CHAPTER Ba

Labor

Editor: Susan B. Carter
Associate Editors: Lee A. Craig, Robert A. Margo, Joshua L. Rosenbloom, Matthew Sobek, and William A. Sundstrom

LABOR

Susan B. Carter

> The annual labour of every nation is the fund which originally supplies it with all the necessaries and conveniences of life, . . . [whose quantity] must in every nation be regulated by two different circumstances; first, by the skill, dexterity, and judgment with which its labour is generally applied; and, secondly, by the proportion between the number of those who are employed in useful labour, and that of those who are not so employed. Whatever be the soil, climate, or extent of territory of any particular nation, the abundance or scantiness of its annual supply must, in that particular situation, depend upon those two circumstances. (Smith 1776, p. 1)

Writing in the American Revolutionary War year 1776, Adam Smith identified labor as the key for understanding international differences in the standard of living and quality of life. For earlier thinkers, the "wealth of nations" was their stock of gold and other precious metals. With these they could purchase implements of military power and pay the salary of a standing army. Such resources not only secured the nation's own stock of wealth but could also be used to plunder the wealth of others.

Smith's insight was to recognize that the true "wealth of nations" is the productive capacity of the population. Although he based his analysis on a close reading of the historical development of European nations, perhaps the best illustration of his principles was about to unfold with the development of the American economy.

In this broad sense, then, "labor" is the subject of nearly every chapter of *Historical Statistics of the United States*. It also commands an enormous literature of its own. For recent overviews, written from the point of view of quantitatively oriented economic historians, see David Galenson (1996) for the colonial era, Robert Margo (2000) for the nineteenth century, and Claudia Goldin (2000) for the twentieth century.

The discussion that follows is meant to direct readers to material in other chapters of *Historical Statistics* that are relevant for understanding the development of labor in the American economy. I use the structure outlined by Smith as an organizational device.

Proportion Employed in Useful Labor

For narrative purposes, let us begin with Smith's second "circumstance," the proportion of the population employed in "useful labour." As Smith argues, this proportion is an important determinant of economic well-being. Other things being equal, high employment rates mean high levels of income per capita. Nations in which there are few dependents have higher levels of income per capita than nations that support large numbers of the young, old, or idle. In addition, because labor productivity tends to be higher in the market than in the nonmarket sector, the transfer of labor out of the household and into the market increases total output. This would be true even if official labor force statistics were to include the output of the household sector, which typically they do not. If output in the household sector is ignored, the effect of a shift of labor to the market sector is especially important (see Folbre and Wagman 1993; Wagman and Folbre 1996; and the essay on the labor force in this chapter).

One measure of the proportion of the population employed in "useful labour" is the labor force–to-population ratio. This is not a perfect measure of Smith's concept because it excludes nonmarket

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labor and includes work that some might not deem "useful." Moreover, it makes no adjustment for changes in hours. For a discussion of change in hours of work per worker over time, see the essay on hours and working conditions in this chapter.[1] The statistical record reveals a high and growing labor force–to-population ratio in America for most of the last two centuries (see, for example, Tables Ba1–78, Ba417–424, and Ba478–486). These estimates put the employment ratio at over 35 percent in 1800; by 2000 it had grown to approximately 51 percent. Both of these levels are high by international standards, especially considering that – except in the case of slaves – relatively few young children were or are engaged in labor in America. The labor force–to-population ratio fell only during the period 1929–1966. The decline was the result of markedly reduced immigration resulting from restrictive legislation, the onset of the Great Depression, and the post–World War II baby boom.

Part of the explanation for the high and growing labor force–to-population ratio that characterized much of American history is demographic. Although American fertility was extremely high during the eighteenth century, it began to fall during the early years of the nineteenth. This more or less continuous fall, interrupted only by the post–World War II baby boom, reduced the dependency ratio; that is, it reduced the fraction of the population that was either too young or too old to work. Measured as the number of persons "young" (0–14 years) and "old" (65 years of age and older), divided by the number of persons in the middle working ages (15–64 years), and multiplied by 100, the U.S. dependency ratio was only 37.1 in 1850 when it is first reliably possible to make this calculation; by 1990 it had fallen to 28.6 (see Chapter Ab on vital statistics). By contrast, at the turn of the twenty-first century many developing countries experience dependency ratios in excess of 75, with some as high as 100 (U.S. Bureau of the Census 2003).

The effects of the early fertility decline were reinforced by a heavy influx of immigrants throughout much of the last two centuries. Immigrants tend to arrive during their young working ages. This means that immigration increases the population in the 15–64 age group relative to those who are young and old (compare Tables Aa185–286 and Ad226–230). Moreover, because a major reason for emigrating in the first place is to obtain employment, immigrants also tend to have high labor-force participation rates relative to the native-born population of the same age and gender (see Table Ad752–759).

The long-term secular increase in women's labor force participation reinforced the positive demographic developments. Women's participation rates are given in Tables Ba40–49, Ba404–416, and Ba535–550. They show a more than threefold increase in the proportion of the prime-age adult female population engaged in the labor force since 1800. Women's labor force participation evolved from a relatively brief interlude between the end of schooling and marriage into a relatively permanent career attachment across the life cycle, including, increasingly, mothers of young children.[2]

The increasing labor force participation of women more than offset three other developments that exerted downward pressure on the economywide labor-force participation rate. These were the reduction in the labor of black workers following emancipation, as their participation rates adjusted to the standards of free rather than slave labor; the reduction in labor force participation among young males as schooling levels advanced; and the marked reduction in the labor force participation of older males as voluntary retirement became the American norm.[3]

"Skill, Dexterity, and Judgment"

Even more important than the labor force–to-population ratio, in Smith's view, was the "skill, dexterity, and judgment" possessed by those who work. To such factors Smith credited the "greatest improvements in the productive powers of Labour." Skill, dexterity, and judgment are developed through three interrelated but distinct processes: division of labor; investments in physical and human capital; and invention, innovation, and diffusion of new technologies and organizational structures.

Division of Labor

The division of labor refers to specialization in production and the exchange of goods and services. Specialization and exchange can take place at a variety of levels. Largely self-sufficient agriculturalists may produce extra farm products for exchange for manufactured items or for services produced on neighboring farms, in a nearby town, or in a distant land. An example is the Samuel Swayne household of Chester County, Pennsylvania, in the latter part of the eighteenth century, which was described by Marc Egnal (1996, pp. 7–8). The Swaynes operated a ninety-one-acre farm they received at their marriage in 1756 and that they supplemented with an additional thirty-five acres purchased sixteen years later. Most of the labor of the Swayne household was reserved for the production of goods and services for its own consumption, but some was directed toward producing goods for exchange. Swayne made saddletrees (leather frames that served as foundations for saddles), and his wife churned butter and made cheese for sale in the local market. They produced wheat, flax, Indian corn, flaxseed, beef, rye, and pork for sale outside the community. The Swaynes used the proceeds from these sales to purchase goods such as books, fabric, sugar, tea, and wine.

Another form of specialization and division of labor involves localities or regions. One well-known example is the "triangular trade" that developed during the eighteenth century, in which New England produced rum for export to Africa, Africa produced slaves for export to the Caribbean area, and the Caribbean exported sugar to New England, where much of it was made into rum (see, for example, Table Eg474–513). Another example is the rapid expansion of regional specialization and interregional trade after 1815, with the "West" (what we would today call the Midwest) specializing in grains, the South in cotton and tobacco, and the Northeast in manufactured products (Atack and Passell 1994, pp. 160–4).

