

The Worldwide Standard of Living Since 1800

Richard A. Easterlin

By many measures, a revolution in the human condition is sweeping the world. Most people today are better fed, clothed, and housed than their predecessors two centuries ago. They are healthier, live longer, and are better educated. Women's lives are less centered on reproduction and political democracy has gained a foothold. Although western Europe and its offshoots have been the leaders of this advance, most of the less developed countries have joined in during the 20th century, with the newly emerging nations of sub-Saharan Africa the latest to participate. Although the picture is not one of universal progress, it is the greatest advance in the condition of the world's population ever achieved in such a brief span of time.

The purpose of this article is to sketch this worldwide change over the past two centuries in the standard of living, broadly conceived. I start with a short discussion of the standard of living concept, proceed to individual components of the standard of living, and conclude with a few summary observations.

The Concept of Standard of Living

The concept of the standard of living has in recent decades increasingly approached the economists' idea of a utility function, in which well-being depends on a wide variety of pecuniary and nonpecuniary circumstances. Early in the post-World War II period, the standard of living was typically conceived in purely material terms—the goods and services at one's disposal—called here the *level* of

■ *Richard A. Easterlin is University Professor, University of Southern California, Los Angeles, California.*

living, following Davis (1945).¹ This conception led naturally to the use of real GDP per capita as the primary measure. Critics expressed concern that GDP per capita failed to reflect a number of important aspects of human welfare, and pointed to some notable disparities in the ranking of countries based on GDP per capita compared with other possible indicators of well-being, such as length of life and education (Morris, 1979; United Nations, 1952; United Nations Research Institute for Social Development, 1970). Many of these critics feared that if policymakers focused on GDP per capita, they would be unduly biased toward economic growth as a policy objective, rather than striving for balanced human development.

A recent product of this social indicators movement has been the United Nations human development index (HDI), now reported on an annual basis (United Nations Development Program, 1999). The HDI combines GDP per capita, life expectancy at birth, and a composite measure of education based on literacy and school enrollment into an overall index number. Some experimental work also seeks to include human rights in this broad measure of human development. This broader conception of the standard of living inevitably raises questions of scope and weighting that hark back to the early days of national income measurement (Kuznets, 1941). What items should properly be included in such a measure? How should they be combined into a single comprehensive index? Since the growth of GDP per capita may cause changes in the other dimensions of the standard of living, and vice versa, do adjustments need to be made to a development index to avoid possible redundancy or double counting?

My approach is influenced by the progressive broadening of the concept of standard of living. It is affected also by what people themselves say about their sources of well-being. In the early 1960s, social psychologist Hadley Cantril (1965) carried out an intensive survey in twelve countries, developed and less developed, asking open-ended questions about what people want out of life.² Economists may take some reassurance from the fact that material circumstances, especially level of living, are mentioned most often in every country, being named by 60 to 95 percent

¹ Joseph S. Davis's (1945) presidential address to the American Economic Association is still apropos, although his suggestion of an aspiration-level interpretation of the standard of living has not found favor. An insightful conceptual discussion is that of Sen (1987), but in this paper I have not followed his proposal for focusing on capabilities and functionings.

² In a face-to-face interview, the respondent was asked to give a personal view of the best of all possible worlds for himself—"his wishes and hopes as he personally conceives them and the realization of which would constitute for him the best possible life" (Cantril, 1965, p. 22). A similar question elicited views on the worst possible life. A respondent could, and often did, name a variety of concerns—living level, health, and so on. One example of the care with which the survey was conducted is Cantril's (p. 26) description of the problem "of translating the original questions from English into the various languages used . . . [C]onsiderable time was spent with experts to be sure the translation contained the precise nuances wanted. One of the methods often utilized in this translation process was to have someone who knew the native language, as a native, for example, an Arab, and who also was completely fluent in English translate our questions into Arabic. Then someone whose native language was English but who had a perfect command of Arabic would translate the Arabic back into English so a comparison could be made with the original question and, through discussion and further comparisons, difficulties could be ironed out."

Table 1

**Concerns Underlying Judgments of Personal Well-Being in 12 Countries
Surveyed around 1960–65**

| <i>Concern (From Most to Least Frequently Mentioned)</i> | <i>Relative Importance</i> | | | |
|--|----------------------------|--------------|---------------------------------------|--------------|
| | <i>Rank</i> | | <i>Percent Mentioning Concern</i> | |
| | <i>Mean</i> | <i>Range</i> | <i>Mean</i> | <i>Range</i> |
| Living level | 1.0 | 1–1 | 77 | 60–95 |
| Family | 2.2 | 2–3 | 50 | 27–76 |
| Health | 3.4 | 2–6 | 34 | 4–48 |
| Values/character | 4.4 | 4–6 | 22 | 9–42 |
| Job/work | 4.4 | 3–6 | 20 | 8–42 |
| Social | 6.7 | 5–8 | 6 | 1–14 |
| International | 7.3 | 4–9 | 4 | 0–15 |
| Status quo | 7.7 | 5–9 | 2 | 0–11 |
| Political | 7.9 | 5–9 | 3 | 0–15 |

Source: Cantril (1965, p. 169). The countries included (with sample sizes) are: Brazil (2170), Cuba (992, urban only), Dominican Republic (814), Egypt (499), India (2366), Israel (1170), Nigeria (1200), Panama (642), Philippines (500), United States (1549), West Germany (480), Yugoslavia (1523). See footnote 2 for further survey detail.

of the people, as shown in Table 1. Next are family concerns—which always rank either second or third—like a happy family life and relations with children and relatives. These are closely followed by concerns about one’s personal or family health. After this, and about equal in importance, are matters relating to one’s work (a good job) and to personal character (emotional stability, personal worth, self-discipline, and so on). Perhaps surprisingly, concerns about broad international or domestic issues, such as war, political or civil liberty, and social equality, are not often mentioned. Abrupt changes in the latter circumstances do affect people’s sense of well-being at the time they occur, but ordinarily it is the things that take up everyday life that are everywhere in the forefront—making a living, marriage and family circumstances, and the health of oneself and one’s family. Education—one of the principal components of the United Nations human development index—is also not often mentioned, no doubt because it is largely a thing of the past for most adults, but it does show up in connection with aspirations for one’s children. It seems reasonable to suppose that if Cantril’s 1960s survey were replicated today, the results would be much the same despite the economic changes that have since occurred because of the similarity he found at that time between concerns in developed and less developed countries.

