of material well being effecting a majority of peasant

7 R. C. Allen, T. Bengtsson and M. Dribe, *Living Standards in the Past: New Perspectives on Well-Being in Asia and Europe* (Oxford 2005); W. Fogel et al., *Political Arithmetic and the Empirical Tradition in Economics* (Chicago 2013).

8 T. J. Hatton (ed.), *The New Comparative Economic History* (Cambridge [Mass.] 2007).

9 S. Broadberry, and S. Hindle, ‘Asia in the Great Divergence’, *Special Issue of Economic History Review* 51, 64, 2011, S1-S7.

10 W. J. Baumol, et al, *Convergence of Productivity: Cross-National Studies and Historical Evidence* (Oxford 1994).

households and their families.¹¹ All three programmes have generated numbers and presented them as initial and negotiable estimates or conjectures of GDP per capita and real wages available for debate and revision on both conceptual and statistical grounds. These numbers purport to be comparable to the refined and consistently revised estimates available for England, Holland and other European countries for at least two centuries before their transitions to industrial market economies.¹²

2 Chinese GDP per capita from the Han dynasty to modern times

Unfortunately, as we show in detail on a paper locatable on the European Economic History Society's website, the volume, range and quality of the data for China accessible in secondary sources does not provide the required run of estimates either for GDP or (arguably) for total population let alone for a sequence of purchasing power parity rates of exchange required to convert plausible estimates in Chinese currency into a numeraire that simultaneously allows for the construction of bench-marked estimates in constant prices over centuries of time as well as unambiguous comparisons with a range and quality of estimates that are in print for Britain and other European national economies in early modern times.¹³

Alas the short cut methods that Maddison resorted to in order to circumvent his very tightly constrained access to anything approximating to acceptable data cannot in our view be condoned by economic historians who wish to engage seriously with trends and long cycles for an early and

11 Bozhong Li, *Agricultural Development in Jiangnan 1620-1850* (London 1998); K. Pomeranz, 'Beyond the East-West Binary: Resituating Development Paths in the Eighteenth Century World', *Journal of Asian Studies*, 61, 2002, 539-590; K. Pomeranz, 'Without Coal or Colonies: Counterfactuals of Industrialization in Europe and China', in: P. E. Tetlock, R. N. Lebow and G. Parker (eds.), *Unmaking the West: What if Scenarios that Rewrite World History* (Ann Arbor 2006); R. C. Allen, 'Agricultural Productivity and Rural Incomes in England and the Yangtze Delta c. 1620-1820', *Economic History Review*, 62, 2009, 525-550; S. Broadberry, 'India and the Great Divergence: An Anglo-Indian Comparison of GDP Per Capita 1600-1871', unpublished paper, LSE, 2013; K. Pomeranz, 'Ten Years After: Responses and Reconsiderations', *Historically Speaking*, September, 2011, 20-25.

12 S. Broadberry and K. O'Rourke (eds.), *The Cambridge Economic History of Modern Europe*, Vol. 1, 1700-1870 (Cambridge 2010).

13 Boliang Liu, K. Deng and P. O'Brien, 'A Sample of Nominal Daily Money Wage Rates for the Qing Empire', vide URKEW website: www.lse.ac.uk/economichistory/research/urkew/qingwages.aspx, Department of Economic History, LSE, 2014.

acceptably quantified explicandum that exposes a historical chronology for divergence between China and the West. Since Maddison has always been commendably transparent about the sources and methods, in the first and second editions he utilized only to construct estimates for GDP for an impressively wide range of countries and continued to be so in the second and revised edition of his economic history of China, there will be no need (or space) to elaborate on the details. For those who have cited and those who will continue to cite these very enticing estimates that purport to measure the growth of GDP per capita from the Han Dynasty to modern times and to compare benchmarked levels with European economies in a common numeraire for pre-modern times, it should be sufficient to simply tabulate the reasons why we, a bevy of experts with reputations in Chinese economic history and, latterly, a platoon of distinguished economists have found them to be conceptually and statistically unacceptable as historical evidence.¹⁴

- a. Maddison utilized just two estimates for China's GDP in current prices. One for 1990 and another unofficial estimate for 1933.¹⁵
- b. All other benchmarked estimates for GDP contained in his book are based upon: (a) backward extrapolations (1990-1870), deploying published estimates for GDP growth published by economists for 1913-1933; (b) a guess that this same growth rate prevailed from 1870-1912; (c) an implausible assumption that the annual growth rates for GDP (ostensibly generated by a deflator constructed to measure movements in Chinese domestic prices over more than a century of time), were consistent both with growth rates that simultaneously reflect changes in the volumes and prices of goods and services produced in China and with estimates designed for purposes of international comparison in international dollars for 1990.¹⁶