Yet a third form of the division of labor involves the specialization among and within occupations, industries, and firms. One example that will be familiar to many is the evolution of the one-room rural schoolhouse, in which a single teacher taught all grades

[1] Moses Abramovitz and Paul A. David estimate that hours worked per capita rose over the period 1800 to 1890, fell from 1890 through 1966, and then rose over the period 1966 through 1989 (Abramovitz and David 2000, Table 1.3, p. 14).

[2] This important development is discussed more fully in the essay on the labor force in this chapter.

[3] These participation rates are shown in Tables Ba391–403 and Ba519–534 and discussed in greater detail in the essay on the labor force in this chapter.

and subjects, into graded classrooms with specialized teachers for individual grades and subjects. A related development was the creation of separate institutions for the elementary, middle, secondary, and postsecondary educational levels.

The division of labor stimulates labor productivity and wages in a number of ways. By specializing in each area of comparative advantage, labor concentrates in the activity in which its relative productivity is highest. Repetition develops workers' skills, and so they become more proficient. Focus on a single activity eliminates lost time in moving from one to another. Close familiarity with a specific task generates new ideas for enhancing productivity; specialization provides an incentive to invest in skills, tools, machinery, and structures to make the work faster, more accurate, and less physically demanding.

Given its abundant advantages, why don't all societies adopt the division of labor? The answer is contained in Smith's often-quoted remark, "The division of labor is limited by the extent of the market." In other words, in order for specialization to be profitable, one needs trading partners. Had Robinson Crusoe specialized, he would not have survived his stay on his deserted island. Crusoe was isolated from the large populations with their high level of wealth that would have made specialization both possible and attractive. If, instead, Crusoe had washed ashore in the newly formed United States of America in 1776, he would have found an extensive market and one that was uniquely well positioned to grow larger still.

Because of its high fertility, low mortality, and extensive immigration, the United States had a large and growing population. By 1820, the U.S. population was almost half the size of that of the United Kingdom (U.K.); by 1870, the U.S. population had overtaken that of the U.K.; and by the year 2000, the United States was the third most populous country in the world after only China and India (Maddison 1995, p. 106; U.S. Bureau of the Census 2003).

This large and growing population was also becoming wealthier. Robert E. Gallman estimates that the U.S. economy in 1774 was already approximately a third the size of Great Britain's, despite the fact that the U.S. population was proportionately smaller and that the economy had not yet embarked upon the Industrial Revolution. Between 1774 and 1909, the U.S. economy grew about 175-fold, or at an average annual rate of 3.9 percent (see Chapter Ca on national income and product). This compares with an estimated average annual growth rate for the British economy over the same period of about 2.2 percent. Thus, by 1909, the U.S. economy was almost two and a half times the size of Great Britain's (Gallman 2000, pp. 2–5).

Low barriers to trade facilitate interactions among labor market participants, thereby further promoting the division of labor. In this light, the constitutional prohibition on tariffs and other impediments that might restrict interstate commerce was an important stimulus to the division of labor. This stimulus was reinforced by early governmental efforts at the federal, state, and local levels to actively promote internal trade by surveying the land, dredging rivers and streams, building turnpikes and canals, and offering inducements to private companies to undertake transportation improvements. For all these reasons, the United States was in the forefront of a worldwide "transportation revolution" that occurred in the early nineteenth century and that measurably increased the speed and reduced the cost of moving goods and people from place to place (for details see the essay on transportation in Chapter Df and Table Cf83–87).

Overall, then, by virtue of its rapidly growing population and wealth and its falling barriers to internal trade, the U.S. domestic market grew to become the world's largest and wealthiest by the end of the nineteenth century, and it maintained that position throughout the twentieth century. Other countries have taken advantage of the division of labor by responding to international markets, and indeed the United States has pursued this strategy as well. However, because of their common language and culture, nations with large internal markets have a particular advantage in capturing this "Smithian" source of economic growth.

The developing division of labor is perhaps most easily visible in the occupation and industry statistics presented in Tables Ba652–813 and Ba1033–4213 and discussed in the essay on occupations in this chapter. As these statistics refer to the nation as a whole, however, they necessarily omit labor specialization at the regional and local level.

Like most other economies of the time, eighteenth-century America was largely agricultural and, unlike England, had not yet commenced its Industrial Revolution. Nonetheless, as early as 1800, more than a quarter of the labor force was employed outside this primary sector, with the two largest categories of nonagricultural employment at the time being ocean transportation and domestic service (see Table Ba814–830). Over the nineteenth and twentieth centuries, the agricultural share of the labor force declined further as labor moved into more productive occupations. By 1890, the agricultural share of the labor force was less than 50 percent of the total; by 1990, it was just a little more than 1.5 percent (see Table Ba1033–1046). Only during the Great Depression of the 1930s, when agriculture provided employment for those who could not find work in other sectors, did agricultural employment experience a respite from the relentless downward trend in its share of employment.

The occupations that outpaced agriculture were diverse and constantly changing. During the nineteenth century, manufacturing employment grew most spectacularly in both absolute and relative terms. In 1810, manufacturing accounted for only 3.2 percent of the labor force; by 1870, it claimed between 19 and 24 percent of the labor force, and at its peak in 1950, it claimed 34 percent of the total (Tables Ba814–830 and Ba1033–1046).

Clerical, sales, and service occupations outside of domestic work grew rapidly in the late nineteenth and early twentieth centuries. In 1870, the first year in which the census of occupations included the entire labor force, clerical and sales and service occupations (excluding domestic work) accounted for only 3.4 and 1.4 percent of the labor force, respectively. By 1920, their respective shares were 13.1 and 4.4 percent; and by 1990, these had advanced to 25.6 and 12.8 percent (Table Ba1033–1046). These important shifts in the occupational distribution of the labor force were both the source of improvements in income per capita and the cause and consequence of the entry of women into the labor force.[4]

Physical Capital

Output per worker may advance as a result of the development of the division of labor alone. Indeed, Kenneth Sokoloff (1986)

[4] See the essay on occupations in this chapter for more detail on the occupational and industrial distribution and its change over time. See the essay on hours and working conditions in this chapter for the changing character of the size of firms in which workers were employed. The essay on productivity in Chapter Cg describes the pace and pattern of labor productivity change over time, and the essay on wages and wage inequality in this chapter describes the pattern of wages.

ascribes productivity advances in early-nineteenth-century American textile manufacturing almost entirely to this source. At the same time, expansion of the physical capital stock – machinery, factories, livestock, and land – can enhance labor productivity regardless of the division of labor. A farmer with a horse-drawn plow can cultivate more acres in a day than one who pushes the plow by hand.

Given the obvious advantages of employing physical capital in the production process, why don't all societies make use of it? The explanation has to do with relative prices and the legal status of labor. If labor is plentiful, inexpensive, and "free," then it pays to organize production using hand techniques even if machinery is readily available; only if labor is scarce, expensive, and "free" does it pay to invest in machinery. Free labor in this context means that the worker retains legal control over the disposition of his or her own labor and cannot be compelled to complete a labor agreement by threat of punishment. Since the beginning of the nineteenth century – and with the important exception of the American South, which is discussed in detail in the section on slave labor – American labor is and has been scarce, expensive, and free. It is for these reasons that capital-intensive techniques have been and continue to be a prominent feature of the American economy.[5]

The origins of labor scarcity date to the earliest European settlements in North America. The arrival of Europeans decimated the indigenous population through disease and calculated political and military strategies, leaving the continent sparsely populated (see the essay in Chapter Ag on American Indians). European settlers and their offspring then enjoyed a relative abundance of land, game, fish, timber, and minerals. As the objective of the colonists in British North America was settlement, they adopted a legal environment that encouraged small landholdings; democratic institutions that encouraged broad-based input into local, state, and national decision making; and a political system of checks and balances designed to limit the exercise of power by any single group.