Here, I try to assemble some rough indicators of various dimensions of the standard of living—arguments, so to speak, of the utility function—without attempting to combine them into an overall measure. The regional classification is

Table 2

Growth Rate of Real GDP Per Capita in the Half Century Before and After Its Turning Point in Six Countries

| | <i>Approximate Turning Point</i> | <i>GDP Per Capita at Turning Point (1990 Dollars)</i> | <i>Growth Rate in Half Century</i> | |
|----------------|--------------------------------------|---|------------------------------------|--------------------------------|
| | | | <i>Before Turning Point</i> | <i>After Turning Point</i> |
| | | | <i>(Percent Per Year)</i> | |
| United Kingdom | 1820 | 1,756 | 0.4 | 1.3 |
| France | 1820 | 1,218 | 0.3 | 0.9 |
| Sweden | 1850 | 1,289 | 0.2 ^a | 1.3 |
| Japan | 1870 | 741 | 0.1 | 1.7 |
| Brazil | 1900 | 737 | 0.1 | 1.7 |
| India | 1945 | 663 | 0.1 | 1.7 |

^a 1820–50.

Source: Maddison (1995, Table D-1). Where data permit, a five-year average of GDP per capita is used to compute the level of GDP per capita and the growth rate based thereon. The 1770 values for the United Kingdom and France are obtained by linear interpolation from Maddison (1982), p. 8 (for France) and p. 213 (for the United Kingdom) and adjusted to the level of the series in Maddison (1995). I have used half century periods in computing rates of change before and after the turning point to minimize the effect of annual variability in historical time series.

that of the United Nations Population Division;³ world and regional averages are population-weighted means of country values. Turning points in historical time series are dated by visual inspection. The present measures are far from exhaustive, but they are sufficient to suggest the immense changes in people’s lives—in their standard of living—that have taken place in the past two centuries.

Level of Living

The quantity of goods consumed by the average person has multiplied in the era of modern economic growth at a rate never before known. In most countries, it is possible to identify approximately a turning point after which living levels begin to advance at a previously unprecedented pace. Table 2 gives examples from six countries.⁴

The rate of improvement has risen noticeably over time. This is hinted at by comparison of the before-and-after growth rates of the three “follower” countries in

³ More developed areas comprise northern America, Japan, Europe, Australia, and New Zealand; less developed, all others. Caribbean nations are included with Latin America; Melanesia, Micronesia, and Polynesia, under “Rest of Asia” (which excludes Japan).

⁴ Maddison (1995, p. 31, n.1) rejects the idea of staggered “take-offs” in GDP per capita in western Europe, choosing 1820 as the starting point for all countries in the region. On a worldwide scale, however, his charts of GDP per capita provide striking confirmation of staggered take-offs (for example, see his Figure 1.2 on p. 29).

Table 3

Growth Rate of Real GDP Per Capita, Major Areas of the World, c. 1950–1995, and Share of World Population, 2000

| | <i>Annual Growth Rate (Percent)</i> | <i>Ratio: Per Capita GDP at End to Beginning</i> | <i>Share of World Population (Percent)</i> |
|----------------------|---|--|--|
| More developed areas | 2.7 | 3.1 | 20 |
| Less developed areas | 2.5 | 2.9 | 80 |
| China | 3.8 | 5.0 | 21 |
| India | 2.2 | 2.5 | 17 |
| Rest of Asia | 3.7 | 4.6 | 21 |
| Latin America | 1.6 | 1.9 | 9 |
| Northern Africa | 2.1 | 2.4 | 2 |
| Sub-Saharan Africa | 0.5 | 1.2 | 11 |

Source: In columns 1 and 2, lines 1 through 2b are rates for 1952–1995 calculated from Maddison (1998), p. 40; lines 2c–2f, rates for 1950–1992 calculated from Maddison (1995), appendices A, C, and D. Northern Africa is a weighted average of Egypt and Morocco, which together account for over half of the region’s population; sub-Saharan Africa is a weighted average of the rates for seven countries accounting for about half of the region’s population (see p. 206). Column 3 is the medium variant projection in United Nations Department of Economic and Social Affairs, 1998. For regional classification here and subsequently, see footnote 3.

Table 2 with the three leaders. The accelerating rate of improvement, however, is most apparent on a worldwide scale since the mid-20th century. In less than half a century throughout most of the world, average living levels have grown two- to three-fold or more, as shown in Table 3, with sub-Saharan Africa being the principal exception. One way of appreciating the rapidity of change is to note how it drives a wedge between the experience of successive generations. An annual growth rate of 2.5 percent means that a parent would, on average, have less than half of what a child has at the same point in the life cycle; a grandparent, less than a fifth of what a grandchild has. Is it any wonder that intergenerational frictions often accompany modern economic growth?

The transformation of living levels has been qualitative as well as quantitative. By comparison with the conveniences and comforts widely available in developed economies at the end of the 20th century, everyday life two centuries ago was most akin to what we know today as “camping out.” In the late 18th century United States (which even then was a relatively rich society), for example, among the rural population, which comprised 95 percent of the total, housing consisted of “[o]ne story log houses and frame houses with one or two rooms and an attic under the rafters Cellars and basements were practically unknown and frequently there was no flooring except the hard earth. The fireplace with a chimney provided heating and cooking . . .” (Brady, 1972, p. 64). Toilet facilities consisted of outdoor privies. Water and wood had to be fetched. A few windows with shutters but no glass provided ventilation and daylight; candles supplemented the fireplace for light in

the evening. The only methods of food preservation were curing and pickling. Transportation consisted of a horse and wagon.

The qualitative change from that world to the current panoply of consumer goods in the United States—cars and planes, electrical appliances and running water, telecommunications and computers, pharmaceuticals and health care, and the phenomenal array of food and clothes—is literally incredible.⁵ Although the followers in modern economic growth are not as far along, their rate of change is often much higher than the leaders at a comparable stage. For example, Japan experienced an annual growth rate of real GDP per capita of 5.7 percent from 1958 to 1987. Consumer durables such as electric washing machines, electric refrigerators, and television sets, found in few Japanese homes at the start of the period, became well-nigh universal, and car ownership soared from 1 to about 60 percent of households in only three decades (Yasuba, 1991). What a difference to be a Japanese child raised in the 1980s rather than the 1950s!

Length of Life, Health, and Stature

Life expectancy at birth, like GDP per capita, is typically marked by a sharp increase in the rate of improvement. Table 4 presents the same set of six countries for which GDP growth rates were given in Table 2 and reveals a pattern of initial mild gains in life expectancy, followed at some point by a rapid improvement. The evidence from these six countries, as well as from more systematic examination, suggests that the rapid improvement in life expectancy started later than modern economic growth, but spread more rapidly (Easterlin, 1996, ch. 6). In none of the six countries in Table 4 did rapid improvement in life expectancy start before the 1870s, whereas economic growth was underway in three of the six countries by that time. For life expectancy, however, the time span between the turning point for the earliest and latest country is only about seven decades compared with 17 decades for the rise in GDP (compare column 1 in Table 4 with that in Table 2). In the four countries in which the turning point in life expectancy is before 1940, there is little evidence of any impact on life expectancy of the substantial retardation in economic growth in the Depression period of the 1930s.

