1 India in the Great Divergence

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Economic historians try to explain why some nations are rich and others poor. The question was first pursued in a European context—Why did the Industrial Revolution happen in Britain rather than France?—but in recent years the discussion has broadened to the whole world, and the question has become, When and why did Europe pull ahead of Asia? Broadening the question is very illuminating because it increases the variation in institutions, culture, policies, and economic structure. Not only do we learn why some countries have experienced little economic growth; we also learn more about the sources of Western success.

The classical economists posed the growth question in global terms. One indicator of success was the real wage. Adam Smith (1776, 74–75, 91, 187, 206) was typical; he saw the world in terms of a wage ladder on which workers in northwestern Europe had the highest standard of living and workers in Asia had the lowest. "In Great Britain the wages of labour seem, in the present times, to be evidently more than what is precisely necessary to enable the labourer to bring up a family." Workers' living standards were even a bit better in the Low Countries: "The wages of labour are said to be higher in Holland than in England." Within Britain, England was above Scotland: "Grain, the food of the common people, is dearer in Scotland than in England. . . . The price of labour, on the contrary, is dearer in England than in Scotland." However, in Scotland, "labour is somewhat better rewarded than in France." Asia lagged far behind Europe: "The real price of labour, the real quantity of the necessaries of life which is given to the labourer . . . is lower both in China and Indostan . . . than it is through the greater part of Europe." Smith saw the maritime centers of southern England and the Low Countries as having the highest real wages. Real wages were lower on Britain's Celtic fringe. Most of continental Europe also lagged behind the mercantile leaders,

and Asia was at the bottom of the wage ladder. That was where wages were at the physiological minimum, in the classical view.

During the nineteenth century, the mainstream explanation of these facts was demographic. Malthus believed that population expands until birth and death rates are equal. The wage that corresponded to that outcome was the "subsistence" wage, which was just enough to allow parents to raise children and for the population to reproduce itself without expanding. In the original, positive check version of his theory, the birth rate was always at its maximum while mortality declined as wages rose. Under these circumstances, the subsistence wage had to be low enough to push mortality up to equal the high birth rate. In the later, preventive check version of the theory, fertility also declined as income dropped, and this modification meant that births and deaths equaled each other at a higher subsistence wage. The wage in a society, therefore, depended on whether the positive or the preventive check predominated. That was a question of marriage customs, law, and what Malthus called habit.

Malthus (1803, 116, 124, 251–252) applied the model by arguing that "habits" differed between Europe (in particular, England) and Asia. In England "the preventive check to population operates with considerable force throughout all the classes of the community." The sons of farmers and tradesmen deferred marriage "till they are settled in some business or farm, which may enable them to support a family." Even the laborer "will hesitate a little before he divides that pittance [of a wage] among four or five" family members. Late marriage restrained fertility and kept the English wage high. In Asia, on the other hand, several customs led to early and universal marriage, and that practice meant that the positive check reigned, and wages were lower than in Europe. Ancestor worship, the expectation that children would support their parents in old age, and infanticide all meant that China was "more populous, in proportion to its means of subsistence, than perhaps any other country in the world." Malthus entertained the possibility that Hindu asceticism depressed fertility (a preventive check) but concluded, "From the prevailing habits and opinions of the people there is reason to believe that the tendency to early marriages was still always predominant." As a result, "the lower classes of people [in India] were reduced to extreme poverty. . . . The population would thus be pressed hard against the limits of the means of subsistence, and the food of the country would be meted out to the major part of the people in the smallest shares that could support life." Disaster was never far away. "India, as might be expected, has in all ages been subject to the most dreadful famines."

Radicals, on the other hand, explained the income ladder in terms of geography, technology, social structure, and political organization. Marx (1853, 339) saw irrigation as "the sine qua non of farming in the East" for two reasons. First, there were "the vast tracts of desert, extending from the Sahara, through Arabia, Persia, India and Tartary, to the most elevated Asia highlands." These dry lands could be made fertile if water were supplied, so "artificial irrigation by canals and waterworks" became "the basis of Oriental agriculture." Second, in river valleys "as in Egypt and India" as well as China, periodic "inundations were used for fertilizing the soil." Water was periodically released on the land, and for that "advantage is taken of a high level for feeding irrigative canals" (331). Thus, both the potentially fertile deserts and the rich river valleys required extensive and elaborate water control systems to achieve maximal fertility. In the West the need for irrigation or water control "drove private enterprise to voluntary association, as in Flanders and Italy." However, in Asia, "where civilization was too low and the territorial extent too vast to call into life voluntary association, the interference of the centralizing power of government" was called into play. The state in Asia took on the job of administering a vast system of public works, which required a class of civil servants, notably the mandarins in China.

The state administration of irrigation had two effects, both of which were detrimental to economic growth. First, the production of agriculture and thus the economy as a whole depended on the performance of the bureaucracy. "In Asian empires we are quite accustomed to see agriculture deteriorating under one government and reviving again under some other government. There the harvests correspond to good or bad governments, as they change in Europe with good or bad seasons" (Marx 1853, 332). In Asia agriculture "is not capable of being conducted on the British principle of free competition, of laissez-faire and laisser-aller" (332). The result was a certain passivity: "The Hindu . . . like all Oriental peoples" left "to the central government the care of the great public works, the prime condition of his agriculture and commerce" (333).