As a result of these institutions, independent family-based enterprises became the norm. The easy availability of self- or family employment meant that hired laborers could be had only at high wages. Thus, those who sought to expand output beyond what could be produced by the family looked for strategies that might mitigate the impact of high wages on their profitability. To this end, they actively recruited foreign workers; encouraged immigration; and pioneered ways to substitute capital, raw materials, and land for labor. Robert Gallman (2000) and Moses Abramovitz and Paul David (2000) have made estimates of average annual growth rates of capital relative to the population and to the labor force for specified subperiods during the nineteenth and twentieth centuries. Growth in capital per worker was a particularly important source of economic growth in the nineteenth century. Abramovitz and David (2000, Table 1.6, p. 23) estimate that this so-called capital deepening accounted for almost half (49 percent) of the total growth in output per worker during the period 1800–1855 and 65 percent of a much more rapid rate of output per worker growth during the period 1855–1890.

The high and growing capital-labor ratios were effected through a variety of technological and organizational responses, three of which are particularly worthy of mention. These appeared first in America and were progenitors of developments that would later be emulated worldwide.

The first was the "American System of Manufactures," perhaps best exemplified by rifle production in the Enfield Armory in Connecticut. Prior to the adoption of the American System, rifles were handcrafted to the specifications of individual customers by an artisan who worked with general-purpose tools, such as files, hammers, and tongs. With respect to the American System, a large volume of standardized rifles were manufactured by a large number of highly specialized workers operating highly specialized single-purpose machines and making heavy use of capital and raw materials. Early characterizations of the American System emphasize the importance of interchangeable parts, although more recent research suggests that interchangeable parts were more the exception than the rule before 1870. Before then, quality was not high enough to make such interchangeability a practical reality in most industries (Hounshell 1984). The American System as developed in small-arms production was soon adopted in the production of other manufactured goods. Thus, the modern factory production techniques that today are employed worldwide had their origin in the high-wage environment of nineteenth-century America (see the essay in Chapter Dd on manufacturing).

The second organizational response was the early development of the machine-tool industry, that is, an industry that specialized in the manufacture of machines for use in other industrial processes. The viability of such an industry depended crucially on an extensive domestic market of final manufactured goods and on the capital-intensive nature of a wide range of industrial enterprises throughout the economy. The search for mineral inputs for this industry, such as iron and coal, prompted mineral exploration efforts that had far-reaching consequences for the economy. Thus, the mineral-rich products that fueled America's international ascendancy and, by extension, the mineral discoveries that revolutionized economies around the world also had their origin in the high-wage environment of nineteenth-century America (Rosenberg 1963; also see the essay on natural resources and the environment in Chapter Cf).

The third factor of significance was the early growth of large-scale corporations. These made their appearance in the American railroad and telegraph industries during the mid-nineteenth century. The railroad and telegraph companies expanded rapidly over the nineteenth century in response to an unprecedented increase in the demand for transportation and communication services. This demand for transportation services, in turn, was stimulated by the vast geographic extent of the nation, its large domestic market, and the strong regional variation of its resource base. Technological breakthroughs in the 1820s and 1830s gave an edge to railroads over water and road transportation systems in much of the country, and the railroad industry expanded rapidly. Annual statistics on the miles of railroad track laid between 1830 and 1890 are shown in Table Df874–881. What these statistics do not show is the growing size of the corporations that owned these rail systems. The railroad industry was characterized by returns to scale; that is, large companies were more profitable than small ones. As a consequence, the industry became highly concentrated in the hands of a small number of rail-service providers. The large size of these rail companies presented unprecedented challenges to labor management. As the business historian Alfred D. Chandler Jr. (1977, p. 79) emphasized:

[5] For a fuller discussion of "free" labor, see the section on labor market institutions in this essay.

> They were the first to require a large number of full-time managers to coordinate, control, and evaluate the activities of a number of widely scattered operating units. For this reason, they provided the most relevant administrative models for enterprises in the production and distribution of goods and services when such enterprises began to build, on the basis of the new transportation and communication network, their own geographically extended, multiunit business empires.

Thus, the unprecedented economic and geographic expansion of the American product market laid the basis for the innovation of labor management systems and internal labor markets. This innovation revolutionized labor systems in the United States and throughout the world during the twentieth century (Jacoby 1985). For statistics on manufacturing employees by size of employing unit, see Table Ba4703–4705.

Human Capital

"Human capital" refers to those productive human skills that are developed through investments in education, apprenticeship, and other formal and informal on-the-job training. Human capital can advance productivity directly, as it does when it leads to faster or more accurate completion of some given task. Human capital can also advance productivity indirectly, as it does when it enables workers to identify and seize new opportunities, such as adopting a new type of seed or a different method of cultivation, or to switch to a more advantageous venue, such as abandoning the thin and rocky soils of New England for the fertile lands of the Midwest or quitting agriculture altogether to take up more profitable employment in industry. Human capital also stimulates invention. In the nineteenth century, it was human capital in the form of the work experience of thousands of individual farmers, mechanics, and craftsmen that generated the stream of inventions that transformed American agriculture and industry. In the early twentieth century, the locus of American invention and innovation shifted to industrial research laboratories and research universities. In this case, the connection between human capital in the form of formal schooling and invention is especially clear (see the essay on science and technology in Chapter Cg).

In the American context, formal schooling is the form of human capital that has received the greatest attention. One reason is that from as early as the mid-nineteenth century until recently, America led the world in formal educational attainment. Claudia Goldin describes this American ascendancy in terms of three transformations (see the essay in Chapter Bc on education). The first of these was achieved in about 1850 when the majority of free American youth completed the eighth grade. The second was achieved in about 1940 when the majority of youth completed high school. The third is ongoing at the beginning of the twenty-first century as a growing fraction of youth complete four years of college. Historical statistics on the educational attainment of the population by sex and race since 1940 are shown in Table Bc737–792. Labor-force participation rates by educational attainment are shown in Table Ba507–518.

Not only did America lead the world in terms of educational attainment for much of the nineteenth and twentieth centuries, but the rest of the world also gradually adopted the American educational model – what Goldin terms the "American template." This template reflected the American political philosophy, which she characterizes as "egalitarianism" and which consisted of several elements: "public funding, openness, gender neutrality, local (and also state) control, separation of church and state, and an *academic curriculum*" (Goldin 2001, p. 265; emphasis added). Americans insisted on an academic rather than a vocational curriculum because the academic but not the vocational curriculum provided *general* skills. General skills are those that are useful in a variety of circumstances. General skills "survive transport across firms, industries, occupations, and geography" (Goldin 2001, p. 275). Americans insisted on these general, portable skills because of the dynamism of the American economy; in America, the locus of opportunity shifted rapidly across industries, occupations, technologies, and locales.