14 A. Deaton and A. Heston, 'Understanding PPPs and PPP-based National Accounts', *American Journal of Macroeconomics* 2, 4, 2010, 1-35; World Bank, Measuring the Real Size of the World's Economy the Framework Methodology and Results of the International Comparisons Program (Washington 2013); K. Deng and Patrick O'Brien, 'Creative Destruction': Chinese GDP per Capita from the Han to Modern Times, *European Historical Economics Society Working Paper No. 63*, September 2014 (http://ehes.org/working_papers.html) 2014.

15 A. Maddison, *Chinese Economic Performance in the Long Run 960-2030* (Paris 2007). Revised and Updated Edition; J. T. C. Liu, and K. Yeh, *The Economy of the Chinese Mainland, 1933-1959* (Princeton 1965).

16 S. Johnson et al., 'Is Newer Better? Penn World Table Revisions and Their Impact on Growth Estimates', *National Bureau of Economic Research Working Paper 15455* (Cambridge 2009).

- c. Maddison's third assumption has, however, been revealed to be deeply implausible by the reconstituted and improved purchasing power parities utilized by the World Bank to convert the GDPs of 146 and 199 countries into international dollars for 2005 and 2011.¹⁷ Conversions at these recently reconstituted rates of exchange have generated estimates for the GDPs of China, India and many other countries in international dollars that differed in a highly significant degree from those generated by the conversion coefficients calibrated in prices and quantities of 1990.¹⁸ Indeed the variation in GDP that flowed from the utilization of conversion coefficients based upon data for single (if not singular) years, (1990, 2005 and 2011), has prompted two economists closely engaged with the construction of purchasing parities to formulate this general rule: 'comparisons became less reliable the further apart are the structures of GDP (or its components) of the countries being compared'. They added 'that many of these numbers have substantial uncertainty and that extrapolations over long periods can easily lead to results that made no sense'.¹⁹
- d. Indeed our own sensitivity test which converted the Maddison estimates of GDP per capita for years 1 to 1850 into kilocalories per day per capita produced numerical outcomes that suggested: (a) that between 1300 and 1850 Chinese per capita income remained at twice the modern level prescribed by the FAO for food security; (b) that level was, moreover, above the levels sustaining the 'labouring poor' of England and over this period, and (c) that Maddison's estimates expressed in kilocalories are in no way congruent with the historical narratives that he and other scholars have written, which represents the economic history of the Chinese Empire (after its famous efflorescence under the Song Dynasty) as one of stasis and decline from 1300-1956 (Maddison 2007); (d) the per capita levels of food security implied by estimates

17 World Bank, *Global Purchasing Power Parities and Real Expenditures* (Washington 2008); World Bank, *Measuring the Real Size of the World's Economy the Framework Methodology and Results of the International Comparisons Program*.

18 Asian Development Bank, *Purchasing Power Parity Preliminary Report International Comparison Program in Asia* (Manila 2007).

19 Deaton and Heston, 'Understanding PPPs and PPP-based National Accounts'; H. de Jong and B. van Ark, *The Comparison of GDP Levels and the Use of PPPs in the Maddison Data Base* (Groningen 2012); J. Bolt and J. L. Van Zanden, 'The Maddison Project: Collaborative Research on Historical National Accounts', *Economic History Review* 67, 3, 2014, 627-651.

in GDP per capita in constant 1990 international dollars would have allowed for improbable levels of appropriation and expropriation by the state and ruling elites of something approximating to half of national income,²⁰ and there is no evidence in the histories of the Chinese Empire that leaves an impression that the people of China experienced exploitation on that scale, even under the alien and oppressive Mongol dynasty.²¹

- e. Maddison's estimates for GDP per capita for benchmarked years circa 1, 1000, 1300, 1500, 1600, 1700, 1820 and 1850 are based on forward extrapolations from a figure of 450, 1990 international dollars.²² He derived this particular base line number from controversial and ongoing attempts by economists employed by the World Bank to construct a metric for a notional and universal poverty line.²³ That concept and its conjoined estimates have come under sustained theoretical and empirical attacks.²⁴ Apart from the difficulty of imagining survival on an income of \$ 1.25 a day in modern America, the number is seriously out of kilter with the then poverty lines constructed by the Chinese government.²⁵ Furthermore, the deployment of international dollars as a numeraire implies that this line would fluctuate over time, not merely with incomes received and the prices of commodities and services purchased by impoverished groups of the populations residing in the Chinese Empire between the Han Dynasty and late Qing Dynasty, but

20 B. Milanovic, et al., 'Measuring Ancient Inequality', *Working Paper 13550*, National Bureau of Economic Research, 2007.