Marx saw Asian society as composed of atomistic villages under the sway of a despotic state that determined their prosperity by the quality of its administration. Each village combined agriculture with textile production through hand processes. "Those family-communities were based on domestic industry in that peculiar combination of hand-weaving, hand-spinning and hand-tilling agriculture which gave them self-supporting power" (335). These villages were the "solid foundation of Oriental despotism," and they also stifled the rational acquisitiveness that propelled

capitalism forward: "They restrained the human mind within the smallest possible compass, making it the unresisting tool of superstition, enslaving it beneath traditional rules, depriving it of all grandeur and historical energies" (335). But there was cause for hope: The "old Asiatic society" would be destroyed by "English steam and English free trade." Modern capitalism would drive India forward (335, 337).

Whichever explanation is favored, the classical view presumed that there were large and persistent differences in preindustrial living standards. This mattered because they cumulated. Prosperity in Europe guaranteed that most people had a small surplus that could be invested in human or physical capital formation. These investments explain the rise of the West (Jones 1981).

Recently, however, this view has been challenged by World System theorists (Frank 1998; Blaut 1993) and the California School of economic historians. Pomeranz (2000), Laveley and Wong (1998), Wong (1997), and Lee and Wang (1999) question both the traditional explanations for Europe's lead and the existence of the lead itself. In a provocative observation Pomeranz (2000, 49), for instance, speculated: "It seems likely that average incomes in Japan, China, and parts of southeast Asia were comparable to (or higher than) those in western Europe even in the late eighteenth century." These revisionists generally affirm that there were no important differences between Asia and Europe in demography, market institutions, or property rights. The great divergence is usually traced to the advantages Europe received from its colonies in the Americas. Had the Americas not existed—a geographical accident—the great divergence would not have happened.

While China has been the main battleground of the revisionists, India has also figured in the discussion. K. N. Chaudhuri (1985), Bayly (1989), and Prakash (1998) extolled India's highly developed commercial culture and extensive trade. These features of preindustrial economic organization are often assumed to cause "Smithian growth" and high incomes. In an important contribution to measurement, Parthasarathi (1998, 82) claimed that "South Indian labourers had higher [real] earnings than their British counterparts in the eighteenth century and lived lives of greater financial security."

These contributions have set the terms of the debate, and a debate there has been. On the one hand, Allen, Bengtsson, and Dribe (2005) reported income and demographic results that support the revisionist view. Clingingsmith and Williamson (2005) charted and explained India's deindustrialization in the eighteenth century, and Keller and Schiue (2004a; 2004b) compared the degree of market integration in eighteenth century Europe

and China and found them roughly comparable. On the other hand, Broadberry and Gupta (2006) denied that the standard of living in India and England were similar, as did Bassino and Ma (2004) in comparing Japan and Europe, and Allen et al. (2005) in comparing China and Europe. It is fair to say that many more salvos will be fired before the issue is decided.

There are two types of problems that make it difficult to gauge the performance of preindustrial Asian economies, and this chapter addresses both in the context of India. A basic problem is lack of data. There is a long tradition of writing price histories of cities in Europe, and these provide one of the fundamental types of information for measuring European performance (another type being anthropometric evidence). To make progress on Asia, we need to put together comparable figures. These include the prices of major commodities in the various regions of the subcontinent as well as factor returns like wages, salaries, land and house rents, and interest rates. This chapter makes a start, for it is based on a data set of the prices of the principal foodstuffs and other consumer goods. These are used to measure the real incomes of unskilled laborers and textile workers. While this information is more extensive than has been used previously to address quantitative questions in Indian economic history, there are many gaps in the series, and they tend to fade into sporadic information as one moves back in time. Much work, therefore, remains to be done to complete the price and wage history of India. The present chapter represents a progress report based mainly on published material, albeit often from obscure sources.

The calculations reported here highlight a second, conceptual problem in the assessment of Indian economic performance, and that is the definition of the standard of living. The nub of the problem is that Asians and Europeans consumed very different baskets of goods, in particular, food. Not only were the basic starches different—wheat and rye versus rice and millet—but Europeans ate foods that were either naturally more expensive sources of nutrients (e.g., meat versus beans) or were more expensive because they were more highly processed (e.g., beer). Did these differences arise because Asians had a "taste for vegetarianism," or were Asians simply poorer than Europeans? A lot turns on the answer because it has a big impact on relative living standards.

Wages in Europe and Asia

Before we can compare real wages, we must establish the levels of nominal wages in India and Europe. The most widely available European

wages are those of building craftsmen and laborers. I have collected their wage rates for a large sample of cities from the Middle Ages to the nineteenth century (Allen 2001). For international comparison, these must be expressed in a uniform standard, so I have converted all the wages to their silver equivalent. This is normal practice as silver coins were the most common medium of exchange in Asia as well as Europe.

Wages have been collected for India from a variety of secondary and governmental sources.[1] I have divided India into four regions—east, south, west, and north. The east is Bengal, the south is the Coromandel region around Madras and Pondicherry, the west includes Bombay, Puna, and vicinity, and the north refers to Rajasthan, Gujarat, Agra, and Delhi. Wages of unskilled occupations, variously called laborers, coolies, and peons, and so forth, are included as well as the earnings of weavers, which were very similar to the others. The wages of agricultural laborers are excluded because they frequently included food, whose value was not recorded. (In this regard it is important that the earnings of the weavers, who were paid entirely in cash, were very close to the wages of the other workers in the unskilled category.) All the wage quotations in each region were pooled to form four regional series of unskilled wages.

From 1873 onward, the four regional series could be extended into the twentieth century with the wages reported annually for about 220 administrative districts in *Prices and Wages in India*. Usually, the wages of an agricultural laborer, a horse keeper, and a carpenter were reported for each district. A representative district was chosen for each of the four regions, and the wage of the horse keeper was taken as representative of the wage of unskilled workers. In this way, we can trace the history of unskilled wages from the seventeenth century—indeed for Agra from 1595—to the twentieth.