If human capital development in the form of formal schooling is so attractive, why didn't all societies embrace it? Part of the answer has to do with demand-side factors. In a stagnant economy experiencing little change in its technology, industrial organization, composition of its output, and the geographic location of its production, there is no payoff to training that goes beyond the acquisition of the current stock of skills; only dynamic economies reward those who can craft solutions to new problems and seize new opportunities. Thus, the principal demand-side factor explaining the growth of formal schooling in America was and is the dynamic economic environment. Some milestones in this dynamic development with special implications for labor include the development of the American System of Manufactures, which reduced the demand for skilled artisans; growth of the machine-tool industry, which stimulated demand for engineering skills; development of large-scale industries, such as the railroad and the telegraph, which stimulated demand for managerial and organizational skills to run them; and the advent of "knowledge-based progress" in the twentieth century.

Some evidence pointing to the power of these demand-side factors are the estimated rates of return to formal schooling. These appear to have been higher than returns to other forms of human capital investment perhaps as early as the 1820s. It also seems probable that rates of return to formal schooling in America were higher than in other parts of the world at that early date. Robert Margo reports that while wages of artisans fell relative to those of unskilled labor during the early period of industrialization, those of educated labor rose.[6] Rates of return to formal education have fallen during only two periods of American history. One was the period of the 1930s, 1940s, and 1950s – the era that Goldin and Margo describe as the "Great Compression," when the Great Depression, then World War II, and finally the rapid expansion of manufacturing in response to a dramatic growth in world demand for American products in the immediate post–World War II period favored less educated workers (Goldin and Margo 1992). The second period of decline in the relative wage advantage of highly educated workers was during the 1970s, when a downturn in the economy coincided with the labor force entry of the large, highly educated "baby boom" generation.[7]

The other reason formal schooling developed as rapidly and extensively as it did in America has to do with supply-side factors.

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[6] Margo (2000) and the essay on wages and wage inequality in this chapter.

[7] On the business cycle, see the essay on economic fluctuations, recessions, and depressions in Chapter Cb. On the characteristics of the baby boom cohort as compared with those of other cohorts, see the essay in Chapter Af on cohorts. For evidence on relative earnings by skill category over time, see Tables Ba4253–4267 and Ba4381–4395, as well as Figure Ba-K. For income at different times according to years of education, see Tables Bc814–901.

Human capital development requires wealth. There is the cost of instruction itself – the wages of teachers and administrators, the physical plant, and books and supplies. Even more expensive, in general, is the implicit cost of the student's time in school. Those engaged in on-the-job training reduce their production. Those engaged in formal schooling may have to suspend production and forgo the associated income altogether. In order for human capital accumulation to take place, a society or an individual must be wealthy enough to absorb these expenses. We have already documented the high and growing wealth in the American economy.

A related issue is the relationship between adults and youths. Human capital is most beneficial to the individual and to society when it is acquired at young ages. This is because young people have more years in which to reap the benefits in terms of higher productivity and wages. However, young people generally find it difficult or impossible to finance their own human capital investments, because their earning capabilities are typically low and they have not had time to accumulate assets. For these reasons, youths are generally dependent for their human capital development on the decisions and resources of their elders. Not all elders are willing to provide schooling for youths, even if they are able. Schooling expands youths' opportunities; youths may take up these opportunities to distance themselves from their parents. In the past, throughout the world and in many parts of the world even today, parents rely on their grown children to provide economic security for their old age. Where they do so, they are reluctant to educate their children, especially their daughters.

Americans largely abandoned their reliance on grown children for old-age security early in the nineteenth century. After this transition, planned, self-financed retirement became the norm. Once accumulated savings secured old age, children became precious. They were sent to school and little work was expected of them. Daughters as well as sons enjoyed these benefits (Fishlow 1967; Lindert 1978; Kaestle and Vinovskis 1980; Tyack and Hansot 1990; Carter, Ransom, and Sutch 2003). School enrollment rates were high, and boys and girls attended in relatively equal proportions (see Tables Bc258–264 and Bc438–446). An unintended consequence of educating daughters as well as sons was the creation of a large pool of inexpensive female teachers. The schools' willingness to hire female teachers and female teachers' willingness to teach for low wages were important ingredients in facilitating the ongoing expansion of the American educational system (Carter 1986; Perlmann and Margo 2001).

A third supply-side factor was the system of local control. This allowed communities to adjust school structure, curriculum, and financing in response to local conditions. Local control meant that schools reflected local needs and, therefore, garnered public support (see the essay in Chapter Bc on education).

Improvements in Technology and Industrial Organization

Technological improvements permit more output from a given set of inputs. They almost always boost labor productivity. A familiar example is Eli Whitney's cotton gin (1793), which replaced hand methods of removing cotton seeds from the bolls. Contemporary observers testified that the gin would "separate more by one hand in a day than formerly in the space of months" (Green 1956, p. 49). Organizational changes can improve output in the same way. A famous early organizational innovation is the hog-slaughtering "disassembly" lines established first in Cincinnati and then in Chicago in the early 1870s. Live hogs were herded into the upper floor of slaughterhouses and moved by gravity and overhead conveyer devices through a sequence of consecutive steps involving slaughtering, butchering, and dressing. The meat for wholesale and retail distribution emerged at the far end of the slaughterhouse without once retracing its steps (Giedion 1948). Such sequential ordering of production was not possible in early factories that relied on water or steam power for their energy. Instead, the power-intensive elements of production were located near the power source, and other intervening operations performed elsewhere in the building. Because consecutive steps in the production process were performed at different places around the plant, a large number of workers had to be employed in simply moving partially finished goods from one part of the factory to another. The introduction of electrical power into factories in the 1890s and its widespread adoption in the 1920s allowed for the rationalization of the workflow. Because electricity could be distributed as easily to one as to another point in the factory, production was reorganized to manage the flow of production in a logical fashion and to reduce the need to move semifinished products back and forth around the plant. These changes afforded considerable savings in labor, plant size, and working capital (David 1990). To the extent that such technological and organizational changes raise labor productivity, they also prompt a rise in wages.

Scholars have argued that as early as the first half of the nineteenth century, technological innovation in America was faster than elsewhere. In an influential book, H. J. Habakkuk (1962, p. 5) reports commentary by contemporary observers to this effect and asks, "Why should mechanisation, standardization and mass-production have appeared before 1850 and to an extent which surprised reasonably dispassionate English observers?" At the same time, there is abundant evidence that America was a heavy borrower of industrial technologies from other countries. To briefly summarize a large and complicated literature, it seems that in certain industries, such as firearms, steamboats, farm machinery, sewing machines, and other machine tools, the United States was the primary source of new and distinctive technological inventions and innovations. In other industries, especially cotton textiles, most of the technology employed in America was borrowed from abroad (Habakkuk 1962; Rosenberg 1976; Hounshell 1984). The longest-running quantitative measure of this technological activity is the series on patents (series Cg30). By 1810, the United States had surpassed Great Britain in patents per capita (Khan and Sokoloff 2001, p. 239).

The characterization of American industrial and organizational inventions, innovations, and practice over the last 200 years is the subject of a large literature. See the essay on science and technology in Chapter Cg, Engerman and Sokoloff (2000), and Mowery and Rosenberg (2000) for recent surveys. Also see the essay on productivity in Chapter Cg for an assessment of the role of improvements in technology and industrial organization as a source of American productivity growth.

Technological and organizational improvements rarely affect all inputs equally. Those that do are said to be "neutral." Generally speaking, however, changes in technology affect the demand for capital and for labor differently and may have different effects on skilled versus unskilled labor as well. See the essay on wages and wage inequality in this chapter for a discussion of the impact of technological and organizational changes on various types of labor over time.