21 G. Deng, *The Premodern Chinese Economy - Structural Equilibrium and Capitalist Sterility* (London 1999) chapter 5.

22 Maddison, *Chinese Economic Performance in the Long Run 960-2030*.

23 M. Ravallion et al., *World Bank Working Papers 133, 3408, 4620* (Washington 1998, 2004 and 2008); R. Konkel, 'The Monetization of Global Poverty in World Bank History', *Journal of Global History* 9, 2, 2014, 276-301.

24 J. Stiglitz, et al. (eds.), *Debates on the Measurement of Global Poverty* (Oxford 2010).

25 Liangkai Wu, 'Qinggiangi Nongye Gugongde Gongzi' (Wages of Hired Agricultural Labourers in the Early Qing), *Zhongguo Shehui Jingjishi Yanjiu* (*Journal of Chinese Economic and Social History*) 2, 1983, 17-30; Miantang Huang, 'Qingdai Nongcun Changgong Gongjia Zongheng Tan' (Wages or Rural Labour on Annual Contracts during the Qing), *Zhongguo Jingjishi Yanjiu* (*Research into Chinese Economic History*), 3, 1992, 71-78; Miantang Huang, *Zhongguo Lidai Wujia Wenti Kaoshu* (*Study of Prices in China's History over the Long Term*) (Jinan 2007); Kexiang Liu, 'Jiawu Zhanzhenghou Zhiyoude Zibenzhuoyide Nongye Guyong Laodongde Fazhan', (Growth in Rural Free and Capitalist Wage Labour Force after 1894), *Zhongguo Jingjishi Yanjiu* 4, 1990, 15-44.

with the incomes and prices confronted by those living in poverty in all parts of the world outside the Middle Kingdom.²⁶

- f. Finally, the rates of growth used by Maddison to extrapolate his pre-selected figure of 450 international dollars of GDP per capita for base year 1 forward in time. In order to provide benchmarked estimates for the years 1000, 1300, 1500, 1600, 1700, 1820 and 1850 are based on statistical evidence and pure assertions that do not in our view stand up either to detailed scrutiny or meet several objections raised against these rates by many historians with credentials and claims to expertise in the economic history of imperial China.²⁷ Maddison offered no citations to support the implicit rates of growth applied to construct estimates for the centuries from year 1 to 1368.²⁸ His evidence for rates of growth for the subsequent Ming-Qing period, 1368-1911, were, however, derived from a classic study of Chinese *grain* output by the Harvard economist and sinologist, Dwight Perkins: *Agricultural Development in China 1368-1968*.²⁹ Perkins's book (which we have also scrutinized line by line) is another laudable and heuristic endeavour to provide an acceptable proxy for a key macro-

26 R. Allen, *Poverty Lines in History, Theory and Current International Practice* (Unpublished paper, Nuffield College, Oxford 2013); Stiglitz, *Debates on the Measurement of Global Poverty*.

27 Jinmin Fan, *Guoji Minsheng - Mingqing Shehui Jingji Yanjiu (The National Economy and People's Life - Selected Essays on Socio-Economic Issues of the Ming-Qing Period)* (Fuzhou 2008); Di Liu, '1600-1840 Nian Zhongguo Guonei Shengchan Zongzhide Gusuan' (Estimation of China's GDP, 1600-1840), *Jingji Yanjiu (Economic Research)* 4, 2009, 144-155; Di Liu, *Qianjindai Zhongguo Zonliang Jingji Yanjiu, 1600-1840 (China's Macro Economic Quantities in the Early Modern Period, 1600-1840)* (Shanghai 2010); Yong Xue, 'A Fertilizer Revolution? A Critical Response to Pomeranz's Theory of Geographic Luck', *Modern China*, 33, 2007, 195-229.

28 A. Feuerwerker, 'Presidential Address: Questions about China's Early Modern Economic History That I Wish I Could Answer', *The Journal of Asian Studies* 51, 4, 1992, 757-769; Wenzhi Li, Jinyu Wei and Junjian Jing, *Mingqing Shidaide Nongye Cibenzhuyi Mengya Wenti (Budding Capitalism in the Agricultural Sector during the Ming-Qing Period)* (Beijing 1983); Shuji Cao, *Zhongguo Renkou Shi (A Demographic History of China)* (Shanghai 2001); Deng, *The Premodern Chinese Economy - Structural Equilibrium and Capitalist Sterility*; C. Holz, 'China's Reform Period Economic Growth: How Reliable Are Angus Maddison's Estimates?', *Review of Income and Wealth* 52, 1, 2006, 85-119.