Among the followers, the rate of improvement in life expectancy, like that in GDP per capita, is much more rapid than in the historical experience of the leaders. In the early 1950s, life expectancy at birth in the less developed world other than Latin America is, on average, below that of western Europe in the 1870s, as shown in Table 5. Only four decades later, life expectancy in most less developed areas outside of sub-Saharan Africa is in the 60–69 year range, a level reached in the developed world only after eight decades of improvement. Even in sub-Saharan Africa, life expectancy,

⁵ This decade has seen the appearance of several valuable studies providing remarkable detail on the change in American consumption in the 20th century (Brown, 1994; Cox and Alm, 1999; Lebergott, 1993, 1996).

Table 4

Life Expectancy Improvement in the Half Century Before and After Its Turning Point in Six Countries

| Country | Approximate Turning Point | Life Expectancy at Turning Point (Years) | Change in Half Century | |
|---------------------|------------------------------|---|-------------------------|------------------------|
| | | | Before Turning Point | After Turning Point |
| England and Wales | 1871 | 41.0 | 3.0 | 12.0 |
| Sweden | 1875 | 45.4 | 4.6 | 17.2 |
| France ^a | 1893 | 44.9 | 3.4 | 20.3 |
| Japan | 1923 | 42.6 | 5.8 | 30.8 |
| Brazil | 1940 | 36.7 | 8.0 | 28.9 |
| India | 1945 | 32.1 | 8.3 | 28.3 |

^a Data are for females.

Source: For details, see Easterlin (1996, p. 71).

Table 5

Years of Life Expectancy at Birth, Major Areas of the World, 1950–55 and 1990–95

| | 1950–55 | 1990–95 | Change |
|----------------------|---------|---------|--------|
| More developed areas | 66.6 | 74.1 | 7.5 |
| Less developed areas | 40.9 | 61.9 | 21.0 |
| China | 40.8 | 68.4 | 27.6 |
| India | 38.7 | 60.3 | 21.6 |
| Rest of Asia | 39.4 | 62.0 | 22.6 |
| Latin America | 51.4 | 68.1 | 16.7 |
| Northern Africa | 41.8 | 62.2 | 20.4 |
| Sub-Saharan Africa | 35.3 | 47.0 | 11.7 |

Source: United Nations Department of Economic and Social Affairs (1998, pp. 12, 546–566).

which starts much lower than in other less developed areas, increases by 12 years up to the late 1980s. According to current United Nations estimates and projections using epidemiological models that take account of the spread of HIV infection there, life expectancy is currently leveling off and will continue to do so through 2010, but it is expected then to resume its marked upward trend (United Nations Department of Economic and Social Affairs, 1998, p. 12).

In the 1960s, some experts came to adopt a “stationary state” expectation about the future of life expectancy in developed countries. Analysts at the National Center for Health Statistics, for example, cautioned in 1964 that “the death rate for the United States has reached the point where further declines as experienced in the past cannot be anticipated” (U.S. Department of Health, Education and Welfare, 1964, p. 42). The reason was that historically—as in the less developed countries today—the great declines in mortality were due to reductions in infec-

tious disease, which benefitted especially those at younger ages.⁶ Further declines were seen as foundering on the hard rock of the degenerative diseases of older age, especially heart disease and cancer. As reasonable as this view seemed, it was very shortly undercut by events. After 1968, a new decline in U.S. mortality set in at a pace not much different from that prevailing from 1900 to 1964, as marked gains began to be made in reducing older age mortality due to heart disease.⁷ Similar declines in mortality rates occurred in other countries leading in life expectancy. Thus, the current improvement in life expectancy in the developed countries reflects chiefly progress on diseases previously viewed as the ineluctable result of aging processes, especially cardiovascular disease.⁸

The marked upturn in life expectancy that started in the late 19th century is due to a technological breakthrough, but a quite different one from that underlying economic growth (Easterlin, 1999; Mokyr and Stein, 1997; Schofield, Reher and Bideau, 1991). It arises from major advances in the control of communicable disease—first via preventive methods, and then via therapeutic techniques. In the first part of the 19th century there was no knowledge of the causes of disease, very little of the mode of transmission, and almost none of how to treat disease. An example of health care knowledge at that time is the case of a Philadelphia tallow chandler in the fall of 1826, described by Rosenberg (1979, p. 13), who “complained of chills, pains in the head and back, weakness in the joints and nausea . . .”:

[B]efore seeing a regular physician, he was bled till symptoms of fainting came on. Took an emetic, which operated well. For several days after, kept his bowels moved with Sulph. Soda, Senna tea, etc. He then employed a Physician who prescribed another Emetic, which operated violently and whose action was kept up by drinking bitter tea.

One can reasonably wonder about the value of the principal treatments for disease prevailing at that time—the use of emetics, cathartics, diuretics, and bleeding—and the productivity of the economists’ “health production function.” A similar state of knowledge existed in the mid-20th century in many less developed areas, and persists to some extent even to the present time (Caldwell et al., 1990).

The contrast with health knowledge in the developed countries today is illustrated by the prevailing methods of control of some of the major infectious

⁶ This does not mean that declines in *infant* mortality led the way. In fact, in the developed countries’ past, gains in infant mortality frequently lagged behind the advances in mortality reduction at other childhood ages (Mathiessen and McCann, 1978).

⁷ The statement about similarity in rate of change before and after the 1960s is based on the age-adjusted mortality rate, which weights age-specific mortality declines on the basis of each age group’s share in the population. The measure of life expectancy at birth gives disproportionate weight to the youngest ages (Lee and Skinner, 1999), and thus fails to reflect as fully the death rate declines at older ages.

⁸ The transition economies of eastern Europe, some of which experienced notable declines in life expectancy in the first part of the 1990s, especially among males, appear now to be recovering (World Health Organization, 1999a).

diseases that evolved chiefly during the 20th century. By the early 1930s, a technology had been put in place that prevented the transmission of disease by a number of techniques: immunization for diphtheria and smallpox; dissemination of personal hygiene knowledge; mosquito control for malaria and yellow fever; supervision of water and food for cholera, dysentery, and typhoid fever (Winslow, 1931). Of these methods, only vaccination against smallpox was in use in the first part of the 19th century, and, even then, not very widely—most of the developments just listed date from the last part of the 19th century or later. These preventive methods were responsible for much of the sharp upturn in life expectancy. Effective methods for the cure of major diseases did not become generally available until the 1940s, when penicillin and a long list of successor antibiotics and other drugs came along (Beeson, 1980). In the less developed world, much the same preventive methods have been responsible for life expectancy improvement to date, although the concurrent availability there of antimicrobial therapeutic measures means that these have played a somewhat larger role than in the past.⁹

There can be little doubt that health status improved in parallel with the advance of life expectancy as infectious disease was brought under control, because the same techniques that lowered deaths due to infectious disease also reduced the incidence and prevalence of such disease and thereby the extent of sickness in the population. Comprehensive evidence of the improvement in health is hard to come by, because of insufficient morbidity data, but the advance is clearly suggested by the dwindling (and often disappearing) number of cases in the United States in the 20th century of reportable diseases such as typhoid fever, malaria, diphtheria, whooping cough, and smallpox (U.S. Bureau of the Census, 1975, p. 77). The reduction and elimination of the debilitating effects of such diseases meant that fewer people went through life with immune, cardiovascular, and other bodily systems permanently damaged by these diseases, and thus raised life cycle resistance to disease in the population generally (Mercer, 1990).