Wages in India were quoted in two currencies. The most common was the rupee, which was used in the east, north, and west. It was a silver coin containing 10.78 grams of silver throughout the period. Computing silver wages from rupees was therefore simple. In southern India, however, wages and prices were denominated in pagodas, which was a gold coin. East India company exchange rates were used to convert pagodas to rupees and silver (K. N. Chaudhuri 1978, 471).

There were differences between Europe and India relating to the usual term of employment. In Europe workers were hired by the year, in which case they received most of their income as room and board, which is very hard to value, or by the day, when they were often paid entirely in cash.

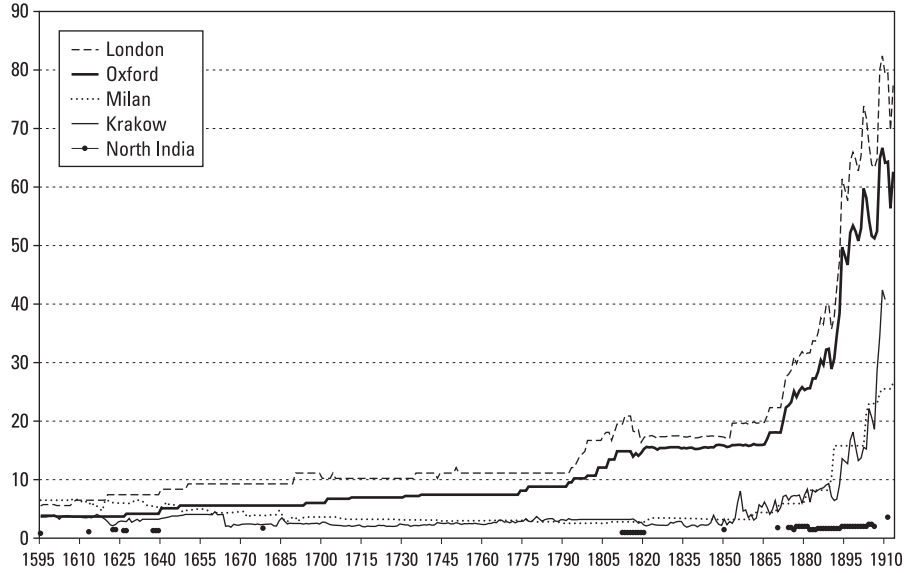

Figure 1.1
Nominal wages (grams of silver per day), Europe and India, 1595–1913.

Here I am concerned only with the latter. When annual earnings are computed for welfare comparisons, a full year's work is taken to be 250 days. In India wages were typically quoted per month rather than per day. Comparison with the few daily quotations suggests that monthly earnings were 30 times the daily wage. Fortunately, the number of days that someone worked per month is not necessary for most calculations of this chapter, which focus on full-time earnings per year. These were assumed to be 12 times the monthly earnings.

Figure 1.1 establishes the broad outlines of the history of nominal wages. The figure shows the daily wage of laborers in grams of silver. One Indian series (for northern India) is shown, and the daily wage is computed from the monthly quotations assuming that all 30 days were worked. Several features stand out:

• Silver wages were lower in India than in Europe. Wages were highest in the economically advanced parts of northwestern Europe (Oxford and especially London) and lower in the backward regions (Krakow and Milan). Wages in those cities were still double those in northern India, although that premium would be cut if one assumed the Indian wage applied to fewer than 30 days.

- The premium that northwestern Europe enjoyed over the rest of Europe and India widened over time, presumably as productivity growth accelerated (Broadberry and Gupta 2006).
- There was comparatively little trend in the Indian series. There was mild inflation in the seventeenth century and some deflation in the second half of the eighteenth and early nineteenth. Wage inflation became important only from 1870 onward.

Comparison with Europe indicates that India was a low-wage and rather static economy.

The series of northern Indian wages shown in figure 1.1 is broadly representative of India as a whole, although there were differences between regions. To greatly oversimplify the matter, between 1600 and 1850 the typical Indian laborer earned 3 rupees per month, which works out to about 1 gram of silver or 2 British pence per day. Wages tended to be lower than this—on the order of 0.8 grams of silver per day—in Bengal and the Coromandel. Wages were higher than 1 gram, occasionally as much as 1.5 grams, in western India. Wages tended to rise slowly in most regions in India between the seventeenth and mid-nineteenth centuries. After 1870 wage inflation increased.

A regression analysis was used to explore patterns in the wage data (table 1.1). The analysis is confined to the period before consistent annual

Table 1.1
Regression Analysis of Indian Wages, 1595–1870

	Regression 1	Regression 2	Regression 3
Constant	1.3505 (44.216)	1.3604 (50.869)	1.3832 (32.85)
North	−0.1739 (−2.875)	−0.1915 (−3.614)	−0.1970 (−3.675)
East	−0.5261 (−9.739)	−0.5354 (−11.326)	−0.5535 (−10.271)
South	−0.1437 (−2.887)	−0.1908 (−4.348)	−0.2031 (−4.293)
Date	0.0014 (5.501)	0.0012 (5.437)	0.0011 (3.974)
Datesq			−0.00000216 (−0.702)
Parthas		1.3397 (8.865)	1.3290 (8.741)
R^2	.43	.57	.57

Note: The dependent variable is the daily wage or daily earnings in grams of silver. T-ratios are in parentheses. There are 258 observations in all regressions.

data were collected by the government of India and before the rapid inflation that began in 1870. In regression 1, the daily wage was regressed on dummy variables representing the regions East, North, and South; the dummy for the west is excluded, so its mean value is captured by the intercept, and the coefficients of the three regional dummies in the regressions represent deviations from the western level. These variables all proved significant and had plausible coefficients. Wages were systematically highest in the west and lowest in the east. Also included is a time trend called Date, which is equal to the year minus 1750. Its coefficient indicates slow wage inflation throughout the period. To test whether inflation was accelerating or decelerating, Datesq, the square of Date, is included in regression 3. However, Datesq always proves to be statistically insignificant, indicating no rise or fall in the rate of wage inflation.