29 Dwight Perkins, *Agricultural Development in China 1368-1968* (Edinburgh 1969).

economic index that could serve to measure long-run trends in grain output measured in unhusked rice equivalents.³⁰

Unfortunately, as historians of China have revealed, the imperial state never seriously attempted to measure grain output; to standardize the measures or record the total areas of the empire cropped or cultivated with rice and other grains; to systematically collect estimates for yields per unit of land cropped with grain; to standardize the area for a 'mu' of land; and to provide figures for the wastage rate that flowed from the conversion of unhusked to husked edible rice.³¹ Perkins certainly did his best to cope with a range of ambiguous and recalcitrant official data and almost recognized that they could not be calibrated or manipulated to form an index that might be accepted as reliable enough to estimate changes in agricultural output from 1368 to 1911. He reluctantly fell back on the assumption that output per capita of unhusked rice fluctuated within limits around a modal average of 286 kilogrammes of unhusked (transformable into 143 kilogrammes of husked rice per capita) per annum.³² Thus, Perkins's conjectures for long term trends in grain (and by extension agricultural) output can be represented as a selected constant of 286 kilogrammes of unhusked rice, multiplied by a range of disputed estimates for total population to which he attached rather wide but potential margins of error.³³

Maddison neither verified the evidence behind the Perkins's estimates, nor did he subject their deployment as proxies for the growth of GDP per capita to sensitivity tests in any systematic and transparent way. We will simply observe that any run of statistics for grain output based upon an unverified assumption of constant output per capita is almost certain to be highly correlated with conceptually flawed estimates for GDP per capita

30 Zeyi Peng, *Zhongguo Jindai Shougongyeshi Ziliao (Historical Materials of Handicraft Industry in Early Modern China)* (Beijing 1957); Zhongguo Peng, *Jindai Shougongyeshi Ziliao, 1840-1949 (Materials for Early Modern Chinese Handicraft History 1840-1949)* (Beijing 1984); Hui Wu, *Zhongguo Jingjishi Ruogan Wentide Jiliang Yanjiu (Quantitative Issues of Chinese Economic History)* (Fuzhou 2009); Aimin Guo, "Rural Households' Production Capacity and Social Changes: A Comparison between England during Industrialization and the Yangzi Delta in Modern Times", *The Pacific Economic Review*, 17, 1, 2012, 86-103.

31 Zhihong Shi, 'Shijiu Shiji Shangbanqide Zhongguo Liangshi Muchanliang Jiqi Zongchanliang Zai Guji', (Re-Estimation of Yields per *Mu* and the Aggregate Food Output in Early Nineteenth Century China), *Zhongguo Jingjishi Yanjiu (Research into Chinese Economic History)*, 3, 2012, 52-66.

32 Perkins, *Agricultural Development in China*.

33 Hui Wu, *Zhongguo Jingjishi Ruogan Wentide Jiliang Yanjiu (Quantitative Issues of Chinese Economic History)*; Shi (Re-Estimation of Yields per *Mu* and the Aggregate Food Output in Early Nineteenth Century China).