Recent research makes it possible now to form some impression of long-term changes in male stature in a few developed countries. Here again there appears to have been a marked rise in the rate of growth, with the onset of rapid improvement occurring around the end of the 19th century. For example, average height of men in a group of eight developed countries (Australia, France, Germany, Great Britain, Japan, Netherlands, Sweden and the United States), not weighted by population, rose by 2.3 centimeters from 1850 to 1900, but by 5.8 centimeters between 1900 and 1950 (Steckel and Floud, 1997, p. 424).¹⁰ Unfortunately, the principal data sources

⁹ Because the emergence of drug-resistant strains of malaria parasites and associated rise in malaria prevalence have been widely publicized by the media, it is worth noting the statement in the World Health Organization's (1999b, p. 50) report that "[n]otwithstanding these serious setbacks, a return to the previously high malaria-related mortality rates within this vast sector of the human population [the world other than sub-Saharan Africa] has never been remotely approached."

¹⁰ See also the two-century-long time series for six European countries in Fogel (1993, p. 20), which show a rise in the rate of increase from an average of 1.1 centimeters in the 19th century to 7.7 centimeters in the 20th century.

for stature, such as military records, are largely confined to males. Female stature presumably trends much like male stature, but it is not possible to say whether the improvement in stature is greater for females, as is known to be true of their relative advance in life expectancy.

Until fairly recently, stature was thought chiefly to reflect real wages and particularly food and nutrient intake (Fogel et al., 1983, pp. 244–248; Fogel, 1994). In fact, stature is something of a mixed bag. It is now widely recognized that stature is significantly affected also by health status, since disease (especially gastrointestinal disease) has a powerful effect on stature, independently of intake. Indeed, the rise in male stature seems to be closely connected with the turning point in life expectancy, and much less closely connected with the rise in per capita GDP, suggesting that so far as trends are concerned, the conditions responsible for life expectancy improvement—namely, the control of communicable disease—are also chiefly responsible for the accelerated growth in stature. This inference is supported by comparison of the change in stature with rough indicators of health and real wages, made possible by a comprehensive study by economic historians that assembles much of the recent historical research on stature (Steckel and Floud, 1997).

Family Circumstances

The fertility rate is not often used as a standard of living measure, but it is surely indicative of a major change in family life and women's roles. This point is made eloquently by British social welfare scholar R.M. Titmuss (1966, p. 91) in commenting on the impact of the fertility decline on English working-class women:

The typical working-class mother of the 1890's, married in her teens or early twenties and experiencing ten pregnancies, spent about fifteen years in a state of pregnancy and in nursing a child for the first years of its life. She was tied, for this period of time, to the wheel of childbearing. Today, for the typical mother, the time so spent would be about four years. A reduction of such magnitude in only two generations in the time devoted to childbearing represents nothing less than a revolutionary enlargement of freedom for women.

The onset of rapid fertility decline starts in the late 19th century in a number of western European countries, with examples shown in Table 6. It is currently spreading throughout the world. Compared with the historical experience of the West, fertility in today's less developed areas, like mortality, typically starts from higher initial levels and declines more rapidly, as seen in Table 7. In most countries, the timing of the onset of the decline in fertility is close to that in mortality. Writing in the 1950s, demographers—generalizing chiefly from European experience—termed this “the demographic transition,” a shift from initially high to eventually low levels of mortality and fertility. They saw the fertility decline as typically lagging the mortality decline. Although there are

Table 6

Decline in Total Fertility Rate in Three Decades Before and After Its Turning Point in Six Countries (*Births Per Woman*)

| Country | Approximate Turning Point | Total Fertility Rate at Turning Point | Decline in 30 Years | |
|-------------------|------------------------------|---|-------------------------|------------------------|
| | | | Before Turning Point | After Turning Point |
| England and Wales | 1881 | 4.6 | (0.3) ^a | 1.7 |
| France | 1881 | 3.4 | 0.1 | 0.9 |
| Sweden | 1885 | 4.3 | 0.0 | 1.2 |
| Japan | 1950 | 4.7 | 0.6 | 3.0 |
| Brazil | 1962 | 6.2 | 0.4 | 3.6 |
| India | 1967 | 5.7 | 0.7 | 2.6 |

^a Increase.

Source: For the three European countries the source is Keyfitz and Flieger (1968). When the total fertility rate (TFR) is not given in the source, I have estimated it from the gross reproduction rate (GRR) and the sex ratio (obtained by linear interpolation), both from the same source. For Japan the 1920 and 1950 TFR is estimated using the 1920 and 1947–49 values of the GRR in United Nations (1965, p. 50) and the 1937–40 and 1950–52 sex ratios in Keyfitz and Flieger (1968). The 1980 TFR is the average of 1975–80 and 1980–85 estimates in United Nations Department of Economic and Social Affairs (1998). For Brazil and India the TFR thirty years prior to the turning point is estimated from the relative change in the crude birth rate, using United Nations (1965, pp. 51, 77) for the early birth rate estimate and United Nations Department of Economic and Social Affairs, 1998 for the later. Other values of the TFR for Brazil and India are from United Nations Department of Economic and Social Affairs (1998). The 1997 estimate for India is the medium projection for 1995–2000. In this table I use 30- rather than 50-year periods in computing rates of change before and after turning points, because turning points for two countries fall in the 1960s.

Table 7

Total Fertility Rate, Major Areas of the World, 1950–55 and 1990–95

| | 1950–55 | 1990–95 | Decline |
|----------------------|---------|---------|---------|
| More developed areas | 2.8 | 1.7 | 1.1 |
| Less developed areas | 6.2 | 3.3 | 2.9 |
| China | 6.2 | 1.9 | 4.3 |
| India | 6.0 | 3.6 | 2.4 |
| Rest of Asia | 6.1 | 3.4 | 2.7 |
| Latin America | 5.9 | 3.0 | 2.9 |
| Northern Africa | 6.8 | 4.0 | 2.8 |
| Sub-Saharan Africa | 6.5 | 5.9 | 0.6 |

Source: United Nations Department of Economic and Social Affairs (1998, pp. 12, 516, 518).

exceptions to this timing pattern (France is a case in point), this generalization is largely borne out by recent experience in less developed countries.¹¹

¹¹ For discussion, see Easterlin (1996, ch. 8). Areas of new settlement, such as Maddison's "European offshoots," may also be exceptions to the timing pattern, but their early experience is not documented well enough to permit safe generalization.