Equations 2 and 3 also include a variable Parthas, equal to 1, for the earnings quoted by Parthasarathi in support of his view that weavers in India could purchase as much grain as weavers in England. The weavers that he describes were in south India. He reports earnings in the eighteenth century from 1.5 to 2.5 pagodas per month. These figures correspond to 1.7 to 3.2 grams of silver per day on a 30-day month. Comparison with other wages suggests that these were very high figures. That impression is confirmed by the large and statistically significant coefficient of Parthas in equations 2 and 3. Parthasarathi (1998; 2001) attributes the high earnings of Coromandel textile workers in the first half of the eighteenth century to the profusion of buyers of cloth—Asian merchants plus the East India companies of several European countries—and the collective organization of the weavers. By the end of the century, England's defeat of France in the Seven Years' War and extension of the English East India Company's hegemony in the region reduced competition on the demand side of the cloth market and broke the power of the weavers' organizations. The East India Company was undoubtedly pleased to be able to drive labor earnings in the Coromandel down to the level in Bengal.

Welfare Ratios with a European Basket

Did the high silver wages of European workers translate into a higher standard of living than in India? To answer that question, we need to know the quantities and prices of the goods workers consumed. We can approach this from both high-wage and low-wage perspectives, and they both prove illuminating.

Table 1.2
Consumer Price Index: Basket of Goods, India

		Nutrients/Day	
	Quantity/Person/Year	Calories (g)	Protein (g)
Bread	182 kg	1,223	50
Beans/peas	52 L	160	10
Meat	26 kg	178	14
Butter[a]	5.2 kg	104	0
Cheese	5.2 kg	53	3
Eggs	52 each	11	1
Beer[a]	182 L	212	2
Soap	2.6 kg		
Linen	5 m		
Candles	2.6 kg		
Lamp oil	2.6 L		
Fuel	5.0 M BTU[b]		
Total		1,941	80

Source: Allen (2001).
Notes:
a. Where oil and wine were consumed instead of butter and beer, 5.2 liters of olive oil were substituted for the butter, and 68.25 liters of wine for the beer. 5.2 liters of olive oil yields 116 calories per day and no protein; 68.25 liters of wine yields 159 calories per day and no protein.
b. Millions of BTUs.

I begin with the northern European consumption basket shown in table 1.2. It was originally developed for comparisons within Europe and was inspired by European budgets and the weights conventionally used in cost-of-living indices.[2] The diet is "medieval" in that it does not include New World crops like potatoes, sugar, or tobacco. The budget in table 1.2 defines a "respectable" standard of living; it was relatively high-wage, and many people survived on less. Nevertheless, the budget provides a starting point for comparing the purchasing power of wages across Europe. To do that, some modifications are required to reflect local tastes and food availability: rye bread was used in eastern and central Europe, whereas wheat bread was used elsewhere; beer was used in northern Europe and wine in southern Europe. The guiding principle in these substitutions was to keep the calorie, protein, and alcohol content the same.

We can extend the framework to India, but we rapidly run into difficulties, for consumption patterns were very different. Indians ate little ani-

mal protein, and that was mainly confined to fish. Also, Indians did not consume much alcohol, nor did they buy bread from bakers, which was the way that urban Europeans got their main carbohydrate. Rice was the staple in eastern and southern India. Wheat was grown in the north and west, but it was a luxury item; common people consumed millet. Beans were widely consumed and were an important protein source. Some foods (e.g., cheese, beer, wine) and many of the nonfoods shown in table 1.2 did not feature in spending. On the other hand, most Indians consumed sugar.

The consumption pattern of the Indians is manifest in the prices that historians can find. The commodities whose prices were most readily available include rice, wheat, millet (jowar and bajra), beans (gram, boot gram, dal), sugar, mustard oil, and ghi (clarified butter). In no case do we have a continuous time series from 1595 to 1913, but the series were most complete in the regions where the commodity was most widely consumed. In addition, some series for some regions in restricted periods could be compiled for barley, mutton, fish, eggs, and firewood. The prices of these goods relative to more common products in India could therefore be established. I have found no prices for wine, beer, spirits, soap, or cheese. Information on the price of coarse cotton cloth (baftas) was also available for Gujarat and Bengal. Presumably prices were similar elsewhere in India in view of the low cost of shipping cloth relative to its value.

The next step in comparing standards of living in Europe and India was to compute the cost in India of the basket shown in table 1.2. This is a hazardous exercise because so many of the prices had to be estimated. Indian prices of bread and beer are not available. It was necessary to estimate them using regressions on European data. Allen (2001), for instance, reported a "bread equation" in which the price of bread was expressed as a function of the price of wheat or rye and the skilled wage rate. This equation was evaluated with India wheat prices and wages in order to calculate the price at which European-style wheat bread could have been produced on the subcontinent. Similarly, a "beer equation" was estimated from European data and used to estimate the price at which beer might have been produced in India in view of the country's prices of grain and labor. Meat, cheese, and eggs were assumed to sell at the same price per kilo, and missing values of these prices, of which there were many, were estimated from the price of meat and eggs relative to grains, where that could be established. The price of firewood was dealt with similarly. Cloth prices were assumed to be the same in all regions of India.