Laws, Institutions, and the Operation of the American Labor Market

The American labor market operates within a complex, idiosyncratic, and changing set of laws and institutions. These laws and institutions influence a wide range of labor market outcomes. We have already referred to the impact of educational institutions on labor skills, of immigration policy on the size and character of the labor force, and of Indian policy on "land abundance" for European settlers. These are but a few examples.

The basic law of employment specifies the ownership and control over human labor itself. Three major categories of such ownership and control have been practiced historically: slavery and serfdom, "contract labor" such as indentured servitude, and free labor. A slave is the property of a master who exercises complete legal and physical control. Slaves pass their enslaved status on to their offspring. Contract laborers are born free and their children are born free, but when they voluntarily enter into a labor contract, they are bound for the specified period of time to perform their agreed-upon duties or face punishment. Free laborers enter labor relations voluntarily and are free to quit at any time. Unlike contract laborers, they are not bound to remain until the task or term of work is completed. If they do depart before the work is complete, they lose compensation for the uncompleted work, but they do not face punishment.

Orthogonal to these three labor systems are laws controlling married women's right to make contracts and to control their own property, earnings, and activities. Throughout most of the world until the nineteenth century and in some parts of the world even today, a wife was forbidden to "make contracts, buy and sell property, sue or be sued, or draft wills. Her husband owned any wages she earned, and he controlled any property she brought to the marriage. A husband also could control his wife's economic activities outside the home, such as limiting a particular shopkeeper from selling to his wife" (Geddes and Lueck 2002, p. 1079). Other legal restrictions societywide often limited the labor of married women.

At their founding, the American colonies recognized slavery and indentured servitude, but over time abolished both of these forms of coercive labor. The abolition of slavery began in the North in 1777 and was complete in the "Free States" by 1803. Slavery continued in the South, however, until the Civil War, and the Thirteenth Amendment to the Constitution outlawed this practice. Indentured servitude vanished by the 1820s. In 1864, Congress legalized contract labor for immigrants, but in 1885 reversed itself and banned the practice. According to Robert Steinfeld (1991), America was the first nation to embrace the institution of free labor on a wide scale.

American labor institutions originated out of the English labor practice and law at the time of initial colonization during the early seventeenth century. As Steinfeld demonstrates, English law at that time sanctioned both slave and consensual labor contracts. The distinction between the two is that slaves had no say in the disposition of their labor, whereas free persons did. Free persons could sign labor contracts in exchange for wages, training, or transatlantic transportation. He also demonstrates that the consensual labor contracts offered at the time subjected workers to what we would describe today as "unfree labor" (Steinfeld 1991, p. 3). Although workers entered into these labor agreements voluntarily, they faced stiff penalties if they failed to fulfill their promises. Thus, if an individual agreed to work for some specified period of time, produce some product, or provide some service, he or she would not only risk the loss of compensation for failing to deliver but also face fines, imprisonment, whippings, disfigurement, or other punishments. Under such circumstances, hired labor in the seventeenth and eighteenth centuries was closer in nature to indentured servitude than it was to the free labor we know today. Today, employees have the right to quit at any time without fear of coercive retribution.

The motivation for adopting these systems of "unfree" labor was the relative ease of attaining self-employment in the American environment. The abundance of land, game, fish, timber, and minerals and the consequent low price for the right to exploit these resources meant that even those who started with few assets of their own could soon purchase access by accumulating savings over a few years of wage work. Those seeking to expand employment in their enterprise beyond the family labor force found it necessary to resort to some form of unfree labor. This insight is attributable to Evsey Domar (1970), who demonstrated that free land, free laborers, and rent-earning landlords cannot exist simultaneously. In a land-rich environment, property owners can profit from hired labor only by placing restrictions on their laborers' rights.

Indentured Servitude and Other Forms of Contractual Labor

Indentured servitude was the first form of unfree labor to enjoy widespread adoption in the American colonies. According to this system, Europeans voluntarily signed contracts, called "indentures," in which they pledged to work for a specific period of time in return for food, shelter, and clothing and often passage to America, training, and "freedom dues" upon the completion of their service. The length of the required service varied with the reimbursements; those who could afford to pay their own passage could negotiate for a shorter period of service. The length of required service also varied with the characteristics of the servant. Young, healthy men in possession of craft skills were offered shorter periods of service because of their higher productivity than those without such characteristics. The length of service also varied with supply and demand. A decrease in the supply of servants or an increase in demand for labor caused the period of service to fall, effectively raising the price of the servant for the master.

By about 1630, after the initial establishment of the colonies had been completed, indentured servants constituted the majority of new arrivals from Europe. With the end of religious persecutions in Europe, the rise in wages, and the fall in transportation costs, the number of persons willing to enter servitude fell, and colonists were forced to offer shorter terms of service in order to attract them. Increases in the value of colonial export products also led to reductions in the length of service as planters searched for ways to entice more potential workers. These forces eventually drove the price of indentured servants above the price of black slaves imported from Africa or the Caribbean. Colonists who wished to use bound labor relied increasingly on slave labor. By the time of the American Revolution, slaves had largely replaced indentured servants in the South, although they continued as an important source of labor in Pennsylvania and the Chesapeake Bay area. After 1820, the institution of indentured servitude disappeared entirely (Steinfeld 1991; Galenson 1996).

In addition to indentured servants, restrictive contracts formed the basis of the employment relation for apprentices and domestic

servants, as well as for laborers. Peter Way (1993) shows that early American canals were built with a labor force that comprised slaves and white laborers who signed contracts committing them to remain with the project until the work was complete. Coercive labor contracts were also ubiquitous in the market for Northern agricultural labor through the first half of the nineteenth century. Although most Northern farms made do with family labor, those that employed hired hands bound them to honor either specific periods of service or the completion of specific tasks (Rothenberg 1992; Steinfeld 1991, Chapter 2).

Slave Labor

Slave labor was a powerful and quantitatively important institution in colonial America. Slavery was legal throughout British North America, and it was practiced in all of the colonies that would ultimately become the United States. In 1770, blacks (almost all of whom are presumed to have been slaves) accounted for an estimated 21.7 percent of the total population. They were heavily concentrated in the South. In Virginia, North Carolina, South Carolina, and Georgia, they accounted for 42.0, 35.3, 60.5, and 45.5 percent of the population, respectively. At the same time, slaves were present in the Northern colonies as well, in particular in Rhode Island, New York, and New Jersey, where they accounted for 6.5, 11.7, and 7.0 percent of the 1770 population, respectively (Table Eg1–59).

In 1800, slaves accounted for over 30 percent of the workforce nationally and slightly over 50 percent of the workforce in the South. Almost all slave labor was engaged in agriculture, especially in the cultivation of tobacco. Enslaved women and children were just as likely as enslaved men to work in the fields. See Tables Ba79–339.

Vermont was the first to abolish slavery in 1777, and by 1804, all of the Northern states had outlawed this practice. Slavery continued to be practiced throughout the South until 1865 at the conclusion of the Civil War and the passage of the Thirteenth Amendment to the Constitution. The essay in Chapter Bb describes the origins of slavery in the American colonies, its development, and subsequent abolition. The essay in Chapter Eg discusses the role of slavery in the colonial economy. The essay in Chapter Eh focuses on the Confederate States of America and the Civil War.