There has been qualitative as well as quantitative change in childbearing behavior—a shift in the nature of fertility control. In the past, fertility was chiefly constrained unintentionally by physical conditions, such as malnutrition, and by customs or practices motivated by concerns other than family size. Examples of such practices are prolonged breastfeeding, timing of entry into marriage, and abstinence, which were typically motivated by concerns for the health of mother or child.¹²

Given these physical and social constraints on fertility, and levels of child mortality so high that only one out of two children survived to adulthood, most parents in the past (other than members of some elites) made little deliberate effort to restrict childbearing. In surveys of less developed countries in the 1960s, most respondents, often as many as 90 percent, reported never having attempted to limit family size—even after the questioner provided a detailed enumeration of a number of contraceptive practices (Easterlin, Pollak and Wachter, 1980). Behavioral evidence for Europe from the period prior to the fertility decline points to a similar absence of deliberate fertility control at that time (Knodel, 1977).

The great reduction of fertility in the 20th century has been accomplished by the adoption of intentional family size limitation by parents through the use of contraception or induced abortion. In the historical experience of European countries, the contraceptive methods chiefly employed to limit family size deliberately were abstinence, withdrawal, and the use of condoms. Even as late as 1970, a European survey found one-half to three-quarters of the reproductive age population in a number of countries using withdrawal as the principal form of contraception (United Nations, 1976). In today's less developed countries, the fertility decline has benefitted from new techniques of contraception that have appeared since the 1960s—the oral pill, the intrauterine device, implants, and sterilization.

These developments in the nature of fertility control imply another significant shift in way of life. No longer do most parents have as many children as they can. Rather, they deliberately limit their family size by adopting practices that were previously either nonexistent or, if known, were rarely used intentionally to reduce the number of offspring.

School Enrollment and Literacy

When one turns to education as a standard of living indicator, the picture of world leadership is somewhat different from that portrayed by the previous mea-

¹² Survey data provide evidence that individuals typically do not make causal links between such practices and family size. While Westerners might imagine that later marriage would be viewed as a way of reducing family size, Caldwell et al. (1983) found in surveys of Indian villagers that the villagers thought that later marriage was associated with higher, not lower, fertility because “a woman who marries two or three years after menarche will probably be more fecund, because her reproductive powers will not be impaired by early damage.” Similarly, Knodel (1983) and his collaborators in Thailand discovered that Thai women generally rejected the notion that prolonged breastfeeding delays pregnancy, citing “as evidence their own experience of becoming pregnant before they had weaned their child.”

tures. England does not lead the way in the 19th century, as it did in the movement toward higher GDP and life expectancy; rather, the mantle shifts to Scandinavia, the German states, and the United States. If 19th century levels of education are measured by, say, the percentage of school-age population enrolled in primary school in 1830, then Germany is first at 77 percent, followed by Scandinavia, 66 percent; United States, 56 percent; England, 41 percent; France, 39 percent; Japan, about 30 percent. Countries like Russia, Brazil and India had a mere 4 percent or less of the school-age population enrolled in primary school at that time.¹³

It is noteworthy that the early spread of industrialization outward from England in the 19th century was to areas where education, and thus the ability to learn new methods of production, was unusually high in the world. There is clearly a suggestion in such data that the pattern of geographic diffusion of modern economic growth in the 19th century must have been due in part to previously existing differentials in human capital.

It would be a mistake to interpret the historical figures on education differentials too much in the light of education today. In the 19th century, school years and school days were shorter, and the curriculum quite different. Numeracy probably lagged behind literacy. But if one were to tell a story of human development that focused on the emergence and spread of formal schooling, it would be rather different from that given by the economic historians' tale of industrialization or the demographers' story of life expectancy improvement. Unfortunately, that history of education has yet to be written. Traditional histories of education focus on educational philosophy, and only fairly recently have efforts been made in a few countries to establish quantitative historical measures of the education of the population generally.

What one can say with some assurance is that the early 19th century differences cited above are the product of trends that reach as far back as the 16th century, well before the onset of modern economic growth, trends that are connected in part to the Protestant Reformation with its emphasis on the need for each individual to be able to read the Bible himself (Cippola, 1969; Easterlin, 1981; Melton, 1988; UNESCO, 1957). Among western European countries and their offshoots, England's relatively poor standing may partly reflect the fact that Protestant Anglican doctrine remained like Roman Catholic doctrine without the emphasis on reading the Bible characteristic of other Protestant sects. It may also reflect the relative dominance of *laissez-faire* philosophy there. In England, it is the minority of non-conformists who are the leaders in schooling, and in the United States it is the northern states, settled and largely dominated initially by these same nonconformist sects, that chiefly account for the high educational standing of the United States.

On a worldwide scale, the pattern for education is much like that for the other

¹³ Enrollment figures are from Easterlin (1981), except Japan, which is based on Hanley (1990, p. 69) and Taira (1971, p. 375). Estimates for Japan, Russia, and Brazil are for around 1865–70; for India, 1890. Historical literacy estimates are generally consistent with those for school enrollment (Cippola, 1969, p. 115; UNESCO, 1957, p. 58; Yasuba, 1987, p. 290).

Table 8

Adult Literacy Rate, Major Areas of the World, 1950 and 1995*(percent)*

| | (1) | (2) | (3) |
|-----------------------------|------|------|--|
| <i>More developed areas</i> | 1950 | 1995 | <i>Change, (2)-(1)</i> <i>(percentage points)</i> |
| More developed areas | 93 | 98 | 5 |
| Less developed areas | 40 | 70 | 30 |
| China | 48 | 82 | 34 |
| India | 19 | 52 | 33 |
| Rest of Asia | 24 | 72 | 48 |
| Latin America | 57 | 86 | 29 |
| Northern Africa | 12 | 53 | 41 |
| Sub-Saharan Africa | 17 | 56 | 39 |

Source: UNESCO (1957); World Bank (1999).

components of the standard of living. Taken collectively, western Europe and its offshoots are the leaders, while throughout much of the less developed world, the move to universal formal schooling occurs chiefly in the 20th century, particularly since World War II, as shown in Table 8. Again, as with the other indicators, the rapidity of change in the less developed areas is often much greater than was true in the historical experience of the West. In those European countries where the establishment of formal schooling was well underway prior to the 19th century, it is unlikely that there is a marked turning point in the early development of schooling. In the history of most countries, however, such turning points are clearly discernible (Easterlin, 1981, Figure 1).

Political Democracy

The relevance of political democracy to well-being is suggested by Alex Inkeles (1991, p. x) who writes: “[D]emocratic systems give people a greater sense of freedom and, I would argue, more actual freedom, to influence the course of public events, express themselves, and realize their individual human potential.”

In current cross-national comparisons of political democracy, virtually all indicators commonly used to capture the presence of democracy are highly correlated (Inkeles, 1991). However, this high correlation is less certain for historical time series, and I have consequently chosen to include two measures here that I use in complementary fashion to describe the spread of democratic institutions—one relating primarily to the executive branch of government, and one to the legislative branch. The executive branch measure gives weight chiefly to two things: procedures for executive recruitment and limits on the power of the chief executive. Such limits might arise from a legislature, but they could also be due to a political party or parties not wholly controlled by the nation’s leader or to some other groups, such as the church or military (Gurr, Jagers and Moore, 1991). The

legislative effectiveness measure indicates whether a legislature exists and how important a role it plays in political decision-making (Banks, 1971). Both measures are based on the judgments of scholars with specialized knowledge of the political histories of the individual countries.