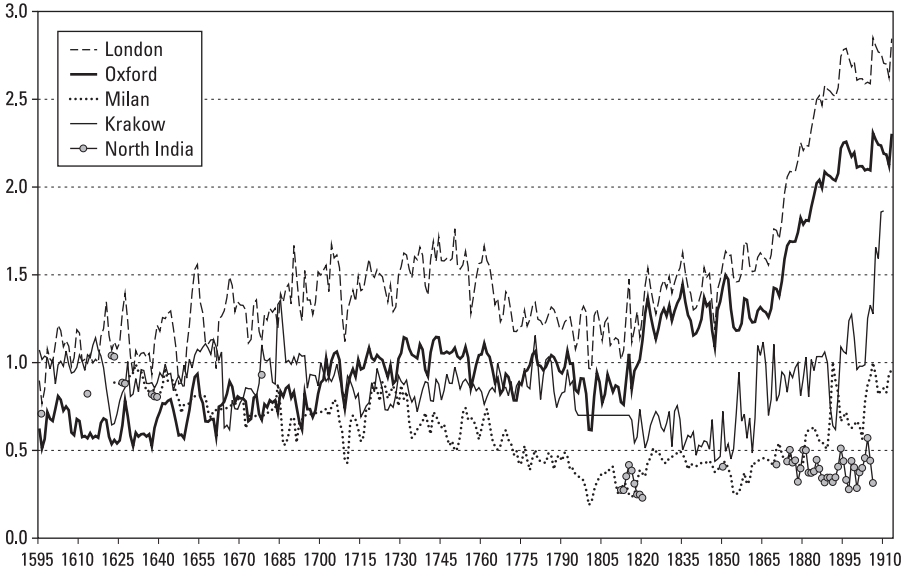

Figure 1.2
Welfare ratios (European respectability), Europe and India, 1595–1913.

In constructing a price index, we must bear in mind its intended use. In this study, we want to know whether a man employed full-time over a year could earn enough to support himself and his family. The basket in table 1.2 defines a standard of consumption that specifies "enough." The basket provides 80 grams of protein and 1,941 calories per day, which is taken as the nutritional norm for an adult male European. More nutrition was needed to support his wife and several children. Based roughly on the calorie requirements for men and women of different ages, the standard of consumption for a family is taken to be three baskets like table 1.2. Raising the cost of the basket by 5 percent to allow for rent implies that the cost of supporting a family at a standard of living like that of a man consuming the basket in table 1.2 is 3.15 times the cost of that basket.

Were laborers' wages in Europe and India high enough to allow them to purchase the lifestyle of table 1.2? The answer is in figures 1.2 and 1.3, which show welfare ratios for regions of Europe and India. A welfare ratio is equal to full-time, full-year earnings divided by the cost of living for a family for a year (i.e., 3.15 times the cost of the basket in table 1.2). Welfare ratios greater than 1 indicate that laborers were prosperous enough to buy that lifestyle, whereas ratios less than 1 indicate insufficient purchasing power. As figure 1.2 indicates, wages were high enough in

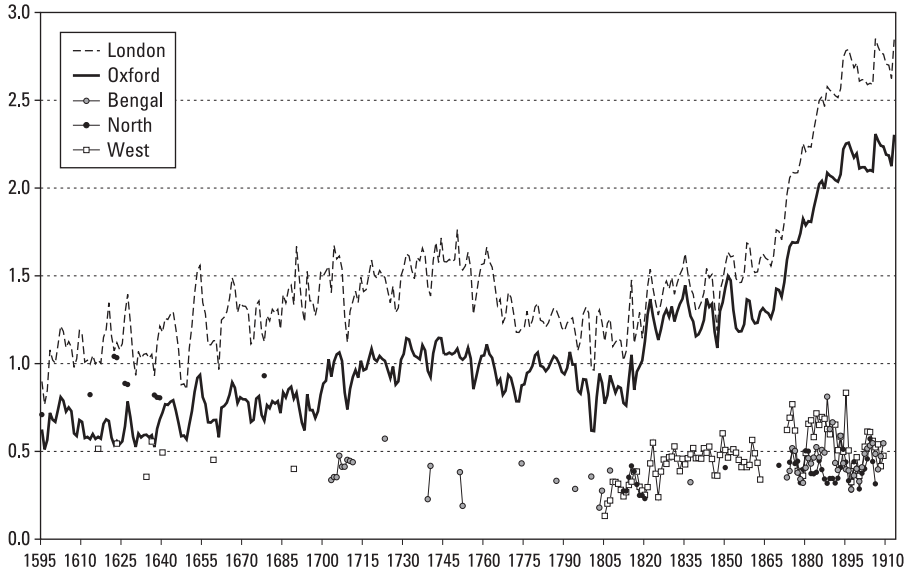

Figure 1.3
Welfare ratios (European respectability), England and India regions, 1595–1913.

London at all times and in Oxford in the eighteenth century for laborers to buy the lifestyle of table 1.2. In Milan and Krakow wages were insufficient. This pattern generalizes: laborers in the booming maritime centers of Britain and the Low Countries had welfare ratios over 1 in the eighteenth century, whereas their counterparts elsewhere on the continent did not.

Figure 1.2 shows the welfare ratio of laborers in northern India, and the situation in other regions is shown in figure 1.3. Two conclusions stand out. First, in the seventeenth century, Indian workers came close to being able to buy the lifestyle defined in table 1.2. Indeed, their standard of living was like that of workers in Europe. Second, the situation changed in the eighteenth century as real earnings slumped on much of the European continent while remaining steady or rising in northwestern Europe. Indian wages also slumped, and the decline in northern India, for instance, closely followed the pattern in Milan. Consequently, a substantial gap emerged between living standards in northwestern Europe in the early nineteenth century and those in central and eastern Europe and India. The gap widened in the late nineteenth century as real wages took off in Europe. In India they rebounded, but only to their seventeenth-century level.