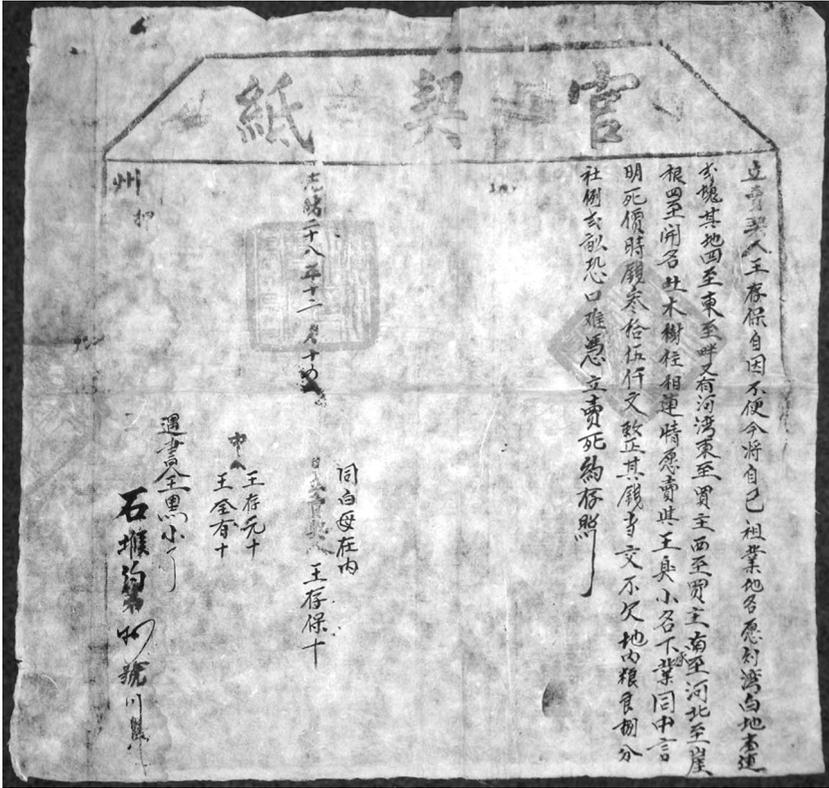


Illustration 1. Qing Government endorsed private land sale contract, 1903

expressed in constant 1990 international dollars. This exercise in abstract quantification will leave an impression of long run stasis that is almost impossible to support with references to China's rich historiography.³⁴ Maddison sought to reinforce his view that 'over the long run in the Ming-Qing dynasties, income per capita was roughly stable by citing data from another eminent American sinologist that little change had occurred in the proportion of the population living in towns between the Tang and Qing dynasties.³⁵ More recent research into the empire's urbanization ratio has, however, called Gilbert Rozman's statistics, published more than 40 years ago,

34 M. Elvin, *The Pattern of the Chinese Past* (Stanford 1973); R. B. Wong, *China Transformed. Historical Change and the Limits of European Experience* (Ithaca and London 1997).

35 A. Maddison, *Chinese Economic Performance in the Long Run 960-2030*; K. Deng, 'Unveiling China's True Population Statistics for the Pre-Modern Era with Official Census Data', *Population Review* 43, 2, 2004, 1-38.

into question.³⁶ Furthermore, for both global and Chinese economic history the familiar supposition that an urbanization ratio has been or indeed could be unambiguously measured within acceptable margins of error across space and over time and that this ratio remained closely correlated with trends in GDP per capita is, to say the least, unproven and improbable.³⁷ While applauding the heuristic value of his endeavours, we conclude that for the economic history of China, they do not provide an index for the measurement for the empire's long run growth, nor a statistically based chronology for divergence or even plausible numerical conjectures that could be used to compare its levels of development with Europe.

3 A review of nominal and real wages for major cities in the Orient and Occident

Another more realistically conceived programme which retains far greater potential for those purposes is the collective endeavour led by Robert Allen and Jan Luiten van Zanden.³⁸ To reconstruct and compare estimates for the real income levels sustaining wage dependent unskilled labourers and their families resident in a very small sample of Chinese, Indian, Japanese and Ottoman cities with a very much larger and better validated sample that refers to their fellow workers employed in the towns and cities of Western, Southern and Eastern Europe. Comparable evidence for Europe (particularly Western Europe) is more extensive, abundant and reliable simply because the relative proportions of the workforce in Asian economies, dependent on waged labour to sustain standards of living for their populations, were significantly smaller.³⁹ As late as the 1890s the Chinese

36 Mingwei Li, *Qingmo Minchu Zhongguo Chengshi Shehui Jiecong Yanjiu (Urban Strata during the Late Qing and Early Republican Periods)* (Beijing 2005); Cao, *A Demographic History of China*, vol. 5, 723, 828-829; Yangfang Hou, *Zhongguo Renkou Shi (A Demographic History of China)* (Shanghai 2001) vol. 6, 482-483.

37 P. Bairoch, *Cities and Economic Development from the Dawn of History to the Present* (Chicago 1988); I. Morris, *The Measure of Civilization* (Princeton 2013); T. Chandler and G. Fox, *Four Thousand Years of Urban Growth. An Historical Census* (New York 1987); D. Pasciuti and Chase Dunn, *Estimating the Population Size of Cities* (<http://irows.ucr.edu/research/citemp/estciti/estcit.com>), 2014.

38 R. C. Allen, 'The Great Divergence in European Wages and Prices from the Middle Ages to the First World War', *Explorations in Economic History*, 38, 2001, 411-447; J. L. Van Zanden, 'Wages and Standards of Living in Europe, 1500-1800', *European Review of Economic History* 3, 1999, 175-198.