Political change is often sudden—the product of elections, coups d'état, revolutions and the like. Because of this, measures of political, in contrast to economic, change usually move at infrequent intervals in stepwise fashion, up or down. But this stuttering pattern of measured change should not obscure the fact that there are slower moving long-term forces—typically unmeasured—that cumulate in the abrupt observed shifts. With a view to discerning the longer-term trends to or away from political democracy, I focus in the time series analysis here on observations at widely spaced intervals.

For the six illustrative countries in Table 9, the long-term trend is uniformly toward democracy. In every country the recent indicator values are at or close to the maximum, while the early values are typically much lower. The trend is not always unidirectional, however. In France and Brazil, for example, there are intervals of marked retreat from democracy that are not apparent from the limited set of observations here. In the three western European countries, most notably in Great Britain, prior to the onset of modern economic growth some progress toward democracy occurred, particularly with regard to the development of an effective legislature. In Japan and Brazil, there is evidence of a somewhat similar political development at or before the turning point in GDP per capita. India stands out as a nation with democratic institutions in place from the very beginning of its independence, at the time of the onset of modern economic growth. Clearly, the relationship between economic development and political democracy is not simple or unidimensional.¹⁴

The world picture with regard to the spread of democracy in the last half century is much less positive than that conveyed by the long-term trends in the six illustrative countries, as shown in Table 10. In most of the less developed world, the development of democratic institutions is at a fairly low level. Only in Latin America has there been noticeable improvement since the 1950s, and then only with regard to the executive branch. The contrast with the previous standard of living indicators is striking. The indicators of political democracy here do not follow the typical pattern, where the progress of less developed areas in the last four or five decades has been more rapid than in the history of the developed countries. One might like to believe, following Lipsett (1959) and Barro (1997), that economic growth stimulates democracy. Given the unprecedented advance in living levels in the less developed world since 1950, however, it is troubling to see so little evidence of it in the present data.

Against the background of such limited political democracy in the less developed world generally, India stands out as a sharp exception. The contrast with

¹⁴ A good survey of what is known about interrelations between economic growth and democracy is the "Symposium on Democracy and Development" in the Summer 1993 issue of this journal.

Table 9

Indicators of Democratic Institutions in Six Countries, 1820–29 to 1990–94
(from minimum of 0 to maximum of 1.0)

| Country | Branch of Government | 1820–29 | 1895–1905 | 1950–59 | 1990–94 |
|----------------|----------------------|------------------|------------------|------------------|---------|
| United Kingdom | Executive | 0.3 | 0.7 | 1.0 | 1.0 |
| | Legislative | 1.0 | 1.0 | 1.0 | 1.0 |
| France | Executive | 0 | 0.8 | 0.9 | 0.8 |
| | Legislative | 0.7 | 1.0 | 1.0 | 1.0 |
| Sweden | Executive | 0 | 0.1 | 1.0 | 1.0 |
| | Legislative | 0.7 | 1.0 | 1.0 | 1.0 |
| Japan | Executive | 0 | 0.4 | 1.0 ^a | 1.0 |
| | Legislative | 0 | 0.7 | 1.0 | 1.0 |
| Brazil | Executive | 0 ^b | 0.1 | 0.6 | 1.0 |
| | Legislative | 0.3 | 0.7 | 1.0 | 1.0 |
| India | Executive | (0) ^c | (0) ^c | 0.9 | 0.8 |
| | Legislative | (0) | (0) | 1.0 | 1.0 |

Source: The measure for the executive branch is that of “institutionalized democracy,” as reported in Jagers and Gurr (1996). This measure is the sum of four component measures and varies from 0 to 1.0 in 0.1 increments. The components are measures of the competitiveness of political participation (ranging from 0 to 0.3), competitiveness of executive recruitment (0 to 0.2), openness of executive recruitment (0 to 0.1), and constraints on the chief executive (0 to 0.4). See Gurr, Jagers and Moore (1991) for further discussion.

The measure for the legislative branch is that of “legislative effectiveness” as given in Banks, 1971, 1992, updated 1995. The measure is scaled here as follows: 0 = no legislature exists; 0.3 = ineffective legislature; 0.7 = partially effective legislature; 1.0 = effective legislature. See Banks (1971, p. xvii) for discussion.

^a American occupation ended with the Peace Treaty of 1951. The values are for 1952–59.

^b Brazil became independent in 1822. The values are for 1824–29.

^c Colony of Great Britain.

China is notable. When human rights are added to the standard of living comparison, China’s relative success in economic growth, health, and fertility reduction must be weighed against India’s remarkable record of political democracy. India’s feat has been accomplished with income and literacy levels lower than those of the United Kingdom and the United States in the first half of the 19th century, when those countries’ democratic attainment was less than India’s today.

Concluding Observations

Surveying economic progress from the eminence of 1848, John Stuart Mill (1848 [1965], p. 755) opined that it was “only in the backward countries of the world that increased production is still an important object.” He saw England, even then, as on the verge of a stationary state, one in which growth in output would shortly come to a halt. Today, however, living levels in many parts of the less developed world are above those of England in Mill’s time and England itself enjoys

Table 10

Indicators of Democratic Institutions, Major Areas of the World 1950–59 and 1990–94 (from minimum of 0 to maximum of 1.0)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-------------------------|----------------------|---------|--------------------|----------------------|---------|--------------------|
| | <i>Executive</i> | | | <i>Legislative</i> | | |
| | 1950–59 ^a | 1990–94 | Change, (2)–(1) | 1950–59 ^a | 1990–94 | Change, (5)–(4) |
| 1. More developed areas | .72 | .92 | .20 | .81 | .85 | .04 |
| 2. Less developed areas | .33 | .34 | .01 | .52 | .56 | .04 |
| a. China | 0 | 0 | 0 | .20 | .33 | .13 |
| b. India | .90 | .80 | –.10 | 1.00 | 1.00 | 0 |
| c. Rest of Asia | .32 | .34 | .02 | .53 | .50 | –.03 |
| d. Latin America | .32 | .69 | .37 | .70 | .73 | .03 |
| e. Northern Africa | .08 | .04 | –.04 | .27 | .32 | .05 |
| f. Sub-Saharan Africa | .25 | .14 | –.11 | .46 | .35 | –.11 |

Source: See Table 9.

^a For Northern and sub-Saharan Africa, 1960–69 or years in that decade for which data are available.

an average per capita GDP seven times that of 1850 (Maddison, 1995). Moreover, health and mortality have improved to an extent inconceivable in Mill's day. Women's roles—a serious concern of Mill's—have altered dramatically. The eradication of illiteracy is within sight.