Welfare Ratios with a Subsistence Basket

How did Indians and Europeans survive with welfare ratios below 1? The answer is that they shifted their diets to cheaper grain and cut their protein consumption. "It appears from contemporary accounts that the articles in the diet of the common people in most parts of India consisted chiefly of rice, millets and pulses" (Raychaudhuri and Habib 1982, I, 164). Palsaert, who visited India in the early seventeenth century, called the Indian diet "monotonous." In the Delhi-Agra region the people "have nothing but a little kitchery [kedgeree] made of green pulse mixed with rice . . . eaten with butter in the evening, in the day time they munch a little parched pulse or other grain." The workmen "know little of the taste of meat." Indeed, pigs, cattle, chickens, and eggs were all taboo. Where available, fish was the only source of animal protein. It was a similar story in western India. Wheat was not eaten by the laboring population, whose main source of carbohydrates was millet. This was ground into a coarse flour and fried up as chapatis that were eaten with pulses and vegetables. Lockyer (1711, 258), who toured Asia in the early eighteenth century on the East India Company ship *Streatham*, observed of the Arab sailors in the Indian Ocean, "They serve for small Wages, and are Victual'd at a much cheaper Rate than our Ship's Companys: Salt-fish, Rice, Gee, and Doll, with a few Fowls, being all the Provisions they care for. Doll is a small Grain, less than Fetches, contains a Substance like our white Peas, and being boil'd with Rice makes Kutcheree."

The restricted character of consumption was also pronounced in other areas. Generally, Indians went barefoot. Contemporary accounts emphasize "the scantiness of clothing." For much of the year, men wore little more than a loin cloth and women a sari. Houses were mud huts with thatched roofs. The peasants and workers had few furnishings besides bamboo mats and cots. Metal pots and utensils were rare, and much cooking was done in earthen pots (Raychaudhuri and Habib 1982, I, 459–462). It was hard to spend less money on one's lifestyle than this.

It was a similar story in Europe. The poor narrowed their spending to food, went without meat, and ate "inferior grain." In the eighteenth century in northern Europe that was often oats, the cheapest source of carbohydrates. Oats, eaten both as bread and porridge, predominated in the low-wage parts of Britain, the northern English counties and Scotland. Dr. Johnson exaggerated only a little when he remarked that oats were "a grain which in England is generally given to horses but in Scotland

Table 1.3
Subsistence Income: Baskets of Goods, India

	Rice			Millet		
	Quantity/ Person/ Year	Nutrients/Day		Quantity/ Person/ Year	Nutrients/Day	
		Calories (g)	Protein (g)		Calories (g)	Protein (g)
Oats						
Rice	164 kg	1,627	34			
Millet				209 kg	1,731	63
Bread						
Beans/peas	20 kg	199	11	10 kg	100	5
Meat	3 kg	21	1	3 kg	21	1
Butter/ghi	3 kg	72	0	3 kg	72	0
Cheese						
Eggs						
Beer						
Sugar	2 kg	21	0	2 kg	21	0
Soap						
Cotton	3 m					
Candles						
Lamp oil						
Fuel						
Total		1,940	46		1,945	69

supports the people." That was what they could afford on their miserable incomes.

To see if shifting the diet to the cheapest grain was a viable survival strategy, we need to specify the spending pattern exactly and cost it out. Consider Indian workers first, for they suffered from very low welfare ratios in the early nineteenth century. To see how they survived, a subsistence budget is defined in table 1.3. Superfluous purchases have been eliminated, and the food is mainly confined to the cheapest cereals—rice in east and south India, millet in north and west India. Each diet, however, still gives about 1,941 calories per day. Protein intake is less with the other diets: 69 grams per day in the case of the millet-based diet and 46 grams with the rice-based diet. These protein levels, however, are adequate in terms of twenty-first-century norms. The U.S. Recommended Daily Allowance for protein is 0.8 grams per day per kilogram of ideal body weight. An Indian man who was 165 cm tall and who had a body-mass index of 20 (in the middle of the normal range) would have weighed

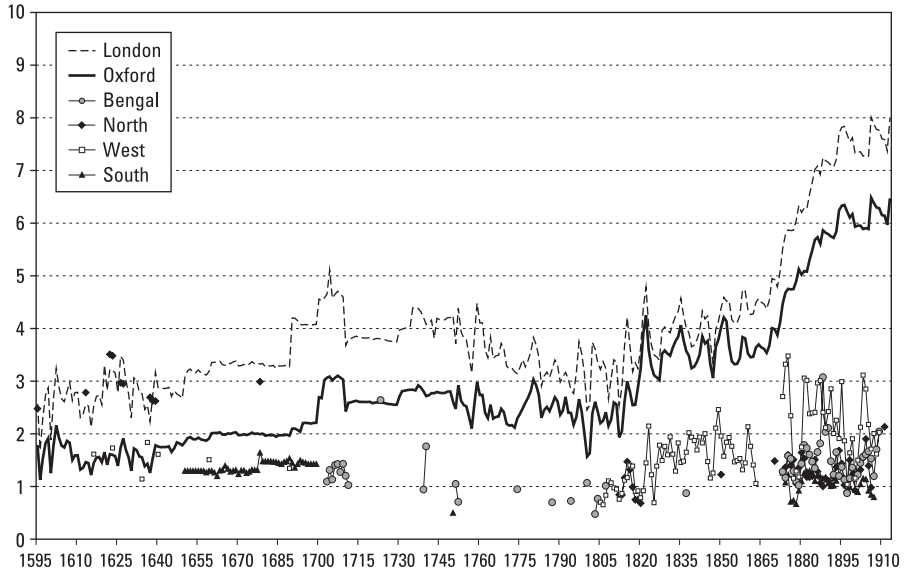

Figure 1.4
Welfare ratios, subsistence baskets, 1595–1913.