39 J. Lucassen, 'The Rise, Organization and Framework of Factor Markets: Proleterianization in Western Europe and India: Concepts and Methods', *GEHN Working Paper*, 2005, LSE.

'proletariat' continued to represent but a tiny proportion (5-10 percent) of the Qing workforce – a fact which raises doubts about the relevance of inferences that could be drawn for reciprocal comparisons, based upon wage dependent labour.⁴⁰

As several scholars with expertise on the economic history of China have observed, this methodological issue might be more convincingly resolved (not solved) by a comparison between the "labouring poor" employed as waged labour in Europe's urban construction industries and agricultures on the one hand and Chinese peasant households on the other.⁴¹

We deal with that point below. Here we draw attention to the reasons why recently published exercises and statistics calibrated to compare the living standards of waged labour in China (and India, and possibly Japan?) with ostensibly similar groups of workers employed in the major European cities and agricultures are not yet secure.⁴² These exercises are potentially promising but those published so far are based upon the incomplete and defective primary and secondary sources for nominal daily wage rates available and accessed for Ming and Qing China.⁴³ Nominal daily wage rates have long been recognized as an intractable source of evidence for the measurement of productivity and standards of living for European economic history.⁴⁴ For China's far less extensive integrated and competitive labour markets the evidence in primary sources required to standardize nominal daily wage rates recorded in governmental, judicial and very rarely in business records into plausible estimates for the annual earnings of wage dependent proletarian unskilled male workers is almost never clarified. For example, the sources provide entirely limited information

40 Kexiang Liu, *Jiawu Zhanzhenghou Zhiyoude Zibenzhuyide Nongye Guyong Laodongde Fazhan*, (Growth in Rural Free and Capitalist Wage Labour Force after 1894), *Zhongguo Jingjishi Yanjiu* 4, 1990, 15-44; Mingwei Li, *Qingmo Minchu Zhongguo Chengshi Shehui Jiecong Yanjiu (Urban Strata during the Late Qing and Early Republican Periods)*.

41 Fangzhong Liang, *Zhongguo Lidai Huko Tiandi Tianfu Tongji (Dynastic Data for China's Households, Cultivated Land and Land Taxation)* (Shanghai 1980); Deng, *The Premodern Chinese Economy*, chapters 2-3; Guo, 'Rural Households'.

42 Penny Francks, 'Simple Pleasures: Food Consumption in Japan and the Global Comparison of Living Standards', *Journal of Global History*, 8, 1, 2013, 95-116.

43 Wu, 'Wages of Hired Agricultural Labourers in the Early Qing'; Kexiang Liu, 'Growth in Rural Free and Capitalist Wage Labour Force after 1894'; Huang, 'Wages or Rural Labour on Annual Contracts during the Qing'; Boliang Liu, K. Deng and P. O'Brien, 'A Sample of Nominal Daily Money Wage Rates for the Qing Empire'.

44 P. Scholliers (ed.), *Real Wages in 19th and 20th Century Europe* (Oxford 1989).

on such payments in kind as food, clothing, shelter, etc.⁴⁵ Such payments were, however, a feature of all pre-modern wage systems because they alleviate risks associated with fluctuations in food prices and obviated the difficulties of securing currency in the forms and denominations required to remunerate labour.⁴⁶ Chinese sources refer to annual, weekly, monthly and daily wage rates, but supply virtually no information on the numbers of days worked. Observations recovered from governmental sources are marked by long term stability over time and across space.⁴⁷ Prima facie they look analogous to fixed pay scales, maintained for the remuneration of soldiers or bureaucrats. Most of the evidence recently uncovered consists of records of daily rates that fell below the amounts required to purchase sufficient rice for 'food security'.⁴⁸

4 Comparisons of the incomes of peasant households of Jiangnan with the incomes of wage dependent unskilled labour employed in English towns

China's nominal wage evidence is, moreover, generally recorded in the empire's official unit of account, the taels of silver, which was neither a standardized officially minted coin, for the empire as a whole, nor convertible at any official and stable rate of exchange into copper cash or *wen* – the currency utilized for local purchases of goods and services.⁴⁹ Even copper coins were cast in different ways, denomination and copper content at no less than 10 provincial mints. Thus the virtually unregulated monetary system has added an almost insurmountable layer of complexity

45 Zeyi Peng, 'Qingdai Qianqi Jiangnan Zhizaode Yanjiu', (The Jiangnan Textile Bureau in the Early Qing Period), *Lishi Yanjiu (Research in History)* 4, 1963, 91-116; Li et al. 1983; Liu 1990.