The institution of slave labor produced a distinctive economic dynamic in the South. Gavin Wright (1984, p. 11) argues that the distinctiveness of the Southern labor market even today had its origins in behaviors motivated by slaveholding in the early nineteenth century:

> As compared to the American North, the incentives of slave property tended to disperse population across the land, reduce investments in transportation and in cities, and limit the exploration of southern natural resources. Above all, slave owners had no incentives to open up labor market links with outside areas, and the resulting inelasticity of the labor supply squeezed out labor-intensive manufacturing activity, such as the pre-[Civil]war textile industry which grew during the 1840s but stagnated during the cotton boom of the 1850s.

With the abolition of slavery, Southerners ceased to engage in these distinctive practices. Wright (1984, p. 11) calls particular attention to the "reallocation of land from corn to cotton, new enthusiasm for railroads and local development, and the rise of new manufacturing and mining sectors." He also shows that after the abolition of slavery, the Southern labor market began to function much like the labor market in the rest of the country. Despite the evils of debt peonage, sharecropping, and racism, Southern labor turnover was high, and laborers migrated from lower- to higher-wage areas. At the same time, the absence of formal linkages with the rest of the nation (in the slave era, the South had stronger trade connections with Europe than it did with the Northern states), the absence of appropriate industrial technologies (the American System of Manufactures was not well suited to the low-wage, labor-abundant South), and a reluctance to invest heavily in education for fear of enabling the out-migration of youths kept the Southern labor market separate from that of the rest of the nation. Until World War I, the Southern labor market operated in isolation from that in the rest of the country. Southern migration took place only within the South, despite the availability of higher wages, better working conditions, and more political freedom for blacks in other regions of the country. As the vast majority of blacks lived in the South, an important implication of this Southern labor-market isolation is that it perpetuated the poverty, low educational attainment, and agricultural employment of the black population. In Wright's phrase, blacks were the "poorest group in the country's poorest region."[8] William Collins (1997) demonstrates that this isolation of the Southern labor market was caused by mass European immigration, coupled with racist hiring practices of Northern employers, who favored white immigrants over Southern blacks.

Labor shortages during World War I and the restrictive immigration legislation of the 1920s sparked the "Great Migration," which ended the isolation of the Southern labor market. The Great Migration refers to the wholesale migration of black Southerners to Northeastern and Midwestern cities. It began in the last decade of the nineteenth century, accelerated substantially during World War I and then again during the 1920s, subsided somewhat during the Great Depression of the 1930s, but then accelerated once again during the World War II years. Although Southerners of all races migrated to the North, black Southerners participated to a disproportionate degree.[9] The Great Migration is credited with substantial gains for blacks on a wide range of fronts, including improvements in educational attainment (Table Bc438–446), increased occupational integration (Table Ba4207–4213), and greater equality in black–white earnings (Tables Ba4431–4439 and Ba4512–4520).

Although the exodus of blacks sparked some improvements for the black workers who remained in the South, Gavin Wright (1987) demonstrates that it was not until the enactment of New Deal labor policies during the 1930s that the Southern labor market really began to resemble the labor market in the rest of the nation. The National Recovery Act (NRA) raised the wage in many Southern industries, and Works Progress Administration (WPA) employment opportunities were offered at wages that were much higher than those prevailing in the South. Other influential New Deal policies were those that encouraged unionization and established a relatively high minimum wage.

[8] Wright (1987). See also Rosenbloom (2002) on the isolation of the Southern labor market.

[9] See the essay in Chapter Ac on internal migration and Collins (1997).

Free Labor

"Free labor" in this context refers to a labor system in which employees have the right to quit. As Robert Steinfeld (1991) demonstrates, free labor was not an institution that America inherited from the English; it was a unique American development. Although free labor first appeared in America in the early eighteenth century, it was not until the early years of the nineteenth century that it emerged as the dominant mode. Steinfeld attributes the appearance and spread of free labor to two consequences of the American Revolution: a heightened resolve to abolish black slavery and a broad-based demand to extend the suffrage. He argues that following the Revolution, "Americans began to think about indentured servitude quite differently, as a form of involuntary rather than voluntary servitude and as essentially indistinguishable from slavery" (Steinfeld 1991, p. 7). Their post-Revolutionary agitation for broadened suffrage pushed in the same direction: "One of the principal new tests for the suffrage that states began to adopt was the test of legal self-government. Did an individual have the legal right to control and dispose of his or her own person, or did that right lie in another? If individuals enjoyed the legal right to control and dispose of themselves, they would be qualified to exercise the suffrage" (Steinfeld 1991, p. 185). Thus, under this interpretation, suffrage required the abolition of unfree labor. Peter Way (1993) suggests that an economic motive may have played a role as well. Free laborers are cheaper than unfree when the supply of labor is great and where demand fluctuates the way it did in the building of canals in the late eighteenth and early nineteenth centuries. During good times, inexpensive free labor could be recruited in Scotland and Ireland; during bad times, free laborers could be dismissed, sparing the company the cost of their room and board, forcing laborers to finance their own unemployment. By the early nineteenth century, the two labor systems were chattel slavery and free labor, where free laborers not only entered into the employment relation voluntarily but had also secured the right to depart at will.

Free labor became an increasingly important institution in America over the nineteenth century and for most of the twentieth century as well. Although the free share of the Southern labor force remained roughly constant during the nineteenth century up until the abolition of slavery, it rose as a share of the national labor force. This was because of the substantial immigration of free laborers to the North, but not to the South, especially after 1840. Thus, while free workers accounted for 69.5 percent of the labor force in 1800, on the eve of the Civil War in 1860 the free share was 78.3 percent (calculated from Tables Ba1–10 and Ba40–49).

There is an additional sense in which free labor was growing in importance over time, that is, in distinguishing self-employed and unpaid family workers from hired workers. Stanley Lebergott estimates that as late as 1900, hired labor accounted for only a little more than half (55.4 percent) of the labor force (calculated from series Ba470, Ba910, and Ba918). The continuing importance of owner-operated farms and small retail and service establishments limited the extent of hired labor economywide. By 1960, wage and salary workers comprised 84 percent of the labor force according to Lebergott, and 86 percent according to the U.S. Bureau of Labor Statistics (BLS) (series Ba981). In 2000, wage and salary workers were estimated to account for 93 percent of the labor force. The decline in self-employment and rise in (free) wage and salary workers have been a largely uninterrupted development, except for a mild reversal of the trend toward wage and salary work in the late 1970s and early 1980s (series Ba981). One confounding development has been the growing use of S-corporations as a legal form for small individual and family enterprises. To reduce risk and taxation, an increasing number of small enterprises have adopted this legal form. When they do so, the formerly self-employed individual is reclassified as an employee of the new corporation (see Table Ch1–18). The number of S-corporations has risen rapidly over time, especially since the mid-1980s. This trend may be masking a substantial amount of what we would otherwise classify as self-employment.

The Rights of Married Women

American law adopted the English practice of "coverture," which refers to the constricted status of married women under common law. In the oft-quoted words of the prominent English jurist Sir William Blackstone, marriage creates under coverture a "unity of person between the husband and wife; it being held that they are one person in law, so that the very being and existence of the woman is suspended during the coverture, or entirely merged and incorporated in that of the husband" (Blackstone 1756). In other words, under coverture, husbands exercised legal control over their wives' activities and owned their wives' output; the absence of coverture is self-ownership. Coverture has been shown to have limited married women's commercial and patenting activities in nineteenth-century America (Khan 1996). It is also probable that coverture reduced investments in women's education and job-related skills (Schultz 1995).