54.45 kg and required 43.56 grams of protein per day. The lower protein intake, therefore, does not signal malnutrition in India but extraordinarily high protein consumption in the prosperous parts of northwestern Europe.

Could Indian workers have purchased the subsistence diet? The test is to see if the welfare ratio, computed with respect to the subsistence budgets in table 1.3, equaled 1. Figure 1.4 shows Indian welfare ratios computed in this way. These ratios are all higher than those in the previous graphs because the subsistence diet cost less than the others. The same secular trends are apparent here: relatively high values in the seventeenth and early eighteenth century followed by a decline into the early nineteenth century and then a return to the seventeenth-century levels by the 1870s. No long-term improvement here. Laborers' incomes were clearly adequate to purchase the subsistence diet in the seventeenth century and the late nineteenth. In the early nineteenth century, the welfare ratio fluctuated around 1, indicating that in good years there was more than enough money to purchase the consumption basket, but in bad years there was not. Taken at face value, figure 1.4 suggests that in bad years Indian laborers borrowed in order to stay alive and then paid back the loans in the good years. The graph suggests that this system worked—just.

What figure 1.4 indicates is that Indian wages in the early nineteenth century were high enough for Indians to remain alive. Since the calories and grams of protein they consumed were similar to European levels, one might conclude that the standard of living of Indians and Europeans was the same, making allowance for different cultural preferences with respect to food. That would appear to be the import of figure 1.4, but it is a conclusion that misses many aspects of the standard of living.

The subsistence diet was specified to minimize the cost of getting 1,941 calories per day. The European diet in table 1.2 was not constructed in the same way, for it reflected what Europeans actually ate and not the least-cost way of surviving. What would a European subsistence diet have been? It would have relied on oats, the cheapest grain. The oats would have been eaten as a gruel or porridge rather than ground and baked into bread, for boiling the whole grain would have avoided nutritional losses in milling. The subsistence diet would also probably have included legumes, as in India. This diet is not fantastical because many Europeans living in peripheral, backward areas—the Scottish highlands, for instance—ate like that. Even in northern England and Wales in the first half of the eighteenth century, most bread was made of oats, barley, or rye; wheat bread was scarce (Deane and Cole 1969, 63–64).

Table 1.4 specifies a European subsistence diet that is the counterpart of those shown for India. It supplies the same number of calories, and indeed slightly more protein, than the meat- and beer-laden diet in table 1.2 because oats are protein-rich.

The cost implications of the oat-based diet are extreme: it cost about one-third of the cost of the "normal" European diet we began with. The cost savings emphasize the high cost of bread, beer, meat, and cheese as sources of calories and proteins. Since it was so cheap, English workers had no trouble purchasing this diet; indeed, in the seventeenth century, their income was double the cost of the subsistence diet. By the twentieth century, income was about eight times subsistence.

Comparison of Indian and English living standards with subsistence income baskets reinforces the conclusions implied by the European respectability baskets in figures 1.2 and 1.3. A very important point is that Indian and English living standards were similar in the seventeenth century. The highest earners (those in London and north India) had incomes three or four times subsistence; workers in Oxford and west India reached welfare ratios of about 2. Starting in the mid-seventeenth or early eighteenth century at the latest, Indian welfare ratios fell behind English ratios, and by the mid-eighteenth century, Indian ratios dropped to about

Table 1.4
Subsistence Income: Basket of Goods, Europe

		Nutrients/Day	
	Quantity/Person/Year	Calories (g)	Protein (g)
Oats	166 kg	1,774	77
Rice			
Millet			
Bread			
Beans/peas	5 kg	47	4
Meat	5 kg	34	3
Butter/ghi	3 kg	60	0
Cheese	3 kg	31	2
Eggs			
Beer			
Sugar			
Soap	2.6 kg		
Linen	5 m		
Candles	2.6 kg		
Lamp oil	2.6 L		
Fuel	5.0 M BTU[a]		
Total		1,946	86

Note:
a. Millions of BTUs.

1, that is, Indian workers could barely purchase the subsistence basket. England had opened up a large lead over India in living standards, and it increased during the nineteenth century.

What were English workers buying? They spent much of their extra income on food *quality* (Allen et al. 2005). Calories and protein are only two aspects of food. Everyone probably tries to get enough calories to avoid feeling hungry. If incomes rise above that, some money may be spent on more calories or even nonfood goods, but much of the increase is devoted to improving the quality of the food. In Europe this meant meat, cheese, bread, and alcohol. English laborers had the purchasing power to do that; Indian laborers, by and large, did not. The command over high-quality food is a measure of Europe's lead over Asia.

Superlative Indices and Real Income Comparisons

Welfare ratios (with culturally adjusted food baskets) are a common method of comparing living standards in the preindustrial world. They

have revealed the importance of food quality as an indicator of well-being. Welfare ratios force us to focus on the different culinary practices of Europe and Asia. Another methodology requiring the same regard are conventional real wage calculations using superlative price indices as the deflators. This methodology turns out to give similar conclusions as the welfare ratios.