46 R. B. Marks, 'Rice Prices, Food Supply, and Market Structure in Eighteenth-Century South China', *Late Imperial China*, 2, 1991, 64-116; Yie-chien Wang, 'Secular Trends of Rice Prices in the Yangzi Delta, 1638-1935', in: T. G. Rawski and L. M. Li, eds, *Chinese History in Economic Perspective* (Berkeley 1992) 35-68; M. Kishimoto, *Shindai, Chūgoku, Nobukka to Reozai hendō (Prices and Economic Change in the Qing Dynasty)* (Tokyo 1997); Yaohua Yu, *Zhongguo Jiage Shi (A History of Prices in China)* (Beijing 2000); Miantang Huang, *Zhongguo Lidai Wujia Wenti Kaoshu (Study of Prices in China's History over the Long Term)* (Jinan 2007).

47 C. Moll-Murata, 'The wage data in Da Qing Huidian Shili', (Collected Statutes of the Great Qing Dynasty Regulations) (unpublished and undated paper).

48 K. Deng and P. O'Brien, 'Clarifying Data for Reciprocal Comparisons of Nutritional Standards of Living in England and the Yangtze Delta (Jiangnan), c. 1644 - c. 1840', *Economic History Working Paper, No. 207, LSE*, 2014.

49 A. Kuroda, 'Anonymous Currencies or Named Debts, Local Credits and Units of Account between China, Japan and England in the Pre-industrial Era', *Socio-Economic Review* 11, 2013, 57-80.

to the endeavours of economic historians attempting to convert scant and ambiguous evidence for nominal daily wage rates into annual incomes expressed in a numeraire that might facilitate reciprocal comparisons across Europe.⁵⁰ Even if these obstacles could be circumvented the inferences that could be drawn from acceptable estimates for relative levels of real wages would remain too circumscribed to settle the core questions addressed by Peer Vries and other participants who continue to debate the historical origins for the Great Divergence. The Weberian view that the economies of East Asia (and South Asia) were for some centuries prior to the Industrial Revolution on trajectories leading to divergence might, however, derive some far stronger statistical support from exercises in quantification that have generated acceptable estimates for the relative standards of living afflicting the lives of the labouring poor in the West and majorities of the Chinese labour force engaged in household units of production in the East.⁵¹

This particular and potentially most fruitful of all paradigms for quantifiable investigations into the Great Divergence has been explored by innovative exercises by Philip Huang and Bozhong Li who have reached diametrically opposed conclusions on the standards of living afflicting (*pace* P. Huang) or enjoyed (*pace* Li) by peasant households in the Yangtze delta under the Qing Dynasty.⁵² That region around Lake Tai (Jiangnan) has long been widely regarded among economic historians of China as the most commercialized and economically advanced of the empire. Ken Pomeranz and Bozhong Li and Jan Luiten van Zanden have selected this province as apposite for comparisons with England and Holland.⁵³ In a working paper accessible on a LSE website, we have reconfigured and recalibrated recently published data that purported to measure the net incomes of a tiny sample of hopefully 'representative' peasant households for benchmarked years that refer to their conditions in the early seventeenth, mid-eighteenth and early nineteenth centuries.

50 F. H. King, *Money and Monetary Policy in China* (Cambridge 1965); A. Kuroda, 'Copper Coins Chosen and Silver Differentiated. Another Aspect of the 'Silver Century' in East Asia', *Acta Asiatica*, 88, 2005, 65-86; Moll-Murata, 'The Wage Data in Da Qing Huidian Shili'; Li et al. 1983; Wu 1983; Liu 1990; Huang 1992; Liu et al. 2014.

51 'The West and the Rest Revisited'; R. Brenner and C. Isett, 'England's Divergence from China's Yangzi Delta: Property Relations, Microeconomics and Patterns of Development', *Journal of Asian Studies*, 61, 2002, 609-662.

52 P. C. C. Huang, *The Peasant Family and Rural Development in the Yangzi Delta, 1350-1988* (Stanford 1988); Li, *Agricultural Development in Jiangnan 1620-1850*.

53 Bozhong Li and J. L. van Zanden, 'Before the Great Divergence? Comparing the Yangzi Delta at the Beginning of the Nineteenth Century', *Journal of Economic History*, 72, 2012, 956-990.