American laws regarding coverture were written at the state level, and it is therefore possible to observe regional differences in the decline of this institution over time. R. Richard Geddes and Dean Lueck (2002) develop a chronology of women's property rights by state over time and use the data to explore the causes of this important legal change. In their view, the principal causes of the decline in coverture, at least in the American environment, were increases in wealth, the market wage, the rate of return to education, and the complexity of market work. According to available estimates, women's self-ownership became law throughout the country by the late 1890s (Table Ba5091–5095).

Nonetheless, twentieth-century depression and wartime exigencies produced a series of labor laws that severely limited married women's employment opportunities between the 1920s and the 1950s. These were the so-called marriage bars that prohibited employers from hiring married women and required them to fire experienced, formerly single female employees upon their marriage. Claudia Goldin (1991) documents the rise of such practices beginning in the 1920s, just as women were beginning to extend the number of years they devoted to the labor force. The institution of such regulations posed few costs to employers, in Goldin's view, because they were imposed at a time when most married women considered their jobs to be temporary. Nonetheless, these regulations surely must have inhibited investments in human capital by women who would have preferred longer employment careers. Marriage bars were suddenly abandoned in the 1950s under pressure from the markedly growing labor supply of married women.

Labor Market Structure

In addition to the basic law of employment, there are countless other laws, institutions, and practices that affect labor market operation. Stephen Nickell and Richard Layard (1999) classify these

under five headings: labor taxation, especially payroll taxes, income taxes, and consumption sales taxes; employment protection legislation regulating hours of work, employee compensation, and job security; trade union activity and minimum wages; support for the unemployed and active labor market policy aimed at reducing unemployment; and education and skill formation. Quantitative evidence on the historical development of these labor market institutions are displayed in various chapters of *Historical Statistics of the United States*. The essay in Chapter Ea on government finance and employment discusses the development of the federal income tax, its level, its incidence, and change over time. The essay on hours and working conditions in this chapter discusses the development of hours of work, worker safety, and job security legislation. The essay on labor unions in this chapter discusses trade unions and their growth and evolution over time. Table Ba4422–4425 displays time series data regarding the federal minimum wage. The essays on public assistance and on social welfare in Chapter Bf describe private and social income support for the unemployed and for those who are out of the labor force. The essay on economic fluctuations, recessions, and depressions in Chapter Cb discusses the evolution of active labor market policy. Educational institutions are described in the essay in Chapter Bc on education, as well as in this essay.

The constellation of institutions that affect labor market operations are sometimes referred to collectively by the term "labor market structure." For some purposes, labor market structure can be usefully viewed as lying along a single dimension. At one end of the spectrum lie "unfettered" labor markets that mimic textbook examples of perfect competition. At the other end are highly "structured" labor markets with substantial legal, political, and social institutions that modify the forces of market competition. A popular way of viewing the development of the American labor market is to see it as moving along this continuum from less to more structure over time. Christopher Tomlins (2000) provides an overview and analysis of the major legal developments. Price Fishback (1998) offers a comprehensive description of the operation of the relatively "unfettered" labor markets at the turn of the twentieth century. He also provides an assessment of their operation and the political economy of the emergence of additional labor market structure over the course of the twentieth century. In Fishback's view, the relatively unfettered labor markets at about 1900 "functioned well enough that workers typically had multiple opportunities and were able to move to take advantage of them to improve their situation" (Fishback 1998, p. 759). At the same time, laborers clearly expressed their dissatisfaction with many of the labor practices of the day, and there were a considerable number of issues that were viewed as problems by both workers and employers. Fishback concludes that many of the Progressive era labor regulations, especially worker compensation laws, unemployment insurance, and minimum wages, were beneficial not only to workers but also to a "significant subset of employers" (Fishback 1998, p. 761). For this reason, they are likely to remain a part of the American landscape, at least until the underlying conditions change.

Labor markets can also be compared according to these structures. An active area of labor market research in the closing years of the twentieth century is the identification of connections between different labor market structures and their associated labor market outcomes.[10]

[10] For overviews, see Blau and Kahn (1999) and Nickell and Layard (1999).

References

Abramovitz, Moses, and Paul A. David. 2000. "American Macroeconomic Growth in the Era of Knowledge-Based Progress: The Long-Run Perspective." In Stanley L. Engerman and Robert E. Gallman, editors. *The Cambridge Economic History of the United States,* volume 3. Cambridge University Press.

Atack, Jeremy, and Peter Passell. 1994. *A New Economic View of American History: From Colonial Times to 1940*. 2d edition. Norton.

Blackstone, Sir William. 1756. *Commentaries on the Law of England, in Four Books*. Clarendon.

Blau, Francine D., and Lawrence M. Kahn. 1999. "Institutions and Laws in Labor Markets." In Orley Ashenfelter and David Card, editors. *Handbook of Labor Economics,* volume 3A, Chapter 25. Elsevier Science.

Carter, Susan B. 1986. "Occupational Segregation, Teachers' Wages and American Economic Growth." *Journal of Economic History* 46 (2): 373–83.

Carter, Susan B., Roger L. Ransom, and Richard Sutch. 2003. "Family Matters: The Life-Cycle Transition and the Unparalleled Antebellum American Fertility Decline." In Timothy W. Guinnane, William A. Sundstrom, and Warren Whatley, editors. *History Matters: Essays on Economic Growth, Technology, and Demographic Change*. Stanford University Press.

Chandler, Alfred D., Jr. 1977. *The Visible Hand: The Managerial Revolution in American Business.* Harvard University Press.

Collins, William. 1997. "When the Tide Turned: Immigration and the Delay of the Great Black Migration." *Journal of Economic History* 57 (3): 607–32.

David, Paul A. 1990. "The Dynamo and the Computer: An Historical Perspective on the Modern Productivity Paradox." *American Economic Review* 80 (2): 355–61.

Domar, Evsey. 1970. "The Cause of Slavery or Serfdom: A Hypothesis." *Journal of Economic History* 30 (1): 18–32.

Egnal, Marc. 1996. *Divergent Paths: How Culture and Institutions Have Shaped North American Growth.* Oxford University Press.

Engerman, Stanley, and Kenneth Sokoloff. 2000. "Technology and Industrialization, 1790–1914." In Stanley L. Engerman and Robert E. Gallman, editors. *The Cambridge Economic History of the United States,* volume 2. Cambridge University Press.

Fishback, Price V. 1998. "Operations of 'Unfettered' Labor Markets: Exit and Voice in American Labor Markets at the Turn of the Century." *Journal of Economic Literature* 36 (2): 722–65.

Fishlow, Albert. 1967. "The American Common School Revival: Fact or Fancy?" In Henry Rosovsky, editor. *Industrialization in Two Systems: Essays in Honor of Alexander Gerschenkron*. Wiley.

Folbre, Nancy, and Barnet Wagman. 1993. "Counting Housework: New Estimates of Real Product in the United States." *Journal of Economic History* 53 (2): 275–88.

Galenson, David W. 1996. "The Settlement and Growth of the Colonies: Population, Labor, and Economic Development." In Stanley L. Engerman and Robert E. Gallman, editors. *The Cambridge Economic History of the United States,* volume 1. Cambridge University Press.

Gallman, Robert E. 2000. "Economic Growth and Structural Change in the Long Nineteenth Century." In Stanley L. Engerman and Robert E. Gallman, editors. *The Cambridge Economic History of the United States,* volume 2. Cambridge University Press.

Geddes, R. Richard, and Dean Lueck. 2002. "The Gains from Self-Ownership and the Expansion of Women's Rights." *American Economic Review* 92 (September): 1079–92.

Giedion, Sigfried. 1948. *Mechanization Takes Command: A Contribution to Anonymous History*. Oxford University Press.