The real wage approach to comparing living standards involves dividing the ratio of European to Asian nominal wages (actually, annual earnings) by the ratio of European to Asian prices. The latter ratio is measured as an index number of European prices relative to Asian. Here I use a Fisher Ideal Index. This index is the geometric average of two component indices. The first looks at the world from a European perspective: The cost of a European basket of goods is computed with European and with Asian prices, and the European cost is divided by the Asian cost. The constituents of this approach were already developed when the cost of the European consumption basket in table 1.2 was computed in both Britain and India.

The second component index in the Fisher Ideal looks at the world from an Asian perspective. The cost of an Asian basket of goods is computed with both European and Asian prices, and the ratio of costs is obtained. I develop two versions: one for east and south India and the second for north and west India. This approach is based on the rice and millet subsistence budgets in table 1.3. While I have already computed their cost in India, their cost in English prices must now be determined. From 1659 onward, the cost of rice in London is available (Beveridge 1939, 432–433), so the cost of the rice diet can be computed. The millet diet is more difficult because millet was not sold in Britain. I use the price of oats, the inferior grain, as a proxy for the price of millet.

Figure 1.5 shows real annual earnings of laborers in London and in Oxford relative to their counterparts in east and north India. (There is little difference between these results and comparisons with south and west India.) The comparisons between England and north India span the whole period. In the seventeenth century, average real earnings in London were slightly above the north Indian level, and earnings in Oxford were slightly below. This finding corroborates the earlier conclusions based on welfare ratios. Figure 1.5 shows that England pulled ahead of India in the eighteenth century, and the lead was extended in the nineteenth. Calculations for Bengal in the eighteenth century confirm the generality of this pattern. Analyzing the wage data in the framework of superlative price indices gives historical results that are similar to those supported by welfare ratios.

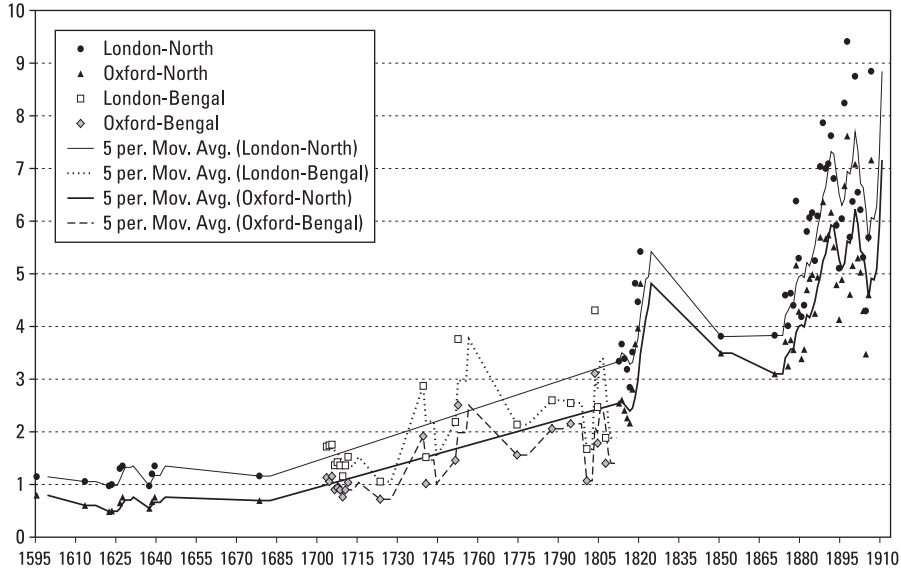

Figure 1.5
Real wage comparisons, fisher ideal price index, 1595–1913.

Conclusion

This chapter supports a more dynamic view of relative living standards in Europe and Asia than either the traditionalists or the revisionists maintain. The revisionist view is sustained for the seventeenth century because real annual earnings look similar in India and England in the period. If this result proves robust, it calls into question the grand classical theories of the great divergence. Malthus's contention that England and India had different demographic systems that equilibrated at different incomes is beside the point if the income levels were the same. Similarly, Marx's ideas about the hydraulic state and the static village are undermined by similar economic outcomes in Europe and Asia. Similarity in income in the early modern period points to less fundamental causes of the great divergence.

It is not all smooth sailing for the revisionists, however. Parity in income was not maintained in the eighteenth century, for the standard of living fell in India. By 1800, England had a big lead in living standards, much as the classical economists maintained. The great divergence began earlier than revisionist historians contend. The collapse of the Mogul Empire and the extension of British hegemony are obviously potential

explanations for the fall in Indian income, and world empire may have played a role in the rise of English income, as the revisionists maintain.

The income comparisons of this chapter suggest that economic success and failure owed more to policy than to fundamentals. Policy explanations are intrinsically contingent: History could easily have turned out otherwise. These explanations raise a dark possibility: Maybe the rise of the West was fundamentally an accident.

Notes

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1. The Indian wages and prices used here were collected from the following sources: *Accompaniements Nos. 1 to 9* (1864); Arasaratnam (1980; 1986); Brenning (1975); Broadberry and Gupta (2006); S. Chaudhuri (1975); Divekar, Indukar, and Vilangekar (1989); Dutt (1906); Gupta (1937); Haider (2004); Hariharan (2002); Hassan and Gupta (1967); Hossein (1988); Hussain (1976); Kinloch (1852); Mitra (1978); Mizushima (1986); Montgomery (1849); Mukerjee (1939); Parthasarathi (1998; 2001); Prakash (1985); *Prices and Wages in India 1893–1910* (1920); Raju (1941); Raychaudhuri and Habib (1982); Shattacharya (1954); Siddiqi (1981); *Statistical Abstract Relating to British India, 1867–1922*; Van Santen (1953).

2. See Allen (2001), who also details the sources of the data used for the European side of the comparison.

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