By most measures here, the rates of change in the less developed countries in the last half century have substantially exceeded those in the historical experience of western Europe. If there are limits to growth in the standard of living—an imminent stationary state—it is not evident in the historical record. True, there are limits to some of the present measures. Life expectancy at birth may have an upper limit, although the value of that limit is not clear (Lee and Skinner, 1999). But if the common measure of life expectancy at birth were replaced by a more sophisticated and meaningful one, such as years of healthy life expectancy, there is ample room for further improvement (Crimmins, Saito and Ingegneri, 1997). Similarly, while literacy clearly has an upper limit of 100 percent of the population, years and quality of schooling does not. As a new century opens up, the prospect of a winding down in the advance of living standards—absent some terrible catastrophe—seems less probable today than when Mill wrote a century and a half ago.

Of course, any serious projection of the future would need to be based, not on mechanical extrapolation of past trends, but on an understanding of the forces driving the advance in living standards and we are far from that nirvana. Three decades ago, when I wrote an article of somewhat similar scope (Easterlin, 1968), I had the temerity to place a number of the developments surveyed here under the heading “characteristics of modern economic growth”—as if these elements had no important historical dimension and as if they all moved in lockstep. Since then, there has been an enormous expansion of historical research and statistical time

series, making the broad outlines of the record of the past much clearer. Perhaps I am also a little wiser. In any event, I am now reluctant to assume high interdependence between real GDP per capita and many other dimensions of the standard of living (compare also Easterly, 1999). Some of the historical evidence presented here, I believe, buttresses this view. For example, among the leaders in economic growth, a substantial expansion of formal schooling typically preceded the onset of rapid growth, while rapid improvement in life expectancy lagged. In today's less developed world, a half century of vigorous economic growth has occurred with little advance in political democracy.

It is true that in regard to all of the indicators above, western Europe and its offshoots are the leaders and, at the other extreme, the newly emergent nations of sub-Saharan Africa are the laggards. This pattern of geographical diffusion is largely responsible for the current cross-national association among these indicators proclaimed by regression analysts. But the notable disparities in timing within individual countries of change in the different dimensions of the standard of living suggest that one should hesitate before jumping from point-of-time correlation to causation. In seeking to understand the wealth of nations, Adam Smith drew deeply on his knowledge of the past. If economics were to return to the study of history, it might conceivably gain better insight into the factors that have shaped this remarkable new world of the 21st century.

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References

- Banks, Arthur S.** 1971. *Cross-Polity Time Series Data*. Cambridge, MA: The MIT Press.
- Banks, Arthur S.** 1992, updated 1995. *Cross-National Time Series Data Archive*. Binghamton, NY: Center for Social Analysis.
- Barro, Robert J.** 1997. *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cambridge, MA: MIT Press.
- Beeson, Paul B.** 1980. "Changes in Medical Therapy During the Past Half Century." *Medicine*. 59:2, pp. 79–99.
- Brady, Dorothy S.** 1972. "Consumption and the Style of Life," in *American Economic Growth: An Economist's History of the United States*. Davis, Lance E., Richard A. Easterlin and William N. Parker, eds. New York: Harper and Row, pp. 61–89.
- Brown, Clair.** 1994. *American Standards of Living, 1918–1988*. Cambridge, MA: Blackwell.
- Caldwell, John C., Sally Findley, Pat Caldwell, Gigi Santow, Wendy Cosford, Jennifer Braid and Daphne Broers-Freeman, eds.** 1990. *What We Know About the Health Transition: The Cultural, Social, and Behavioral Determinants of Health*, 2 vols. Proceedings of an International Workshop, Canberra, Australia, May 1989. Canberra, Australia: Health Transition Centre, Australian National University.
- Caldwell, John C., P.H. Reddy and P. Caldwell.** 1983. "The Causes of Marriage Change in

- South India." *Population Studies*. November, 37:3, pp. 343–61.
- Cantril, Hadley.** 1965. *The Pattern of Human Concerns*. New Brunswick, N.J.: Rutgers University Press.
- Cipolla, Carlo M.** 1969. *Literacy and Development in the West*. Baltimore, MD: Penguin Books.
- Cox, W. Michael and Richard Alm.** 1999. *Myths of Rich and Poor: Why We're Better Off Than We Think*. New York: Basic Books.
- Crimmins, Eileen M., Yasuhiko Saito and Dominique Ingegneri.** 1997. "Trends in Disability-Free Life Expectancy in the United States, 1970–90." *Population and Development Review*. September, 23:3, pp. 555–72.
- Davis, Joseph S.** 1945. "Standard and Content of Living." *American Economic Review*. March, XXXV:1, pp. 1–15.
- Easterlin, Richard A.** 1968. "Economic Growth: An Overview." *International Encyclopedia of the Social Sciences*. IV, New York: Macmillan, pp. 395–408.
- Easterlin, Richard A.** 1981. "Why Isn't the Whole World Developed?" *Journal of Economic History*. March, 41:1, pp. 1–19.
- Easterlin, Richard A.** 1996. *Growth Triumphant: The Twenty-first Century in Historical Perspective*. Ann Arbor, MI: University of Michigan Press.
- Easterlin, Richard A.** 1999. "How Beneficent is the Market? A Look at the Modern History of Mortality." *European Review of Economic History*. December, 3:4, pp. 257–94.
- Easterlin, Richard A., Robert A. Pollak and Michael L. Wachter.** 1980. "Toward a More General Economic Model of Fertility Determination: Endogenous Preferences and Natural Fertility," in *Population and Economic Change in Developing Countries*. Easterlin, Richard A., ed. Chicago: University of Chicago Press for NBER, pp. 81–140.
- Easterly, William.** 1999. "Life During Growth." World Bank, unpublished paper, available on the web at (http://www.worldbank.org/html/prdmg/grthweb/growth_t.htm).
- Fogel, Robert W.** 1993. "New Sources and New Techniques for the Study of Secular Trends in Nutritional Status, Health, Mortality, and the Process of Aging." *Historical Methods*. Winter, 26:1, pp. 5–43.
- Fogel, Robert W.** 1994. "Economic Growth, Population Theory, and Physiology: The Bearing of Long-Term Processes on the Making of Economic Policy." *American Economic Review*. June, 84:3, pp. 369–95.
- Fogel, Robert W., Stanley L. Engerman, Roderick Floud, Gerald Friedman, Robert A. Margo, Kenneth Sokoloff, Richard H. Steckel, T. James Trussell, Georgia Villaflor and Kenneth W. Wachter.** 1983. "Secular Changes in American and British Stature and Nutrition," in *Hunger and History*. Rotberg, Robert I. and Theodore K. Rabb, eds. Cambridge: Cambridge University Press, pp. 247–83.
- Gurr, Ted Robert, Keith Jagers and Will H. Moore.** 1991. "The Transformation of the Western State: The Growth of Democracy, Autocracy, and State Power since 1800," in Alex Inkeles, ed. *On Measuring Democracy: Its Consequences and Concomitants*. New Brunswick, NJ: Transaction Publishers, pp. 69–104.
- Hanley, Susan B.** 1990. "The Relationship of Education and Economic Growth: The Case of Japan," in Gabriel Tortella, ed. *Education and Economic Development Since the Industrial Revolution*, Valencia: Generalitat Valenciana, pp.69–87.
- Inkeles, Alex, ed.** 1991. *On Measuring Democracy: Its Consequences and Concomitants*. New Brunswick, NJ: Transaction Publishers.
- Jagers, Keith and Ted Robert Gurr.** 1996. *Polity III: Regime Change and Political Authority, 1800–1994* [computer file]. 2nd ICPSR version. Boulder, CO: Keith Jagers/College Park, MD: Ted Robert Gurr [producers], 1995. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor].
- Keyfitz, Nathan and Wilhelm Flieger.** 1968. *World Population*. Chicago: University of Chicago Press.
- Knodel, John.** 1977. "Family Limitation and the Fertility Transition: Evidence from the Age Patterns of Fertility in Europe and Asia." *Population Studies*. July, 31, pp. 219–49.
- Knodel, John.** 1983. "Natural Fertility: Age Patterns, Levels, Trends," in Bulatao, Rodolfo A. and Ronald D. Lee, eds. *Determinants of Fertility in Developing Countries: A Summary of Knowledge*, vol. 1. New York: Academic Press, pp. 61–102.
- Kuznets, Simon.** 1941. *National Income and Its Composition, 1919–1938*. New York: National Bureau of Economic Research.
- Lebergott, Stanley.** 1993. *Pursuing Happiness*. Princeton, N.J.: Princeton University Press.
- Lebergott, Stanley.** 1996. *Consumer Expenditures: New Measures and Old Motives*. Princeton, N.J.: Princeton University Press.
- Lee, Ronald and Jonathan Skinner.** 1999. "Will Aging Baby Boomers Bust the Federal Budget?" *Journal of Economic Perspectives*. Winter, 13:1, pp. 117–40.
- Lipset, Seymour Martin.** 1959. "Some Social Requisites of Democracy: Economic Development and Political Legitimacy." *American Political Science Review*. 53:1, pp. 69–105.