Goldin, Claudia. 1991. "Marriage Bars: Discrimination against Married Women Workers from the 1920s to the 1950s." In Patrice Higonnet, David S. Landes, and Henry Rosovsky, editors. *Favorites of Fortune: Technology, Growth, and Economic Development since the Industrial Revolution.* Harvard University Press.

Goldin, Claudia. 2000. "Labor Markets in the Twentieth Century." In Stanley L. Engerman and Robert E. Gallman, editors. *The Cambridge Economic History of the United States,* volume 3. Cambridge University Press.

Goldin, Claudia. 2001. "The Human-Capital Century and American Leadership: Virtues of the Past." *Journal of Economic History* 61 (2): 263–92.

Goldin, Claudia, and Robert A. Margo. 1992. "Great Compression: The U.S. Wage Structure at Mid-Century." *Quarterly Journal of Economics* 107 (February): 1–34.
Green, Constance McLaughlin. 1956. *Eli Whitney and the Birth of American Technology*. Little, Brown.
Habakkuk, H. J. 1962. *American and British Technology in the Nineteenth Century*. Cambridge University Press.
Hounshell, David A. 1984. *From the American System to Mass Production, 1800–1932: The Development of Manufacturing Technology in the United States*. Johns Hopkins University Press.
Jacoby, Sanford M. 1985. *Employing Bureaucracy: Managers, Unions, and the Transformation of Work in American Industry, 1900–1945.* Columbia University Press.
Kaestle, Carl F., and Maris A. Vinovskis. 1980. *Education and Social Change in Nineteenth-Century Massachusetts*. Cambridge University Press.
Khan, B. Zorina. 1996. "Married Women's Property Laws and Female Commercial Activity: Evidence from United States Patent Records, 1790–1895." *Journal of Economic History* 56 (2): 356–88.
Khan, B. Zorina, and Kenneth L. Sokoloff. 2001. "The Early Development of Intellectual Property Institutions in the United States." *Journal of Economic Perspectives* 15 (3): 233–46.
Lindert, Peter H. 1978. *Fertility and Scarcity in America*. Princeton University Press.
Maddison, Angus. 1995. *Monitoring the World Economy, 1820–1992*. Development Centre of the Organization for Economic Co-operation and Development.
Margo, Robert A. 2000. "The Labor Force in the Nineteenth Century." In Stanley L. Engerman and Robert E. Gallman, editors. *The Cambridge Economic History of the United States,* volume 2. Cambridge University Press.
Mowery, David, and Nathan Rosenberg. 2000. "Twentieth-Century Technological Change." In Stanley L. Engerman and Robert E. Gallman, editors. *The Cambridge Economic History of the United States,* volume 3. Cambridge University Press.
Nickell, Stephen, and Richard Layard. 1999. "Labor Market Institutions and Economic Performance." In Orley Ashenfelter and David Card, editors. *Handbook of Labor Economics,* volume 3C, Chapter 46. Elsevier Science.
Perlmann, Joel, and Robert A. Margo. 2001. *Women's Work? American Schoolteachers 1650–1920.* University of Chicago Press.
Rosenberg, Nathan. 1963. "Technological Change in the Machine Tool Industry, 1840–1910." *Journal of Economic History* 23 (4): 414–43.
Rosenberg, Nathan. 1976. *Perspectives on Technology*. Cambridge University Press.
Rosenbloom, Joshua L. 2002. *Looking for Work, Searching for Workers: American Labor Markets during Industrialization.* Cambridge University Press.
Rothenberg, Winifred B. 1992. "Structural Change in the Farm Labor Force: Contract Labor in Massachusetts Agriculture, 1750–1865." In Claudia Goldin and Hugh Rockoff, editors. *Strategic Factors in Nineteenth Century American Economic History: A Volume to Honor Robert W. Fogel.* University of Chicago Press.
Schultz, T. Paul, editor. 1995. *Investment in Women's Human Capital*. University of Chicago Press.
Smith, Adam. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*.
Sokoloff, Kenneth. 1986. "Productivity Growth in Manufacturing during Early Industrialization: Evidence from the American Northeast, 1820–1860." In Stanley L. Engerman and Robert E. Gallman, editors. *Long-Term Factors in American Economic Growth.* National Bureau of Economic Research. Studies in Income and Wealth, volume 51. University of Chicago Press.
Steinfeld, Robert J. 1991. *The Invention of Free Labor: The Employment Relation in English and American Law and Culture, 1350–1870.* University of North Carolina Press.
Tomlins, Christopher L. 2000. "Labor Law." In Stanley L. Engerman and Robert E. Gallman, editors. *The Cambridge Economic History of the United States,* volume 3. Cambridge University Press.
Tyack, David, and Elisabeth Hansot. 1990. *Learning Together: A History of Coeducation in American Public Schools*. Yale University Press.
U.S. Bureau of the Census. 2003. *International Data Base.* Downloaded from the Census Bureau Internet site on June 19, 2003.
Wagman, Barnet, and Nancy Folbre. 1996. "Household Services and Economic Growth in the United States, 1870–1930." *Feminist Economics* 2 (1): 43–66.
Way, Peter. 1993. *Common Labor: Workers and the Digging of North American Canals, 1780–1860*. Johns Hopkins University Press.
Wright, Gavin. 1984. *Old South, New South: Revolutions in the Southern Economy since the Civil War*. Basic Books.
Wright, Gavin. 1987. "Postbellum Southern Labor Markets." In Peter Kilby, editor. *Quantity and Quiddity: Essays in U.S. Economic History.* Wesleyan University Press.

LABOR FORCE

Susan B. Carter

For much of human history, and in much of the world even today, the vast majority of the population work for a living. Except for those too young, too old, or too sick, and except for the "idle classes" – those with power or resources to command food, clothing, and shelter from others – people work, and do so for most of their lives.

In contrast to this common human reference to labor, the term "labor force" has a technical definition that was created and refined during the social, economic, and political crises accompanying the Great Depression of the 1930s. To determine an individual's status according to the labor force concept, people are asked about their activities during a specific reference week and, on the basis of their answers, are classified as either employed, unemployed, or out of the labor force. The labor force, according to this measure, is the sum of the employed and the unemployed.

The employed are defined as those adults who, during the reference week, (1) did any work at all as paid employees, worked in their own business, in their profession, or on their own farm, or who worked fifteen hours or more as unpaid workers in a family-operated enterprise; plus (2) those who did not work but who had jobs or businesses from which they were temporarily absent due to illness, bad weather, vacation, child care problems, labor dispute, parental leave, or other family or personal obligations – whether or not they were paid by their employers for the time off and whether or not they were seeking other jobs.[1] Each employed person is counted only once, even if he or she holds more than one job. Multiple jobholders are counted in the job at which they worked the greatest number of hours during the reference week. Included in the total are employed citizens of foreign countries who are residing in the United States. Excluded are persons whose only activity consists of unpaid work around their own home, such as housework, painting, repairing, and so forth, or volunteer work for religious, charitable, and similar organizations.

The unemployed are those who had no employment during the reference week, but who were available for work and who had made specific efforts, such as contacting employers, to find work during a specified period. Those who are neither employed nor unemployed are classified as "out of the labor force." Additional details for assigning individuals across the categories employed,

[1] "Adults" were defined as persons fourteen years of age and older through 1947 and persons sixteen years of age and older beginning in 1947. There are two values for the labor force in 1947, one for each age grouping. See Table Ba478–486.