Essentially our methodology consists of conversions utilizing price data for the *net* output/incomes accruing to these households from agricultural production and the manufacture of coarse cotton cloth into edible rice equivalents and transforming their disposable incomes measured in kilograms of rice equivalents into kilocalories per capita per day.⁵⁴ These procedures provided us with estimates of levels and changes in the standards of living for peasant households in Jiangnan from circa 1600 to circa 1829. We compared these conjectures with estimates embodying far superior claims to have measured levels and trends in kilocalories potentially available to unskilled labour employed in English agriculture and the construction industries of southern English towns for benchmarked periods 1600-50, 1651-1700, 1701-1750, 1751-1800, 1801-1850. If our recalibrated data derived from recently published secondary sources is regarded as sufficiently secure for a reciprocal comparisons then some tentative and negotiable inferences flow from these imperfect numbers that lend support to the views that Peer Vries has been developing in response to contrary claims made by Ken Pomeranz in his seminal book of 2000.⁵⁵

Our clarified and recalibrated estimates suggest that from the early seventeenth century onwards, the state, institutions and foundational culture of the Chinese empire were failing to cope with 'the pressures of numbers and environmental degradation' nearly as well as the states and economies of Western Europe. Joseph Bryant's restatement of a Weberian view that the potential for specialization, trade and technological innovation between and among families, villages, town and regions of the Qing (and let us add the Ottoman and Mughal empires) had diminished over time, has some imperfect statistical evidence to commend it.⁵⁶

Our general view is that the numbers currently available for China and India are and may well remain too fragmentary, ambiguous and insecure to sustain a Kuznetsian paradigm for investigation into the historical origins of the Great Divergence. If that emerges as the case, other paradigms and historiographical traditions for the construction of metanarratives of the kind, depth and quality we are now reviewing, could become a second

54 K. Deng and P. O'Brien, 'Clarifying Data for Reciprocal Comparisons of Nutritional Standards of Living in England and the Yangtze Delta (Jiangnan); K. Deng and P. O'Brien, 'Comparison of Incomes in the Yangtze Delta and England, *circa* 1600 to *circa* 1850', website: www.lse.ac.uk/economic-history/research/urkew/incomecomparison.aspx. Department of Economic History, LSE, 2014.

55 Pomeranz, *Great Divergence*; Vries, *Escaping Poverty*.

56 Bryant, 'The West and the Rest Revisited'.

best solution to an intractable problem of uncovering ‘facts’ that can travel in order to facilitate reciprocal comparisons between Europe and China.⁵⁷

About the authors

Patrick O’Brien and Kent Deng are respectively economic historians of Europe and China based at the London School of Economics. As their publications listed on the School’s web site exposes, in recent years they have both been actively involved with academic debates and research concerned with the Great Divergence. For the past year they have collaborated in a forensic examination of the statistical sources, concepts and methods mobilized for purposes of a major and ongoing debate that has led to a revival of global history. Their most recent attempts include: Deng, K. and P. O’Brien, ‘Clarifying Data for Reciprocal Comparisons of Nutritional Standards of Living in England and the Yangtze Delta (Jiangnan), c.1644 – c.1840’, *Economic History Working Paper*, No. 207, LSE, 2014; Deng, K. and P. O’Brien, ‘Creative Destruction: Chinese GDP per Capita from the Han to Modern Times’, *European Historical Economics Society Working Paper* No. 63, September 2014. (http://ehes.org/working_papers.html) 2014; and Deng, K., and P. O’Brien, ‘Comparison of Incomes in the Yangtze Delta and England, circa 1600 to circa 1850’, www.lse.ac.uk/economichistory/research/urkew/incomecomparison.aspx (Department of Economic History, LSE, 2014). Deng, K., and P. O’Brien, ‘China’s GDP per capita from the Han Dynasty to Modern Times: Confronting the Problems of Measurement in 1990 International Dollars’, forthcoming, 2015.

As historians long committed to quantification they have reluctantly concluded that the scale and quality of reliable statistical information available for the Ming and Qing empire means that prospects for the application of the Kuznetsian tradition and paradigm to reciprocal comparisons between the economic histories of China and Europe are limited.

See: http://www.lse.ac.uk/economicHistory/whosWho/academic_staff/Profiles/pobrien.aspx p.obrien@lse.ac.uk

and http://www.lse.ac.uk/economicHistory/whosWho/academic_staff/Profiles/kgdeng.aspx k.g.deng@lse.ac.uk

⁵⁷ P. Howlett and M. S. Morgan (eds.), *How Well Do Facts Travel? The Dissemination of Reliable Knowledge* (Cambridge 2010).