- Maddison, Angus.** 1982. *Phases of Capitalist Development*. New York: Oxford University Press.
- Maddison, Angus.** 1995. *Monitoring the World Economy 1820–1992*. Paris: Development Centre of the Organisation for Economic Co-Operation and Development.
- Maddison, Angus.** 1998. *Chinese Economic Performance in the Long Run*. Paris: Development Centre of the Organisation for Economic Co-Operation and Development.
- Matthiessen, Poul C. and James C. McCann.** 1978. "The Role of Mortality in the European Fertility Transition: Aggregate-Level Relations," in Samuel H. Preston, ed. *The Effects of Infant and Child Mortality on Fertility*. New York: Academic Press, pp. 47–68.
- Melton, James van Horn.** 1988. *Absolutism and the Eighteenth Century Origins of Compulsory Schooling in Prussia and Austria*. New York: Cambridge University Press.
- Mercer, A.** 1990. *Disease, Mortality, and Population in Transition*. Leicester: Leicester University Press.
- Mill, John Stuart.** [1848] 1965. *Principles of Political Economy*. Toronto, Canada: University of Toronto Press.
- Mokyr, J. and R. Stein.** 1997. "Science, Health, and Household Technology: The Effect of the Pasteur Revolution on Consumer Demand," in Bresnahan, T.F. and R.J. Gordon, eds. *The Economics of New Goods*. Chicago: University of Chicago Press, pp. 143–200.
- Morris, Morris David.** 1979. *Measuring the Condition of the World's Poor: The Physical Quality of Life Index*. New York: Pergamon.
- Rosenberg, Charles E.** 1979. "The Therapeutic Revolution: Medicine, Meaning, and Social Change in Nineteenth-Century America," in Vogel, Morris J. and Charles E. Rosenberg, *The Therapeutic Revolution*. Philadelphia: University of Pennsylvania Press, pp. 3–25.
- Schofield, R., D. Reher and A. Bideau.** 1991. *The Decline of Mortality in Europe*. Oxford: Clarendon Press.
- Sen, Amartya.** 1987. *The Standard of Living*. Cambridge, England: Cambridge University Press.
- Steckel, Richard H. and Roderick Floud, eds.** 1997. *Health and Welfare During Industrialization*. Chicago: University of Chicago Press.
- Taira, Koji.** 1971. "Education and Literacy in Meiji Japan: An Interpretation." *Explorations in Economic History*. Summer, 8:4, pp. 371–94.
- Titmuss, R. M.** 1966. *Essays on the Welfare State*. London: Unwin University Press.
- United Nations.** 1952. *Preliminary Report on the World Social Situation*. New York: United Nations.
- United Nations.** 1965. *Population Bulletin of the United Nations, No. 7, 1963*. New York: United Nations.
- United Nations.** 1976. *Fertility and Family Planning in Europe around 1970*. New York: United Nations.
- United Nations Department of Economics and Social Affairs.** 1998. *World Population Prospects: The 1998 Revision, Vol. I, Comprehensive Tables*. New York: United Nations.
- United Nations Development Program.** 1999. *Human Development Report 1999*. New York: Oxford University Press.
- UNESCO.** 1957. *World Illiteracy at Mid-Century*. Paris: United Nations Educational, Scientific and Cultural Organization.
- United Nations Research Institute for Social Development.** 1970. *Contents and Measurement of Socio-Economic Development: An Empirical Enquiry*. Geneva, Switzerland: United Nations Research Institute for Social Development.
- United States Bureau of the Census.** 1975. *Historical Statistics of the United States, Colonial Times to 1970. Bicentennial Edition, Part 2*. Washington, D.C.: U.S. Government Printing Office.
- United States Department of Health, Education, and Welfare.** 1964. *The Change in Mortality Trend in the United States*. National Center for Health Statistics, 3rd ser., no. 1, March, Washington, D.C.: U.S. Government Printing Office.
- Winslow, C.E.A.** 1931. "Communicable Diseases, Control Of," in Seligman, E.R.A., ed. *Encyclopaedia of the Social Sciences*, IV, New York: The MacMillan Co.
- World Bank.** 1999. *World Development Report 1998/99. Knowledge for Development*. New York: Oxford University Press.
- World Health Organization.** 1999a. *Health for All Database*. Copenhagen: World Health Organization.
- World Health Organization.** 1999b. *The World Health Report 1999: Making a Difference*. Geneva, Switzerland: World Health Organization.
- Yasuba, Yasukichi.** 1987. "The Tokugawa Legacy: A Survey." *The Economic Studies Quarterly*. December, 38:4, pp. 290–308.
- Yasuba, Yasukichi.** 1991. "Japan's Post-war Growth in Historical Perspective." *Japan Forum* 3, April 1, pp. 57–70.